

Aberdeen Western Peripheral Route / Balmedie - Tipperty

Competition for the Design, Build, Finance and Operation of the
Aberdeen Western Peripheral Route / Balmedie - Tipperty

Volume Five

Schedule 4: O&M Works Requirements

Part 1: Overall Requirements

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SCHEDULE 4: O&M WORKS REQUIREMENTS

PART 1: OVERALL REQUIREMENTS

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Part 1: Overall Requirements

1 Introduction

- 1.1 Without prejudice to the other provisions of this Agreement, the Company shall be responsible for the Design, construction, completion, finance, operation and maintenance of the O&M Works Site.
- 1.2 Without prejudice to the other provisions of this Agreement, these O&M Works Requirements describe the O&M Works Requirements for the Design, construction, completion, operation and maintenance of the O&M Works.
- 1.3 Unless otherwise described, all statements refer to the whole of the Design, construction, completion, operation and maintenance of the O&M Works.
- 1.4 Without prejudice to the other provisions of this Agreement and in accordance with Clause 6.3 of this Agreement, the Company shall be responsible for the O&M Works Site from the Restricted Services Commencement Date until the earlier of the Expiry Date or the Termination Date.

1.5 Definitions

- 1.5.1 Defined terms used in these O&M Works Requirements are the same as those set out in the Agreement with the following additional defined terms, where the plural of a term shall have the same meaning, where appropriate:

Access System means a permanent or temporary moveable access gantry or platform together with associated runway beams, supports and associated fixings;

Asset Manager means the person described in paragraphs 3.2 and 3.3;

Automated Diary Facility means a web-based software application supplied by Transport Scotland to the Company for the input, editing and dissemination of information on all planned roadworks, traffic management, lane closures, lane occupations and events likely to cause traffic delays or disruption on the O&M Roads;

Category 1 Defect means a defect or damage as detailed in paragraph 1.2.6 to Part 2 to these O&M Works Requirements;

Category 2 Defect means a defect or damage as detailed in paragraph 1.2.6 to Part 2 to these O&M Works Requirements;

Cyclic Maintenance shall be as defined in Section 5.5 to Part 2 of these O&M Works Requirements and shall only apply to the maintenance and management of Structures;

Detailed Inspection means the inspection required as set out in Section 1.6 to Part 2 of these O&M Works Requirements;

Disruption Risk Management Plan means the document maintained by the Company to record the processes and activities to manage all identified risks of disruption to the O&M Roads through Incidents;

Disruption Risk Site means a site where there is a history of or potential for unplanned disruption in the form of a lane, carriageway or full road closure or some other temporary restriction to normal movement, excluding disruption due to congestion;

Emergency Services means the ambulance service, police service, coast guard and fire and rescue service;

Establishment Period shall be as defined in Section 1.6 to Part 1 of Schedule 2 of the Agreement;

Fault Management System (FMS) means the system described in paragraph 6.1.5 to Part 2 of these O&M Works Requirements;

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Fault Reporting Centre means the arrangements described in paragraph 6.6.2 of Part 2 of these O&M Works Requirements;

General Inspection means the inspection required as set out in BD63 of the DMRB as amended by Section 5.4 to Part 2 of these O&M Works Requirements;

Incident means an unplanned event on or near the O&M Works Site that has given rise to, or is likely to give rise to, disruption to traffic flow, harm to the environment or harm to the safety or welfare of Users, the public, or those working on or close to the O&M Works Roads;

Incident Response means all operational activities undertaken by the Company to co-ordinate, direct and execute an effective response after notification of an Incident the requirements for which are described in Section 17 of this Part;

Incident Response Plan means a written plan containing the Company's arrangements for executing its Incident Response, including details of resources, roles and responsibilities and communication arrangements;

Incident Response Resources means personnel, equipment, supplies, facilities and other resources utilised by the Company to execute its Incident Response;

Incident Support Unit means the Company's vehicles and personnel responding to Incidents occurring on the O&M Roads;

Incidents Database means the recording system for registering details of the occurrence of Incidents on the Trunk Road network;

Incident Support Service Plan means the plan described at Section 17.28;

Integrated Roads Information System means the data collection system detailed in Section 15;

Integrated Roads Information System Coordinator means the person appointed by the Company in accordance with Section 15.1;

Intelligent Lighting Control System (ILCS) means a central management system capable of two-way communication to allow remote adjustment, control and monitoring of individual road lighting or traffic signs assets.

Land Made Available by the Scottish Ministers for the O&M Works means the land shown on the drawings listed in Appendix O/4 to Part 5 of these O&M Works Requirements under the title 'Land Made Available by the Scottish Ministers for the O&M Works';

Landscape Development Plan means the plan described in paragraph 8.1.3 of Part 2 of these O&M Works Requirements;

Liaison Officer means the person described in Section 3 of Part 9 to these O&M Works Requirements;

Maintenance Management Plan means the documentation required as set out in Section 27;

Mutual Aid means reciprocal arrangements with adjoining authorities or Trunk Road Operating Units for the provision of assistance in response to Incidents;

Network Operations Services Providers means the companies listed in Appendix R/1 to this Part or as otherwise notified to the Company in writing by the Contracting Authority;

Network Operations Equipment means equipment used to provide the Traffic Scotland Service and the Traffic Database Service;

Night Inspection means the inspection required as set out in Section 1.7 to Part 2 of these O&M Works Requirements;

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Normal Working Hours means 0700 to 1900 hours on Business Days;

Operational Manager means the person described at paragraph 3.4;

Operational Partners means those organisations which are involved in the operation of any part of the Trunk Road network and may work in partnership with the Company. Operational Partners are:

- (i) branches within Trunk Roads and Bus Operations Directorate and other Directorates in Transport Scotland;
- (ii) the Traffic Scotland Operator;
- (iii) the Performance Audit Group;
- (iv) the Police Services and the Association of Chief Police Officers (Scotland);
- (v) the Emergency Services;
- (vi) The Department for Transport;
- (vii) the Scottish Roads Traffic Database Operator;
- (viii) local roads authorities;
- (ix) local authorities;
- (x) local authority emergency planning departments;
- (xi) bridge authorities;
- (xii) the Traffic Customer Care Line Service;
- (xiii) Operating Companies in adjacent areas;
- (xiv) Design Build and Finance Operators in adjacent areas;
- (xv) the Trunk Road Incident Support Service patrols in adjacent areas;
- (xvi) the Scottish Environment Protection Agency
- (xvii) Scottish Natural Heritage;
- (xviii) authorised contractors, notified to the Company by the Contracting Authority;
- (xix) Undertakers;
- (xx) statutory authorities;
- (xxi) Network Rail; and
- (xxii) any other partner notified to the Company by the Contracting Authority.

Principal Inspection means the inspection required as set out in the BD63 of the DMRB as amended by Section 5.4 to Part 2 of these O&M Works Requirements;

Safety Inspection means the inspection required as set out in Section 1.5 to Part 2 of these O&M Works Requirements;

Safety Patrol means the patrols required as set out in Section 1.4 to Part 2 of these O&M Works Requirements;

Scheme means work undertaken as part of the O&M Works which is subject to a road safety audit and or falls within the scope of the Integrated Roads Information System.

Scour Inspection means the inspection required as set out in BD63 of the DMRB and as amended by Section 5.4 to Part 2 of these O&M Works Requirements;

Severe Weather means adverse weather conditions that disrupt, or are likely to disrupt, driving conditions and traffic movements on the Project Roads;

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Special Inspection means the inspection required as set out in BD63 of the DMRB as amended by Section 5.4 to Part 2 of these O&M Works Requirements;

Standard Incident Diversion Route means existing roads designated by the Transport Scotland as temporary routes for maintaining traffic around sections of the O&M Roads temporarily closed due to roadworks, Incidents, Severe Weather events or special events.

Statement of Intent means a document prepared by the Company which describes the scope of, and justification for a Scheme;

Structures means the structures in Table 1 of BD 63 of the DMRB as amended by the requirements of Annex B to BD 63;

Structures Engineer means the person described at Section 5.2 in Part 2 of these O&M Works Requirements;

Structural Maintenance means the repair or renewal of pavements (refer to Part 2)

Structural Maintenance of Structures means the repair or renewal of structural elements or components of Structures that have become unserviceable due to general wear and tear or have deteriorated for other reasons;

Superficial Inspections means the inspections required as set out as 'safety inspections' in BD63 of the DMRB and as required by Section 5.4 to Part 2 of these O&M Works Requirements;

Traffic Scotland Active Maintained Equipment means the part of Traffic Scotland Maintained Equipment that the Traffic Scotland Service Provider shall be responsible for maintaining and includes such equipment existing on the Project Roads at the Commencement Date and the Traffic Scotland Equipment installed by the Company as part of the New Works or in accordance with Schedule 4;

Traffic Scotland Maintained Equipment means the Traffic Scotland Passive Maintained Equipment and Traffic Scotland Active Maintained Equipment;

Traffic Scotland Passive Maintained Equipment means the part of Traffic Scotland Maintained Equipment that the Company shall be responsible for maintaining, and includes all infrastructure existing on the Project Roads that has any function relating to the provision of the Traffic Scotland Service at the Commencement Date, and all additional or replacement Traffic Scotland Equipment and infrastructure that has any function relating to the Traffic Scotland Service installed by the Company after the Commencement Date, which is not Traffic Scotland Active Equipment maintained by the Traffic Scotland Service Provider;

Traffic Scotland Service is the service established by Transport Scotland to support the delivery of the Scottish Government's purpose of sustainable economic growth. In this regard the specific objectives of the Traffic Scotland Service are to: improve journey time reliability; reduce disruption caused by incidents, roadworks and events; minimise the effects of congestion by the provision of alternative route advice; allow travellers to make informed decisions concerning route, time, and means of transport by the provision of credible and accurate travel information; and improve safety and security for travellers;

Traffic Scotland Service Provider means the provider or providers as appointed to undertake Traffic Scotland Service delivery on behalf of Traffic Scotland;

Winter Service means the requirements set out in Section 3 to Part 2 of these O&M Works Requirements;

Winter Service Duty Officer means the officer(s) described at paragraph 3.6.1 of Part 2 of these O&M Works Requirements; and

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Winter Service Plan is a plan prepared in accordance with Section 3 to Part 2 of these O&M Works Requirements and used in the management of the Winter Service of the Project Roads.

- 1.5.2 References in these O&M Works Requirements to “paragraph(s)”, “section(s)”, “item(s)”, “table(s)” and “Appendix / Appendices” shall refer to such “paragraph(s)”, “section(s)”, “item(s)”, “table(s)” and “Appendix / Appendices” of that part of these O&M Works Requirements.
- 1.5.3 Except to the extent defined elsewhere in this Agreement, defined terms contained in these O&M Works Requirements shall have the meaning given to them in the DMRB as the context requires.

2 Design

- 2.1 Subject to the other provisions of this Agreement, the Design and other design, construction, completion, operation and maintenance of the O&M Works shall comply with:
- 2.1.1 the DMRB;
- 2.1.2 the MCHW;
- 2.1.3 the Traffic Signs Manual;
- 2.1.4 Temporary Traffic Management on High Speed Roads - Good Working Practice, TRL 2002;
- 2.1.5 Guidance for Safer Temporary Traffic Management, Highways Agency, Health & Safety Executive and County Surveyors Society 2002;
- 2.1.6 Code of Practice "The Reduction of Traffic Delays at Roadworks" - Published by the Scottish Office and the County Surveyors' Society Scotland (1992).
- 2.1.7 the Certification Procedure; and
- 2.1.8 any other specific standards and otherwise referenced elsewhere in this Agreement.
- 2.2 The Design, construction, completion, operation and maintenance of the O&M Works shall meet the requirements and, if relevant, be consistent with the Environmental Assessment Documents as listed in Schedule 8 to the Agreement.
- 2.3 Subject to the other provisions of this Agreement, the Company shall ensure that every Design in respect of the O&M Works is sufficient to allow the construction, completion, operation and maintenance of the O&M Works which Design shall:
- 2.3.1 be consistent with the Conceptual Design; and
- 2.3.2 comply with and be carried out in accordance with the requirements and provisions of these O&M Works Requirements.
- 2.4 The Company shall ensure that all persons referred to in the Certification Procedures shall:
- 2.4.1 at all relevant times be appointed to carry out the procedures referred to therein; and
- 2.4.2 at all times comply with the Certification Procedure.

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- 2.5 The Company shall not commence or permit the commencement of construction of any part of the O&M Works until the relevant certificates shall have been submitted to the Contracting Authority in accordance with the Certification Procedure and the Contracting Authority shall have acknowledged receipt of such certificates.
- 2.6 Notwithstanding the other provisions of this Agreement, the Company shall consult and comply without limitation with those organisations identified in these O&M Works Requirements.
- The Company shall provide Consultation Certificates in accordance with the Certification Procedure in respect of this requirement.
- 2.7 All materials used in the O&M Works shall comply with these O&M Works Requirements. Without prejudice to this requirement, where new materials shall be used to replace existing materials, they shall have similar colour, texture and form to the existing materials, unless otherwise consented to by the Contracting Authority in writing.
- 2.8 Existing materials, street furniture, or infrastructure shall only be reused where such material fully satisfies Part 5 of these O&M Requirements and the relevant codes, schemes, and Certification Procedure and shall be clearly identifiable and accompanied by all relevant and necessary certificates before they shall be used in the O&M Works.
- 2.9 The use of gabions shall not be permitted in any part of the Design and the permanent works.
- 2.10 For the purposes of this Agreement best practice shall be applied when these O&M Works Requirements do not specify a requirement. In the context of any part of the Design, where any ambiguity shall be raised by either:
- 2.10.1 the Company;
 - 2.10.2 the O&M Works Contractor;
 - 2.10.3 the Designer;
 - 2.10.4 the Design Checker; or
 - 2.10.5 the Contracting Authority;
- as regards either advice or its application in terms of best practice and where such ambiguity cannot be resolved between the Company and the Contracting Authority, then the resolution shall be by reference to Schedule 7 to the Agreement.
- 2.11 Where the DMRB requires a decision by the Designer which affects the standard of the Design, each decision shall be recorded and shall form part of the information accompanying the appropriate Design Certificate or Design Interim Certificate as detailed in the Certification Procedure.
- 2.12 Any requirements that any material or article shall comply with any specified standard whether a British Standard, other named standard or otherwise, shall be satisfied by compliance with any relevant national or governmental standard of any member state of the European Union or any relevant international standard recognised in such a member state, provided that in either case the standard in question shall offer guarantees of safety, suitability and fitness for purpose equivalent to those offered by the standard which is specified in this Agreement.
- 2.13 Any requirement to use material or an article which is defined by reference to named supplier or manufacturer or a specified Quality Assurance Scheme or Agreement Board Certificate, or which shall be registered with or shall have otherwise received the approval of the Overseeing Organisation shall be satisfied using material or an article which shall
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have received equivalent approval in another member state of European Union provided that the material or article in question shall be as safe, suitable and fit for the relevant purpose as material or an article complying with the requirement as set out in this Agreement.

3 General Requirements

3.1 In the planning and execution of all O&M Works associated with the management and maintenance of the O&M Works Site, the Company shall take all such action as shall be necessary in the circumstances and shall do all such things to ensure and in such a manner as shall secure, but shall not be limited to, the following:

3.1.1 the safety of:

- (i) the Company's employees;
- (ii) Operations;
- (iii) Users; and
- (iv) any other persons on the O&M Works Site or on land adjacent to the O&M Works Site.

3.1.2 The ability of the Contracting Authority and any Relevant Authority to ensure the performance of statutory duties or functions in relation to the O&M Works Site shall be unimpaired such that:

- (i) delay to Users shall be minimised;
- (ii) the risk of adverse effects on the environment and on the amenity enjoyed by:
 - (a) the owners and occupiers of land adjacent to the O&M Works Site;
 - (b) the Users; and
 - (c) any users of adjoining roads and facilities;shall be minimised;
- (iii) all accidents and emergencies shall be responded to as quickly as possible and in accordance with Section 17 and their adverse effects on Users shall be minimised;
- (iv) risk of damage to, or destruction of, third party property within or outwith the O&M Works Site shall be minimised;
- (v) members of the public and all other Users shall be treated with due courtesy and consideration;
- (vi) Users shall be given adequate information and forewarning of any events on or any matters affecting the O&M Works Site such as shall be reasonable to enable them to minimise any adverse consequences on themselves of such events or matters;
- (vii) members of the public and others shall be given adequate opportunity to bring to the attention of the Company, any matters affecting the ability of the Company to meet the requirements of this Agreement; and
- (viii) for data relating to the operation and maintenance of the O&M Works Site and events on the O&M Works Site shall be collected by the Company and shall be provided to the Contracting Authority.

3.2 The Company shall appoint an Asset Manager who shall be responsible for the Maintenance Management Plan, liaison with the Contracting Authority in respect of the

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content of the Maintenance Management Plan and implementation of O&M Works relating to renewal and improvement of the assets of the O&M Works Site.

3.3 The Asset Manager shall be a chartered engineer with appropriate capabilities to lead all technical processes and documentation, including reviews, consultations and liaison necessary to comply with the asset management aspects of these O&M Works Requirements.

3.4 The Company shall appoint an Operational Manager on a permanent, full-time basis on-site, who shall as a minimum be responsible for the following aspects of the O&M Works Requirements:

- (i) Routine Maintenance;
- (ii) Incident Response;
- (iii) Winter Service;
- (iv) faults and defects potentially or actually affecting the safety of Users and or the public within the O&M Works Site;
- (v) temporary traffic management schemes;
- (vi) Undertakers, other than in connection with Design;
- (vii) customer services, including hauliers movements, complaints, Users and the public, other than in connection with Design; and
- (viii) procedures, reporting and records relating to the foregoing.

3.5 The Company shall consult and comply with the following local roads authorities in relation to standards of Routine Maintenance of the Side Roads within the O&M Works Site during the Restricted Services Period:

- (i) Aberdeen City Council: [REDACTED], Tel: [REDACTED], Email: [REDACTED]
- (ii) Aberdeenshire Council: [REDACTED], Tel; [REDACTED], Email: [REDACTED]

The Company shall provide Consultation Certificates in accordance with the Certification Procedure in respect of this requirement.

3.6 O&M Roads that are subject to Access Road Level of Service shall be maintained by the Company in accordance with Part 10 of these O&M Requirements. Any agreement with landowners in respect of this requirement shall be confirmed in writing by the Company with the appropriate landowners. A copy of any such agreement shall be submitted to the Contracting Authority. The Restricted Services Roads shall be maintained by the Company in accordance with Part 11 of these O&M Requirements.

3.7 The Company shall provide an O&M Manual that shall be a controlled item of the O&M Works Quality Plan and it shall describe how the Company shall comply with the O&M Works Requirements. The O&M Manual shall incorporate, as a minimum, the following:

- (i) Maintenance Management Plan;
- (ii) Winter Service Plan;
- (iii) Disruption Risk Management Plan;
- (iv) Incident Response Plan
- (v) Landscape Development Plan, as and when it shall become a requirement;
- (vi) maintenance and management of Structures, including the role of and interaction with the SMS;

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- (vii) delivering the O&M Works Requirements for Traffic Scotland's equipment, including compliance with the documentation requirements of Part 5 of these O&M Works Requirements ;
- (viii) the Liaison Procedures; and
- (ix) the remaining O&M Works Requirements.

- 3.8 The Asset Manager shall take the lead role in developing and reviewing the O&M Manual.
- 3.9 Not later than 30 days prior to the Restricted Services Commencement Date the Company shall prepare and submit to the Contracting Authority in accordance with the Certification Procedure, an O&M Manual covering the O&M Works Requirements for the Restricted Services Period, in addition to other requirements for submission of parts of the O&M Manual.
- 3.10 The Company shall review the O&M Manual each Contract Year. Each annual review shall be completed and submitted to the Contracting Authority 30 days prior to the end of each Contract Year.
- 3.11 Where there is an O&M Works Requirement to carry out consultation or liaison in respect of any part or parts of the O&M Manual such consultation or liaison shall have taken place before the O&M Manual is changed. The Company shall provide Consultation Certificates in accordance with the Certification Procedure in respect of this requirement.

4 Provision of Records and Information

- 4.1 Without prejudice to any other provisions of this Agreement, the Company shall provide the records and information required in Part 7 of these O&M Works Requirements.
- 4.2 Property Condition Surveys
- 4.2.1 The Company shall carry out a risk assessment of the effects the Design, construction, completion, operation and maintenance of the O&M Works may have on the structural integrity of adjacent buildings.
- 4.2.2 The Company shall arrange for property condition surveys to be undertaken in relation to those buildings and structures that the Company considers appropriate relative to their proximity to the O&M Works in advance of any O&M Works commencing.
- 4.2.3 Such surveys shall be carried out by a chartered structural engineer. The details of the chartered structural engineer which the Company intends to use to carry out the surveys shall be submitted for written approval by the Contracting Authority.
- 4.2.4 Such surveys shall be carried out in two stages as follows:
- (i) The first stage shall consist of pre-construction start condition surveys including photographic records carried out prior to the commencement of any O&M Works. Two copies of the pre-construction start condition survey records and reports shall be completed and forwarded to the Contracting Authority 4 weeks in advance of any O&M Works commencing.
 - (ii) The second stage shall consist of post-construction completion condition surveys including photographic records carried out within 4 weeks after the completion of the relevant O&M Works. Two copies of the post-construction completion condition survey records and reports shall be completed and forwarded to the Contracting Authority within 8 weeks after the completion of the relevant O&M Works.

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4.2.5 In respect of all such property condition surveys, the Company shall arrange entry to the properties with the property owners. This entry arrangement shall be in writing with a copy of this correspondence issued to the Contracting Authority.

4.2.6 The Company shall provide the property owners with a copy of both the pre-construction and post-construction property condition surveys.

5 Disruption During the Service Period

5.1 The Company shall ensure that disruption, nuisance, interference or material disturbances to Users and other third parties during construction, completion, operation and maintenance of, and any testing, investigation and surveys in connection with, the O&M Works shall be kept to the minimum possible. The Company shall ensure that there shall be adequate alternative provision of an appropriate standard for all vehicular, pedestrian, and animal traffic to all existing roads, footways, accesses, premises and otherwise adjacent to and/or affected by the O&M Works.

5.2 All O&M Works shall be carried out without unnecessary noise and disturbance subject to and without prejudice to the provisions of Appendix 1/9 to Part 5 of these O&M Works Requirements.

5.3 Notwithstanding any other provision of this Agreement the Company shall take all reasonable precautions in connection with any underground water resources (including percolating water), rivers, streams, waterways, drains, watercourses, lakes, ditches, reservoirs and otherwise to prevent:

5.3.1 any interference with the supply to or abstraction from such source;

5.3.2 silting;

5.3.3 erosion of their beds or banks; and

5.3.4 pollution of the water so as to affect adversely the quality or appearance thereof or cause injury or death to animal, aquatic or plant life;

in each case by an act or omission by the Company.

5.4 Notwithstanding the other requirements of this Agreement the Design shall ensure the continuity of operation of all existing electric fencing and all existing water supplies affected by the Design, construction, completion, operation and maintenance of the O&M Works.

6 Temporary Traffic Management Schemes

6.1 Notwithstanding any other provisions of this Agreement, the Company shall consult and comply with the requirements of:

(i) Aberdeen City Council: [REDACTED], Tel: [REDACTED], Email: [REDACTED]

(ii) Aberdeenshire Council: [REDACTED], Tel; [REDACTED], Email: [REDACTED]

(iii) Transport Scotland Trunk Road and Bus Operations: [REDACTED], Tel; [REDACTED], Email; [REDACTED]

(iv) Police Scotland: [REDACTED], Email; [REDACTED]

(v) North East Scotland Management Unit: [REDACTED], Tel; [REDACTED]; and

as appropriate on all Temporary Traffic Management Schemes.

The Company shall provide Consultation Certificates in accordance with the Certification Procedure in respect of this requirement.

- 6.2 Notwithstanding any other provisions of this Agreement, the Company shall consult and comply with the requirements of:

(i) Police Scotland: [REDACTED], Email; [REDACTED]

and provide assistance to the Police in monitoring and enforcing speed restrictions.

The Company shall provide Consultation Certificates in accordance the Certification Procedure in respect of this requirement.

7 Land Made Available by the Scottish Ministers for the O&M Works

- 7.1 The extent of the land made available by the Scottish Ministers for the purposes of the O&M Works shall be the O&M Works Site. Details of the limitations on use of the land in the O&M Works Site shall be as contained in Appendix 1/7 to Part 5 of these O&M Works Requirements and the other provisions of this Agreement.

- 7.2 Where any planning permission, Consent or otherwise shall be required as a result of the Design or any part of the Design for any part of the O&M Works, it shall be obtained by the Company from the Relevant Authority and submitted to the Contracting Authority prior to either construction, completion, operation or the maintenance of that affected part of the O&M Works proceeding.

- 7.3 The Company shall consult and comply with the requirements of:

(i) Aberdeen City Council; [REDACTED], Tel: [REDACTED], Email: [REDACTED]

(ii) Aberdeenshire Council; [REDACTED], Tel; [REDACTED], Email: [REDACTED]

as appropriate, with respect to working hours and the control of noise and vibration as detailed in Appendix 1/9 to Part 5 of these O&M Works Requirements.

The Company shall provide Consultation Certificates in accordance with the Certification Procedure in respect of this requirement.

8 Licences Approvals and Otherwise

- 8.1 The Company shall not have possession and/or right of entry onto land owned or reputed to be owned by:

(i) Network Rail; and/or

(ii) any other third party.

until such licences, approvals and otherwise as may be relevant shall have been granted by Network Rail and/or any other third party.

- 8.2 The Company shall consult, comply and negotiate with Network Rail and/or any other third party to obtain the necessary licences, approvals and otherwise to enable either the construction, completion, operation or maintenance of the O&M Works. In this respect the Company shall also refer to Appendix 1/7 to Part 5 of these O&M Works Requirements.

The Company shall provide Consultation Certificates in accordance with the Certification Procedure in respect of this requirement.

- 8.3 The Company shall consult and comply with the requirements of SEPA (Contact: [REDACTED] (Specialist II), SEPA South Grampian Team, Tel: [REDACTED]),

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[REDACTED]) with respect to complying with the requirements of the Water Environment (Controlled Activities) Regulations 2005. The Company shall provide a copy of all relevant licences, registrations and otherwise as required under Water Environment (Controlled Activities) Regulations 2005 to the Contracting Authority prior to commencement of the relevant O&M Works.

The Company shall provide Consultation Certificates in accordance with the Certification Procedure in respect of this requirement.

9 Access

- 9.1 All roads and accesses affected by the O&M Works shall be retained and kept operational throughout the period of the O&M Works until alternative suitable means of access are provided in accordance with Appendix 1/18 to Part 5 of these O&M Works Requirements.
- 9.2 Notwithstanding the other provisions of this Agreement, any agreement to alter a private access in any way shall be confirmed in writing by the Company with the appropriate landowners, tenants and occupiers and other authorised users and the Company shall be required to have such agreement in writing prior to any alteration to the access. A copy of any agreement together with supporting drawings shall be submitted to the Contracting Authority, prior to implementation of such agreements.
- 9.3 The Company shall provide at least four weeks written notice to the Contracting Authority, the Relevant Authorities and interested parties in advance of its intended date for stopping up any roads in accordance with the Orders.
- 9.4 Road access to the O&M Works Site shall be gained solely via classified roads subject to the requirements of Appendix 1/19 to Part 5 of these O&M Works Requirements.
- 9.5 Access to the O&M Works Site from public roads shall be subject to the requirements of Appendix 1/17 to Part 5 of these O&M Works Requirements.
- 9.6 The Company shall prevent any of the roads or bridges connecting with or on the routes to the O&M Works Site from being subjected to extraordinary traffic within the meaning of Section 96 of the Roads (Scotland) Act 1984 or any statutory modification or re-enactment thereof by any traffic of the Company and in particular shall select routes and use vehicles and restrict and distribute loads so that any extraordinary traffic as shall inevitably arise from the moving of Constructional Plant and material or manufactured or fabricated articles from and to the O&M Works Site shall be limited as far as reasonably possible and so that unnecessary damage or injury shall not be occasioned to such roads and bridges.
- 9.7 Notwithstanding the other provisions of this Agreement, the Company shall be responsible for and shall pay the cost of strengthening any bridges or altering or improving any roads communicating with the O&M Works Site to facilitate the movement of Constructional Plant equipment or temporary works or other items or vehicles required in the execution of the O&M Works and the Company shall negotiate and pay all claims arising out of any damage to any roads or bridges caused by such movement without recourse to the Contracting Authority.
- 9.8 Notwithstanding the other provisions of this Agreement, the Company may gain entry to the O&M Works Site via private land only with the prior written agreement of the landowner and occupier after having obtained any necessary planning consent or otherwise. Access to the private land from the public road shall be to the requirements of paragraphs 9.1 and 9.2.
- 9.9 The Company shall bear full responsibility for negotiating, paying for and bearing all costs relating to such access agreements and for any matters arising with parties who consider themselves to be affected by these accesses.

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- 9.10 The Company shall assess the potential environmental impacts of any such access and ensure that any adverse environmental impact shall be avoided.
- 9.11 The Contracting Authority shall have access at all times to the O&M Works Site for all purposes related to the Project and the Company shall provide all reasonable assistance and facilities required by the Contracting Authority, the Undertakers and their respective contractors pursuant to the execution of all works in connection with or ancillary to the O&M Works (including the execution of diversionary works) or otherwise requiring to be carried out on the O&M Works Site.
- 9.12 Compliance with the requirements of this Section 9 shall not relieve the Company of any of its obligations under this Agreement and the Company shall not be entitled to any extension of time or additional payment.

10 Orders

- 10.1 Notwithstanding any other provisions of this Agreement, where the Company requires the enactment of further Orders and/or produces further Environmental Assessment Documents to accommodate the Design, construction, completion, operation and maintenance of the O&M Works, the Company shall be responsible for:
- (i) any additional time and cost for Design, construction, completion, operation and maintenance of the O&M Works, wayleaves, material procurement and otherwise;
 - (ii) any other associated work and/or risks; and
 - (iii) all other costs and profit including those required by the Undertakers in connection with privately and publicly owned Apparatus and otherwise.

11 Public and Private Roads Accesses and Public/Private Rights of Way

- 11.1 The Company shall consult and comply with Relevant Authorities in connection with any alterations to public and private roads, accesses and public/private rights of way.
- The Company shall provide Consultation Certificates in accordance with the Certification Procedure in respect of this requirement.
- 11.2 All public and private roads, accesses and public/private rights of way affected by the O&M Works shall be retained and maintained throughout the Service Period.
- 11.3 Any diversions which the Company proposes shall be shown to cause minimum disruption to the end User.
- 11.4 All construction procedures and equipment shall include adequate provision to ensure the safety of members of the public and others using public and private roads, accesses and public/private rights of way affected by the O&M Works.
- 11.5 Any agreement to alter a private road or access in any way shall be confirmed in writing by the Company with the appropriate landowners, occupiers and other authorised users and the Company shall be required to have such agreement in writing prior to any alteration to the access.
- 11.6 The Company shall assess the environmental impacts of the proposed changes to the O&M Works and ensure that all reasonable measures are taken to avoid or mitigate adverse environmental impacts.
- 11.7 A copy of any agreement together with supporting drawings shall be submitted to the Contracting Authority prior to the Company carrying out any such alterations.

12 Community Relationships and Public Liaison

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12.1 Part 8 of these O&M Works Requirements describes the Community Relationships and Public Liaison procedures.

13 Payment of Fees and Compliance with Undertakers

13.1 The Company shall:

- (i) give all notices;
- (ii) take all actions; and
- (iii) pay all fees;

required to be given or paid by any statutory requirements in relation to the execution of the O&M Works and by the rules and regulations of all Relevant Authorities whose property or rights shall be or may be affected in any way by the O&M Works.

14 Superintendence by Company

14.1 Notwithstanding the other provisions of this Agreement, the Company shall ensure there shall be supervision of the construction, completion, operation and maintenance of the O&M Works. In doing so the Company shall ensure an adequate level of supervisory staff shall be present on the O&M Works Site at all times to carry out such supervision duties required under this Agreement.

14.2 Such staff shall have sufficient knowledge of the Operations to be executed (including, but not limited to, the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents) as may be required for the satisfactory execution of the Operations.

15 Integrated Roads Information System

15.1 General

15.1.1 The Integrated Roads Information System shall be provided to the Company via a website hosted by the Scottish Ministers and it shall include the functionality shown below:



15.1.2 The Integrated Roads Information System allows for downloading of data to the Company systems in a variety of manners including standard Microsoft Office output files; comma separated variable files and XML Schema. The Company may submit requests to the

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Contracting Authority for the use of alternative output formats. Consent for such usage shall be at the sole discretion of the Contracting Authority.

15.1.3 The functions within the Integrated Roads Information System are as follows:

- (i) Contract control management function of the Integrated Roads Information System including data for:
 - (a) financial and contract management activities,
 - (b) work transactions,
 - (c) financial statements, and
 - (d) transaction documents.

and which is for the exclusive use of the trunk road operating units.

- (ii) Pavement management function including data for:
 - (a) condition; and
 - (b) network.
- (iii) Scheme manager function including data for:
 - (a) all Schemes included in the annual maintenance plan and all other identifiable Schemes contained in the maintenance forward plan;
 - (b) all Statement of Intents, results of further investigations and other information supporting the Scheme justification;
 - (c) current Scheme costs, programme and status information; and
 - (d) Scheme Design and construction information.
- (iv) Routine maintenance management function including data for:
 - (a) network;
 - (b) inventory;
 - (c) Defect;
 - (d) inspection;
 - (e) maintenance; and
 - (f) Monitoring and reporting of energy consumption.

The routine maintenance management function includes all data associated with the trunk road network.

- (v) Structures management function:
 - (a) inventory;
 - (b) Defect;
 - (c) inspection; and
 - (d) maintenance.
- (vi) Development management function:
 - (a) pre application,
 - (b) application, and
 - (c) response.
- (vii) Accident recording and analysis function:

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- (a) Import, analysis and reporting of STATS 19 data,
 - (b) severity, casualty and accident rates,
 - (c) Identification of cluster sites,
 - (d) KPIs to report against accident and casualty reduction targets, and
 - (e) Road protection scoring.
- (viii) Lighting management function:
- (a) inventory,
 - (b) Defect,
 - (c) inspection,
 - (d) Maintenance, and
 - (e) Monitoring and reporting of energy consumption
- (ix) Cyclerroute database and management function:
- (a) network,
 - (b) existing and proposed cyclerroutes, and
 - (c) Sustrans routes.
- (x) Management of incidents function:
- (a) Disruption Risk planning,
 - (b) Incident Response planning and Incident Response Operations,
 - (c) Trunk Road Incident Support Service planning, and
 - (d) Incident Support Units planning.
- (xi) Land terrier function:
- (a) Land Registry and ownership.
- (xii) Intelligent transport system function:
- (a) inventory,
 - (b) Defect,
 - (c) inspection, and
 - (d) maintenance.
- (xiii) Performance and reporting measurement system function:
- (a) reports,
 - (b) performance frameworks,
 - (c) schedule of audits, and
 - (d) risk register.
- (xiv) Road orders database system function:
- (a) recording and managing road orders.
- (xv) Speed limit database system function:
- (a) managing speed limit data,
 - (b) speed limit review, and

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- (c) recording temporary speed limit orders.
 - (xvi) Street works function:
 - (a) managing Street Works activities,
 - (b) issue of notices, and
 - (c) operate Permit Schemes and manage inspections.
 - (xvii) Winter Service function:
 - (a) weather forecasts,
 - (b) weather stations,
 - (c) salting actions, and
 - (d) salt stock monitoring.
 - (xviii) Third party claims function:
 - (a) processing and managing third party claims, and
 - (b) claim history.
 - (xix) Asset management hierarchy function:
 - (a) analyse and calculate the hierarchy for the Trunk Road network, and
 - (b) managing the hierarchy for the Trunk Road network.
 - (xx) Drainage management hierarchy function:
 - (a) flooding incidents,
 - (b) drainage inventory and condition, and
 - (c) spill incident management.
 - (xxi) Environmental management function:
 - (a) inventory,
 - (b) Defect,
 - (c) Inspection, and
 - (d) maintenance.
 - (xxii) Geotechnical management function:
 - (a) management of assets, and
 - (b) calculation of earthwork geology
- 15.1.4 The Contracting Authority shall supply the Company no later than 5 Business Days before the Restricted Services Commencement Date with 5 licences to access the Integrated Roads Information System.
- 15.1.5 The Company shall be responsible for providing the following hardware and security systems to enable its licensed users to access the Integrated Roads Information System:
- (i) computer terminals running the latest version of Microsoft Internet Explorer or acceptable alternative browser software;
 - (ii) broadband (with a minimum connection speed of one megabit per second for up to five users) corporate network or similar internet access; and
 - (iii) security and firewall setup enabling the following protocols:

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- (a) Hypertext Transfer Protocol (“http”);
 - (b) Hypertext Transmission Protocol-Secure (“https”); and
 - (c) Citrix Internet Connection Sharing (“ICS”).
- 15.1.6 The Contracting Authority shall supply software to enable communications to and from the Integrated Roads Information System and the data capture devices used by the Company during inspections as required by these O&M Works Requirements.
- 15.1.7 The Company shall supply all data capture device hardware which shall meet the following minimum specifications:
 - (i) laptop, tablet personal computer or similar device running a suitable Windows operating system (not Linux or similar), or any other software as notified by the Contracting Authority;
 - (ii) compliance with the specification in paragraph 15.1.4;
 - (iii) minimum 100 gigabyte of data storage memory; and
 - (iv) global positioning system capabilities.
- 15.1.8 The Company shall not upload any data from its own systems into the Integrated Roads Information System other than other than as required by this Section 15.
- 15.1.9 The Company shall accommodate all future developments of the Integrated Roads Information System as required by the Contracting Authority at any time during the Contract Period.
- 15.1.10 The Company shall appoint an Integrated Roads Information System Coordinator who shall be responsible for the implementation and management of the Integrated Roads Information System by the Company.
- 15.1.11 The Integrated Roads Information System Coordinator shall provide to the Contracting Authority the names and email addresses of staff authorised by the Company to use the Integrated Roads Information System.
- 15.1.12 The Company shall notify the Contracting Authority within five Business Days of any changes of authorised users.
- 15.1.13 The Company shall notify the Contracting Authority within one Business Day of any authorised user that ceases to be employed by the Company All usernames and passwords supplied by the Contracting Authority to the Company, or passwords generated by the Company’s staff, shall be treated as confidential information and the Company shall ensure staff do not divulge this information to any other person.
- 15.1.14 An Integrated Roads Information System user group meeting shall be held from time to time to inform the Company of future changes to the Integrated Roads Information System and discuss potential developments to the Integrated Roads Information System.
- 15.1.15 Any developments of the Integrated Roads Information System shall be at the sole discretion of the Scottish Ministers.
- 15.1.16 The Integrated Roads Information System Coordinator shall attend the Integrated Roads Information System user group at the dates and times notified in writing by the Contracting Authority.

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- 15.1.17 The Scottish Ministers shall from time to time provide training in the use of the Integrated Roads Information System to staff nominated by the Company.
- 15.1.18 The Company shall ensure that all nominated staff shall attend such training at the dates and times notified in writing by the Contracting Authority.
- 15.1.19 The Company shall be responsible for providing any additional training to its staff and ensuring that the Integrated Roads Information System is used in accordance with the Agreement.
- 15.2 Network reference requirements
- 15.2.1 The trunk road network is defined by way of a linear network referencing system using a series of links and sections dividing each route into identifiable lengths for management purposes. Links and sections are marked by sets of node marker studs installed on the road. Each link and section has attributes defining its:
- (i) location;
 - (ii) road characteristics; and
 - (iii) shape.
- 15.2.2 Road items such as
- (i) defects;
 - (ii) treatments;
 - (iii) inventory;
 - (iv) condition assessment data;
 - (v) accidents; and
 - (vi) any other relevant items.
- are located by their link and section number and chainage from the network node points and by Ordnance Survey grid reference co-ordinates.
- 15.2.3 The network referencing system is held by the Scottish Ministers and shall be supplied to the Company on the Integrated Roads Information System. The Scottish Ministers shall be responsible for:
- (i) defining the O&M Roads and their attributes in the Integrated Roads Information System;
 - (ii) assigning link/section numbers and node points to the O&M Roads; and
 - (iii) Updating the O&M Roads attributes and data;
- in the Integrated Roads Information System when changes occur.
- 15.2.4 The Company shall be responsible for ensuring that no later than 6 months after the Full Services Commencement Date:
- (i) the initial Integrated Roads Information System network referencing accurately reflects the physical characteristics of the O&M Roads;
 - (ii) ensuring that the most recently issued version of the Integrated Roads Information System network referencing is used in any other Company system for the AWPR / B-T project that uses network referencing.
- 15.3 O&M Roads network update

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- 15.3.1 Following the initial update referred to in paragraph 15.2.4 the Integrated Roads Information System network referencing shall be updated as necessary to reflect changes to the geometric alignment or cross-section of the O&M Roads. Examples of such changes shall include but shall not be limited to:
- (i) major realignments; and
 - (ii) less extensive changes such as:
 - (a) changes to cross-section (e.g. the addition of a climbing lane and on-line widening);
 - (b) new junction layouts;
 - (c) roundabouts;
 - (d) bend straightening; and
 - (e) any other change where the new alignment deviates by 300 millimetres from that currently recorded in the trunk road network referencing system.
- 15.3.2 Other changes to O&M Roads may affect the characteristic of a road although the geometric alignment may remain unaltered. Changes to the characteristics of a road include:
- (i) addition of a climbing Lane;
 - (ii) carriageway or Lane widening;
 - (iii) changes in Lane allocation or junction layouts;
 - (iv) bridge or culvert extensions; and
 - (v) other features affecting the use and maintenance of the trunk road.
- 15.3.3 The Company shall implement processes to ensure that any likely changes to the geometric alignment or cross-section of the O&M Roads shall be identified.
- 15.3.4 Sources of potential change may include, but shall not be limited to:
- (i) Schemes promoted by the Company;
 - (ii) Schemes promoted by the Scottish Ministers; and
 - (iii) Schemes promoted by third parties.
- 15.3.5 The Company shall submit the information listed in Section 15.4 to enable updates to the Integrated Roads Information System network referencing to be made.
- 15.4 Information required for network reference changes
- 15.4.1 Where, as a result of the O&M Works or any works by third parties, changes of geometric alignment or characteristics of the O&M Roads as described in Section 15.3 necessitate updates to the Integrated Roads Information System network referencing, the Company shall complete a network change form as provided in Appendix A/3 of this Part and submit it to the Contracting Authority.
- 15.4.2 The following information shall be provided by the Company to the Contracting Authority for each Scheme identified, during the update process, at least 20 Business Days before commencement of construction work on the Scheme to allow the changes to be implemented and to ensure that the changes required can be assessed, node markers installed and the Integrated Roads Information System network referencing updated:

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- (i) Scheme layout plans at 1:2500 scale which shall include the Scheme chainages for each carriageway in the Scheme at the tie-in points to the existing road;
 - (ii) proposed new or revised network node locations (if applicable);
 - (iii) Scheme construction, commencement and completion dates. The date when traffic first starts using the road in a temporary traffic management contra-flow or other temporary traffic management situation before Scheme construction has been completed shall also be provided; and
 - (iv) carriageway specification and the number of Lanes for each new section.
- 15.4.3 Once the revised Scheme network has been notified to the Company by the Contracting Authority, the Company shall within 25 Business Days provide to the Contracting Authority:
- (i) a completed maintenance Scheme data sheet, in the format shown in Appendix A/1 of this Part; and
 - (ii) Sideways Co-efficient Routine Investigation Machine ("SCRIM") Site categories to the format shown in Appendix A/2 of this Part, for the Scheme, based relative to the new network referencing.
- 15.4.4 Once the network node locations have been advised in writing by the Contracting Authority and the node markers installed, the Company shall provide details for each Scheme as follows:
- (i) measured lengths for each new network section including those comprising existing or new road;
 - (ii) measured chainage of the start and end of the new Scheme related to the existing network referencing;
 - (iii) Ordnance Survey grid references for each installed network node point which shall be provided as 12 figure references and shall be accurate to plus or minus one metre; and
 - (iv) node marker reference replacement documents to the format shown in Appendix A/4 of this Part.
- 15.4.5 The Company shall:
- (i) identify any error, inaccuracy or discrepancy in the Integrated Roads Information System network referencing;
 - (ii) the reason for such error; and
 - (iii) the proposed correction for consideration by the Contracting Authority.
- 15.4.6 Where an error is identified in the Integrated Roads Information System network referencing, the Company shall complete a network error form as provided in Appendix A/3 of this Part and submit it to the Contracting Authority.
- 15.5 Inventory
- 15.5.1 The existing known inventory shall be supplied to the Company on the Integrated Roads Information System.
- 15.5.2 Scottish Ministers shall be responsible for defining the inventory items and their attributes in the Integrated Roads Information System.
- 15.5.3 The Company shall be responsible for:

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- (i) adding the New Works inventory prior to the Full Services Commencement Date;
 - (ii) Within 6 months of the Full Services Commencement Date validating and ensuring that all inventory items on the O&M Roads have a corresponding inventory record recorded in the Integrated Roads Information System and that all attributes as defined in the Transport Scotland 'Inventory Collection Manual' are fully populated;
 - (iii) maintaining the accuracy and integrity of the inventory data as defined in the Transport Scotland 'Inventory Collection Manual';
 - (iv) adding new inventory items and end-dating old inventory items as the inventory changes; and
 - (v) adding missing inventory items for current inventory items.
- 15.6 Inspections and maintenance
- 15.6.1 The Contracting Authority shall be responsible for defining the types of inspections and maintenance to be recorded by the Company in the Integrated Roads Information System.
- 15.6.2 The Company shall:
- (i) design its inspection and maintenance routes;
 - (ii) create and maintain its routes in the routine maintenance management function of the Integrated Roads Information System;
 - (iii) enter details of all inspections, defect rectification and maintenance activities undertaken; and
 - (iv) record all required data and attributes in the routine maintenance and management function of the Integrated Roads Information System.
- 15.6.3 The Company shall ensure that the routine maintenance and management function of the Integrated Roads Information System data supports the evidence required for fatal accident inquiries and the consideration of damages claims by third parties. The Company shall maintain and ensure the accuracy and integrity of the routine maintenance and management function of the Integrated Roads Information System data at all times including all inventory, Category 1 and Category 2 Defects and all inspections and maintenance carried out on the O&M Roads.
- 15.6.4 The Company shall include procedures in the O&M Works Quality Plan for the validation of all data for correctness and completeness before entering the data into the routine maintenance and management function of the Integrated Roads Information System. Any error or omission in the routine maintenance and management function of the Integrated Roads Information System data found by the Company shall be corrected within four Business Days of its discovery.
- 15.7 Information system features of the routine maintenance and management function
- 15.7.1 The routine maintenance and management function of the Integrated Roads Information System data can be accessed, interrogated and retrieved using one or more of the following methods:
- (i) map based presentation of data;
 - (ii) fixed reports; and
 - (iii) user defined reports.
- 15.7.2 The fixed reports shall include as a minimum:
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- (i) Category 1 Defects and Category 2 Defects;
 - (ii) Category 1 Defect repair performance;
 - (iii) Safety Inspection performance;
 - (iv) Safety Patrol performance;
 - (v) Detailed Inspection performance; and
 - (vi) maintenance performance.
- 15.7.3 The user defined reports enable users to create queries concerning the Integrated Roads Information System data and to save the data in a text format.
- 15.7.4 The Company shall use the routine maintenance and management function of the Integrated Roads Information System to record details and evidence of its activities, including:
- (i) completed inspection checklists and certificates;
 - (ii) evidence of activities being carried out with before and after photographs;
 - (iii) photographic evidence of all Category 1 Defects and appropriate Category 2 Defects;
 - (iv) photographic evidence of Defect repairs for all Category 1 Defects and appropriate Category 2 Defects;
 - (v) inventory design information; and
 - (vi) photographs of inventory items for all items required by the 'Inventory Collection Manual' and where appropriate for other items.
- 15.8 Pavement management functionality of features
- 15.8.1 the Scottish Ministers shall populate the pavement management function of the Integrated Roads Information System with the following:
- (i) road condition data including:
 - (a) high speed Surface Condition Assessment of the National Network of Roads (SCANNER) system survey data;
 - (b) Sideways Co-efficient Routine Investigation Machine ("SCRIM") survey data; and
 - (c) deflectograph survey data;
 - (ii) derived traffic flow data from the Scottish Ministers' traffic database;
 - (iii) accident data; and
 - (iv) road construction data.
- 15.8.2 Survey contractors employed by the Scottish Ministers shall undertake road condition surveys and the Contracting Authority shall notify the Company in writing at least 20 Business Days before the start of the annual survey cycle of the programme of routes and types of road condition surveys to be undertaken on the O&M Roads each year during the Contract Period.
- 15.8.3 The Scottish Ministers' survey contractors shall liaise directly with the Company informing it of dates and types of survey to be, or being, undertaken on the O&M Roads. The Company shall liaise with such survey contractors when necessary for traffic management and other safety purposes.
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- 15.8.4 The Company shall be responsible for analysing and interpreting the pavement management function data to identify structural pavement maintenance schemes.
- 15.8.5 The Company shall be responsible for updating the Scheme manager function of the pavement management function with details of all structural pavement maintenance Schemes in its maintenance programmes.
- 15.8.6 The status of each Scheme shall be updated by the Company throughout the Service Period within 5 Business Days of a change in status of a Scheme.
- 15.8.7 A Statement of Intent and, during the last 5 Contract Years, a value for money assessment all as referenced in the pavement management function shall be attached to each Scheme record by the Company.
- 15.8.8 The category of the Scheme shall be agreed with the Contracting Authority.
- 15.8.9 The Company shall produce a maintenance Scheme data (MSD) sheet whenever a scheme includes:
- (i) repair;
 - (ii) replacement; or
 - (iii) change;
- of an area of carriageway greater than 30 metres in length and half a Lane or more in width.
- 15.8.10 If more than one specification for repair, replacement or change is adopted within the area, the Company shall produce a structural pavement maintenance Scheme data sheet for each specification that is adopted. Submission shall be made on the basis of one submission per Scheme with separate sheets identified by chainage for each specification. The following file naming convention shall be used "MSD_YYYY_XXXX_ZZZZ", where:
- (i) YYYY = year e.g. 0910 for Financial Year 2009/2010.
 - (ii) XXXX = Route e.g. A1.
 - (iii) ZZZZ = Scheme name/location e.g. Cockburnspath.
 - (iv) example filename = "MSD_0910_A1_Cockburnspath
- 15.8.11 Maintenance scheme data sheets shall be prepared using the relevant form in Appendix A/1. Such maintenance Scheme data sheets shall contain sufficient data to identify uniquely the location and extent of the area of repair replacement or change with respect to the linear network referencing system. If a Scheme is adjusted on site an explanation for change form, provided in Appendix A/4 shall be submitted with the maintenance Scheme data sheet.
- 15.8.12 Maintenance Scheme data sheets shall be submitted where pavement investigations indicate there is a substantial difference between the existing construction layers and those recorded in the Integrated Roads Information System and where the difference is likely to influence the interpretation of deflectograph data.
- 15.8.13 Maintenance scheme data sheets shall be submitted to the Contracting Authority within 25 Business Days of completion of the related repair replacement or change.
- 15.9 Node Markers
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- 15.9.1 The Company shall be responsible for installing node markers and for ensuring that all node markers on the O&M Roads are accurately located and visible at all times.
- 15.9.2 All missing or defective node marker installations shall be treated as Category 1 Defects, including missing new markers.
- 15.9.3 Node studs shall be installed strictly in accordance with the Scottish Executive Advice Note 'Node Marker Standards'.

16 Abnormal Indivisible Load Routeing

16.1 Introduction

16.1.1 Movement of Abnormal Indivisible Loads is regulated and controlled by:

- (i) The Road Vehicles (Construction and Use) Regulations 1986 (SI 1986 No 1078);
- (ii) The Road Vehicles (Authorised Weight) Regulations 1998 (SI 1998 No 3111);
- (iii) The Road Vehicles (Authorisation of Special Types) General Order 2003 (SI 2003 No 1998) hereinafter referred to as Special Types General Order 2003; and
- (iv) Section 44 of the Road Traffic Act 1998.

16.1.2 The Company shall, on behalf of the Contracting Authority, act as the main contact for all communication and correspondence relating to the routing and movement of abnormal indivisible loads on the O&M Works Roads. The Company shall inform the Scottish Ministers and Contracting Authority of all proposed and agreed movements of abnormal indivisible loads within the O&M Works Site.

16.1.3 Movement of certain abnormal indivisible loads requires authorisation from the Department of Transport. Hauliers and companies are required to obtain authorisation for movements of abnormal indivisible loads with dimensions or weights as described in Parts B and C of Appendix B of this Part.

16.1.4 In addition, hauliers and companies moving abnormal indivisible loads are required to give notice to the police and all road and bridge authorities who have responsibility for the proposed route in accordance with the timescales specified in Parts B and C of Appendix B of this Part.

16.1.5 Movement of certain loads, as stated in Parts B and C of Appendix B of this Part, require an escort. Hauliers are permitted to undertake the self-escorting of abnormal indivisible loads and abnormal vehicles within certain limits. The Company shall inform all hauliers and companies intending to undertake the self-escorting of abnormal indivisible load of the need to comply with Highways Agency publication 'Code of Practice – Self-Escorting of Abnormal Loads and Abnormal Vehicles'. The Company shall comply with this guidance when executing any Operations that may involve self escorting of abnormal indivisible loads and abnormal vehicles.

16.1.6 The Association of Chief Police Officers in Scotland published a notice to all hauliers wishing to self-escort any abnormal indivisible loads on roads in Scotland. A copy of such notice is contained in Appendix C of this Part. The Company shall bring this notice to the attention of all hauliers and companies seeking the routeing and movement of abnormal indivisible loads within the O&M Works Site.

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- 16.1.7 The Company shall include or procure the inclusion of documented procedures for the effective management of abnormal indivisible load routing in the O&M Works Quality Plan.
- 16.1.8 The Company shall appoint a Bridges Manager who shall supervise and co-ordinate the duties to be undertaken by the Company in relation to abnormal indivisible loads.
- 16.2 Load Routing and Co-ordination
- 16.2.1 The Scottish Ministers have a duty to provide a statutory abnormal indivisible load routing and co-ordination service throughout Scotland to hauliers and companies on behalf of the Department of Transport.
- 16.2.2 The Company shall provide advice on the routing of abnormal indivisible loads to the Scottish Ministers and the Contracting Authority and, on behalf of the Scottish Ministers and the Contracting Authority, to others as and when required.
- 16.2.3 The Company shall provide a routing and co-ordination service for hauliers and industry for those parts of movements that take place on the O&M Roads.
- 16.2.4 The Company shall liaise with the:
- (i) adjoining local road authorities;
 - (ii) Scottish Ministers;
 - (iii) Police;
 - (iv) Network Rail;
 - (v) British Rail Property Board;
 - (vi) Scottish Canals;
 - (vii) Undertakers; and
 - (viii) other legitimately concerned organisations;
- as required, in order to advise on or identify a suitable route.
- 16.2.5 When any movement requires statutory authorisation the Company shall advise the haulier or company accordingly. No later than three days after advising the haulier or company of the need for statutory authorisation, the Company shall refer the application or enquiry, together with a suggested abnormal indivisible load route, to the Scottish Ministers and the Contracting Authority.
- 16.2.6 Any advice that the Company gives to hauliers or companies shall be based on such records as the Company may possess or to which the Company has access.
- 16.2.7 The Company shall inform hauliers and companies that by advising or commenting on a proposed abnormal indivisible load route:
- (i) the Company, Contracting Authority and Scottish Ministers shall not assume responsibility of any kind in connection with the movement of the relevant abnormal indivisible load or abnormal vehicle, and
 - (ii) in following any advice provided, the owner and the operator of the vehicle shall not be relieved of any of its obligations or liabilities under the relevant legislation.
- 16.3 Route Assessment

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- 16.3.1 The Company shall assess the suitability of bridges, other Structures and the O&M Roads for the movement of heavy, wide, long or high abnormal indivisible loads.
- 16.3.2 The Company shall use the structures management function of the Integrated Roads Information System database and follow the procedures set out in the structures management function of the Integrated Roads Information System database user manual to identify Structures that may be affected by the movement of an abnormal indivisible load.
- 16.3.3 The Company shall update the data held within the structures management function of the Integrated Roads Information System in accordance with the requirements Section 5 of Part 2 to these O&M Works Requirements.
- 16.3.4 In undertaking a route assessment, the Company shall take account of the guidance contained in the structures management function of the Integrated Roads Information System on the effects of heavy load movements across over-bridges, under-bridges and structures within the O&M Works Site. The Company shall record in the structures management function of the Integrated Roads Information System, data on the vehicles used in the movement of abnormal indivisible loads.
- 16.3.5 The Company shall assess the proposed movement of vehicles with heavy, wide, long or high abnormal indivisible loads to determine the suitability of Structures and the O&M Roads to accommodate such vehicles.
- 16.3.6 The Company shall examine the records available in the structures management function of the Integrated Roads Information System or other documents or databases available to the Company when making its assessment.
- 16.3.7 The Company shall not carry out structural assessments as part of its duties under this Part. When it is identified that a Structure may require further structural assessment to establish its capability to carry the proposed load, the Company shall bring this to the immediate attention of the Contracting Authority and the Scottish Ministers.
- 16.3.8 Subject to the haulier or company reaching agreement with Contracting Authority and the Scottish Ministers on a further structural assessment, the Company shall provide assistance to the haulier or company or his agent by giving access to relevant drawings, calculations and other appropriate records held by the Company.
- 16.4 Recommendation and Checks
- 16.4.1 The Company shall make its recommendations on the suitability of a proposed movement to the Contracting Authority and the Scottish Ministers in writing, within the timescale specified in the written request for comments, in order to allow authorisation by the Department for Transport on behalf of the Scottish Ministers.
- 16.4.2 The Scottish Ministers shall issue a copy of the notifications and authorisation to the Company. The Company shall immediately check all notifications and authorisations issued and no later than seven days after checking, bring any discrepancies to the attention of the appropriate organisation.
- 16.5 Management and Records
- 16.5.1 The Company shall keep records of the assessment of abnormal vehicle movements and the approved abnormal indivisible load route for each abnormal indivisible load. The Company is advised that, whilst the findings of a given assessment and the vehicles checked along an approved abnormal indivisible load route are retained within the

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structures management function of the Integrated Roads Information System, the route is not retained.

16.6 High Loads

16.6.1 The Company shall provide advice to the Contracting Authority, Scottish Ministers, hauliers and the industry on the passage of high loads. In order that the maximum possible use is made of the Trunk Road network, the overall laden height of a vehicle should not exceed 4.95 metres (16'3").

16.6.2 No later than 30 days before the Restricted Services Commencement Date the Contracting Authority shall provide the Company an abnormal load pinch point grid of high load routes within Scotland. These high load routes shall be for load heights of 5.48 metres (18ft) with further information provided on routes that can accommodate 6.09 metres (20ft) high loads.

16.6.3 The Company shall immediately notify the Contracting Authority and the Scottish Ministers of any changes that need to be made to the abnormal load pinch point grid of high load routes.

16.6.4 The Company shall ensure that no activity for which it is responsible reduces the existing height clearances available on Trunk Roads within the O&M Works Site unless consented to in writing by the Contracting Authority.

16.7 Electronic Service Delivery for Abnormal Loads

16.7.1 During the Contract Period, the Scottish Ministers may introduce a new system, known as the electronic service delivery for abnormal loads.

16.7.2 If the system for electronic service delivery for abnormal loads is introduced, the Company shall be required to:

- (i) implement the use of this system through documented procedures contained within the O&M Works Quality Plan;
- (ii) use this system for the remainder of the Contract Period;
- (iii) update data used in indicative capacity appraisals to identify potential problem structures; and
- (iv) add information to the system about any constraints that may impact on an abnormal indivisible load route.

16.8 Indemnification

16.8.1 The Company shall request, on behalf of the relevant Roads Authorities, indemnification in the format specified in Road Vehicles (Authorisation of Special Types) (General) Order 2003 from any haulier or company whose loads shall be expected to travel on the O&M Works Site.

16.8.2 The Company shall immediately notify the Contracting Authority and the Scottish Ministers should any requested indemnities not be received.

16.8.3 The Company shall keep on file indemnity forms received and shall prepare and maintain a list of hauliers and industry for whom indemnity forms shall be held on file.

16.8.4 Indemnities shall be kept for a minimum period of 12 months after the indemnified movements have taken place.

16.8.5 Should the 12 month period extend beyond the Expiry Date, any indemnity forms held by the Company shall be passed to the Scottish Ministers.

17 Incident Response

17.1 General

17.1.1 This Section identifies the requirements for the Company in relation to:

- (i) planning its Incident Response Operations to Incidents within the O&M Works Site or near to it;
- (ii) executing its Incident Response Operations;
- (iii) minimising the duration of Incidents that occur on or near the O&M Works Site, including the impact that any Incidents may have on the operation of the O&M Roads; and
- (iv) identifying and executing mitigating actions to prevent the occurrence of Incidents.

17.1.2 The Company shall attend to all Incidents in a prompt and efficient manner through the planned and coordinated use of its Incident Response Resources.

17.1.3 The Company's Incident Response planning activities shall include as a minimum the development and use of management plans, processes and systems. The Company shall undertake such activities to enhance its capability to deliver the response to, and minimise the duration of, Incidents.

17.1.4 The Company's Incident Response Operations shall commence immediately after it has been notified of an Incident. Such operations shall include as a minimum:

- (i) responding to all Incidents within the response times stated in Part 5 of these O&M Works Requirements;
- (ii) providing sufficient Incident Response Resources to execute Incident Response Operations;
- (iii) undertaking repair work to restore safe access and use of the Trunk Roads for all Users; and
- (iv) undertaking recovery operations to restore the O&M Roads to normal operation.

17.1.5 The Company shall undertake its Incident Response planning and Incident Response Operations in accordance with the Incident Response Plan. This plan shall be prepared and maintained by the Company as detailed in Section 17.9.

17.1.6 The Company's Incident mitigation activities shall seek to minimise or eliminate the risks associated with Incidents that impact on the operation and use of the O&M Roads. Such mitigation activities shall include as a minimum:

- (i) Disruption risk management activities relating to Incidents that cause disruption of the operation of the network. The Company shall undertake such activities in accordance with the Disruption Risk Management Plan which shall be prepared and maintained by the Company in accordance with Transport Scotland's 'Manual for the Management of the Risk of Unplanned Network Disruption' and as stated in this Part; and
- (ii) activities relating to Incidents that do not cause disruption to the operation and use of the O&M Roads.

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- 17.1.7 The Company shall ensure that all staff involved in Incident Response Operations is suitably trained and that its vehicles are sufficiently equipped to deal with all Incidents.
- 17.2 Incident Response Services
- 17.2.1 The Company's Incident Support Units shall attend to all Incidents in accordance with the response times stated in the Specification and this Part.
- 17.3 Multi Agency Response Team
- 17.3.1 "Multi Agency Response Team" means the team that comprises partner organisations working with Transport Scotland in the deployment of resources to manage Incidents that are deemed in the first instance by Transport Scotland to:
- (i) have a high risk of severe disruption to road or rail journeys with potential safety risks for the travelling public;
 - (ii) have a significant potential impact for large parts of the strategic transport network; and
 - (iii) require a multi agency response.
- 17.3.2 The need to deploy the Multi Agency Response Team shall be considered by Transport Scotland in dialogue with the Multi Agency Response Team partners. The decision making shall be based on professional judgement and use the best intelligence available to the group. Participation by and deployment of the Multi Agency Response Team shall be proportionate and defined by the nature, scale and potential impact of the Incident or event.
- 17.3.3 The Company shall maintain a list of suitably trained staff that is able to work in the Multi Agency Response Team when it is in operation. These nominated individuals shall be available at short notice to attend the Traffic Scotland Control Centre when required and have a full understanding of the objectives of the Multi Agency Response Team and their role in its operation. Such staff shall be available to attend any training events that may be organised in relation to Multi Agency Response Team operations.
- 17.3.4 No later than 30 Days prior to the Restricted Services Commencement Date, the Company shall produce and thereafter maintain up to date throughout the Contract Period its own Multi Agency Response Team information folder which shall contain key information such as contacts, record logs and the like and which shall be handed over at each shift change when the Multi Agency Response Team is in operation.
- 17.3.5 The Multi Agency Response Team organisational partners shall vary over the lifetime of this Agreement and are likely to include:
- (i) Transport Scotland;
 - (ii) the Traffic Scotland Operator;
 - (iii) the Scottish Minister's Trunk Road North East Management Unit;
 - (iv) Network Rail;
 - (v) First Scotrail;
 - (vi) the Meteorological Office; and
 - (vii) the Association of Chief Police Officers in Scotland.

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CLASSIFICATION OF INCIDENTS**17.4 Major Incidents**

17.4.1 "Major Incident" means any unplanned event that requires the implementation of special arrangements by one or more of the Category 1 responders in accordance with the requirements of the Civil Contingencies Act 2004 and the Civil Contingencies Act 2004 (Contingency Planning) (Scotland) Regulations 2005 for:

- (i) the rescue and transport of a large number of casualties;
- (ii) the involvement, either directly or indirectly, of large numbers of people;
- (iii) the handling of a large number of enquiries likely to be generated both from the public and the news media, usually to the Police; or
- (iv) the large scale combined resources of the Category 1 responders to cater for the threat of death, serious injury or homelessness to a large number of people.

17.4.2 The Police and other Category 1 responders are responsible for declaring a Major Incident and shall immediately notify the Contracting Authority and the Traffic Scotland Operator when a Major Incident has been declared.

17.4.3 When requested by the Contracting Authority, the Company shall support Category 1 responders with dealing with Major Incidents.

17.5 Critical Incidents

17.5.1 "Critical Incident" means any unplanned event that includes any one or more of the following:

- (i) any Incidents and Severe Weather events that result in significant disruption to the operation of the O&M Works Site;
- (ii) road traffic accidents on a Trunk Road involving fatalities, serious injuries, or dangerous substances;
- (iii) partial or full closure of a Trunk Road due to weather or road conditions;
- (iv) road traffic accidents involving crossover of a vehicle from one carriageway of a Trunk Road to another;
- (v) road traffic accidents on a Trunk Road resulting in serious or potentially serious damage to a Structure necessitating road closures;
- (vi) any Incident causing full or partial closures of a Trunk Road due to road traffic accidents, equipment failure, security alerts of criminal or terrorist activities or any other significant event;
- (vii) any Incident of public sensitivity;
- (viii) Incidents resulting in damage to the infrastructure within the O&M Works Site;
- (ix) environmental Incidents of significant importance; and
- (x) any Incident not on the Trunk Road that meets any of the above criteria and which may affect the Trunk Road.

17.5.2 The Company shall declare an Incident to be a Critical Incident for its own and the Contracting Authority's management purposes.

17.5.3 The Company's notification requirements for Critical Incidents are stated in Appendix O of this Part.

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- 17.5.4 Where the Company considers Critical Incidents to have escalated, or are likely to escalate, to a Major Incident, the Company shall immediately notify the appropriate Category 1 responder, the Contracting Authority and the Traffic Scotland Operator.
- 17.6 Minor Incidents
- 17.6.1 "Minor Incident" means any unplanned event within the O&M Works Site that is not considered by the Company to be a Major Incident or a Critical Incident.
- 17.6.2 The Company shall declare an Incident to be a Minor Incident for its own and the Contracting Authority's management purposes.
- 17.6.3 The Contracting Authority shall change the classification of a Minor Incident to Critical Incident where other information that is available to the Contracting Authority indicates that such a classification change is required.

DISRUPTION RISK MANAGEMENT PLAN

17.7 General

- 17.7.1 Disruption risk management shall refer to the activities undertaken by the Company that are aimed at improving journey time reliability by minimising or eliminating the risk of unplanned disruption to the operation of the O&M Works Site. The Company shall develop and implement its disruption risk management processes in accordance with Transport Scotland's 'Manual for the Management of the Risk of Unplanned Network Disruption' to:
- (i) collect, store and analyse data on Incidents to identify locations within the O&M Works Site with a pattern of, or potential for, disruption Incidents;
 - (ii) undertake a risk assessment at each Disruption Risk Site using a standard approach to be provided by the Contracting Authority to identify Disruption Risk Sites with high and very high risk level;
 - (iii) develop and submit a statement of intent, for consent by the Contracting Authority, for appropriate risk management actions at Disruption Risk Sites identified as having a high and very high risk level. Such actions include as minimum, capital investment projects, development and implementation of a management plan and further investigation of specific Disruption Risk Sites;
 - (iv) when consented to by the Contracting Authority, implement approved risk management actions where a written instruction to do so has been issued by the Contracting Authority; and
 - (v) establish, maintain, implement and continuously improve a Disruption Risk Management Plan for the O&M Works Site. The Company shall update the Disruption Risk Management Plan at intervals not exceeding 12 months.
- 17.7.2 The Company's Disruption Risk Management Plan for the O&M Works Site shall contain details of its arrangements for implementing its disruption risk management activities.
- 17.8 Disruption Risk Management Plan
- 17.8.1 The Disruption Risk Management Plan shall combine the details and requirements of other management plans and records required by this Agreement that contribute to the management of disruption risk. Such Records and plans include:
- (i) the Incident Response Plan;
 - (ii) the Winter Service Plan;

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- (iii) the Incident Support Unit plan;
- (iv) the Standard Incident Diversion Routes;
- (v) Severe Weather management plans including:
 - (a) the wind management plans;
 - (b) the flooding management plans; and
 - (c) the landslide management plans;
- (vi) disruption risk Records;
- (vii) Disruption Risk Sites;
- (viii) the Statement of Intent requests for risk management action; and
- (ix) any other management plans and risk records related to potential disruption risk.

17.8.2 No less than 30 days prior to the Restricted Services Commencement Date, the Company shall submit to the Contracting Authority for written consent, a draft Disruption Risk Management Plan covering the full extent of the O&M Works Site. The Disruption Risk Management Plan shall be developed in accordance with Transport Scotland's Manual for the Management of the Risk of Unplanned Network Disruption by utilising all relevant historic data supplied by the Contracting Authority.

17.8.3 The Company shall, at intervals not exceeding 12 months, update the Disruption Risk Management Plan and re-issue it to the Contracting Authority, or issue a statement that the plan has been reviewed and that no update is required.

INCIDENT RESPONSE PLAN

17.9 General

17.9.1 No less than 30 days prior to the Restricted Services Commencement Date, the Company shall submit an Incident Response Plan to the Contracting Authority as part of the Draft Disruption Risk management Plan.

17.10 Scope of the Incident Response Plan

17.10.1 The Incident Response Plan shall ensure a prompt and efficient response to Incidents including as a minimum:

- (i) road traffic collisions;
- (ii) vehicle breakdown;
- (iii) deposit and spillage of debris, waste or animal carcasses;
- (iv) damaged infrastructure within the O&M Works Site;
- (v) flooding and scour of roads and Structures;
- (vi) Incidents other than vehicle damage that put Structures at risk;
- (vii) spillage of fuels, chemicals, noxious substances, body fluids and other sensitive material;
- (viii) landslides and rock falls;
- (ix) subsidence;
- (x) damaged electrical apparatus including where live elements may be exposed;

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- (xi) Severe Weather events affecting any part of the O&M Works Site excluding the clearance of ice and snow in accordance with the Winter Service Plan; and
- (xii) any other circumstances involving an Incident.

17.10.2 The Incident Response Plan shall demonstrate the adequacy and availability of its Incident Response resources and arrangements to implement all necessary Incident Response Operations and meet the response times referred to in Part 5 of these O&M Works Requirements.

17.10.3 The Incident Response Plan shall include as a minimum the:

- (i) management arrangements including the named resources of the Company and other relevant organisations;
- (ii) management arrangements to ensure the provision of out of hours Incident Response as referred in Part 5 of these O&M Works Requirements;
- (iii) management communication and instruction arrangements to provide the response referred to in this Section;
- (iv) arrangements for notifying the Emergency Services of the contact details for the Incident Liaison Officer;
- (v) arrangements with the Scottish Minister's Trunk Road North East Management Unit for the use of additional Incident Response Resources in exceptional circumstances;
- (vi) communication methods including as a minimum a dedicated direct telephone number available to the Emergency Services to contact the Company and the Company's method of informing the Emergency Services of the direct telephone number and any changes to it;
- (vii) communication resilience arrangements for ensuring availability of communications in the event of failure of electricity supplies, mobile telephone services and landline telephone services, radio communication services or any other service on which the Incident Response Operations depend;
- (viii) communication between Company vehicles, offices, depots, sites of Incidents, Emergency Services and other Operational Partners;
- (ix) availability of the Company and other resources and their locations, supply chain management arrangements, emergency contact details and mobilisation arrangements for labour, plant and materials to implement all potential Incident Response;
- (x) management arrangements for Incidents other than vehicle damage that put Structures at risk;
- (xi) arrangements for the provision of Mutual Aid;
- (xii) management arrangements for the availability of the Incident Liaison Officer both during and outwith Normal Working Hours;
- (xiii) arrangements for post Incident debriefing and reporting to the Contracting Authority of Critical or Major Incidents, Incidents involving spillage or deposit of hazardous or sensitive materials, Incidents involving Structures and any Incident where the requirements of this Agreement have not been met;
- (xiv) arrangements for liaison with all appropriate organisations referred to in this Schedule;

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- (xv) arrangements for coordination with other Incident responders referred to in this Schedule;
- (xvi) arrangements for dealing with spillage and deposit of hazardous or sensitive material referred to in this Part;
- (xvii) arrangements for dealing with Structures including unsafe or potentially unsafe Structures referred to in this Part; and
- (xviii) the management process for obtaining specialist advice to determine the safety and stability of damaged or at risk Structures and the Design for temporary works, remedial and strengthening measures for Structures.

17.11 Liaison Arrangements

17.11.1 In developing its Incident Response Plan, the Company shall:

- (i) identify all relevant Operational Partners that have involvement in dealing with an Incident;
- (ii) agree the communication arrangements between itself and the relevant Operational Partners in the event of an Incident; and
- (iii) ensure mutual understanding of the roles and responsibilities of the Company and the relevant Operational Partners in the event of an Incident.

17.11.2 Details of all relevant Operational Partners, the agreed communication arrangements and the roles and responsibilities for dealing with Incidents shall be incorporated within the Incident Response Plan.

17.11.3 The Company shall maintain close working relationships with all relevant Operational Partners through regular meetings to review and update the communication arrangements and enable the integration of communication systems and technology.

17.11.4 The Emergency Services, in conjunction with local authorities and central government departments, undertake regular contingency planning and Incident planning meetings and conduct contingency and Incident exercises. The Company shall participate in all meetings and exercises to which it is invited by such parties, including meetings of all local contingency planning forums whose areas cover any part of the O&M Works Site.

17.12 Coordination with other Incident Responders

17.12.1 The Company shall ensure all Emergency Services, statutory Authorities, and other appropriate Operational Partners are advised of its arrangements for initiating Incident Response Operations.

17.12.2 The Company shall provide all relevant Operational Partners with one electronic copy and one controlled paper copy of its current Incident Response Plan.

17.13 Review of the Incident Response Plan

17.13.1 The Company shall keep the Incident Response Plan under continuous review and at intervals of no more than three months:

- (i) update and re-issue such plan to the Contracting Authority for consent; or
- (ii) issue a statement to the Contracting Authority declaring that the plan has been reviewed and that no update is required.

17.13.2 The continuous review shall include the adequacy and availability of the Incident Response Resources to implement all necessary Incident Response Operations, and

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where required, proposed changes to the arrangements identified through Incident debriefings. The Company's review procedures shall also ensure the accuracy of contact details is maintained.

17.13.3 Notwithstanding the requirements above, the Incident Response Plan shall be re-issued to the Contracting Authority no later than 10 Business Days prior to the end of each Contract Year.

17.14 Amendments to the Incident Response Plan

17.14.1 The Company shall not make amendments to the arrangements set out in the Incident Response Plan without the prior written consent of the Contracting Authority, with the exception of changes to contact details.

17.14.2 When consented to by the Contracting Authority, the Company shall immediately notify any amendments to the Incident Response Plan to all holders of controlled copies of the plan and shall provide a controlled copy of the change within one Business Day.

17.15 Incident Response Resource Classification

17.15.1 Incident Response Resources shall be classified as initial, secondary or back-up Incident Response Resources.

17.15.2 The Company shall ensure that:

- (i) initial and secondary Incident Response Resources are available both during and outwith Normal Working Hours to comply with the response times for attendance at an Incident as stated in Part 5 of these O&M Works Requirements;
- (ii) arrangements are established such that the Company can deliver the back-up Incident Response Resources to the site of the Incident as soon as possible and no later than 24 hours from the time when the need for the back-up Incident Response Resources has been identified.

17.15.3 The Incident Response Resources identified in the Part 5 of these O&M Works Requirements are the minimum provision and shall not be construed as being all the resources required by the Company to fulfil its obligations for Incident Response Operations.

17.16 The Incident Liaison Officer

17.16.1 The Company shall appoint suitably qualified personnel to undertake the role of Incident Liaison Officer. No later than 30 days prior to the Restricted Services Commencement Date, the Company shall notify in writing to the Contracting Authority the names, contact information and back up mobile telephone contact numbers for all Incident Liaison Officers. The Company shall include details of the cover arrangements during periods of absence or unavailability.

17.16.2 The Incident Liaison Officer shall be responsible for the management and delivery of the Company's Incident Response duties and shall have the information and the authority to provide an effective response appropriate to any Incident. The Incident Liaison Officer shall be available both during and outwith Normal Working Hours and be based within the Company's main office for the Operations.

17.16.3 The Incident Liaison Officer shall act as the first point of contact within the Company's organisation for all Incidents on or near the O&M Works Site. When requested by the Contracting Authority, the Incident Liaison Officer shall undertake duties from the Traffic Scotland Control Centre.

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- 17.16.4 The Incident Liaison Officer shall be available to receive notification of an Incident from:
- (i) the Traffic Customer Care Line Operator;
 - (ii) the Emergency Services;
 - (iii) the Traffic Scotland Operator;
 - (iv) local authorities;
 - (v) the public;
 - (vi) North East Management Unit;
 - (vii) the Company's personnel; and
 - (viii) any other sources.
- 17.16.5 The duties of the Incident Liaison Officer include:
- (i) notifying the Emergency Services, the Traffic Scotland Operator and the Contracting Authority of Incidents in accordance with the requirements specified in Appendix O of this Part;
 - (ii) mobilising the initial Incident Response Resources;
 - (iii) managing and coordinating the execution of Incident Response;
 - (iv) maintaining contact with and keeping informed the Emergency Services, the Traffic Scotland Operator, local authorities and other affected parties as necessary during the Incident;
 - (v) when necessary, providing the required support to the Emergency Services;
 - (vi) determining the need for secondary and back-up Incident Response and mobilising where necessary;
 - (vii) determining the need for obtaining specialist advice from the Bridges Manager and making contact as appropriate;
 - (viii) ensuring all Standard Incident Diversion Routes supplied by the Contracting Authority are reviewed prior to the Restricted Services Commencement Date;
 - (ix) the review and update of existing Standard Incident Diversion Routes in full consultation with relevant Operational Partners;
 - (x) developing new Standard Incident Diversion Routes in accordance with Transport Scotland's 'Development Procedures for Operating Companies';
 - (xi) making an initial assessment as to whether the Incident is already, or has the potential to escalate to, a Critical or Major Incident; and
 - (xii) preparing Incident reports for submission to Contracting Authority in accordance with requirements of Section 10 of this Part.
- 17.16.6 The Company shall provide all necessary resources needed by the Incident Liaison Officer to coordinate, mobilise, deploy and supervise Incident Response Resources and Incident Response Operations in response to an Incident.
- 17.17 Arrangements for Full-Time Cover
- 17.17.1 Incident Response cover shall be available both during and outwith Normal Working Hours from the Restricted Services Commencement Date to the Expiry Date.
- 17.17.2 The Company shall prepare rotas of trained operatives able to attend Incidents and implement appropriate measures or actions. The Company shall prepare such rotas at

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least 30 days prior to the Full Services Commencement Date and thereafter at least 10 Business Days prior to 1 April and 1 October in each Contract Year. The rotas shall detail the availability of the Incident Liaison Officers and Incident Response crews for each six month period commencing 1 April and 1 October in each Contract Year. Such rotas shall be issued to the Contracting Authority and all relevant Operational Partners.

17.17.3 The rotas shall include a list of named Company staff with relevant contact information including line management details. The rotas shall be updated when the staff identified on the rotas cease to be available or when changes are proposed by the Company. The Contracting Authority and all relevant Operational Partners shall be notified immediately of any changes to issued rotas.

17.17.4 The Company shall train and supervise all personnel who may be involved in any aspect of Incident Response to ensure that they are familiar with the types of Incident that may occur, including any special procedures to be followed outwith Normal Working Hours.

17.18 Contact Arrangements

17.18.1 The Company's Incident Response Resources shall be contactable both during and outwith Normal Working Hours throughout each Contract Year.

17.19 Resource Mobilisation and Deployment

17.19.1 For all Incidents the Incident Liaison Officer shall mobilise and deploy:

- (i) initial Incident Response Resources as soon as possible to meet the response times stated in Part 5 of these O&M Works Requirements;
- (ii) secondary Incident Response Resources as soon as possible to meet the response times stated in the Part 5 of these O&M Works Requirements whenever the need for them is identified; and
- (iii) back-up Incident Response Resources as soon as possible and no later than 24 hours from when the need for them is identified.

17.20 Offices and Depots

17.20.1 The Company shall make available offices and depots as stated in Part 5 of these O&M Works Requirements to provide support for the provision of the Incident Response.

17.21 The Company's Incident Communications

17.21.1 The Company shall ensure that adequate communication is maintained with other Operational Partners at all times.

17.21.2 Within 10 minutes of receipt of information relating to an Incident, the Company shall disseminate such information to relevant Operational Partners.

INCIDENT RESPONSE OPERATIONS

17.22 Scope of Incident Response Operations

17.22.1 Incident Response includes:

- (i) providing assistance to the Emergency Services;
- (ii) traffic management for hard shoulder closures, lane closures, road closures and other closures instructed within the carriageway;
- (iii) arranging for and implementing traffic diversions including those necessary for carriageways, footways, cycleways and rights of way;

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- (iv) making safe and protecting any part of the O&M Works Site infrastructure;
- (v) making safe and protecting infrastructure located on or adjacent to the O&M Works Site that is not the property of the Scottish Ministers and arranging with the owner of such infrastructure for its repair or replacement;
- (vi) making safe, protecting and when necessary removing unsafe and fallen trees and branches;
- (vii) cleaning and sweeping;
- (viii) removal and disposal of general debris, animal carcasses and other obstructions in the road;
- (ix) containment, removal and disposal of debris and waste including chemicals, noxious substances, body fluids and other hazardous and sensitive material;
- (x) repairing and replacing any part of the O&M Roads infrastructure where necessary or where otherwise determined by the Contracting Authority for a particular Incident as part of the Incident Response;
- (xi) alleviating and averting flooding;
- (xii) checking and making safe any electrical apparatus involved in an Incident;
- (xiii) where required, the initial assessment of a Structure involved in an Incident to determine its continued safe use;
- (xiv) lifting and propping bridges, other Structures and other parts of the Trunk Road infrastructure;
- (xv) over-spanning bridge decks, supports at bridges and other Structures that are unsafe due to failure or are damaged due to any cause and, where possible, enabling such bridges and Structures to remain in service;
- (xvi) removal and disposal of debris arising from landslides and rock falls;
- (xvii) dealing with subsidence;
- (xviii) dealing with Severe Weather events;
- (xix) the provision of Mutual Aid; and
- (xx) providing regular Incident status updates to relevant Operational Partners.

17.23 Standard Incident Diversion Routes

- 17.23.1 The Company shall execute the management and implementation of all existing Standard Incident Diversion Routes and related Incident Response Operations.
- 17.23.2 The Company shall ensure that signing on all diversion routes is installed to current standards and is maintained as required throughout the period of the Incident. At the conclusion of the Incident, all such signing shall be immediately removed and returned to storage.
- 17.23.3 Company shall consider the effectiveness of each Standard Incident Diversion Route after each operational use and shall advise the Contracting Authority of any changes or improvements that may be required.
- 17.23.4 The Company shall undertake an annual review a Standard Incident Diversion Route to identify changes or potential improvements. This review must be of suitable rigour to ensure that any changes that may be detrimental to the operation of the route are identified, ensure that the route remains suitable to all classes of vehicle and confirm that

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signing remains adequate. This, this may require a driven survey of some or all routes. This review shall be undertaken in full consultation with relevant Operational Partners.

- 17.23.5 Where the Company undertakes a review of any Standard Incident Diversion Route to identify changes or potential improvements, it shall:
- (i) produce revised documentation in both hard copy and electronic format;
 - (ii) maintain Records of amendments and distribution; and
 - (iii) submit final documentation to the Contracting Authority for approval and distribution via the Traffic Scotland Operator.
- 17.23.6 Records not required to be stored in Integrated Roads Information System shall be retained in accordance with Part 7 of these O&M Works Requirements, including the daily record sheet to be maintained by the Company in a similar format to Appendix P of this Part for the Incident Support Units activities.
- 17.23.7 Where a Standard Incident Diversion Route is unavailable for implementation when required, the Company shall liaise with appropriate Operational Partners to implement a suitable diversion route where available.

INCIDENT SUPPORT UNITS

17.24 General

- 17.24.1 Incident Support Units shall provide the Incident Response within the O&M Works Site.
- 17.24.2 The Incident Support Units shall be managed and operated by the Company to provide Incident Response Operations.

17.25 Primary and Secondary Functions of the Incident Support Units

- 17.25.1 The primary functions of Incident Support Units are:
- (i) under Police instruction, making Incidents safe through the application of temporary traffic management;
 - (ii) relieving congestion and removing hazards to safety by clearance of debris from traffic lanes and hard shoulders;
 - (iii) where O&M Roads infrastructure is damaged as a result of an Incident, undertaking immediate repairs in accordance with the requirements of Part 2 to of these O&M Works Requirements;
 - (iv) assessing the scene and securing the attendance of additional or specialist resources where the task is beyond the Incident support team's capabilities;
 - (v) providing a communications link between the Incident site and the Company's Incident Liaison Officer;
 - (vi) reporting abandoned or broken down vehicles to the Company's Incident Liaison Officer;
 - (vii) offering assistance to broken down vehicles including assisting in removing broken down vehicles to safe locations and offering fuel; and
 - (viii) liaising with the Company's Incident Liaison Officer and with Police control rooms and the Traffic Scotland Operator and individual Police officers at Incidents as required.
- 17.25.2 Subject to there being no impact on the provision of the primary functions, the Incident Support Units may undertake secondary functions as part of the O&M Works including:

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- (i) Safety Patrols and Safety Inspections;
 - (ii) maintenance Operations such as cleaning signs, drainage clearance and litter picking; and
 - (iii) making safe or repairing Category 1 Defects.
- in accordance with the requirements of this Part.

17.25.3 When the Company's Incident Support Units are required to attend Incidents outwith the O&M Works Site in order to render assistance to the Police, the Scottish Ministers' Trunk Road North East Management Unit and Trunk Road Incident Support Service patrols, the Incident Support Units shall respond in accordance with the requirements of this Part.

17.25.4 The Incident Liaison Officer shall keep Records of all occasions where the Incident Support Units from the Scottish Minister's Trunk Road North East Management Unit respond to Incidents within the O&M Works Site. Such incidents shall not be subject to Performance Deductions.

17.25.5 The Incident Liaison Officer shall ensure instances are recorded where Incident Support Units are not able to attend Incidents outwith the O&M Works Site.

17.25.6 Where Incident Support Unit patrols are unable to respond to an Incident, both within and outwith the O&M Works Site, the Company shall immediately notify the Contracting Authority of such circumstances.

17.26 Resource Requirements, Competence and Training

17.26.1 Sufficient, suitably qualified and experienced personnel shall be available at all times to carry out the Incident Support Units' duties.

17.26.2 The Incident Support Units' personnel shall possess appropriate qualifications in road maintenance and traffic management.

17.26.3 Prior to commencing any Incident Support Unit Operations, the Company shall provide sufficient training for Incident Support Units personnel on its plans and procedures for delivery of the requirements of this Part. Such training shall cover:

- (i) driver training;
- (ii) vehicle and equipment checks and vehicle familiarisation;
- (iii) network familiarisation;
- (iv) understanding of the all purpose Trunk Road;
- (v) roles, responsibilities and scope of Incident Support Units service;
- (vi) roles and responsibilities of relevant Operational Partners including the Traffic Scotland Operator, Emergency Services, Trunk Road Incident Support Service, including legal responsibilities and powers;
- (vii) Airwave communication;
- (viii) emergency traffic management;
- (ix) hazardous materials training;
- (x) operational response strategies and scenarios;
- (xi) road traffic collisions training;
- (xii) carriageway clearance training;

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- (xiii) Safety inspections and Safety Patrols;
 - (xiv) scene preservation and incident management;
 - (xv) broken down and abandoned vehicles – vehicle recovery service;
 - (xvi) administrative procedures;
 - (xvii) preparation of health and safety risk assessments and dynamic risk assessments;
 - (xviii) communication skills;
 - (xix) first aid;
 - (xx) conflict resolution; and
 - (xxi) general maintenance Operations and procedures.
- 17.26.4 The scope and provision of such training shall be agreed to in writing by the Contracting Authority prior to the commencement of Operations and shall be in line with the standards agreed by the Contracting Authority.
- 17.26.5 The Incident Support Unit personnel shall participate in joint training exercises with relevant Operational Partners.
- 17.26.6 Incident Support Unit personnel shall carry at all times photographic identification cards provided by the Company. The cards shall display as a minimum full name, company, position and employee number.
- 17.27 Vehicles and Equipment
- 17.27.1 The type of vehicles and the equipment to be provided within them by the Company shall be as stated in the Part 5 of these O&M Works Requirements.
- 17.27.2 Incident Support Unit vehicles shall have a global positioning system that provides the Company's Incident Liaison Officer with a "live" location and identification facility to enable the effective tasking of resources and monitoring of Operations. If requested by the Contracting Authority, the Company shall provide the relevant network operations provider with a live feed to this data and all necessary supporting information to allow this live feed to be integrated into the Traffic Scotland Service systems.
- 17.27.3 Incident Support Unit vehicles shall use the Trunk Road Incident Support Service Type 1 vehicle requirements as detailed in the specification. Any temporary vehicles engaged for the service shall be clearly identified as such by the use of temporary markings complying with the Type 2 vehicle requirements as detailed in the Part 5 of these O&M Works Requirements.
- 17.28 Incident Support Units Plan
- 17.28.1 The Company shall submit to the Contracting Authority an Incident Support Units plan which shall be part of the Incident Response Plan.
- 17.28.2 The Company's procedures and method statements contained within its O&M Works Quality Plan shall cover:
- (i) traffic management;
 - (ii) traffic delay monitoring and reduction;
 - (iii) assistance in the removal of vehicles and provision of fuel;
 - (iv) repair of Defects; and

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- (v) removal of objects and debris.
- 17.28.3 The Incident Support Units plan shall be separate from, but suitably integrated with, the Incident Response Plan and be cross referenced where required with the procedures contained in the Incident Response Plan. The plan shall include the following headings:
- (i) Company management structure;
 - (ii) communication systems;
 - (iii) Police and Traffic Scotland Operator liaison and key contacts;
 - (iv) schedule of resources and staff rotas;
 - (v) vehicle and equipment log including locations;
 - (vi) resource training and performance appraisal; and
 - (vii) reporting and evaluation.
- 17.28.4 The Company shall continuously review its Incident Support Units plan and at intervals not exceeding three months shall submit the plan to the Contracting Authority for written consent.
- 17.29 Reporting to the Incident Liaison Officer
- 17.29.1 On reaching the scene of an Incident the Incident Support Unit shall report the time of arrival, the nature of Incident and its estimated duration to the Incident Liaison Officer.
- 17.29.2 Once the Incident is cleared, the patrol shall report the time of departure off-task and confirm the nature of the Incident to the Incident Liaison Officer.
- 17.29.3 If the Incident is expected to last more than 30 minutes, the patrol shall provide regular updates to the Incident Liaison Officer. Such information shall be supplied to the relevant Operational Partners within 10 minutes of receipt of information.

PARTICULAR REQUIREMENTS IN RESPECT OF SPILLAGE AND DEPOSIT OF HAZARDOUS OR SENSITIVE MATERIAL

- 17.30 The following allocation of responsibilities applies to all Incidents involving the spillage or deposit of hazardous or sensitive material:
- (i) the Emergency Services shall have the primary responsibility for establishing a safe situation at an Incident site involving the deposit of hazardous or sensitive materials;
 - (ii) the Emergency Services shall have primary responsibility for co-ordinating the removal of body parts;
 - (iii) the Emergency Services shall have the primary responsibility for identification of chemicals, noxious substances and other hazardous or sensitive material to ensure the safety of the public and the personnel dealing with the Incident. If the Emergency Services consider the Incident site to be low risk due to the nature, quantity and location of such spillages or deposits, the Company shall undertake the identification and safe removal of any chemicals, noxious substances and other hazardous or sensitive material under the supervision of the Emergency Services, including any body fluids not removed by the Emergency Services;
 - (iv) the Company shall not enter an area containing chemicals, noxious substances, body fluids, body parts and other hazardous or sensitive material until such time

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- as the Emergency Services have confirmed that they require assistance and that it is safe to do so;
- (v) the Company shall deploy suitably trained resources to deal with spillages or deposit of chemicals, noxious substances, body fluids or other hazardous or sensitive materials within the O&M Works Site;
 - (vi) the Company's Incident Response Resources shall include facilities for the identification, management, removal and disposal of chemicals, noxious substances, body fluids and other hazardous and sensitive material;
 - (vii) the Company shall liaise as necessary with the Scottish Environmental Protection Agency to ensure that identification, management, removal and disposal of waste materials is undertaken in accordance with current best practice guidance to minimise risk to the environment; and
 - (viii) the Company shall ensure pollution control measures in accordance with Pollution Prevention Guideline 22 issued by the Scottish Environmental Protection Agency are available for use.

PARTICULAR REQUIREMENTS IN RESPECT OF STRUCTURES

17.31 General

- 17.31.1 For any Incident affecting Structures outwith the extent of the O&M Works Site the Company shall liaise with and provide support to, relevant Operational Partners.
- 17.31.2 The Company's Incident Response relating to Incidents involving Structures shall, in accordance with the Specification, include:
- (i) temporary props;
 - (ii) supports;
 - (iii) barriers;
 - (iv) diversion signs;
 - (v) trench crossing units; and
 - (vi) steel plates.
- 17.31.3 The Company shall liaise with the Traffic Scotland Operator and the Contracting Authority as detailed in Appendix O of this Part.
- 17.31.4 The Company shall have access to secondary and back-up Incident Response Resources for temporary bridging, temporary bridge propping, heavy craneage, temporary barriers, demolition, access platforms and diving.
- 17.31.5 Following the provision of initial Incident Response Resources, the Company shall provide secondary and back-up Incident Response Resources in respect of Structures to:
- (i) assess the safety and stability of a damaged Structure;
 - (ii) assess whether its use or stability is put at risk and if the safety of the public is endangered;
 - (iii) arrange and implement footway and cycleway diversions;
 - (iv) make safe damaged parapets and barriers;
 - (v) clear detached non-structural elements where there is a risk of them falling to the carriageway or navigable watercourse below;

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- (vi) install traffic barriers to prevent vehicular access to and across Structures following a Critical or Major Incident that renders the Structure potentially unsafe;
- (vii) make safe electrical supplies to Structures including damaged signs, gantries, high mast lights and other Structures;
- (viii) fence to prevent public access to damaged Structures;
- (ix) fence damaged parapets and walls;
- (x) install temporary barriers to achieve the appropriate containment following damage to parapets and safety fence;
- (xi) provide special access to investigate damaged or unsafe Structures;
- (xii) implement weight or traffic restrictions to certain vehicle types on Structures;
- (xiii) set up signing for short or long term diversion routes; and
- (xiv) alleviate and avert flooding to Structures and take measures to prevent further damage due to scour.

17.31.6 The Company shall notify Contracting Authority where Incidents require:

- (i) Design for remedial measures;
- (ii) the assessment of damage, its effect on load carrying capacity and the ability to remain in service; or
- (iii) Design of temporary works for existing Structures.

REPORTING OF INCIDENTS

17.32 Critical and major Incidents

17.32.1 The names, contact telephone numbers and e-mail details of the Scottish Minister's Traffic Scotland Operator and Contracting Authority staff to be contacted shall be notified to the Company in writing by the Contracting Authority prior to the Restricted Services Commencement Date and shall include outwith Normal Working Hours telephone numbers where applicable.

17.32.2 On becoming aware of a Critical or Major Incident, the Incident Liaison Officer shall first take such actions as are necessary to arrange the response to such Incident and then immediately contact the Traffic Scotland Operator and the appropriate Contracting Authority staff as stated in Appendix O of this Part. The Company shall provide sufficient information to enable the Traffic Scotland Operator and Contracting Authority staff to be able to brief the relevant parties and the media with as full an account of events as quickly as possible.

17.33 Minor Incidents

17.33.1 On becoming aware of a Minor Incident that has the potential to escalate to a Critical Incident, cause significant delay or cause risk to the public or workers, the Company shall notify the relevant Operational Partners as stated in Appendix O of this Part.

17.34 Road Traffic Incidents Involving Fatalities

17.34.1 In addition to the reporting requirements stated in Appendix O of this Part for Major and Critical Incidents, where an Incident involves fatalities, the Incident Liaison Officer shall immediately notify the staff stated in Appendix Q of this Part, providing brief details of the Incident.

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- 17.34.2 Within 24 hours of any fatal Incident, the Company shall submit a detailed report by electronic copy using part 1 of the fatal accident notification form detailed in Appendix Q of this Part to the appropriate Contracting Authority's staff.
- 17.34.3 A joint site observation at the location shall be undertaken by the Company, the Contracting Authority and the Police, within 25 Business Days of the Incident. Within five Business Days of the site visit having been carried out, the Company shall submit a detailed report using part 2 of the fatal accident notification form detailed in Appendix Q of this Part to the Contracting Authority. The report shall include all correspondence relating to the Incident and potential causal factors including the maintenance, historic site data, weather conditions and any other information relevant to the location of the Incident.
- 17.34.4 In the event of a fatal Incident inquiry being held, the Company shall:
- (i) assist the Contracting Authority;
 - (ii) provide all available information; and
 - (iii) attend the inquiry to be examined on matters of fact.

POST INCIDENT BRIEFING

17.35 General

- 17.35.1 No later than 30 days after each Critical or Major Incident, the Company shall:
- (i) review its Disruption Risk Management Plan and propose improvements to the Contracting Authority;
 - (ii) coordinate debriefing activities with relevant Operational Partners as required; and
 - (iii) coordinate debriefing activities with other adjacent companies and DBFOs as required.
- 17.35.2 No later than 25 Business Days after the commencement of each Contract Year, the Company shall submit an annual report reviewing the impact of Incidents within the O&M Works Site for the previous Contract Year.

INCIDENT DATA

17.36 General

- 17.36.1 The Incident Liaison Officer shall ensure that all data stated within this Part is collected, maintained and updated at all times.
- 17.36.2 All data and other relevant information collected by the Company in implementing its:
- (i) Disruption Risk Management Plan;
 - (ii) Incident Response Plan;
 - (iii) Incident Response; and
 - (iv) Incident Support Units plan.

shall be stored within the Scottish Executive Roads Information System database. Where such Records are not captured electronically, the data required shall be manually logged into the Integrated Road Information System within 24 hours of the data being collected by the Company.

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17.36.3 Records not required to be stored in the Integrated Road Information System shall be retained, including the daily record sheet to be maintained by the Company in the format provided in Appendix P of this Part for Incident Support Unit activities.

18 Road Safety Audits

18.1 General

18.1.1 Road safety audits shall be undertaken in accordance with the DMRB and Transport Scotland Interim Amendment 40/11 - Road Safety Auditor Certification – Compliance with EC.

18.1.2 The Company shall organise road safety audits of Schemes for which it shall be carrying out the Design and or supervision of the Operations and Works and the associated temporary traffic management.

18.1.3 The Contracting Authority has the right, at his sole discretion, to instruct a third party to undertake the road safety audit, for example where a Company conflict of interest is identified.

18.1.4 The requirements of road safety audits shall be managed by the Road Safety Manager.

18.1.5 The Company shall maintain and update the Route Safety File which shall contain details of all Stage 1, 2, 3 and 4 road safety audit reports, including audits undertaken by third parties, in relation to that Route.

18.2 Road Safety Audits Undertaken by the Company

18.2.1 For the purposes of paragraphs 18.2 and 18.3 of this Section, the following are clarifications of definitions given in the DMRB:

- (i) Design organisation means the designated Design team responsible for the Scheme within the control of the Company,
- (ii) Project Sponsor means the Company's Representative except where expressly provided otherwise in this Agreement.

18.2.2 The words "Project Sponsor" as referred to in paragraphs 2.48 to 2.51 inclusive of HD19/03 of the DMRB and paragraphs 2.2 to 2.3 of Transport Scotland Interim Amendment 40/11 shall be deleted and replaced with "Contracting Authority" for paragraphs 18.2 and 18.3 of this Section.

18.2.3 The Company shall submit its nominated personnel for the roles of the audit team members and audit observers to the Contracting Authority for written consent.

18.2.4 The Company shall demonstrate the competence of the nominated audit team members by submitting details of their training and experience to the level required by paragraph 2.57 of HD19/03 of the DMRB and Section 3 of Transport Scotland Interim Amendment 40/11, to the Contracting Authority.

18.2.5 The Contracting Authority shall satisfy itself that the team has adequate and relevant training, skills and experience for each road safety audit undertaken.

18.2.6 The Contracting Authority shall not give consent to any nominated personnel if it considers that they lack the necessary experience and training or if their independence is in doubt. In such cases the Contracting Authority shall instruct the Company to submit alternative nominees for consideration.

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- 18.2.7 Once consented to by the Contracting Authority, the nominated individuals may be called upon to take part in road safety audits in the role for which consent has been given.
- 18.3 Scopes and Stages of Road Safety Audits
- 18.3.1 The scopes and stages of road safety audits are stated in HD19/03 of the DMRB.
- 18.3.2 The Company shall ensure that two copies of each road safety audit report, including any attachments, is sent to the Contracting Authority within five Business Days of being undertaken.
- 18.3.3 The Company shall ensure that all issues raised by the audit team are given due consideration by the design organisation.
- 18.3.4 The Company shall submit to the Contracting Authority two copies of an exception report, when required, for any stage of a road safety audit where the design organisation considers the comments provided within the road safety audit report are not viable or applicable within the scope of the project. The Company shall ensure the exception report gives reasons and proposes alternatives in the exception report for the Contracting Authority's approval.
- 18.3.5 The Company shall submit two copies of the audit brief to the Contracting Authority for comment.
- 18.3.6 The requirements for road safety audits on Schemes which meet the criteria for audits referred to in this Part are in addition to any other requirements for road safety audits stated in the DMRB.
- 18.4 Stage 1 – Preliminary Design
- 18.4.1 The preliminary Design for a Scheme shall be subjected to a stage 1 road safety audit.
- 18.4.2 The Company shall ensure that the design organisation, in addition to meeting the requirements of the DMRB, submits the following information to the road safety audit team where relevant:
- (i) 1:1250 or 1:2500 scale general layout drawings showing horizontal and vertical alignment details together with visibility requirements including as a minimum details of:
 - (a) junctions;
 - (b) drainage;
 - (c) Landscaping;
 - (d) accesses;
 - (e) utilities;
 - (f) lay-bys;
 - (g) sign gantries;
 - (h) traffic signals; and
 - (i) street lighting;
 - (ii) 1:500 scale plans of special features and interfaces with existing roads;
 - (iii) standard details and typical cross sections including road restraint systems;
 - (iv) accident data including locations;
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- (v) traffic flows including vehicular, pedestrian, cyclist and equestrian movements; and
 - (vi) details of relaxations and departures from standards as stated and defined in the DMRB.
- 18.4.3 The Company shall ensure that the design organisation has addressed all matters raised in the road safety audit report before progressing to the next stage.
- 18.5 Stage 2 – Detailed Design
- 18.5.1 The detailed Design shall be subjected to a stage 2 road safety audit.
- 18.5.2 The Company shall ensure that the design organisation submits to the road safety audit team any information not previously submitted, or information amended from that given at stage 1 and, where applicable, with:
- (i) 1:500 scale Scheme plans of the road layout showing all junctions including verges and extent of side slopes;
 - (ii) drawings showing:
 - (a) road restraint systems;
 - (b) pedestrian guard rails;
 - (c) bridge parapets;
 - (d) walls;
 - (e) other Structures;
 - (f) signs including location, poles, arrangements and sign fascia;
 - (g) road markings;
 - (h) lighting; and
 - (i) other features;
 - (iii) drawings showing road surface contours, drainage details and carriageway details;
 - (iv) traffic signal and integrated traffic systems details; and
 - (v) copies of the previous road safety audit and exceptions reports.
- 18.5.3 The Company shall ensure that all amendments to the Design required as a result of the stage 2 road safety audit shall be incorporated into the Design of a Scheme before work commences on site.
- 18.6 Stage 3 – Completion of Construction
- 18.6.1 The Company shall carry out a Stage 3 Road Safety Audit immediately prior to the Company issuing notice to the Contracting Authority in connection with any relevant Final Construction Certificate.
- 18.6.2 The Stage 3 Road Safety Audit shall be carried out in connection with the full extent of any part of the O&M Works proposed for issue of the relevant Final Construction Certificate.
- 18.6.3 Notwithstanding the other requirements of this Agreement, a Stage 3 Trunk Road Cycle Audit shall be included with the Stage 3 Road Safety Audit as described in Section 18.9.

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- 18.6.4 The Company shall give the Contracting Authority at least 14 days' notice in writing when a Scheme, or any part thereof, is ready for a stage 3 road safety audit.
- 18.6.5 Fourteen days prior to the due date of any audit, the Company shall invite representatives of the Contracting Authority, the design organisation, and the Police to attend all stage 3 road safety audits to offer their views. These representatives do not constitute part of the road safety audit team and the responsibility for the production of the road safety audit report shall remain with the audit team leader.
- 18.6.6 The audit team leader shall provide immediate feedback to the representative(s) of the Contracting Authority while on Site in relation to any road safety concerns raised in the stage 3 road safety audit.
- 18.6.7 The Company shall discuss the findings on Site and any previous exception reports with the Contracting Authority prior to any additional work being carried out. This feedback and discussion shall be included the stage 3 road safety audit report.
- 18.6.8 The Company shall ensure that additional work, together with any corrective work, is incorporated into the Scheme.
- 18.7 Stage 4 – Monitoring
- 18.7.1 Stage 4 monitoring shall include any Scheme for which construction was completed before the Restricted Services Commencement Date.
- 18.7.2 The stage 4 monitoring report shall include the accident data logged in the Integrated Roads Information System for 12 months and 36 months after the Scheme becomes operational.
- 18.7.3 The Company shall notify the Contracting Authority no later than four weeks before the due date of the 12 month and 36 month stage 4 monitoring reports.
- 18.7.4 The Company shall submit a stage 4 road safety audit report to the Contracting Authority that provides an analysis of accidents as stipulated in the DMRB and provides details of any operational issues arising from the works that were not apparent at the stage 3 road safety audit.
- 18.7.5 Where the Contracting Authority procures a stage 4 road safety audit from a third party, the Company shall, provide information required for the analysis of accidents and descriptions of operational difficulties to the third party.
- 18.7.6 The Company shall discuss the findings of the stage 4 road safety audit report with the Contracting Authority.
- 18.7.7 The Company shall carry out any additional work required as a result of the reports.
- 18.8 Road Safety Audits Carried Out by Others
- 18.8.1 Schemes promoted by others shall be the subject of Road Safety Audits carried out on behalf of the promoters of the schemes and reports shall be submitted to the Company. In such cases the company shall review and comment on any points of concern contained within Road Safety Audit reports prepared and provided by others.
- 18.9 Cycle Audit

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- 18.9.1 The Company shall carry out Stage 1, Stage 2 and Stage 3 Trunk Road Cycle Audits in compliance with the requirements of Cycling by Design, published by Transport Scotland in June 2010.
- 18.9.2 For the avoidance of doubt, the Trunk Road Cycle Audit Stage 2 shall be undertaken prior to the construction of any cycle facilities and/or any affected O&M Works.
- 18.9.3 The Trunk Road Cycle Audit Stage 3 shall be integrated with the Road Safety Audit Stage 3 as a supplementary procedure.
- 18.9.4 Trunk Road Cycle Audit Certificates shall be submitted in accordance with the Certification Procedure.
- 18.10 Accident Prevention
- 18.10.1 Notwithstanding the requirements in respect of Road Safety Audits, the Company shall undertake all necessary measures having regard to the Company's responsibilities under this Agreement such that for any given calendar year the average accident rate for the roads in the O&M Works Site measured in terms of accidents per million vehicle kilometres for all severities of injury over the previous three years shall be no worse than the average accident rate for the same classification of injury derived from figures in respect of equivalent classes of roads for the same three years contained within Road Accidents Scotland, a National Statistics publication released annually by the Scottish Government.
- 18.10.2 The Company shall provide to the Contracting Authority in October of each year, lists (referred to as the moving cursor programme) of locations within the O&M Works Site exhibiting three or more personal injury accidents during any three year period, the current threshold criterion.
- 18.10.3 The Company shall take all measures necessary to avoid the Project Roads exhibiting characteristics which cause the threshold criterion to be exceeded. The Company shall within six weeks of the date of issue of the lists provide a report to the Contracting Authority identifying the measures it proposes to undertake to reduce the accident rates at these sites to below the threshold criteria. The report shall include a programme for the implementation of such measures and shall identify any locations which may be considered unsuitable for treatment.
- 18.10.4 Subject to the agreement of the Contracting Authority, the Company shall proceed with the proposed measures at the earliest practical date.

19 Departures

- 19.1 Where the Company proposes to incorporate a Departure within the Design of the O&M Works or for the Operations, the Company shall seek the formal approval in writing of the Overseeing Organisation. For this purpose, the Overseeing Organisation is Transport Scotland, Trunk Road and Bus Operations.
- 19.2 The Company may seek a Departure where it can be shown that the safety of the Users, operational effectiveness and Design Life Expectancy are not compromised and that these O&M Works Requirements shall still be satisfied.
- 19.3 Applications by the Company for a Departure shall be made in accordance with the Certification Procedure.

20 Noise Surveys

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- 20.1 The Company shall carry out noise surveys as detailed in Appendix 1/9 to Part 5 of these O&M Works Requirements in accordance with the Noise Insulation (Scotland) Regulations 1975 and the Memorandum on the Noise Insulation (Scotland) Regulations 1975 - Regulations 3 and 6 as published by Her Majesty's Stationery Office. These noise surveys shall relate to traffic noise generated from the Project Roads.
- 20.2 Year 1 noise surveys shall be carried out within 12 months of the issue of the relevant Permit to Use, as appropriate. Reassessments based on the same month shall be made in the 5th, 10th and 15th year following the original surveys.
- 20.3 The Company shall be responsible for the settlement of any claims for compensation from third parties and provision of noise insulation for third parties required under the Noise Insulation (Scotland) Regulations 1975 as a result of the noise surveys.
- 20.4 Where any O&M Works are carried out by the Company which shall have an effect on noise it shall carry out noise surveys in accordance with the Noise Insulation (Scotland) Regulations 1975 and the Memorandum on the Noise Insulation (Scotland) Regulations 1975 - Regulations 3 and 6 on properties as required by the Contracting Authority.

The Company shall be responsible for carrying out the subsequent surveys and shall be responsible for the settlement of any appropriate claims for compensation from third parties under the Regulations as a result of the Operations.

21 Defects and Damage

- 21.1 Other than as set out in Clause 12.1.4 of the Agreement, the Company shall as part of the O&M Works remedy all defects, including Category 1 Defects and Category 2 Defects, occurring or manifesting themselves in the O&M Works Site at any time within the appropriate timescale identified in paragraphs 1.2.6 and 1.2.7 to Part 2 of these O&M Works Requirements.
- 21.2 In the event of any damage to or destruction of the O&M Works Site or any part thereof at any time then irrespective of the cause of such damage or destruction the Company shall, as part of the O&M Works, carry out, as soon as possible, such O&M Works as shall be necessary to reinstate the O&M Works Site in accordance with these O&M Works Requirements, as a minimum to its condition immediately prior to the occurrence of such damage or destruction.

22 Shared Electrical Facilities

- 22.1 The Company shall ensure that no shared electrical facilities shall be arranged within the O&M Works Site, unless the Contracting Authority shall have given prior written consent.

23 Planning Applications

- 23.1 Consultation with the Scottish Ministers
- 23.1.1 Planning authorities are required to consult with the Scottish Ministers under Regulation 25 and Schedule 5 paragraph 5 of The Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2008 before granting planning permission for a development.
- 23.1.2 An electronic planning system has been introduced nationally for planning in Scotland with applications being logged via an online portal. Transport Scotland has developed a parallel electronic online system to record, review, respond and monitor all planning applications. This system is the development management function of the Integrated Roads Information System:

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23.2 Notice to Consider

23.2.1 The planning authority is required to give the Scottish Ministers not less than 14 days' notice of its intention to consider and determine the application.

23.3 Assistance with Response

23.3.1 The Company shall appoint a Planning Application Officer who shall assist the Contracting Authority in supporting the Scottish Ministers in responding to planning authorities on individual planning applications.

23.4 System for Processing Planning Applications

23.4.1 The Company shall comply with the development management function of the Integrated Roads Information System for processing planning applications described in paragraph 23.4.2.

23.4.2 The system for the processing of planning applications shall be as follows:

- (i) the Company shall use the development management function of the Integrated Roads Information System to complete its responses online within five Business Days of receipt of all documentation relating to the planning application, for the Contracting Authority's consideration,
- (ii) planning applications, including details and enclosures (such as plans), are uploaded by the planning authority onto the national online planning system on the planning authorities' web pages and an electronic notification is issued to the Contracting Authority and the Company,
- (iii) the development management function of the Integrated Roads Information System shall prompt the Company to complete its relevant actions in the required timescale in order to assist in the process of responding to the planning application, and
- (iv) the Company shall inform the Contracting Authority immediately, via email, if the applicant for planning permission has any connection with the Company or any of its members or associates, including:
 - (a) sub-consultants,
 - (b) contractors,
 - (c) sub-contractors, and
 - (d) any parent company or local authority partner of the Company,which might cause a conflict of interest.
- (v) The Contracting Authority shall inform the Company should it consider it inappropriate for the Company to consider the planning application further. The Contracting Authority shall then appoint others to deal with such applications.
- (vi) The Contracting Authority shall ensure that the planning authority has provided all the information required to allow the planning application to be properly assessed. Should the Company identify that incorrect or insufficient information is provided such that the Company cannot process the application, the Company shall highlight this via the development management function of the Integrated Roads Information System.
- (vii) The development management function of the Integrated Roads Information System shall then generate a request to the planning authority to supply the required information as soon as possible. The development management

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function of the Integrated Roads Information System shall also indicate that all the information is not available to the Company. The time for the Company to make the response shall be extended automatically by the development management function of the Integrated Roads Information System until all the required information is available,

- (viii) The development management function of the Integrated Roads Information System shall reference applications geographically in order that they can be displayed on a digital map to which the Contracting Authority and the Performance Audit Group have access at all times.
- (ix) Where historical information is available, the Company shall use this information to advise the Contracting Authority of any previous planning applications in the vicinity of any new planning application. The Company shall take into account any advice relating to historical planning applications that are relevant to the vicinity of the new planning application.
- (x) Where historical information on planning applications is not held by the Company, the Contracting Authority shall arrange for any available information to be passed to the Company as an Electronic Copy and the Company shall upload the information to the development management function of the Integrated Roads Information System,
- (xi) The Company shall inspect the O&M Road in the vicinity of the location relevant to any planning application and consider any potential implications.
- (xii) The Company shall submit an inspection report, via the development management function of the Integrated Roads Information System, to the Contracting Authority which shall include relevant details such as:
 - (a) visibility,
 - (b) traffic flow,
 - (c) accident record, as recorded on the Contracting Authority's accident database,
 - (d) speed limit, and
 - (e) any other relevant considerations.
- (xiii) The Company shall make comments and recommendations on the application to the Contracting Authority, via the development management function of the Integrated Roads Information System, taking into account all the details available from the inspection and records.
- (xiv) The Company's recommendations to the Contracting Authority shall adopt, where appropriate, the standard planning consultation responses referred to in Scottish Executive Circular 4/1998 – The Use of Conditions in Planning Permissions.
- (xv) On receipt of the planning application, the Company shall review the Equality Act database and advise the Contracting Authority of any barriers to accessibility in the vicinity of the planning application via the development management function of the Integrated Roads Information System.
- (xvi) The Company shall provide photographs taken in the vicinity of the site of the planning application. The photographs shall be taken in a sufficiently competent manner and be of sufficient scope and quality to assist the Contracting Authority in coming to a recommendation. Particular attention shall be given to the quality of the photographs provided during the winter months when the daylight hours are restricted.

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(xvii) The Company shall upload the photographs in the correct file size and format specified by the development management function of the Integrated Roads Information System.

23.4.3 The advice to the planning authority on each planning application shall be issued by the Contracting Authority via the development management function of the Integrated Roads Information System and shall take into account the comments and recommendations of the Company. The advice given by the Contracting Authority to the planning authority shall be available to the Company via the development management function of the Integrated Roads Information System.

23.5 Transport Assessments

23.5.1 The Company shall notify the Scottish Ministers, via the development management function of the Integrated Roads Information System, within one Business Day of receipt of any planning applications which require a transportation appraisal or assessment, as referred to in the Development Planning and Management Transport Appraisal Guidance published by the Scottish Government.

23.5.2 The audit of a transportation appraisal or assessment submitted by the developer shall usually be carried out by the Development Management Branch of the Trunk Road and Bus Operations.

23.5.3 The Scottish Ministers shall manage such planning applications but the Company shall be required to complete the necessary responses and comments and take the necessary photographs in accordance with paragraph 23.4.2 of this Part.

23.6 Local Planning Public Inquiries and Local Development Plans

23.6.1 From time to time applications shall result in Local Planning Public Inquiries being held.

23.6.2 The Company shall provide technical assistance to the Scottish Ministers for such enquiries as directed by the Contracting Authority.

23.6.3 The Company shall provide technical assistance to the Scottish Ministers regarding consultation on Local Development Plans as directed by the Contracting Authority.

23.7 Pre-application Advice

23.7.1 Pre-applications shall be registered on the development management function of the Integrated Roads Information System and when prompted to do so by Transport Scotland, the Company shall provide information or advice in relation to such pre-applications.

23.7.2 Where the Company is asked to provide information or advice on pre-applications, the Company's response to the applicant shall be recorded on the development management function of the Integrated Roads Information System. Where site measurements or checks are required in response to a pre-application, the Contracting Authority shall notify the Company via the Planning Application and Notification System and the Company shall record the relevant measurement or check information.

23.7.3 At no time shall the Company confirm that a proposal is acceptable to an applicant or its agent, although it may acknowledge the suitability or otherwise of any technical standards. Its response to the applicant shall be referred back to Transport Scotland via the development management function of the Integrated Roads Information System to be qualified as appropriate.

23.8 Works within the O&M Works Site

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- 23.8.1 The Scottish Ministers' advice on the development management function of the Integrated Roads Information System allows:
- (i) for the inclusion of advice that any planning consent does not carry with it the right to carry out works within the O&M Works Site; and
 - (ii) that the applicant shall consult the Company on terms and conditions under roads legislation that require to be agreed between the developer and the Scottish Ministers before approval shall be given to undertake works within O&M Road boundary.
- 23.8.2 Where a developer requires to:
- (i) execute works in; or
 - (ii) make excavations under, the O&M Works Site whether or not planning consent is required;
- the developer shall be required to obtain consent from the Company before commencement of such work.
- 23.8.3 The Company shall ensure that before it gives consent to a developer to carry out works within the O&M Works Site, plans and proposals for the works have been submitted to the Company in sufficient detail for the Company to satisfy itself that that there shall be compliance with all terms and conditions relating to the design, construction and temporary traffic management of the works and legislative requirements of the Equality Act 2010 have been complied with to allow it to authorise such works.
- 23.8.4 The Company shall also be responsible for undertaking whatever supervision shall be necessary to ensure:
- (i) that the works shall not cause unnecessary inconvenience to all categories of road User including, but not limited to:
 - (a) motorists; and
 - (b) non-motorised Users.
 - (ii) that the work undertaken meets the required standards of design, construction and temporary traffic management.
- 23.8.5 The Company shall update the network referencing when appropriate in accordance with the requirements of Section 15 of this Part.
- 23.8.6 The Company's duties, responsibilities and powers, as referred to in this Section 23.8 are contained in the relevant sections of the Roads (Scotland) Act 1984 and are statutory functions delegated to the Company under this Agreement.
- 23.8.7 The Company shall advise the Contracting Authority in writing in the event of the failure by a developer to comply with the terms and conditions of any such advice notwithstanding that the Company has taken all reasonable steps to ensure that the developer complies with his obligations.
- 23.9 Minute of Agreement
- 23.9.1 For certain planning applications a developer may be required to enter into a minute or letter of agreement with the Scottish Ministers which specifies conditions relating to approvals and consents for work to be carried out by a developer on the O&M Works Site and adoption of the completed works.

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- 23.9.2 The Company shall assist the Scottish Ministers in drawing up and administering such minutes or letters of agreement including, but not limited, to:
- (i) providing technical and programming advice on proposals; and
 - (ii) and site supervision of any works on the O&M Works Site;
 - (iii) as directed by the Contracting Authority.

24 Delegation of Statutory Functions

- 24.1 The Company shall be responsible in accordance with Clause 21 of the Agreement for carrying out all the statutory functions of the Scottish Ministers specified in Appendix G to this Part and for complying with the additional requirements of Appendix J to this Part.

25 Customer Contact Service

25.1 Traffic Customer Care Line Contact

- 25.1.1 To complement information provided by the Traffic Scotland Service, Transport Scotland provides its customers with timely and accurate travel information relating to Scotland's strategic trunk road network through the Traffic Customer Care Line, a dedicated 24 hour phone service, which is delivered currently through a call centre. The Contracting Authority shall provide details of the current Traffic Customer Care Line Operator to the Company and shall notify the Company of any changes as necessary thereafter.

- 25.1.2 The Traffic Customer Care Line shall serve as a single point of contact for customers with enquiries relating to the Restricted Services Roads and from the issuing of a Permit to Use, the relevant O&M Roads.

- 25.1.3 The Contracting Authority shall notify the Company in writing of any changes made to the Traffic Customer Care Line Operator role or telephone number during the Contract Period.

- 25.1.4 The Company shall liaise regularly with the Traffic Customer Care Line Operator prior to the Restricted Services Commencement Date including attending at least one meeting prior to the Restricted Services Commencement Date. Following the Restricted Services Commencement Date, the Company shall meet the Traffic Customer Care Line Operator and the Contracting Authority at least once per Contract Year to provide feedback and improve the coordination arrangements between the Company and the Traffic Customer Care Line Operator in delivering the customer contact service.

- 25.1.5 The Company, as part of the liaison process referred to in paragraph 25.1.4, shall provide the Traffic Customer Care Line Operator with a list of Restricted Services Roads and O&M Roads and the relevant dates from which the Traffic Customer Care Line services shall be undertaken on those roads to meet the requirements of paragraph 25.1.2.

25.2 Traffic Customer Care Line Contact Requirements

- 25.2.1 The Company shall provide all necessary resources including competent, trained and experienced staff during both Normal Working Hours and outwith Normal Working Hours to deliver the requirements relating to the Traffic Customer Care Line service as defined within this Part.

- 25.2.2 The Company shall immediately notify the Traffic Customer Care Line Operator in writing of cover arrangements during periods of staff absence due to holidays, sickness and the like.

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- 25.2.3 The Company shall provide the Traffic Customer Care Line Operator with a dedicated, 24 hours a day, manned telephone number and an e-mail address throughout the Contract Period for all communications including the transfer of calls received by the Traffic Customer Care Line Operator requiring a response by the Company and those identified by the Traffic Customer Care Line Operator as emergency calls in accordance with paragraph 25.7.1 (ii) and Appendix H/1 of this Part.
- 25.2.4 The Company shall provide the Traffic Customer Care Line Operator with this contact information no later than 30 days prior to the Restricted Services Commencement Date. The Company shall notify the Traffic Customer Care Line Operator immediately of any alteration to the contact information provided.
- 25.3 Customer Enquiries Submitted by the Traffic Customer Care Line Operator
 - 25.3.1 The Traffic Customer Care Line service shall be responsible for receiving and transferring to the Company, telephone calls relating to the Restricted Services Roads and O&M Roads.
 - 25.3.2 The Traffic Customer Care Line Operator shall notify the Company of such information by submitting customer enquiries via email, common internet access or telephone calls. Appendix H/2 of this Part details the information that shall be supplied within any such customer enquiry by the Traffic Customer Care Line Operator to the Company.
 - 25.3.3 The Company shall respond in accordance with the timescales prescribed in paragraphs 25.4.1 and 25.5.1.
 - 25.3.4 The Company shall, as a minimum, have within its O&M Works Quality Plan documented procedures for dealing with all types of customer enquiries classified and submitted by the Traffic Customer Care Line Operator. These procedures shall ensure that all customer enquiries identified as emergencies by the Traffic Customer Care Line Operator are responded to immediately.
 - 25.3.5 When the Company determines that other Operational Partners may be affected by Traffic Customer Care Line customer enquiries, the Company shall immediately notify, liaise and coordinate its response with the appropriate Operational Partners as required.
- 25.4 Responses to Customer Enquiries
 - 25.4.1 Where responses to customer enquiries are provided to the Traffic Customer Care Line Operator by the Company, such responses shall be provided in accordance with the timescales detailed in below and contain, as a minimum, the information specified in Appendix H/3 of this Part.

Work Request Type	Response Time to Customer Enquiries received after 06:00 Monday up to 19:00 Friday		Response Time to Customer Enquiries received after 19:00 Friday up to 06:00 Monday	
	After 06:00 up to 19:00	After 19:00 up to 06:00	Maximum Response time	
Emergency	1 hour	2 hours	Emergency	2 hours
Enquiry	24 hours	24 hours	Enquiry	No later than 07:00 the following Tuesday
Complaint	24 hours	24 hours	Complaint	No later than 07:00 the

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Work Request Type	Response Time to Customer Enquiries received after 06:00 Monday up to 19:00 Friday		Response Time to Customer Enquiries received after 19:00 Friday up to 06:00 Monday	
				following Tuesday
Routine	48 hours	48 hours	Routine	No later than 07:00 the following Wednesday

25.4.2 Responses shall be provided via email, common internet access or telephone call as appropriate, using one of the following classifications as defined in Appendix H/3 of this Part:

- (i) "Received", or
- (ii) "WIP (work in progress)", or
- (iii) "Closed".

25.4.3 The Company shall also provide any additional information it deems relevant to the status of the customer enquiry.

25.5 Customer Call-backs

25.5.1 The Company shall provide customers requiring call-backs with updates in accordance with the timescales detailed below using the method of communication preferred by the customer.

Customer Enquiry Type	Frequency of call-back
Emergency	Within an hour of first notification and then hourly until the emergency is resolved.
Enquiry	(i) within 24 hours of first notification to acknowledge the enquiry, (ii) to confirm the required information has been found and (iii) notification of formal response.
Complaint	(i) within 24 hours of first notification to acknowledge the complaint, (ii) to confirm resolution of complaint and (iii) notification of formal response.
Routine	(i) within 48 hours of first notification to acknowledge the enquiry, (ii) to confirm the required information has been found and (iii) notification of formal response.

25.6 Clarification of Customer Enquiries

25.6.1 The Company shall review all customer enquiries to ensure the information provided by the Traffic Customer Care Line Operator is clear and accurate.

25.6.2 If the Company considers the information contained within a customer enquiry is incomplete or incorrect, or it cannot identify accurately the affected sections of the Restricted Services Roads or the O&M Roads, it shall contact the Traffic Customer Care Line Operator via email or telephone call to request the relevant additional or corrected information and an updated customer enquiry within one hour of identifying the need for such information.

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- 25.6.3 The Traffic Customer Care Line Operator shall make the required additions or corrections and reissue the customer enquiry.
- 25.6.4 Where the Company considers a customer enquiry to be either incomplete or incorrect, the response time requirements detailed in paragraphs 25.4.1 and 25.5.1 shall only apply once an updated customer enquiry is received by the Company.
- 25.6.5 Where a customer enquiry submitted to the Company relates to another company's network, the Company shall forward the enquiry to that company and inform the Traffic Customer Care Line Operator of the error immediately via email.
- 25.7 Customer Enquiry Classifications and Call Types used by the Traffic Customer Care Line Operator
- 25.7.1 The Traffic Customer Care Line Operator shall classify each customer enquiry submitted to the Company as either "complaint", "emergency", "enquiry" or "routine":
- (i) "complaint" relates to customer enquiries identifying customer dissatisfaction regarding the service provided by the Company;
 - (ii) "emergency" relates to customer enquiries where an immediate response by the Company is required to prevent potential danger to the public or disruption to the operational effectiveness of the Restricted Services Roads or the O&M Roads. Details of typical Incidents that might be classified as emergencies by the Traffic Customer Care Line Operator are provided in Appendix H/1 of this Part;
 - (iii) "enquiry" relates to customer enquiries requiring the Company to respond regarding aspects of the maintenance of the Restricted Services Roads or the O&M Roads. A request for a response to the customer shall also be passed to the Company; and
 - (iv) "routine" relates to routine maintenance or non-emergency customer enquiries or scenarios that do not pose a danger to the public or do not have the potential to disrupt the operational effectiveness of Restricted Services Roads or the O&M Roads.
- 25.7.2 The Company shall respond appropriately to the issues identified in each customer enquiry or call type in accordance with the relevant requirements elsewhere in this Part. In the event of a conflict between the classification of a customer enquiry or call type used by the Traffic Customer Care Line Operator and a classification given elsewhere in these O&M Requirements, the classification given elsewhere in these O&M Requirements shall take precedence. In the event of any conflict, the Company shall notify the Traffic Customer Care Line Operator accordingly and confirm what action it intends to take.
- 25.7.3 The customer enquiry classification categories shall be further categorised by the Traffic Customer Care Line Operator, using one or more of the following call types:
- (i) defect report where the customers reports a defect with any aspect of the Restricted Services Roads or O&M Roads;
 - (ii) third party damage where the customer reports damage to property sustained as a result of the condition of the Restricted Services Roads or O&M Roads or the activities of the Company. Where the customer requests a claim form, the Traffic Customer Care Line shall collect appropriate details in accordance with Appendix H/4 of this Part and transfer such request to the Company;
 - (iii) roadworks enquiry where the customer enquires about any aspect of current or planned roadworks on the Restricted Services Roads or O&M Roads;
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- (iv) road conditions enquiry where the customer enquires about the status of road conditions on the Restricted Services Roads or O&M Roads;
- (v) Severe Weather enquiries where the customer requires Severe Weather related road condition information; and
- (vi) repeat calls where the customer has previously made an enquiry. Such calls shall be passed to the Company in the form of an update to the original work request.

25.8 Fault Reporting

25.8.1 Any system failure of the Traffic Customer Care Line which leads to customer enquiries not being sent to the Company results in an automatic notification being sent to the Traffic Customer Care Line faults mailbox. The Company shall be given access to this mailbox.

25.8.2 In the event of planned or short-term loss of the Traffic Customer Care Line system, calls shall be diverted to the Company's nominated contact who shall collate and transfer call details and pass them to the Traffic Customer Care Line Operator.

25.9 Calls from the Public received directly by the Company

25.9.1 The Company's customer contact telephone system shall make callers aware of the Traffic Customer Care Line service and give them the option of being automatically redirected to that service on matters dealt with by the Traffic Customer Care Line or speaking directly to a Company customer contact operator on other matters.

25.9.2 The Company's customer contact operators shall maintain an up-to-date register of Company staff and their responsibilities so that callers may be transferred to responsible staff when appropriate.

25.9.3 Should a Company customer contact operator become aware that an enquiry is being made by the media the call shall be transferred to the Media and Communications Officer.

25.9.4 The Company's customer contact operators shall be trained by the Company to identify any misdirected calls intended for Operational Partners. Such misdirected calls shall be dealt with by the customer contact operator who shall immediately e-mail the details of the call to the appropriate Operational Partner. The Company shall retain copies of such e-mails for a minimum of 12 weeks.

25.9.5 Should the caller wish to deal directly with the Operational Partner then the customer contact operator shall transfer the call directly to the Operational Partner.

25.10 Branding Requirements

25.10.1 The Company shall erect signs of the type shown at Appendix H/5 at key locations adjacent to the Restricted Services Roads prior to the Restricted Services Commencement Date and within 5 Business Days of the issuing of a Permit to Use, on the relevant O&M Roads. The signs on the Restricted Services Roads shall be removed on or immediately prior to the relevant Detrunking Date.

25.10.2 No later than 30 days prior to the Restricted Services Commencement Date, the Company shall submit details of the logo which it proposes to utilise on these signs to the Contracting Authority for written consent. On receipt of the Contracting Authority's written consent, the Company shall manufacture suitable plates containing the logo and attach one to each sign in the area provided for the Company name, prior to erection of the sign. If written consent is received after a sign has been erected the plate shall be attached within 7 days of the date of receipt of the written consent.

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- 25.10.3 The Company shall produce an information leaflet which shall include details describing the O&M Roads, the services provided by the Company and appropriate telephone contact numbers for the Company and the Traffic Customer Care Line.
- 25.10.4 The draft leaflet shall be submitted for the written consent of the Contracting Authority not later than 30 days prior to the Full Services Commencement Date. On receipt of the Contracting Authority's written consent, and not later than the Full Services Commencement Date, the Company shall produce and distribute one copy of the leaflet per property to all properties having direct access on to the O&M Roads. The Company shall also contact:
- (i) outlets within the O&M Works Site including filling stations, refreshment places and post offices, and
 - (ii) Statutory Authorities' establishments including local authority offices, libraries and police stations.
- to establish if they are willing to display stocks of the leaflet and how many copies of the leaflets are required.
- 25.10.5 The Company shall provide further copies of the leaflet on request.
- 25.11 Project Specific Website Requirements
- 25.11.1 The Company shall submit their proposed Project-specific website no later than 30 days before the Full Services Commencement Date to the Contracting Authority for approval.
- 25.11.2 Following approval the Company shall create and launch a fully operational project-specific website no later than 30 days after Full Services Commencement Date.
- 25.11.3 As a minimum, the Company shall utilise its project-specific website for the following issues, however, this is not meant to duplicate the Traffic Scotland website:
- (i) demonstrate added value to a more local audience by providing timely, accurate and reliable information on issues being faced by the Company, to allow informed decisions to be made on travel arrangements. Such information shall include how, where and when the normal operation of the O&M Roads has been affected and how it shall impact on Users;
 - (ii) highlight in a transparent manner what the Company is doing to proactively manage and monitor the O&M Roads; and
 - (iii) provide greater detail on roadworks, closures, Incidents and special events occurring on the O&M Roads than the information published on the Traffic Scotland Service website. Such information shall include dates and timings of such events similar to that logged within the Automated Diary Facility.
- 25.11.4 The Company shall manage and keep the project-specific website up to date on a daily basis throughout the Contract Period and shall:
- (i) supply the Contracting Authority with monthly reports on usage figures on all pages contained within the project-specific website, and
 - (ii) remove or amend content or structure if requested by the Contracting Authority.
- 25.12 Social Media
- 25.12.1 The Company shall use social media for improved communications with customers. Proposals to use social media shall be submitted to the Contracting Authority for written consent.

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- 25.12.2 When the Contracting Authority gives written consent for the use of social media, the Company shall:
- (i) ensure information provided through social media is accurate and kept up to date at all times;
 - (ii) moderate third party comments when possible; and
 - (iii) remove any information provided through social media if instructed to do so by the Contracting Authority.
- 25.12.3 When posting information or otherwise administering content of social media the Company shall comply with Appendix H/6 of this Part.

26 Correspondence Enquiries and Complaints

26.1 Communications Strategy

- 26.1.1 The Company shall develop a comprehensive communications strategy in the form of an annual AWPR /BT Project communications plan for publicising and promoting to customers and stakeholders its role in delivery of services under this Agreement.

26.2 Communications Planning

- 26.2.1 No later than 25 Business Days prior to the Restricted Services Commencement Date, the Company shall develop and submit for the Contracting Authority's consent a Project specific communications plan for the first Contract Year. In developing the communications plan, the Company shall identify key groups of customers and stakeholders with whom it needs to communicate such as Transport Scotland, the Traffic Scotland Operator, local, regional and national media, Operational Partners, local and community councils and Members of the Scottish Parliament. This plan shall, as a minimum, include proposals for:
- (i) proactive management of a wide range of both incoming and outgoing communications including dealing with positive and adverse publicity and disseminating information efficiently and effectively;
 - (ii) managing proactive and reactive media opportunities, including those relating to sensitive issues that may attract media attention,
 - (iii) meeting current standards for digital communications, including how these shall be resourced to ensure they are updated on a regular, on-going basis throughout the Contract Period;
 - (iv) managing the relationship with the Contracting Authority and Press Transport Scotland including:
 - (a) a process for deciding whether publicity should be handled directly by the Company or through Press Transport Scotland;
 - (b) a process for keeping Press Transport Scotland informed about all relevant issues;
 - (c) a process for deciding whether to use Transport Scotland or Company branding on publicity;
 - (d) providing customers and stakeholders with opportunities to discuss their needs and give feedback on the communications plan;
 - (e) responding to customer and stakeholder feedback;
 - (f) publicising and promoting its annual Winter Service Plan;

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- (g) developing and agreeing appropriate strategies for different levels of communication in relation to Schemes according to their importance, complexity and potential impact on the reliability of journey times; and
- (h) regular monitoring and reporting to the Contracting Authority on the effectiveness of the plan, including suggestions for improvements.

26.2.2 No later than 25 Business Days prior to the commencement of the second Contract Year and all subsequent Contract Years, the Company shall review the current communications plan and develop and submit an updated plan to the Contracting Authority for its consent.

26.2.3 Press Transport Scotland shall provide advice to the Company regarding the text for all newsletters and other publicity materials and communications. The Company shall agree the nature and extent of any external advertising with the Contracting Authority.

26.2.4 The Company shall produce a quarterly e-newsletter for issue to customers, community groups and relevant stakeholders. The Company shall propose an initial list of recipients for this newsletter for the consent of the Contracting Authority. The Company shall thereafter maintain the list of recipients and keep it up to date throughout the Contract Period.

26.3 Media Relations

26.3.1 The Company shall appoint suitably experienced personnel to deliver the Media and Communications Officer role and manage the communications plan.

26.3.2 The Media and Communications Officer shall ensure that Press Transport Scotland is given the opportunity to comment on proposed media statements prior to their release in accordance with the media enquiries procedure detailed in Appendix I/2 of this Part.

26.3.3 The Media and Communications Officer shall provide Press Transport Scotland, and Operational Partners where appropriate, with sufficient information to enable advance notice to be given for all Schemes, road closures, diversions and the like which are likely to affect the reliability of journey times. The Media and Communications Officer shall agree in advance the extent of any related publicity or advertising with Press Transport Scotland and the Contracting Authority.

26.3.4 The Media and Communications Officer shall attend quarterly review meetings, on dates to be notified by the Contracting Authority, with Press Transport Scotland and the Contracting Authority to review the effectiveness of the communications plan and agree any improvements or amendments for the following quarter.

26.3.5 The Media and Communications Officer shall attend biannual meetings on dates to be notified by the Contracting Authority, with the trunk road operating companies' media and communications officers, Press Transport Scotland and the Contracting Authority to review the effectiveness of communications plans and strategies and agree any improvements, new or revised objectives for the following six months.

26.4 Website and Digital Communications

26.4.1 The Company shall comply with the requirements of paragraph 25.11 in relation to its project-specific website and the use of social networking websites.

26.5 Ministerial, Chief Executive and General Correspondence

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- 26.5.1 All information referred to in this Section 26 which is to be submitted to the Contracting Authority shall be submitted by e-mail. All requests from the Contracting Authority to the Company for draft responses, briefings and other information shall be sent by e-mail.
- 26.5.2 The Company shall provide to the Contracting Authority, on request, draft responses and briefing material to general, Transport Scotland Chief Executive and Ministerial correspondence which has been received by the Scottish Ministers or Transport Scotland, in respect of any matter requiring input relevant to the Company or this Contract. This shall be in a format prescribed by the Contracting Authority.
- 26.5.3 The Company shall provide the draft response required in paragraph 26.5.2 of this Part to the Contracting Authority within five Business Days of receipt of the request to provide such responses.
- 26.5.4 If the Company anticipates that a draft response cannot be provided within five Business Days of receipt, it shall notify the Contracting Authority and agree a date for the provision of the full response with the Contracting Authority.
- 26.5.5 The Company shall appoint a Correspondence Officer.
- 26.5.6 The Contracting Authority shall provide the Company with draft standard text for use in the direct replies or in the draft responses to be provided under this Part.
- 26.6 Parliamentary Questions
- 26.6.1 The Company shall provide to the Contracting Authority, on request, a briefing note related to the topics raised in written or oral Parliamentary questions from Members of the Scottish Parliament and provide a draft reply in editable electronic form to allow the Contracting Authority to develop a suitable response for the Minister to issue. For written questions, the information shall be provided to the Contracting Authority within three Business Days. For oral questions, the information shall be provided to the Contracting Authority within two Business Days.
- 26.7 The Equality Act 2010
- 26.7.1 When the Company receives a request for a briefing note in relation to:
- (i) written or oral Parliamentary questions from Members of the Scottish Parliament; or
 - (ii) direct correspondence
- which relates to barriers to accessibility as defined by the Equality Act 2010, the Company shall check whether the issue is registered within the routine maintenance and management function of the Integrated Roads Information System.
- 26.7.2 When the issue is not registered, the Company shall notify the Contracting Authority and the Contracting Authority shall discuss and agree with the Company whether it should be registered.
- 26.8 Direct Responses from the Company
- 26.8.1 The Company shall respond directly to correspondence, enquiries and complaints received from any source excluding those made directly to the Company by Members of the Scottish Parliament, Members of the United Kingdom Parliament, Members of the European Parliament and local councillors.

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- 26.8.2 When correspondence, enquiries and complaints are received from Members of the Scottish Parliament, Members of the United Kingdom Parliament, Members of the European Parliament and local councillors, the Company shall:
- (i) respond directly by acknowledging the correspondence, enquiries and complaints within five Business Days of receipt;
 - (ii) forward a copy of the correspondence, enquiries and complaints received to the Contracting Authority within one Business Day of receipt; and
 - (iii) provide within five Business Days of receipt, a briefing note related to the topic raised and a draft letter of reply in editable electronic form to allow the Contracting Authority to develop a suitable response for the Minister to issue, in accordance with the requirements of paragraph 26.2.1 above.
- 26.8.3 In respect of correspondence, enquiries and complaints received directly by the Company regarding matters of Transport Scotland and Scottish Government policy, Transport Scotland or Scottish Government funding or matters where there is a possibility of political sensitivity, the Company shall refer the correspondence or communication to the Contracting Authority within one Business Day of receipt and notify the originator accordingly.
- 26.8.4 The Contracting Authority shall clarify in writing whether the Company or the Contracting Authority shall respond to any issues referred to in the previous paragraph which are raised by the Company.
- 26.9 Media Enquiries
- 26.9.1 All enquiries to the Company from television companies, radio stations and the press shall be dealt with by the Media and Communications Officer.
- 26.9.2 The Media and Communications Officer shall operate in accordance with the media enquiries procedure stated in Appendix I of this Part.
- 26.9.3 The Company shall maintain an electronic register of media enquiry forms, as provided in Appendix I/2 of this Part, at its main office for the Operations. The register shall be available for inspection at all times by the Contracting Authority.
- 26.9.4 No later than 30 days prior to the Full Services Commencement Date, the Company shall submit its proposed arrangements for dealing with media enquiries received between 08:00 hours and 17:00 hours on each Business Day , and any received outside these hours, to the Contracting Authority for written consent.
- 26.10 Communications Register
- 26.10.1 The Company shall maintain an electronic register of all communications it receives and the replies thereto relating to the O&M Works Site or to this Agreement. The information recorded in the register in respect of each communication received from the Contracting Authority, or any other source, shall include:
- (i) date of receipt of the communication and whether it is verbal or written;
 - (ii) details of the communication, including whether it is related to the Equality Act 2010;
 - (iii) whether the communication requires a response;
 - (iv) date of issue of written information to the Contracting Authority with the reference number and transmittal method;
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- (v) date of issue and a copy of the Contracting Authority's signed reply to the originator;
- (vi) date of issue and a copy of any direct reply from the Company to the originator;
- (vii) any follow up actions to be taken by either the Company or the Contracting Authority;
- (viii) details of any commitments made;
- (ix) date by which a commitment is to be completed; and
- (x) date on which a commitment was completed.

26.11 Monthly and Annual Summaries to be Maintained

26.11.1 The communications register shall be capable of producing summarised reports for each calendar month and for each Contract Year which shall be available for inspection by the Contracting Authority. The communications register shall contain the following information:

- (i) number of communications received from the Contracting Authority;
- (ii) number of communications received from all other sources;
- (iii) number of communications requiring a response;
- (iv) number of communications responded to within and outwith the five Business Days limit referred to in paragraph 26.5.3;
- (v) number of communications acknowledged within and outwith the five Business Days limit referred to in paragraph 26.9.2 (i);
- (vi) number of communications forwarded to the Contracting Authority within and outwith the one Business Day limit referred to in paragraph 26.9.2 (ii);
- (vii) number of briefing notes and draft letters of reply prepared for, and provided to, the Contracting Authority within and outwith the five Business Day limit referred to in paragraph 26.9.2 (iii);
- (viii) average response time in days for all communications;
- (ix) number of commitments completed within the due date; and
- (x) number of commitments not completed within the due date.

26.11.2 The Company shall produce a monthly summary for the preceding month, by the fifteenth day of each month, throughout the Contract Period.

26.11.3 The Company shall produce an annual summary by 15 April each year, covering the preceding Contract Year, throughout the Contract Period.

27 Maintenance Management Plan**27.1 General**

27.1.1 The Company shall produce and maintain a Maintenance Management Plan that shall contain the requirements of this Section 27.

27.1.2 The Maintenance Management Plan shall form a controlled item of the Quality Plan and shall form part of the O&M Manual.

27.1.3 The Maintenance Management Plan shall describe how the Company shall meet these O&M Works Requirements in respect of maintenance and management of the O&M Works Site.

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- 27.1.4 Not later than 30 days before the end of each Contract Year the Company shall update the Maintenance Management Plan and submit it to the Contracting Authority.
- 27.1.5 The Maintenance Management Plan as at the Restricted Services Commencement Date shall be incorporated in Schedule 3 of this Agreement.
- 27.2 Asset Management Strategy
- 27.2.1 The Company shall prepare, maintain, update and implement an asset management strategy which shall at a minimum meet the requirements in this Section 27.2 and at all times be consistent with and enable the Company to comply with these O&M Works Requirements.
- 27.2.2 The Maintenance Management Plan shall contain the Company's asset management strategy.
- 27.2.3 The Company's asset management strategy shall contain:
- (i) the Company's short, medium and long term strategies, objectives and plans for the following in relation to each asset element type forming the O&M Works Site:
 - (a) maintenance, renewal and management of assets;
 - (b) identification and verification of defects; and
 - (c) achievement of the Handback Requirements;
 - (ii) the specification of the computer or other technology systems that the Company shall use for asset management of the O&M Works Site, including any role played by the Integrated Roads Information System.
- 27.3 Maintenance Forward Plan
- 27.3.1 The Company shall prepare, maintain, update and implement a plan for the maintenance, renewal and management of the O&M Works Site (the maintenance forward plan) meeting the requirements of this Section 27.3.
- 27.3.2 The Maintenance Management Plan shall contain the maintenance forward plan.
- 27.3.3 The maintenance forward plan shall:
- (i) cover a period of 30 years on a rolling basis, including, after the first Contract Year, periods beyond the Expiry Date;
 - (ii) incorporate the annual maintenance plan requirements referred in Section 27.4;
 - (iii) be consistent with and demonstrate the Company's compliance with the O&M Works Requirements, including the asset management strategy as referred in Section 27.2;
 - (iv) enable the Company to achieve and demonstrate the Company's progress towards achievement of the Handback Requirements;
 - (v) contain an overview:
 - (a) explaining how the Company intends to comply with the asset management strategy referred in Section 27.2 and the O&M Works Requirements, including the Handback Requirements;
 - (b) setting out a plan for addressing and managing any deficiencies identified from any condition inspections, surveys or assessments carried out; and

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- (c) giving details of any proposed changes and developments in relation to maintaining or managing the O&M Works Site;
- (vi) include the following in respect of the entire period covered by the plan:
 - (a) summary plans and programmes for maintenance, renewal and management of the O&M Works Site by asset element types and individual bridge Structures by each Contract Year;
 - (b) summary plans and programmes for maintenance, renewal and management of the O&M Works Site in each Contract Year; and
 - (c) estimated expenditure on all assets forming the O&M Works Site categorised by each Contract Year, each asset element type, including bridge Structure elements and sub-totalled by Routine Maintenance, renewals / replacements and management.

27.4 Annual Maintenance Plan

27.4.1 That part of the maintenance forward plan relating to the first and second Contract Years covered by the plan (the annual maintenance plan) shall contain the Company's:

- (i) plans and programmes in detail for the maintenance, renewal and management of the O&M Works Site in the relevant Contract Years for each asset element type, each type of maintenance, each CHART section for pavements and each bridge Structure;
- (ii) estimated costs of each maintenance or renewal intervention; and
- (iii) estimated costs of any consequent payment deductions.

27.4.2 After the first Contract Year has commenced the annual maintenance plan shall contain the requirements of paragraph 27.4.1 of this Part 1 in relation to two subsequent Contract Years.

28 Signing

28.1 General

28.1.1 To ensure a consistent national approach the authorisation of all signs requested or installed by others on the O&M Works Site shall be the responsibility of the Contracting Authority with the exception of the responsibilities of the Company as referred to in this Section 28.

28.1.2 The Company shall provide advice and recommendations to the Contracting Authority on the suitability or otherwise of all signing proposals which shall have been:

- (i) submitted directly to the Company; or
- (ii) referred to the Company by the Contracting Authority.
- (iii) Such advice and recommendations shall be provided to the Contracting Authority within 14 days of the Company's receipt of any such proposals.

28.1.3 The Company shall keep an electronic register of all sign proposals and applications received and shall categorise the entries in the register as related to:

- (i) tourist signposting;

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- (ii) temporary traffic signs to special events; or
- (iii) truckstop signposting.

For each proposal and application the electronic register shall contain, as a minimum, the following information for each entry:

- (i) the applicant and owner;
- (ii) the location of the signs;
- (iii) the decision to consent or reject the application;
- (iv) the terms of the agreement; and
- (v) all relevant dates.

subject to the fulfilment of the obligations referred to in this Section 28. The records shall be cross-referenced to the register entry.

- 28.1.4 No later than 20 Business Days before the Full Services Commencement Date, the Company shall add to the electronic register all incomplete proposals and applications received from the outgoing Trunk Road maintenance company. The Company shall progress any incomplete proposals and applications in accordance with the requirements of this Part as if the proposal had been made directly to the Company.
- 28.1.5 The Company shall ensure that the Contracting Authority shall have direct remote access at all times to all electronic registers and records referred to in this Section 28. Each entry in each register shall be geographically referenced such that the records can be identified from a digital map.
- 28.1.6 The Company shall designate an officer to deal with each application in the register and with all correspondence associated with each application.
- 28.1.7 The Company shall comply with the particular requirements of Appendix K.
- 28.1.8 For the purpose of this Part, references to "VisitScotland" shall mean Scotland's national tourist board or its successor organisation.

29 Roadside Electrical Assets and Power Supplies

29.1 General

- 29.1.1 This Part gives information relating to the roadside electrical assets which includes electrical equipment, lighting, luminaires and associated control apparatus, power supplies, associated infrastructure, structures and other supporting arrangements to be managed and maintained by the Company, either as a whole or in joint responsibility with others. For Trunk Roads, Clause 29.1.3 of this Part, together with LDS8023 A.6 EMG – Electrical Maintenance Guidelines for Roadside Electrical Assets, Lighting and Power Supplies provide the scope of the roadside electrical assets to be managed and maintained.
- 29.1.2 Associated infrastructure includes as a minimum power supply cabinets, distribution enclosures, protection devices, cabling, associated ducting and chambers.
- 29.1.3 The roadside electrical assets to be managed and maintained by the Company include but may not be limited to:

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- (i) Road lighting, flood lighting, underpass lighting, architectural lighting, power supply arrangements for festive lighting, road side services lighting, bus shelter lighting and maintenance lighting within Structures;
 - (ii) Illuminated traffic signs;
 - (iii) Illuminated bollards;
 - (iv) Power supply and downstream distribution network cabinets for roadside electrical assets;
 - (v) Power, communication and signal cabling;
 - (vi) Electrically operated apparatus for maintenance access to Structures;
 - (vii) Electrical ancillary drainage items;
 - (viii) Moveable bridge equipment;
 - (ix) Inclement weather signs and snow gates;
 - (x) Marine and air navigation lights;
 - (xi) Marine navigation aids;
 - (xii) Wildlife counters;
 - (xiii) Cathodic protection equipment;
 - (xiv) Power supply arrangements to roadside electrical assets for third party use;
 - (xv) Weather stations, road sensors, weather station CCTV cameras, and other weather station sensors forming part of the apparatus for weather monitoring;
 - (xvi) Vehicle activated signs;
 - (xvii) Gantry mounted illuminated signs without Traffic Scotland Equipment;
 - (xviii) Traffic signals;
 - (xix) Electrical installations within and related to the administration and control buildings associated with Structures;
 - (xx) Where fitted, any control and or communications devices relating to or forming part of a lighting central management system as typically mounted on roadside illuminated assets or within associated enclosures; and
 - (xxi) Any other roadside electrical assets.

29.1.4 In addition to the assets listed in paragraph 29.1.3, for Trunk Roads Transport Scotland's roadside electrical assets include Traffic Scotland Equipment complete with electrical, electronic and communications systems. These assets are maintained under the Traffic Scotland Operations and Infrastructure contract and include but may not be limited to:

- (i) Gantry mounted illuminated signs with Traffic Scotland Equipment,
- (ii) Hazard warning signals,
- (iii) Variable message signs,
- (iv) Closed circuit television,
- (v) Automatic number plate recognition cameras,
- (vi) Emergency telephones,
- (vii) Matrix signals,
- (viii) Detector loops and road sensors for vehicle detection,

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- (ix) Communications cabinets, and
 - (x) Any other roadside infrastructure associated with the provision of the Traffic Scotland Service.
- 29.1.5 Roadside electrical assets associated with items in paragraph 29.1.3 of this Part shall be managed and maintained in accordance with Schedule 4 Part 2.
- 29.1.6 Certain aspects of the management and maintenance of the roadside electrical assets associated with items in paragraph 29.1.4 of this Part shall be undertaken by the Company in accordance with Schedule 4 Part 2.
- 29.2 Roadside Electrical Assets Inventory
- 29.2.1 The Inventory, Energy Inventory and Lighting Management Function of the Integrated Roads Information System.
- 29.2.1.1 The Integrated Roads Information System made available for the Company will include a facility to access the following:
- (i) an inventory of the roadside electrical assets listed in Clause 29.1.3. using attributes as described in the Transport Scotland Trunk Road Inventory Manual,
 - (ii) an energy inventory which is a sub-set of the inventory as described in Clause 29.2.1.1 (i). This subset has attributes that relate to the energy consumption aspects of the inventory – these attributes are listed in Clause 29.3.2 of this Part, and
 - (iii) a lighting management function which forms an integral part of the routine maintenance and management function of the Integrated Roads Information System.
- 29.2.1.2 The Company shall comply with requirements of the Transport Scotland Trunk Road Inventory Manual.
- 29.2.1.3 The Company shall provide such assistance as required by Transport Scotland in order to develop the lighting management function for the maintenance and management of roadside electrical assets within Integrated Roads Information System.
- 29.2.2 Updating and Maintenance of Inventory and Lighting Management Function of the Integrated Roads Information System
- 29.2.2.1 The Company shall maintain an accurate inventory of roadside electrical assets. This shall include the energy consumption aspects of the inventory and information relating to the lighting management function of the Integrated Roads Information System.
- 29.2.2.2 The Company shall provide its collected information in a format agreed with Transport Scotland.
- 29.2.2.3 During the 13 weeks after the Restricted Services Commencement Date, the Company shall review the inventory provided and update as necessary to meet the requirements of the Integrated Roads Information System and Transport Scotland.
- 29.2.2.4 Following the review and update referred to in Clause 29.2.2.3 of this Part, the Company shall continuously appraise and produce an updated inventory and update the lighting management function of the Integrated Roads Information System. An energy inventory shall be submitted to Transport Scotland on a monthly basis. The Company shall notify Transport Scotland of any differences found during these updates.
- 29.2.2.5 The Company shall ensure that the inventory of roadside electrical assets is updated with all newly installed additional, decommissioned, modified and replaced roadside electrical
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assets on the O&M Roads. Any such updates shall be introduced into the inventory within seven Business Days after the introduction of the change.

29.2.2.6 The Company shall, within seven Business Days of notification, amend the existing inventory or supply an updated inventory in the event of any anomalies, inaccuracies or recommendations identified by Transport Scotland or the meter administrator.

29.3 Attributes for Energy Inventory

29.3.1 The Company shall ensure that the electrical energy inventory of unmetered electrical supply equipment shall be maintained to comply with the requirements of the 'Balancing and Settlement Code of Practice (BSCP) 520' issued by ELEXON.

29.3.2 For O&M Road un-metered roadside electrical apparatus, the Company shall populate the inventory with the following attributes:

- (i) National Street Gazetteer road reference, Trunk Road number or other agreed unique road reference;
- (ii) name of town or the district;
- (iii) name of the road;
- (iv) Ordnance Survey grid reference;
- (v) unit type, model and control gear type;
- (vi) identity code shown on unit;
- (vii) BSCP520 charge code;
- (viii) rated wattage;
- (ix) circuit wattage;
- (x) burning hours per annum;
- (xi) number of items of this charge code at this location;
- (xii) switching regime with appropriate BSCP520 code;
- (xiii) number of photo electric control units or time switches on the item;
- (xiv) control charge code with appropriate BSCP520 code for the control device;
- (xv) exit point – Y if yes, N if no, U if unknown;
- (xvi) annual energy usage in kWh;
- (xvii) ILCS lantern communication module reference (LCM); and
- (xviii) ILCS lantern group communications module (LGCM).

29.3.3 Traffic Scotland Equipment is maintained and operated by others on behalf of the Scottish Ministers. The Company shall collect the necessary information and update the Integrated Roads Information System inventory as outlined in Section 29.2 of this Part. This information is not required for the energy inventory or lighting management function of the Integrated Roads Information System.

29.4 Arrangement and Reporting of the Energy Inventory

29.4.1 The Company shall prepare and submit an energy inventory report as required by the Transport Scotland. The bulk of energy to operate roadside electrical assets is purchased through an unmetered arrangement with the distribution network operators in Scotland. Transport Scotland procures energy on a half-hourly basis and is required to submit monthly updates to the distribution network operators. The Company shall prepare and

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submit the energy inventory report by the 21st day of each calendar month, or the first Business Day after the 21st day of each calendar month, to Transport Scotland.

29.4.2 The items of roadside electrical assets in the report shall be grouped by route and shall be listed by starting at the beginning of a route and moving sequentially to the end. Any significant groups of items such as lighting through a built-up area shall be sub-groups of the route.

29.4.3 The report shall include the information itemised in Section 29.4.3 of this Part within which shall be identified clearly and separately the energy consumption per annum for un-metered supplies, in accordance with the requirements of Balancing and Settlement Code of Practice (BSCP) 520 issued by ELEXON, for each sub-group within any pre-numbered section of O&M Road, each O&M Road, each item code within any pre-numbered section of O&M Road and each item code each O&M Road.

29.5 Intelligent Lighting Control System (ILCS)

29.5.1 The Company shall provide Transport Scotland with remote read only access on a continuous basis to the Company's ILCS, to enable and maintain a Scotland wide live monitoring capability of illuminated assets on the Scottish Trunk Road Network.

29.5.2 The Company shall consult and comply during the Contract Period with Transport Scotland regarding any procurement, replacement and refurbishment of ILCS equipment ensuring continuing compatibility with any ILCS operating outside of the scheme extents, and to continue to align with the adjacent authorities operating protocols, practices, policies and future aspirations.

29.5.3 Transport Scotland shall make traffic flow data available to allow the Company to develop the variable lighting operational regimes and lighting level profiles. Should the Company consider additional or alternative traffic flow data is required the collection method and application of such collected data shall be agreed with Transport Scotland and the Contracting Authority.

29.5.4 The Company shall consult and comply with Transport Scotland for the implementation of Transport Scotland's ILCS Operational Strategy at the Full Service Commencement Date. This shall include the consideration of traffic flow data detailed in clause 29.5.3 of this part, and agree, develop and embed the variable lighting operational regimes and lighting level profiles to be applied through the ILCS. Such variable lighting shall be operational no later than 14 weeks after the Full Service Commencement Date.

29.5.5 Transport Scotland is in a process of developing a remote dynamic lighting control system (RDLCS) based upon the Transport Scotland's real-time measured traffic flow. The Company shall assist Transport Scotland in the implementation of RDLCS. Transport Scotland's ILCS Policy provides an outline of RDLCS.

29.5.6 The Company shall evaluate and incorporate the emerging best practice and efficient operation of illuminated assets on the O&M Roads through ILCS during the Contract Period. Such efficiencies are expected to arise from revisions in relevant regulations and standards – including Transport Scotland's ILCS Operational Strategy.

29.6 The Company shall consult and comply with Transport Scotland, and take cognisance of the obligations for the effective and efficient operation of the illuminated assets on the Trunk Road network – taking account of carbon footprint reduction targets in Scotland and Transport Scotland's CRC-EES Act 2010 obligations – i.e. Carbon Reduction Commitment – Energy Efficiency Act. Electrical Supplies to Roadside Electrical Assets

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- 29.6.1 The Company shall manage and ensure safe operation of all electrical supplies to roadside electrical assets. This shall include the following:
- (i) reporting to the appropriate distribution network operator any loss of supply, managing any consequences arising and ensuring restoration of supply,
 - (ii) undertaking any Defect repair of the downstream distribution network,
 - (iii) all required inspections, testing, and maintenance of downstream distribution network is in accordance with of Schedule 4 Part 2,
 - (iv) notifying any third party of loss of supply to its assets supplied from the Trunk Road distribution network,
 - (v) record all power supply defects and failures, and
 - (vi) record in a suitable tabulated form the distribution network operator supply system type and the measured value of the distribution network operator's external earth fault loop impedance ie Z_e , in ohms, at the point of interface between the distribution network operator and the roadside electrical assets. Both of these parameters shall be those entered in the current applicable British Standard 7671 Certificate for each point of interface. This requirement applies to all distribution network operator supplies that energise roadside electrical assets whether directly or as part of a shared supply installation. The resulting table shall be submitted along with the energy inventory report, as required by Transport Scotland.

29.7 Payment of Electrical Energy Charges

- 29.7.1 The Company shall be responsible for payment of any electrical energy charges in relation to its own facilities, construction plant and equipment, long term and temporary office accommodation and compounds. The Contracting Authority shall make their own arrangements for the direct payment of electrical energy charges for all other electrical energy supplies within the O&M Works Site for the Contract Period.
- 29.7.2 The Company shall provide such assistance as the Contracting Authority may require in resolving any matter relating to the roadside electrical assets inventory necessary to enable the Transport Scotland to obtain the un-metered supply certificate.
- 29.7.3 The Company shall obtain electricity meter readings for metered supplies to roadside electrical apparatus, within the O&M Works Site, on a monthly basis and shall provide the information to the Contracting Authority in the format and detail agreed.

30 Third Party Claims

30.1 General Requirements

- 30.1.1 The Company shall undertake the activities specified in this Part in respect of:
- (i) all claims for damages associated with the O&M Works Site made by third parties against the Contracting Authority, and
 - (ii) Damage to Crown Property, including claims by the Contracting Authority against third parties.
- 30.1.2 If a claimant submits a claim to Transport Scotland, the Contracting Authority shall acknowledge receipt in writing to the claimant and forward a copy of the claim to the Company for action.

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- 30.1.3 Where a third party claim arises from work undertaken within the O&M Works Site by any other organisation appointed by the Contracting Authority, the Company shall forward the claim to the organisation within two Business Days and shall advise the claimant in writing within five Business Days of receipt of the claim that it has been passed to the organisation.
- 30.1.4 The Company shall put in place appropriate procedures for dealing with third party claims. Such procedures shall include completion of the following forms at Appendix L, when relevant:
- (i) Third Party Claims Notification (TPCN) forms, including the:
 - (a) CRU Section, for compliance with the Social Security (Recoupment) Regulations 1990 and Social Security Act 1989 in relation to claims for compensation in relation to personal injury; and
 - (b) a CRU 1 Form.
- Where the above forms in (i) are not relevant to the third party claim, the Company shall put in place procedures for completion of an alternative relevant form.
- 30.1.5 When dealing directly with the claimant or the claimant's agent, the Company shall ensure that all letters and other correspondence sent at the time of the initial intimation of claim or preliminary information gathering process are in accordance with the proforma letter. No indication shall be given in any correspondence relating to the claim that it is subject to any jurisdiction other than that of the Scottish courts, unless it is the subject of legal proceedings raised in a court outwith the jurisdiction of the Scottish courts.
- 30.1.6 The Company shall maintain electronic registers and records of all third party claims in accordance with Sections 1.2 and 2 to Part 7 to these O&M Works Requirements. Such records and electronic registers shall include the completed forms described in paragraph 30.1.1, along with Company records of the data and other information required of the following report forms at Appendix L:
- (i) all Third Party Claims Company Report (TPCCR) forms and associated spreadsheets, letters, explanatory notes, details relating to compliance with legislation on claims for compensation for personal injury;
 - (ii) all Damage to Contracting Authority Property Company Reports (DCPCR and DCPCRR) forms and related cost estimates and expenditure and cost recovery records;
 - (iii) associated spreadsheets;
 - (iv) letters;
 - (v) explanatory notes; and
 - (vi) completed Department for Work and Pensions Notification of Claim for Compensation (CRU1) forms.
- 30.1.7 The Contracting Authority shall have access at all times to electronic registers and records relating to damage to Contracting Authority Property as defined in Clause 51.1.2 of the Agreement.
- 30.1.8 The Company shall provide such information as the Contracting Authority may request in relation to claims within 5 Business Days of the date of the request.
- 30.1.9 In cases where the Company has to provide additional data in response to third party queries, this data shall be supplied within 5 Business Days of request.
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- 30.2 Third Party Claims where the Contracting Authority are indemnified in accordance with Clause 51 of the Agreement.
- 30.2.1 The Company shall deal directly with the claimant and shall be responsible for all matters in relation to such claims.
- 30.2.2 The Company shall process all third party claims in a courteous, fair and timely manner.
- 30.2.3 The Company shall put in place a process for dealing with appeals by a claimant.
- 30.2.4 If a claimant submits such a claim to the Contracting Authority it shall acknowledge receipt in writing and forward a copy to the Company for action.
- 30.3 Third Party Claims where the Contracting Authority is not indemnified in accordance with Clause 51 of the Agreement.
- 30.3.1 The Company shall notify the Contracting Authority in writing within 5 Business Days of receipt of such a third party claim.
- 30.3.2 Should the Contracting Authority decide that the Contracting Authority is indemnified in respect of any claim; the Contracting Authority shall notify the Company in writing of its decision and such claim shall be dealt with by the Company in accordance with the provisions of Section 30.2 of this Part.
- 30.3.3 Should the Contracting Authority decide that the Contracting Authority is not indemnified in respect of any claim; the Contracting Authority shall notify the Company in writing of his decision. Within five Business Days of receipt of such notification, the Company shall supply the Contracting Authority with all information related to each incident giving rise to a claim where the Contracting Authority is not indemnified, including:
- (i) the completed Third Party Claims Notice Form; and
 - (ii) a completed Third Party Claims Company Report Form in the format shown in Appendix L of this Part.
- 30.3.4 The Company shall not make any admission of liability on its own behalf or on behalf of the Contracting Authority in respect of any matters pertaining to such third party claims.
- 30.3.5 The Company shall supply the Contracting Authority at the time of notification of the claim under paragraph 30.3.1 with all information related to each incident giving rise to a claim. The information supplied shall include:
- (i) The completed forms TPCN and TPCCR;
 - (ii) details of the previous six months Safety Inspections; and
 - (iii) gritting records for the location of each incident.
- 30.4 Third Party Claims in respect of Personal Injury
- 30.4.1 In the event of a third party claim for personal injury, the Company shall notify the Department for Work and Pensions Compensation Recovery Unit within 14 days of receipt of the claim, using the Department's form CRU1 which is available on the Department for Work and Pensions website.
- 30.5 Claims for Damages where the incident occurred prior to the Restricted Services Commencement Date.
- 30.5.1 The Company shall liaise with the North East Management Unit and Transport Scotland to establish a list of damage to Crown Property within the O&M Works Site that shall have
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occurred on or after the Effective Date or shall have been outstanding on the Effective Date and the list of cases being pursued against third parties.

30.5.2 The Company shall when requested in writing provide assistance to the Contracting Authority with any other claims against persons that caused damage in incidents occurring prior to the Restricted Services Commencement Date.

30.5.3 The Company shall deal in accordance with the requirements of this Part with all third party claims arising from incidents that occur before the Expiry Date. Such claims shall continue to be the responsibility of the Company after the Expiry Date.

30.6 Handover Arrangements

30.6.1 The Company shall pass details of registers and records of all claims notified to the Company within 20 Business Days of the earlier of the Expiry Date or the Termination Date and details of all other claims which shall still be outstanding at that time, to the successor organisation and to the Contracting Authority no later than 10 Business Days after the earlier of the Expiry Date or the Termination Date.

31 Network Operations Services

31.1 General

31.1.1 Network Operations is a branch of Transport Scotland which is responsible, on behalf of the Scottish Ministers, for the provision of a number of national traffic, travel information, on-road, and public transport customer support services, all of which are aimed at improving the operational efficiency and journey time reliability of the Trunk Road network. These Network Operations services include the Traffic Scotland Service, the Traffic Customer Care Line and Transport Scotland's Traffic Database service. The point of contact for all Traffic Scotland matters is the Traffic Scotland Manager unless advised otherwise by the Contracting Authority.

31.1.2 The Company shall undertake obligations that are required to support the delivery of the Traffic Scotland Service, the Traffic Customer Care Line and the Scottish Road Traffic Database service.

31.2 The Traffic Scotland Service

31.2.1 The Traffic Scotland Service provides Transport Scotland and its customers, the media, the Scottish Ministers and the Scottish Ministers' resilience staff with accurate and timely real time information relating to conditions, Incidents and events prevailing across the Trunk Road network in Scotland on a 24 hours a day, seven days a week basis. The Traffic Scotland Service Provider is responsible for the delivery of the Traffic Scotland Service, of which the operations element is carried out from the Traffic Scotland National Control Centre at South Queensferry. Further to this the Traffic Scotland Service Provider is responsible for delivery of the Customer Contact Service as detailed in Schedule 4 Part 1 Section 25.

31.2.2 Network Operations, through the Traffic Scotland Service, also provide a traffic data service and collects traffic parameter data at the fixed location traffic counting sites within the Scottish trunk road network. Network Operations shall integrate the Company's Traffic Data into this element of the Traffic Scotland Service and the Company shall provide electronic transfer of the Company's Traffic Data, in a data format agreed by the Traffic Scotland Service Provider, so that the Company's Traffic Data is available to the Traffic Scotland Service within seven days of the Company collecting the Company's Traffic Data.

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- 31.2.3 The names, addresses and contact numbers of the Traffic Scotland Service Provider shall be as referred to in Appendix R/1 of this Part or as otherwise notified to the Company in writing by the Contracting Authority. The Contracting Authority shall notify the Company in writing of any changes made to the Traffic Scotland Service Provider roles.
- 31.2.4 The Traffic Scotland Service Provider will operate the Traffic Scotland Active Maintained Equipment within the O&M Works Site to support the delivery of the Traffic Scotland Service. The Traffic Scotland Manager shall retain the right to use, at any time, the Traffic Scotland Equipment to provide driver information and control services with the aim of ensuring safe and effective operation of the trunk road network including the O&M Roads and to maximise the use of any existing capacity within the strategic road network.
- 31.2.5 No later than 25 Business Days prior to the Restricted Services Commencement Date, the Contracting Authority shall issue to the Company in electronic format, an up-to-date Traffic Scotland Active Maintained Equipment inventory of all Traffic Scotland Active Maintained Equipment located on the Project Roads. From that date the Company shall provide inventory updates to the Traffic Scotland Service Provider so that the Traffic Scotland Active Maintained Equipment inventory is never more than seven days out of date.
- 31.2.6 The Company shall undertake liaison and coordination with the Traffic Scotland Service Provider regarding planned and unplanned roadworks and Incidents occurring on the Project Roads. The Company shall take a proactive approach in liaison and coordination with the Traffic Scotland Service Provider regarding planned and unplanned roadworks, events and Incidents that have adverse effects on the journey time reliability of the O&M Roads.
- 31.2.7 The Company shall not interfere with any Traffic Scotland Active Maintained Equipment inspected, but shall ensure that any faults or damage identified on the Traffic Scotland Active Maintained Equipment during the course of the Company's Detailed Inspections shall be reported to the Traffic Scotland Service Provider.
- 31.2.8 The Company shall hold a record of Traffic Scotland Passive Maintained Equipment in IRIS. The Company shall maintain Traffic Scotland Passive Maintained Equipment record drawings showing the installation location, origin and destination of communication cable runs, electrical supply and associated power cables to equipment and cabinets and all other information required. These records shall be amended by the Company within 14 days of any change to the installations and copied to the Contracting Authority in addition to the Company updating the Traffic Scotland Service health and safety file as required to comply with the CDM Regulations.
- 31.2.9 The Company shall liaise with the Contracting Authority in regards to any modifications or alterations in the vicinity of Traffic Scotland Maintained Equipment such as to allow the Contracting Authority to modify or alter the Traffic Scotland Maintained Equipment installation as required to maintain a consistent Traffic Scotland Service.
- 31.2.10 Maintenance of Traffic Scotland equipment shall be in accordance with Section 6 of part 2 of these O&M Requirements.
- 31.3 Consultation, Liaison, Notification and Coordination Requirements Relating to Network Operations Services
- 31.3.1 The Company shall consult, liaise, notify and coordinate with the Traffic Scotland Manager and the Traffic Scotland Service Providers as detailed in this Schedule 4.
- 31.3.2 Where an O&M Road is not operating within its normal operational conditions, which shall include situations where delays exceed the limits defined in Appendix R/3 of this Part or

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an Incident has occurred, the Company shall continually share its knowledge of the current operational conditions on the O&M Roads with the Traffic Scotland Service Provider to enable the Traffic Scotland Service Provider to provide accurate traffic situation and incident information to customer as described in Part 1 and Part 2 of Schedule 4.,

- 31.3.3 The Company shall attend at least one meeting with the Traffic Scotland Manager and the Traffic Scotland Service Providers prior to the Restricted Services Commencement Date. Thereafter the Company shall meet at least six monthly with the Traffic Scotland Manager and Traffic Scotland Service Provider, or additionally as requested by the Traffic Scotland Manager, to provide feedback, learning and improvements that will assist in achieving Traffic Scotland Service's specific objectives and to coordinate future activities on the O&M Roads and the adjoining road network.
- 31.3.4 It is essential that the existing Traffic Scotland communications system remains at full operational capacity at all times during the duration of the Agreement. The Company shall ensure that all Operations are planned so Traffic Scotland Maintained Equipment is always maintained in a full operational state unless planned downtime is agreed, at a minimum of three months advance notification of the planned downtime, with the Traffic Scotland Manager and the Traffic Scotland Service Provider. The Company shall be aware that the main longitudinal cables in the O&M Roads are likely to be part of the national carrier network in addition to its function of carrying local data from signals, telephones and the like, and any damage to such longitudinal cables is likely to result in significant downgrading of the Traffic Scotland Service.
- 31.3.5 The Company shall liaise and coordinate regularly with all Traffic Scotland Service Providers to minimise the impact of its Operations on the Network Operations Equipment and journey time reliability of the Trunk Road network. The Company shall facilitate Traffic Scotland Service Providers' access to its planned maintenance schedules so that Traffic Scotland Service Providers can plan works to coordinate with planned Company maintenance activities.
- 31.3.6 The Company shall ensure that all suitable precautions are taken to prevent damage to Traffic Scotland Maintained Equipment during Operations. Where the Company causes damage; suspects that it or its subcontractors may have caused damage, or becomes aware of any external activities that may have caused damage to Traffic Scotland Maintained Equipment, it shall immediately inform the appropriate Traffic Scotland Service Provider by telephone, providing an indication of what damage has occurred. The Company shall subsequently complete the form provided at Appendix R/7 of this Part and submit it to the Traffic Scotland Service Provider via e-mail and by copy to the Contracting Authority, within 24 hours of the damage being caused or identified. The Company shall note the further requirements of section 31.18 of this Part in respect of damage.
- 31.3.7 The Company or Traffic Scotland Service Provider, as directed by the Traffic Scotland Manager, shall undertake repair of the damage at the earliest possible time.
- 31.3.8 The Company shall comply with the Traffic Scotland Manager's details for the repair, replacement, renewal or discontinuance of any fixed location traffic counting site so affected.
- 31.4 Appointment of Journey Time Reliability Coordinator
- 31.4.1 The Company shall appoint suitably qualified personnel to deliver the Journey Time Reliability Coordinator role, in accordance with the requirements of section 6.5 of Part 2 of this Schedule 4.

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31.5 Journey Time Reliability Coordinator's Main Duties

- 31.5.1 The Journey Time Reliability Coordinator shall be responsible for supporting the Incident Liaison Officer in the delivery of the coordination, liaison and management requirements of the Company specified within this Schedule 4, to ensure that the journey time reliability of the O&M Roads is maintained at its optimum level.
- 31.5.2 The Journey Time Reliability Coordinator shall be proactive in gathering relevant information and continuously monitoring the Automated Diary Facility, the Scottish Road Works Register, the Traffic Scotland Service website, operational partners and other relevant systems to ensure complete knowledge of all roadworks, events and Incidents occurring or planned to occur on or near the O&M Works Site.
- 31.5.3 The Journey Time Reliability Coordinator shall be the first point of contact within the Company's organisation for all roadworks undertaken by the Company and events occurring on or near the O&M Works Site during Normal Working Hours and outwith Normal Working Hours. The Journey Time Reliability Coordinator shall be contactable on dedicated landline and mobile phone numbers.
- 31.5.4 The Journey Time Reliability Coordinator shall be based within whichever offices the Company deems are most suitable to fulfil the requirements of the role and shall undertake periodic site visits to assess the implementation and impact of roadworks and events. Such visits shall be used to assess how improvements in journey time reliability can be improved when similar roadworks and events take place in the future.
- 31.5.5 The Journey Time Reliability Coordinator shall:
- (i) liaise and communicate with the Traffic Scotland Service Provider, Traffic Scotland Manager and relevant Operational Partners and shall:
 - (a) disseminate accurate and timely information to assist in the effective delivery and coordination of their roadworks and events throughout the O&M Works Site;
 - (b) ensure representation by Company personnel at all liaison meetings with the Operational Partners;
 - (c) ensure representation by the Company at seminars or working groups related to improving the methods by which Trunk Road management and maintenance activities shall be carried out, when required by the Contracting Authority;
 - (d) ensure that the minutes of all liaison meetings called by the Company are prepared and copies issued to the Contracting Authority and relevant Operational Partners, within five Business Days of the meeting taking place; and
 - (e) ensure that the issues arising from the liaison meetings are managed in accordance with the requirements of the Agreement and that any actions required from the Company are completed within the agreed or required timescales
 - (ii) provide a monthly report to the Contracting Authority no later than the fifteenth day of each calendar month throughout the Contract Period detailing:
 - (a) liaison meetings held;
 - (b) issues arising from such liaison meetings;
 - (c) actions taken or to be taken arising from such liaison meetings;

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- (d) action plans agreed between the Company and the Contracting Authority or Operational Partner; and
- (e) the impacts of the Company's activities on the journey time reliability of the O&M Roads with recommendations for proposed improvements;
- (iii) prepare and submit reports annually to the Contracting Authority, detailing the impacts of all the Company's activities on the journey time reliability of the O&M Roads including any proposed improvements and mitigation measures;
- (iv) take ownership and management responsibility for the Automated Diary Facility ensuring that it is fully functional and kept updated at all times;
- (v) include the Temporary Traffic Regulation Order number associated with Roadworks in the Automated Diary Facility.
- (vi) coordinate, monitor and control all roadworks or events to minimise road closures, potential impacts and conflicts and maximising the capacity of the O&M Roads, using the Automated Diary Facility and Scottish Roadworks Register where necessary;
- (vii) disseminate accurate and timely information to Operational Partners via the Automated Diary Facility, emails, regular meetings and telephone calls to assist in the effective coordination of their activities;
- (viii) implement escalation procedures for roadworks and events which exceed allowable delay thresholds;
- (ix) liaise with the Incident Liaison Officer and relevant Operational Partners in dealing with Incidents occurring during roadworks including coordination of the activation and implementation of Standard Incident Diversion Routes and managing the cancellation of roadworks if such cancellation shall improve the capacity of the O&M Roads when an Incident is taking place;
- (x) utilise and manage support personnel on specific tasks relating to the planning and implementation of roadworks or events including ensuring such personnel are provided with adequate communications equipment, coordinating, mobilising, deploying and supervising Traffic Management arrangements and evaluating their impacts;
- (xi) notify the Contracting Authority promptly in writing of operational conflicts that may impact on the journey time reliability of the O&M Roads and adjoining road network and coordinating the implementation of any corrective action consented to by the Contracting Authority with the Traffic Scotland Service Provider;
- (xii) coordinate the programming, planning and installation of traffic management and traffic control equipment in relation to the roadworks undertaken by the Company to ensure the safety of Company operational staff and Users;
- (xiii) maintain a record of all traffic management installations, including mobile Lane closures on the O&M Roads for each day of each Annual Period on a central database maintained by the Company and ensuring that all updates are completed by 09.30 hours on the following Business Day; and
- (xiv) management and dissemination of information required by the Company and others for the preparation of Temporary Traffic Regulation Orders for roadworks and special events in accordance with the Specification.

31.6 The Automated Diary Facility

31.6.1 The Traffic Scotland Service Provider requires complete knowledge of:

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- (i) all planned and unplanned site Operations, works, traffic management, Lane closures and Lane occupations, which for the purposes of this Part only shall be called 'roadworks', whether such roadworks are to be undertaken by the Company, Works Contractor, Undertaker, authorised contractor or others; and
 - (ii) all events expected to attract a minimum of 3,000 attendees, including concerts, sporting events and seasonal events which are likely to generate significant traffic.
- 31.6.2 The Journey Time Reliability Coordinator shall use Transport Scotland's Automated Diary Facility for providing information to the Traffic Scotland Service Provider when:
- (i) the Company proposes to undertake any Operations; or
 - (ii) the Company becomes aware of authorised contractors, Undertakers or others proposing to carry out any works.
- 31.6.3 The Journey Time Reliability Coordinator shall be responsible for ensuring that all information held in the Automated Diary Facility is accurate, complete and up to date at all times to enable the Traffic Scotland Service Provider to deliver reliable information to customers.
- 31.6.4 The Journey Time Reliability Coordinator shall monitor both the Automated Diary Facility and Scottish Road Works Register to determine if there are any other roadworks scheduled or in progress by any Undertaker, authorised contractor or others that may impact on the implementation of any proposed roadworks. Where other roadworks are identified as having such a potential impact, the Journey Time Reliability Coordinator shall coordinate these roadworks to minimise potential impacts or mitigate against conflicts with the proposed implementation programme.
- 31.7 Access to the Automated Diary Facility
- 31.7.1 No later than 25 Business Days prior to the Restricted Services Commencement Date, the Company shall provide and maintain at its main office for the Operations an internet capable PC and associated broadband internet connection for access to the Automated Diary Facility.
- 31.7.2 Prior to ordering this PC and internet connection, the Company shall contact the Traffic Scotland Service Provider to confirm the exact requirements.
- 31.8 Information to be Logged on the Automated Diary Facility
- 31.8.1 The Journey Time Reliability Coordinator shall ensure that details of all roadworks undertaken on the Restricted Services Roads and the O&M Roads are logged onto the Automated Diary Facility and kept updated at all times. Appendix R/8 sets out the details required in respect of such roadworks. Each roadworks item logged shall be allocated a unique referencing number which shall be quoted by the Company in all communications with the Traffic Scotland Service Provider and within its own organisation and by its subcontractors.
- 31.8.2 The information supplied by the Company via the Automated Diary Facility shall allow the Traffic Scotland Service Provider to create messages on the Traffic Scotland variable message signs, informing road users of potential delays and of alternative routes where applicable without requiring to ask for additional information from the Company. The Traffic Scotland Service Provider shall also provide this information to the media and road users via the Traffic Scotland website (www.trafficscotland.org).
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- 31.8.3 The Traffic Scotland Service website shall serve as the single, reliable source for information on all events. The Journey Time Reliability Coordinator shall ensure that the Traffic Scotland Service website is monitored on a daily basis to obtain information on forthcoming events that need to be incorporated into the planning of Operations.
- 31.8.4 The Journey Time Reliability Coordinator shall ensure that details of events expected to attract fewer than 3,000 attendees, but deemed by the Company to have potential to cause significant delays, are logged on the Automated Diary Facility and kept updated at all times.
- 31.8.5 The Journey Time Reliability Coordinator shall use the Network Access Form at Appendix R/2 of this Part to request road works information from authorised contractors, Undertakers and others with a right to work within the O&M Works Site, to ensure accurate and consistent information is utilised to meet the obligations of this Schedule 4. This information shall then be logged on the roadworks diary of Transport Scotland's Automated Diary Facility for each roadworks event.
- 31.8.6 The Journey Time Reliability Coordinator shall ensure all details logged into the Automated Diary Facility are reviewed and updated no later than 09.30 hours daily. Where the Company becomes aware of any significant change to such details, the Journey Time Reliability Coordinator shall ensure the Automated Diary Facility is updated within one hour of becoming aware.
- 31.9 Automated Diary Facility Severe Weather Information
- 31.9.1 During periods of Severe Weather, the Journey Time Reliability Coordinator shall ensure the Severe Weather information being published on the Automated Diary Facility is regularly reviewed and updated at not less than hourly intervals.
- 31.9.2 Where the Company becomes aware of:
- (i) any change in the situation at any location logged on the Automated Diary Facility; and
 - (ii) any other locations where Severe Weather is affecting driving conditions or traffic movements on the O&M Roads;
- the Journey Time Reliability Coordinator shall ensure the Automated Diary Facility is updated at the next scheduled review.
- 31.9.3 The minimum information requirements for updating Severe Weather information on the Automated Diary Facility are referred to in Appendix R/4 of this Part.
- 31.10 Remote Access to Closed Circuit Television
- 31.10.1 Where considered necessary by the Contracting Authority, the Contracting Authority shall make arrangements to provide a single close circuit television camera workstation to the Company at the location agreed between the Contracting Authority and the Company.
- 31.10.2 The Company shall make provision for the office space to accommodate a close circuit television camera workstation comprising:
- (i) Dual 20" monitors;
 - (ii) Large footprint desk top personal computer;
 - (iii) Keyboard;
 - (iv) Mouse; and
 - (v) Closed circuit television control panel;
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and shall facilitate communications connections and installation by the Traffic Scotland Service Provider.

31.11 Assessment of Roadworks Delays

31.11.1 Roadworks or any other activity being undertaken by the Company or authorised contractors, Undertakers or others, which reduce the operational capacity of the O&M Roads shall require an assessment by the Company prior to commencement to assess the impact of the reduction in capacity. The Company shall use the delay modelling tool provided in accordance with Appendix R/5 of this Part to assess the impact and cost of traffic delay.

31.11.2 The Company shall undertake reduction in capacity assessments for the full duration of any activity that reduces the operational capacity of the O&M Roads and each assessment shall include the unique reference number as described in paragraph 31.8.1 of this Part.

31.11.3 The Company shall not assess roadworks relating to emergency repairs prior to commencement but shall assess such roadworks on the next Business Day after implementation.

31.11.4 Where activities that reduce the operational capacity of the O&M Roads are proposed that have been assessed as likely to cause traffic delays below the acceptable delay thresholds detailed in Appendix R/3 of this Part, the Company shall implement such activities following the normal notification period.

31.11.5 The Journey Time Reliability Coordinator shall record each delay modelling tool assessment in the Automated Diary Facility.

31.11.6 Where activities that reduce operational capacity are proposed which have been assessed as likely to cause traffic delays greater than the acceptable delay threshold of 12 minutes as detailed in Appendix R/3 of this Part, the Company shall implement such activities only following receipt of consent from the Contracting Authority. To allow the Contracting Authority to determine if consent can be provided, the Company shall prepare a delay management report detailing justification for implementing activities that shall cause delay greater than the acceptable delay threshold of 12 minutes. The delay management report shall include, as a minimum, the following details:

- (i) activity location and description;
- (ii) result of impact assessment using the delay modelling tool;
- (iii) data collection and modelling approach where modelling beyond the use of the delay modelling tool has been agreed by the Contracting Authority; and
- (iv) description of existing and expected operational condition of that part of the O&M Roads affected by the proposed activity, with a summary of recommendations for measures to be applied to reduce delay.

31.11.7 The Company shall notify the Traffic Scotland Service Provider at least 25 Business Days prior to the commencement of the activity when the estimated delay is greater than eight minutes.

31.11.8 Complex roadworks refers to situations where specific work activities and time periods may make it impossible to meet the delay thresholds detailed in Appendix R/3 of this Part. Conditions where this may occur include:

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- (i) roadworks located in areas where the existing trunk road is operating at or near capacity but where the existing traffic flow is relatively stable. At such locations, a slight reduction in capacity resulting from roadworks activities could have a significant impact on road users;
- (ii) roadworks where Lane closures are required to preserve the safety of Users and Company personnel or for environmental reasons; and
- (iii) roadworks being undertaken during periods of high traffic volume related to seasonal traffic, holidays and events.

31.11.9 For activities that may cause delay beyond the 12 minute delay threshold detailed in Appendix R/3 of this Part the Company may propose the use of microscopic simulation models for the Contracting Authority's consent.

31.11.10 When the Company identifies an implementation option that reduces predicted delays below the 12 minute delay thresholds detailed in Appendix R/3 of this Part, this implementation option shall be used by the Company.

31.12 Notification of Roadworks Delays

31.12.1 Where roadworks are being undertaken which have been assessed as likely to cause traffic delays in excess of thresholds detailed in Appendix R/3 of this Part, or which involve the closure of an off-slip or on-slip road, the Journey Time Reliability Coordinator shall keep the Traffic Scotland Service Provider notified of traffic delays via regular telephone calls, quoting the unique Traffic Scotland Automated Diary Facility reference number for the Site, at the following intervals:

- (i) at code 3 and 4 delays, 15 minutes prior to traffic management commencing at a roadworks location;
- (ii) immediately when delays to traffic, assessed using the delay modelling tool, exceed 10 minutes;
- (iii) thereafter at no more than 30 minutes intervals or when delay changes of five minutes or more occur, giving details of the delay times until they have ceased to exceed 10 minutes; and
- (iv) immediately once the traffic management has been removed from a roadworks location.

31.12.2 The Journey Time Reliability Coordinator shall notify the Traffic Scotland Service Provider by telephone and update the Automated Diary Facility within one hour of becoming aware of changed circumstances which would significantly affect movement of traffic, including:

- (i) when roadworks which were coded 1 to 2 in accordance with 'Coding for estimated traffic delays' detailed in Appendix R/3 of this Part are causing traffic delays in excess of 10 minutes;
- (ii) when planned roadworks are cancelled at short notice and the cancellation has not yet been entered into the Automated Diary Facility;
- (iii) Incidents that have been notified to, or identified by, the Company; and
- (iv) when road, Lane or slip closures or Lane occupations have been, or are likely to be, put in place.

31.13 Monitoring and Evaluation

31.13.1 To facilitate learning and feedback from the implementation of roadworks, the Company shall monitor and evaluate predicted and actual delays. If the actual delay exceeds the

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predicted delay by any period greater than five minutes, the Company shall include within the Automated Diary Facility actual delays for all code 4 works and for all codes of works designated in accordance with the 'Coding for estimated traffic delays' provided in Appendix R/3 of this Part.

- 31.13.2 If necessary, the Company shall utilise equipment which can automatically determine traffic delays through roadworks and disseminate appropriate messages to the Traffic Scotland Service Provider. Where the Company considers the use of automatic traffic delay monitoring equipment necessary, it shall submit written proposals for the deployment of such equipment to the Contracting Authority for consent. Where the Company considers the use of automatic traffic delay monitoring equipment is not feasible, it shall instead deploy sufficient operational personnel to monitor traffic delays.
- 31.13.3 Where the actual traffic delays exceed the predicted traffic delays by any period greater than 15 minutes, the Company shall immediately notify the Traffic Scotland Service Provider and the Contracting Authority. The Journey Time Reliability Coordinator shall provide details of the discrepancy between the predicted and actual delays and propose suitable on Site corrective actions and shall keep the Contracting Authority and Traffic Scotland Service Provider fully briefed on the status of such roadworks.
- 31.13.4 The Contracting Authority may require the Company to implement proposed corrective actions or suspend the implementation of roadworks in order to reduce traffic delays which he considers unacceptable. Where the suspension of roadworks due to unacceptable travel delays would have a negative impact on the safety of road users, the Contracting Authority may allow the implementation of roadworks to continue until the Company has resolved the negative impact by taking the necessary corrective actions. The Journey Time Reliability Coordinator shall notify and liaise with the Traffic Scotland Service Provider in either situation.
- 31.14 Vehicle Activated Signs
- 31.14.1 The Company shall use vehicle activated signs during roadworks where such use shall address safety issues relating to inappropriate speeds. The Company requests for use of vehicle activated signs shall be made in writing to the Contracting Authority.
- 31.14.2 Vehicle activated signs shall only be deployed in addition to regulatory signs as a response to excessive speed and in accordance with the following requirements:
- (i) the Traffic Signs Regulations and General Directions 2002 and other relevant United Kingdom and European Union guidance and standards. Departures shall not be permitted unless specifically authorised by the Contracting Authority;
 - (ii) be type approved for use on the O&M Roads , and shall utilise only the legends approved by the Contracting Authority;
 - (iii) not be deployed where the works are located within those sections of the O&M Roads that already have Lane control signalling;
 - (iv) where both directions within the roadworks area meet the criteria of this paragraph, one vehicle activated sign shall be deployed in each direction; and
 - (v) be deployed where detailed accident investigation or risk assessment confirms that vehicle activated signs are an appropriate remedial measure.
- 31.14.3 Speed monitoring detectors shall be installed accurately to minimise errors in speed measurement.

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- 31.14.4 When the signs are activated, the displays shall provide appropriate warning to motorists when the assigned speed limit is exceeded and shall not interfere with the visibility and general effectiveness of any other signs in the area.
- 31.15 Mobile Variable Message Signs
- 31.15.1 The Traffic Scotland Maintained Equipment includes a network of permanently located variable message signs positioned at key locations throughout the Trunk Road network. These signs facilitate the provision of real time information to Trunk Road users.
- 31.15.2 The Scottish Ministers own a number of mobile variable message signs. These shall be made available for use by the Company in advance of, or during, any major works or Operations in areas which are outwith the coverage of the permanent variable message sign system forming part of the Traffic Scotland Equipment.
- 31.15.3 Where the Company requires the use of the mobile variable message signs, the Journey Time Reliability Coordinator shall apply in writing to the Traffic Scotland Service Provider for consent to use these, giving as much notice as possible. The Traffic Scotland Service Provider shall have absolute discretion to decide when the use of the mobile variable message signs is allowed, based on the perceived benefits to road users.
- 31.15.4 Where the Traffic Scotland Service Provider gives written consent to the use of mobile variable message signs, the responsibilities of the Company shall be as specified within the Guidance Note No.1 'Use of Mobile Variable Message Signs on The Trunk Road Network', published by Transport Scotland in March 2011.
- 31.15.5 In accordance with this guidance, the Transport Scotland mobile variable message signs shall be used by the Company to cover situations including:
- (i) the signing of major roadworks where there are currently no permanent variable message signs;
 - (ii) gauging driver reaction to the potential benefits of permanently locating a variable message sign at that position on the network;
 - (iii) providing weather related information during the winter months, such as snowfalls which have the potential to require road closures or seriously affect traffic travelling these routes; and
 - (iv) signing for large scale outdoor events that generate abnormally high levels of traffic in otherwise quiet areas for short periods such as pop concerts and sporting events.
- 31.15.6 The Company shall be responsible for:
- (i) the collection and return of the signs in good working order by arrangement with the Traffic Scotland Service Provider; and
 - (ii) the provision of suitable locations for the signs, which shall include:
 - (a) hard standing, including adequate maintenance and inspection access to the sign once deployed;
 - (b) protection for the signs by an existing permanent barrier or by a temporary barrier, including assessment of the site to ensure compliance with TD19/06 of the Design Manual for Roads and Bridges and any other road safety related matters;
 - (c) appropriate communications, including a 230 volts, 50Hz power supply facility complete with appropriate methods of connecting to the mobile

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variable message signs, including provision of certification to British Standard 7671, which shall be provided prior to connection of the sign;

- (d) where it is not possible to provide a mains power supply facility, the Company shall be responsible for the provision of a suitable generator, including the supply of fuel, maintenance, security and all necessary servicing when using signs with a generator; and
- (e) visual inspection of the sign and its immediate environs and reporting of any defects to the appropriate parties.

during their operation.

31.16 Proposed Operations or Works in the vicinity of Traffic Scotland Maintained Equipment

31.16.1 When:

- (i) the Company proposes to carry out Operations or Works within or adjacent to locations containing Traffic Scotland Maintained Equipment, or
- (ii) the Company becomes aware of authorised contractors, Undertakers or others proposing to carry out works within or adjacent to locations containing Traffic Scotland Maintained Equipment,

the Journey Time Reliability Coordinator shall communicate with the Traffic Scotland Manager and the Traffic Scotland Service Provider as if the Traffic Scotland Service Provider was an Undertaker as defined in the *New Roads And Street Works Act 1991*.

31.17 Proposed Operations or Works affecting Traffic Scotland Maintained Equipment

31.17.1 When:

- (i) the Company proposes to undertake any Operations or Works that may have a physical effect on any Traffic Scotland Maintained Equipment, or
- (ii) the Company becomes aware of authorised contractors, Undertakers or others proposing to carry out works that may have a physical effect on any Traffic Scotland Maintained Equipment,

the Journey Time Reliability Coordinator shall notify the Traffic Scotland Service Provider by completing and submitting the form provided at Appendix R/6 of this Part via e-mail at least 15 days prior to the Operations or works commencing. The completion and submission of the form shall be in addition to all planning of relocation, design of relocation and consultation with the Traffic Scotland Manager which the Company shall undertake when it commences any planning of Operations or works that will impact on Traffic Scotland Maintained Equipment, as detailed in paragraph 31.17.3 of this Part.

31.17.2 Where the Company deems that such Operations or works shall have no physical effect on any Traffic Scotland Maintained Equipment, the form shall be submitted to show a nil return.

31.17.3 The Journey Time Reliability Coordinator shall consult and liaise with the Traffic Scotland Manager and the Traffic Scotland Service Provider regarding the nature of the Operations or works and shall make arrangements for the affected Traffic Scotland Maintained Equipment to be replaced or renewed. Such arrangements shall include detailed planning and design of works to accommodate the diversion and relocation of Traffic Scotland Maintained Equipment.

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- 31.17.4 Where the Contracting Authority agrees in writing that the Company has the skills and competence to undertake the planning, design, diversion, relocation and renewal of the Traffic Scotland Maintained Equipment or any part thereof, the Company shall undertake and complete this work as an integral part of the Operations or works and shall:
- (i) complete the planning and design of the diversion, relocation or renewal of Traffic Scotland Maintained Equipment as part of the planning and design of the Operations or works in consultation with the Traffic Scotland Manager and the Traffic Scotland Service Provider;
 - (ii) complete any diversion and relocation of Traffic Scotland Maintained Equipment in advance of, or during, the Operations or works as appropriate;
 - (iii) when the Operations or works include road surfacing, ensure that the Traffic Scotland surface detection equipment is replaced and operational as part of the Operations or works or, if approved in writing by the Contracting Authority, within seven Working Days of the surface course being laid; and
 - (iv) undertake all relevant and statutory testing of Traffic Scotland Maintained Equipment and the provision of records to enable the Contracting Authority, the Traffic Scotland Manager and the Traffic Scotland Service Provider to maintain the relevant Health and Safety Files and New Roads and Street Works Act 1991 records. Testing shall take place as an integral part of the Operations or works and the records shall be provided within 14 days of the completion of Operations or work adjacent to the Traffic Scotland Maintained Equipment.
- 31.17.5 The Company shall ensure that any affected Traffic Scotland Maintained Equipment is replaced as part of the Operations or works in accordance with specifications that shall be supplied by the Traffic Scotland Service Provider.
- 31.17.6 When works that affect or may affect Traffic Scotland Maintained Equipment are to be undertaken by authorised contractors, Undertakers or others, the Journey Time Reliability Coordinator shall:
- (i) on receiving notice of the works from the authorised contractor, Undertaker or others, notify the Contracting Authority, Traffic Scotland Manager and the Traffic Scotland Service Provider in writing of the proposed works; and
 - (ii) make arrangements with the authorised contractor, Undertaker or others for the Traffic Scotland Maintained Equipment to be diverted, relocated or replaced as part of the works within agreed timescales.
- In such circumstances, the Contracting Authority reserves the right to nominate the Traffic Scotland Service Provider to undertake the diversion, relocation or replacement of the Traffic Scotland Maintained Equipment.
- 31.18 Damage to Traffic Scotland Maintained Equipment
- 31.18.1 The Company shall be aware of situations where Traffic Scotland Maintained Equipment is or may be susceptible to damage from Operations or works and shall ensure that all suitable precautions are taken to prevent damage to such equipment. The Company shall give special consideration during the planning stages of any work to avoiding damage to existing services and cables. Such situations may include:
- (i) edge drainage works and other drainage alterations;
 - (ii) tree planting;
 - (iii) provision of noise barrier fencing;
 - (iv) reconstruction of carriageways;
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- (v) resurfacing;
- (vi) recabling contracts; and
- (vii) provision of fencing and road restraint systems.

31.18.2 Before commencing any work or moving heavy plant or equipment in the vicinity of Traffic Scotland Maintained Equipment, the Company shall confirm details of the Traffic Scotland Maintained Equipment installed within the area with the Traffic Scotland Service Provider.

31.18.3 The Company shall locate the actual position of all Traffic Scotland Maintained Equipment and shall mark the locations prior to any work commencing in the vicinity of Traffic Scotland Maintained Equipment. The manner of such marking shall be dependent on the surface under which the equipment lies and such marking shall at all times be clearly visible to all parties working on the Site. The Company shall notify all operatives, including sub-contractors employed by the Company, of the presence of Traffic Scotland Maintained Equipment, particularly cabling, together with the need to exercise extreme care and attention to ensure the prevention of any damage.

31.18.4 The Company shall ensure that Traffic Scotland Maintained Equipment is protected from damage throughout the period of the works. The method of protection shall be such that the Company shall provide access to all Traffic Scotland Maintained Equipment for the repair or inspection of any damage within two hours of its notification. Depending on the extent of damage or the fault being repaired, access for vehicles, winches, cable drums and any further equipment may be required by the Traffic Scotland Service Provider. Access to all chambers and cabinets forming part of the Traffic Scotland Maintained Equipment shall be kept clear and unobstructed at all times. The Company shall particularly note that surface mounted cabling should not under any circumstances be aerially suspended without the prior consent of the Traffic Scotland Service Provider and then only in the manner specified by the Traffic Scotland Service Provider

31.18.5 Any disconnections or connections to operational systems shall be made under the supervision of the Traffic Scotland Service Provider.

31.18.6 Where traffic detection loops become inoperable the Company shall reinstate the traffic detection loops or feeder cables in accordance with the Specification for Highway Works MCH1540 specification for the Installation of Detector Loops.

31.18.7 When a temporary repair is made to damaged Traffic Scotland Maintained Equipment, the Company shall liaise with the Contracting Authority and the Traffic Scotland Service Provider regarding the nature of the damage and make arrangements for the Traffic Scotland Maintained Equipment to be repaired or replaced by either the Traffic Scotland Service Provider or the Company.

31.18.8 When a permanent repair is made to damaged Traffic Scotland Maintained Equipment, the Company shall undertake the permanent repair in accordance with paragraph 31.17 of this Part. The timescales for completion of the permanent repair shall be agreed with the Contracting Authority but shall usually be within 28 days of the date of the initial damage.

31.18.9

32 Severe Weather Services

32.1 The Company shall undertake planning activities in preparation for Incident Response Operations relating to Severe Weather events.

Part 1: Overall Requirements

-
- 32.1.1 The Company shall undertake planning activities for Severe Weather events relating to the Winter Service in accordance with the requirements of Part 2.
- 32.1.2 The requirements of this Part shall be undertaken as part of the Incident Response Plan and Incident Response Operations stated in this Part 1.
- 32.1.3 The Company shall include documented procedures in its O&M Works Quality Plan to deliver the requirements of Parts 1 and 2.

PLANNING ARRANGEMENTS FOR SEVERE WEATHER EVENTS

32.2 General

- 32.2.1 The Company's planning activities for responding to Severe Weather events shall include the development and use of management plans, processes and systems. The Company shall establish such arrangements to complement and enhance its Incident Response Operations developed as required by this Part 1.

32.3 Information Gathering and Impact Assessment

- 32.3.1 The Company shall establish its arrangements for gathering and processing information on the key characteristics of any Severe Weather event that occurs or shall be predicted to occur within the O&M Works Site. Such information shall include the nature and severity of the Severe Weather event and its potential impact on the operation of the O&M Works Site.

- 32.3.2 The Company shall procure the services of an expert weather forecasting service to assist it with the prediction and management of Severe Weather events. This expert weather forecasting service shall be operational seven days a week during Normal Working Hours to provide specific, timely and accurate weather forecasts and advance warnings of Severe Weather events predicted to occur within the O&M Works Site. Such information shall, as a minimum, be specific to the conditions of the O&M Works Site.

- 32.3.3 The expert weather forecasting service for Severe Weather events shall be in addition to the Winter Service weather forecasting requirements stated in Part 2.

- 32.3.4 No later than 30 days prior to the Restricted Services Commencement Date, the Company shall submit to the Contracting Authority for consent details of its proposed expert weather forecasting service for Severe Weather events.

- 32.3.5 The Company shall provide suitably trained designated personnel who are able to receive, continuously monitor and interpret information provided by its expert weather forecasting service for Severe Weather events. Such personnel shall be authorised to make key decisions on the implementation of the Company's Incident Response Operations relating to Severe Weather events.

32.4 Liaison and Coordination

- 32.4.1 No later than 30 days prior to the Restricted Services Commencement Date, the Company shall:
- (i) identify all Operational Partners that have involvement in dealing with Severe Weather events;
 - (ii) agree the communication arrangements between itself, the Traffic Scotland Operator and other relevant Operational Partners during a Severe Weather event; and

Part 1: Overall Requirements

- (iii) ensure a mutual understanding of the roles and responsibilities of the Company and the relevant Operational Partners during a Severe Weather event.

The Company's procedures contained within its O&M Works Quality Plan shall include:

- (i) details of all relevant Operational Partners;
- (ii) the arrangements for disseminating accurate, timely and relevant Severe Weather information to the Traffic Scotland Operator and other Operational Partners;
- (iii) the communication arrangements between the Company, the Traffic Scotland Operator and other relevant Operational Partners to be followed during a Severe Weather event; and
- (iv) the roles and responsibilities of the Company and all relevant Operational Partners for dealing with a Severe Weather event.

32.4.2 The Company shall attend regular meetings with all relevant Operational Partners to review and update the communication arrangements and enable the integration of communication systems and technology.

32.5 Information Management and Dissemination

32.5.1 The Company shall establish and record within its O&M Works Quality Plan, the arrangements for managing and disseminating Severe Weather information to relevant Operational Partners during the implementation of its Incident Response Operations in this Part 1.

SEVERE WEATHER MANAGEMENT PLAN

32.6 General

32.6.1 The Company shall execute the management, implementation, review and updating of the Severe Weather management plan and related Incident Response Operations.

32.6.2 The Company shall develop new Severe Weather management plans at new Disruption Risk Sites. The Company shall submit such plans to the Contracting Authority for consent.

32.6.3 All Severe Weather management plans shall contain details of the arrangements for Incident Response Operations and mitigation activities at the Disruption Risk Sites where Severe Weather has been identified as a cause of disruption. Such plans shall include actions for dealing with high winds, flooding and landslides.

32.6.4 All Severe Weather management plans shall contain details of any Mutual Aid arrangements with adjacent local authorities and the North East Operating Unit.

32.6.5 Severe Weather management plans shall form part of Company's Disruption Risk Management Plan.

32.7 Wind Management Plans

32.7.1 No later than 60 days prior to the Restricted Services Commencement Date, the Contracting Authority shall provide the Company with details of existing wind management plans.

32.7.2 The Company shall develop additional wind management plans at Disruption Risk Sites where high winds have been identified as a cause, or potential cause, of disruption to the operation of the O&M Works Site.

Part 1: Overall Requirements

- 32.7.3 The Company shall ensure all wind management plans are produced in accordance with Transport Scotland's 'High Winds Strategy and National Winds Management Guidelines' and shall take account of other relevant Operational Partners' wind management strategies.
- 32.7.4 Each wind management plan shall contain the arrangements for implementing the Company's Incident Response Operations and mitigation activities for any wind related Severe Weather event that occurs or shall be predicted to occur at the Disruption Risk Site.
- 32.7.5 The Company's expert weather forecasting service for Severe Weather events shall provide real-time wind speed data at all sites subject to a wind management plan. Such data shall be made available to the Contracting Authority and the Traffic Scotland Operator.
- 32.7.6 The Company shall review and update all wind management plans at the same time as undertaking reviews and updates of the Incident Response Plan and shall submit any proposed revisions to the Contracting Authority for consent.
- 32.8 Flooding Management Plans
- 32.8.1 The Company shall develop flooding management plans at Disruption Risk Sites where flooding has been identified as a cause, or potential cause, of disruption to the operation of the O&M Works Site.
- 32.8.2 Each flooding management plan shall detail arrangements for implementing the Company's Incident Response Operations and mitigation activities for any flooding related Severe Weather event that occurs or shall be predicted to occur at the Disruption Risk Site.
- 32.8.3 The Company shall use its expert weather forecasting service for Severe Weather events to assist in the planning and implementation of its programme for inspections and patrols of Disruption Risks Sites where flooding has been identified as a cause of the disruption. Such inspections and patrols shall be undertaken in accordance with this Part 1 and Part 2 of these O&M Requirements.
- 32.8.4 The Company shall review and update all flooding management plans at the same time as undertaking reviews and updates of the Incident Response Plan and shall submit any proposed revisions to the Contracting Authority for consent.
- 32.9 Landslides Management Plans
- 32.9.1 The Company shall develop landslide management plans for Disruption Risk Sites where landslides have been identified as a cause, or potential cause, of disruption to the operation of the O&M Works Site, including those identified in Transport Scotland's Landslide Study Report. The Company shall ensure all landslide management plans take account of other relevant Operational Partners' landslide management strategies.
- 32.9.2 Each landslide management plan shall detail arrangements for implementing the Company's Incident Response Operations and mitigation activities for any landslide related Severe Weather event that occurs or shall be predicted to occur at the Disruption Risk Site.
- 32.9.3 When exceptional rainfall events are predicted, the Company shall use its expert weather forecasting service for Severe Weather events to assist in the planning and execution of additional inspections and patrols in areas identified as being prone to landslides.

Part 1: Overall Requirements

- 32.9.4 The Company shall review and update all landslide management plans at the same time as undertaking reviews and updates of the Incident Response Plan and shall submit any proposed revisions to the Contracting Authority for consent.

INCIDENT RESPONSE OPERATIONS FOR SEVERE WEATHER EVENT**32.10 General**

- 32.10.1 When the Company becomes aware of a Severe Weather event occurring or predicted to occur within the O&M Works Site, it shall commence its Incident Response Operations in accordance with the requirements of this Parts 1 and Part 2 and shall implement the arrangements stated in the relevant Severe Weather management plan.
- 32.10.2 The Company's mitigation activities shall include short- and long-term activities aimed at minimising or eliminating the vulnerability and exposure of the O&M Works Site and its Users to the risks from Severe Weather events. The mitigation activities to be undertaken shall be stated in the relevant Severe Weather management plan. All mitigation activities shall be undertaken in accordance with the Company's Disruption Risk Management Plan, which shall be prepared and maintained by the Company in accordance with Transport Scotland's 'Disruption Risk Manual'.

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APPENDIX A - INTEGRATED ROADS INFORMATION SYSTEM FORM

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Part 1: Overall Requirements

Appendix A/1: Scheme Data Forms

MAINTENANCE SCHEME DATA FORM V 1.7, Sep 2012

Unit Route Work code

Scheme Name Scheme number Date Works completed

Lane Number(s) Start link / section Start chainage

End link / section End chainage

Thickness of material removed (milling or planing depth)

LEVEL	LAYER	TREATMENT TYPE	MATERIAL SPECIFICATION	MATERIAL TYPE	MIXING TEMP	% RECYCLED	MATERIAL THICKNESS (mm)	BINDER TYPE	BINDER SPECIFICATION	GRADING/ TEXTURE	TYPE OF AGGREGATE	NOMINAL SIZE OF AGGREGATE	PSV	MATERIAL SOURCE		
														PRIMARY	SECONDARY	BACKUP
0	Surface Treatment (if any)	?	?	?	?			?	?	?	?	?		?	?	?
1	Surface	?	?	?	?			?	?	?	?	?		?	?	?
2	Binder	?	?	?	?			?	?	?	?	?		?	?	?
3	Base	?	?	?	?			?	?	?	?	?		?	?	?
4	Sub base	?	?	?	?			?	?	?	?	?		?	?	?
Additional layers (Regulating, Reinforcement, SAMI etc)																
1/1	?	?	?	?	?			?	?	?	?	?		?	?	?
1/1	?	?	?	?	?			?	?	?	?	4		?	?	?

Design Life

Outturn Cost

Additional info Comments

Treatment statistics

	Rescon	Overlay	Inlay	Surface	Anti skid
Work code	101	102	103	104	105
Lane / kms					
Area sq. m					

For Operating Company

MSD Completed by

MSD Checked by

Date MSD supplied to TS

For Transport Scotland

MSD Checked by

Date MSD passed to AM

SERIS Updated by

Part 1: Overall Requirements

NEW CONSTRUCTION SCHEME DATA FORM V 1.7, Sep 2012

Unit

Route

Work code

Scheme Name

Scheme number

Date Works completed

Lane Number(s)

Start link / section

Start chainage

End link / section

End chainage

Thickness of material removed (milling or planing depth)

?

LEVEL	LAYER	TREATMENT TYPE	MATERIAL SPECIFICATION	MATERIAL TYPE	MIXING TEMP	% RECYCLED	MATERIAL THICKNESS (mm)	BINDER TYPE	BINDER SPECIFICATION	GRADING / TEXTURE	TYPE OF AGGREGATE	NOMINAL SIZE OF AGGREGATE	PSY	MATERIAL SOURCE		
														PRIMARY	SECONDARY	BACKUP
0	Surface Treatment (if any)	?	?	?	?			?	?	?	?	?		?	?	?
1	Surface	?	?	?	?			?	?	?	?	?		?	?	?
2	Binder	?	?	?	?			?	?	?	?	?		?	?	?
3	Base	?	?	?	?			?	?	?	?	?		?	?	?
4	Sub base	?	?	?												
Additional layers (Regulating, Reinforcement, SAMI etc)																
??	?	?	?	?	?			?	?	?	?	?		?	?	?
??	?	?	?	?	?			?	?	?	?	4		?	?	?

Design Life

Additional Info / Comments

Duration Cost

Treatment statistics

	Recon	Overlay	Inlay	Surface	Anti skid
Work code	101	102	103	104	105
Lane / kms					
Area sq. m					

For Operating Company

MSD Completed by

MSD Checked by

Date MSD supplied to TS

For Transport Scotland

MSD Checked by

Date MSD passed to AM

SERIS Updated by

Part 1: Overall Requirements

Appendix A/2: Notification of SCRIM Category for Network Update Forms

NOTIFICATION OF SCRIM CATEGORY FOR NETWORK UPDATE



Unit Route Date supplied to TS

Lane No	link/section	Start chainage	End chainage	SCRIM Category
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

COMPLETED BY CHECKED BY

Part 1: Overall Requirements

NOTIFICATION OF SCRIM INVESTIGATORY LEVEL



NEW CONSTRUCTION / NETWORK UPDATE

Unit Route Date supplied to TS

Scheme Name (if new scheme) Date works complete (if new scheme)

Lane No	Start link/sect	Start chainage	End link / section	End chainage	SCRIM Category
1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
4	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
6	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
7	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
8	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
9	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
10	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
11	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
12	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
13	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
14	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
15	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

COMPLETED BY CHECKED BY

COMPLETED BY CHECKED BY

SERIS UPDATED BY DATE

Part 1: Overall Requirements

Appendix A/3: Network Change Form and Network Error Form

NETWORK CHANGE FORM



1 GENERAL

Submitted by Date

Unit Route Sections

Location

Reason for change

Details of proposed correction

2 INFORMATION SUPPLIED BY OPERATING COMPANY

	Check	Date
Scheme layout plans at 1:2500 as detailed in Schedule 4 Part 3 Section 2.2.1(i)	<input type="checkbox"/>	<input type="text"/>
Estimated opening date of scheme	<input type="checkbox"/>	<input type="text"/>

3 TRANSPORT SCOTLAND FEEDBACK

New referencing sections and node locations devised / agreed	<input type="checkbox"/>	<input type="text"/>
Operating Company informed of section numbers and node locations	<input type="checkbox"/>	<input type="text"/>

4 OPERATING COMPANY FURTHER INFORMATION SUPPLIED

Node markers installed	<input type="checkbox"/>	<input type="text"/>
Measured lengths for each new network section	<input type="checkbox"/>	<input type="text"/>
Measured chainages of existing sections at the start & end of the new scheme	<input type="checkbox"/>	<input type="text"/>
12 figure OSGR for each installed network node accurate to 1 metre	<input type="checkbox"/>	<input type="text"/>
Pavement construction data (NCSD)	<input type="checkbox"/>	<input type="text"/>
Scrim site category data	<input type="checkbox"/>	<input type="text"/>
Node marker location document	<input type="checkbox"/>	<input type="text"/>

5 TRANSPORT SCOTLAND NETWORK UPDATE

Network update instruction finalised	<input type="checkbox"/>	<input type="text"/>
SERIS updated	by <input type="text"/>	<input type="text"/>
Network update instruction issued	to <input type="text"/>	<input type="text"/>

Part 1: Overall Requirements

NETWORK ERROR FORM



1 GENERAL

Submitted by

Date

Unit

Route

Sections

Location

Reason for change / error

Details of proposed correction

2 TRANSPORT SCOTLAND ACTION

Check

Date

Network update instruction required

Proposed TS resolution

TS action taken

3 TRANSPORT SCOTLAND NETWORK UPDATE / AMENDMENT

Network update instruction or amendment finalised

SERIS updated

by

Network update instruction issued

to

or

Network amendment emailed

to

Part 1: Overall Requirements

Appendix A/4: Explanation for Change Form



EXPLANATION FOR CHANGE SOI - MSD

Date supplied to SE

Unit

Route

Work code

Scheme number

Scheme Name



Details of change from approved SOI

Explanation

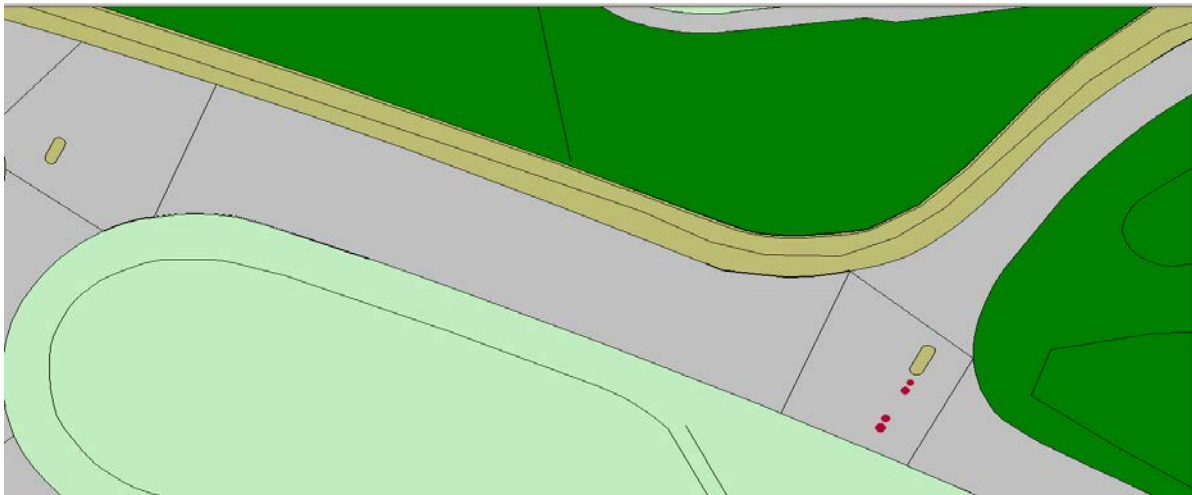
Part 1: Overall Requirements

Appendix A/5: Design for Node Marker Reference Replacement

Route	Section
Section Description	
Section Length	
Section Type	
Design	



Site Plan



ADVISORY UPDATE TO DATA (changes to section)		Length	
OSGR	Easting	Northing	
Location Description			
Other:			
Location submitted by: <i>Signature</i>		Date	
Location agreed by TS: <i>Signature</i>		Date	
Data update complete: <i>Signature</i>		Date	

APPENDIX B - ABNORMAL INDIVISIBLE LOAD ROUTEING

A Guide to Notification and Authorisation

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APPENDIX B : ABNORMAL INDIVISIBLE LOAD ROUTEING

A Guide to Notification and Authorisation

Abnormal Load Movements

A brief guide to Notification and Authorisation requirements

A. Dimensions within “Construction & Use Regulations”

*Laden dimensions **not** exceeding*

2.90m (9'6") overall width	No requirement for notice to Police or for notice with indemnity to Road and Bridge Authorities
18.30m (60'0") rigid length or	
40,000kgs (40t) gross weight	

the Scottish Ministers' authorisation is not required for the movement of loads with laden dimensions as above.

B. Dimensions within “Special Types General Order”

*Laden dimensions in excess of “Construction & Use Regulations” but **not** exceeding*

6.1m (20'0") overall width *	2 clear days notice to Police
------------------------------	-------------------------------

* Secretary of State “VR1” authorisation is required for the movement of loads **with an overall width in excess of 5.0m (16'5") but not exceeding 6.1m (20'0")**

27.40m (90'0") rigid length	2 clear days notice to Police
80,000kgs (80t) gross weight	2 clear days notice to Police with indemnity to Road and Bridge Authorities
over 80,000kgs (80t) but not exceeding 150,000kgs	5 clear days notice with indemnity to Road & Bridge Authorities and 2 clear days notice to Police

C. Dimensions requiring Special Order

Laden dimensions exceeding

6.1m (20'0") overall width	5 clear days notice with indemnity to Road & Bridge Authorities and 5 clear days notice to Police
27.40m (90'0") rigid length	
150,000kgs (150t) gross weight and/or 16,500kgs (16.5t) per axle	

Scottish Ministers' "Special Order" authorisation is required for the movement of load with laden dimensions as above.

NOTES

1. At present there is no legislation governing the overall laden height of a vehicle but in order that the maximum possible use is made of the motorway and trunk road network it should not exceed 5.0 metres (16'5").
2. "Clear days notice" excludes Saturdays, Sundays and Bank Holidays.
3. Transport Scotland offers an advisory service on the routeing of abnormal loads (including those which do not require the Scottish Ministers' authorisation) but does not need to be notified of their proposed movements.

APPENDIX C - ABNORMAL INDIVISIBLE LOAD ROUTEING

**The Association of Chief Police Officers in
Scotland – Notification to Hauliers**

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ABNORMAL INDIVISIBLE LOAD ROUTEING

The Association of Chief Police Officers in Scotland – Notification to Hauliers



NOTICE TO HAULIERS

ACPOS ABNORMAL LOADS WORKING GROUP

ACPOS Road Policing Standing Committee have endorsed the principle of self escorting abnormal indivisible loads on motorways and linking dual carriageways and on other roads deemed suitable by individual Chief Constables.

The self escorting of abnormal indivisible loads is acceptable only in the following circumstances:-

- The Haulier complying with the Department for Transport/Highways Agency Code of Practice.
- The Haulier must give written notice at the time of notification that the self escort personnel shall not engage in the direction or control of traffic.
- The Haulier must give an assurance that they shall not operate or move abnormal indivisible loads on urban motorways during peak traffic flows.

ROAD SAFETY UNDERPINS THE POLICY RELATIVE TO SELF ESCORTING. HAULIERS MUST ENSURE THAT THE SAFETY OF ALL USERS IS AT THE FOREFRONT OF SELF ESCORTING ACTIVITIES.

The draft code of conduct refers to Level 2 accredited persons. Level 2 accredited persons shall not apply in Scotland. Chief Officers in England and Wales do not intend to accredit any individuals to Level 2 as referred to in the DfT Highways Agency Code of Practice.

The police service in Scotland are not forcing any haulier to self escort. Self escorting is an option available to all the hauliers using motorways and the linking dual carriageway network in Scotland. The savings in time shall no doubt make self escorting very attractive to Hauliers. As a result of the “no escort” policy being adopted by the police service in England and Wales from 1 January 2004, many private companies have been set up as providers of abnormal load escorts. Such

companies are in the process of contacting individual police forces seeking some form of endorsement for their company. Scottish Forces shall not enter into any form of agreement with private abnormal load escort companies. The relevant legislation refers to the haulier and no provision is made for any agent or other person acting on behalf of the haulier. The onus relative to notification and indemnity rests with the haulier and with no other person.

The Association of Chief Police Officers in Scotland Road Policing Standing Committee are not requiring Hauliers to be members of any organisations or trade associations before they can operate self escorting.

It is essential that all Hauliers have insurance cover for the task of self escorting.

The onus for route planning and notification to both the Police and Roads Authorities remains with the Haulier.

Should any further information relative to the policy be required, contact should be made with the undersigned during normal Normal Working Hours.

Police Scotland; [REDACTED]

Email: [REDACTED]

APPENDIX D - NOT USED

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APPENDIX E - NOT USED

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APPENDIX F - NOT USED

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APPENDIX G - DELEGATED FUNCTIONS

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APPENDIX G : Delegated Statutory Functions

1. Statutory Functions

- 1.1. The function of the Scottish Ministers as roads authority conferred by or under section 2 of the Local Government (Omnibus Shelters and Queue Barriers) (Scotland) Act 1958 in relation to giving and withholding consent and attaching conditions to any consent.
- 1.2. The function of the Scottish Ministers as roads authority conferred by or under section 25(2) of the Water (Scotland) Act 1980 (c.45) in relation to giving and withholding consent.
- 1.3. The function of the Scottish Ministers as persons having an interest in the land as roads authority conferred by or under section 7(4) of the Litter Act 1983¹ in relation to giving and withholding consent and arranging terms of any consent.
- 1.4. The function of the Scottish Ministers as traffic authority conferred by or under section 65(1) of the Road Traffic Regulation Act 1984 in relation to the power to cause or permit traffic signs to be placed on or near a road.
- 1.5. The functions of the Scottish Ministers as roads authority conferred by or under the following provisions of the Roads (Scotland) Act 1984² are:
 - (i) section 2(1) (powers and duties with respect to trunk roads etc);
 - (ii) section 4(1) (power of the Scottish Ministers to enter into agreements with local roads authorities for them to carry out their functions as roads authority for trunk roads etc) but only for carrying out those functions specified in sub paragraph (i) above and sub paragraphs (iii) to (xxx) inclusive;
 - (iii) section 34 (duty of roads authority with respect to snow and ice on roads);
 - (iv) section 50 (power of roads authority to plant trees, shrubs etc within road boundary);
 - (v) section 51 (power of roads authority to consent to persons planting trees, shrubs etc within a road boundary);
 - (vi) section 56 (power of roads authority to consent to works and excavations in roads);
 - (vii) section 57 (power of roads authority with respect to dangerous works in roads);
 - (viii) section 58 (power of roads authority to permit occupation of parts of roads for the deposit of building materials etc);
 - (ix) section 59 (power of roads authority with respect to obstructions in roads);
 - (x) section 60 (power of roads authority to fence and light obstructions and excavations in roads on default of person required to do so and to recover the expenses thereof);
 - (xi) section 61 (power of roads authority to give permission to place and maintain etc appliances in roads);
 - (xii) section 63 (power of roads authority with respect to new accesses over verges and footways);
 - (xiii) section 64 (power of roads authority to consent to Undertakers using appliances or vehicles on footways, footpaths and cycle tracks);
 - (xiv) section 66 (power of roads authority with respect to maintenance of vaults and cellars etc under roads);
 - (xv) section 67 (power of roads authority with respect to doors etc opening outwards into roads);

¹. 1983 c.35.

². 1984 c.54.

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-
- (xvi) section 85 (power of roads authority to permit the deposit of builders' skips on roads);
 - (xvii) section 86 (power of roads authority to remove or reposition builders' skips and to recover the expenses thereof);
 - (xviii) section 87 (power of roads authority with respect to unauthorised structures on roads);
 - (xix) section 88 (power and duty of roads authority with respect to projections impeding or endangering users);
 - (xx) section 89 (power and duty of roads authority with respect to accidental obstructions on roads);
 - (xxi) section 90 (power of roads authority to consent to the placing of bridges, beams, rails, pipes, cables and other apparatus over roads);
 - (xxii) section 91 (power of roads authority to prevent danger to a road from nearby vegetation and fences etc or from inadequate retaining walls) except subsection (5);
 - (xxiii) section 92 (power of roads authority with respect to trees etc planted within 5 metres of the edge of carriageways);
 - (xxiv) section 93 (powers of roads authority to protect users from roadside dangers);
 - (xxv) section 94(1)(a) (power of roads authority to fill in unnecessary roadside ditches subject to the consent of owners and occupiers);
 - (xxvi) section 95 (power of roads authority to recover expenses of removing mud etc deposited from vehicles onto roads so as to be dangerous);
 - (xxvii) section 98 (power of roads authority with respect to stray and other animals on roads);
 - (xxviii) section 99 (power of roads authority with respect to the prevention of the flow of water etc onto roads);
 - (xxix) section 120 (duty of roads authority to have regard to the needs of disabled and blind persons in executing works etc in roads); and
 - (xxx) section 141 (power of roads authority to execute works etc on default of persons required to do so) but only in relation to those functions specified in the foregoing sub-paragraphs of this paragraph).
- 1.6. The functions of the Scottish Ministers as road works authority conferred by or under the following provisions of the New Roads and Street Works Act 1991(c). Such functions shall include, but shall not be limited to:
- (i) section 109 (power of road works authority to permit execution of works and power to substitute existing permission with new one);
 - (ii) section 112 (duty of road works authority to keep a road works register);
 - (iii) section 115 (power of road works authority to give directions as to the timing of road works);
 - (iv) section 117 (power of road works authority to restrict road works following substantial works carried out for road purposes);
 - (v) section 118 (duty of road works authority to co-ordinate execution of works of all kinds on roads);
 - (vi) section 122 (power of road works authority to designate roads as having special engineering difficulties);
-

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- (vii) section 123 (power of road works authority to designate roads as traffic sensitive);
and
- (viii) section 131 (power of road works authority with respect to reinstatement of roads by Undertakers).

1.7. The function of the Scottish Ministers conferred by or under section 150 of the Local Government etc (Scotland) Act 1994(d) (power of the Scottish Ministers to place mandatory traffic signs on roads in extraordinary circumstances).

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APPENDIX H - CUSTOMER CONTACT SERVICE

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Appendix H/1: Customer Enquiries Classified as Emergencies by the Traffic Customer Care Line

The descriptions below provide an indication of call types which the Traffic Customer Care Line Operator shall regard as emergencies. The Traffic Customer Care Line Operator defines an emergency as any Incident or fault that poses a danger to the public or has the potential to disrupt the operational effectiveness of the trunk road network. This list is not exhaustive.

Emergency	Descriptions
Crash Barrier / Fencing Damage	Damaged Crash Barrier
	Boundary fence damage
Debris / Animals	Dead animals on live lanes and hard shoulder
	Live animals on carriageway
	Debris on live lane or hard shoulder & verge if likelihood could blow back onto live lane.
	Debris on centre reservation – obstructs vision, possibly blow onto carriageway
Drains / Manhole Covers	Damaged or Missing manhole cover
	Collapsed gully
Flooding	Flooding
Landscaping / Overhanging Branches	Grass cutting / landscaping – obscures visibility splays, trees down on carriageway or footpaths, overhanging branches.
Other	Calls from Emergency Services requiring road closures. Road closures as a result of accidents and Incidents
	Bridge Strikes, parapet strikes, high winds or other
Potholes	Damage to road pavement
Road Traffic Accident (RTA)	Report of road traffic accident
	Debris, spillage as a result of RTA
	Diversions, Traffic Management
	RTA involving electrical unit
Road Works	Cones, signs, lamps scattered
Spillage	All spillages including oil, petrol, diesel, hydraulic fluid / chemical / fish oil etc
Street Lighting	Dark sections (3 or more consecutive)
	Door off / wires exposed
	Damaged electrical road signs, lighting columns
	Hanging lanterns, hanging bowls
	Exposed wiring on electrical installation
Subsidence	Road subsidence
Traffic Related Signs	Damaged, facing in wrong direction, hanging from mounting
Traffic Signal	All dark, stuck on RED – emergency at specified locations
	Pedestrian crossing all dark
	Two or more red lamps dark in same direction
	In-operative push button
	2 or more reports of signal stuck on red. Outwith Normal Working Hours, monitor for any other calls before calling emergency

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Appendix H/2: Customer Enquiry Information Supplied by the Traffic Customer Care Line

In accordance with paragraph 1.3.1 of this Part, the following tables show typical information which shall be supplied by the Traffic Customer Care Line Operator to the Company within submitted customer enquiries:

Data Field	Description
Service request ID	Unique Request ID of the call
Route	Route on which Incident is located
X-coordinate	X-Coordinate of Incident location
Y-coordinate	Y-Coordinate of Incident location
Caller first name	First name of the caller
Caller last name	Surname of the caller
Caller add name num	Caller's property number
Caller add 1	First line of caller's address
Caller add 2	Second line of caller's address
Caller add town	Caller's town
Caller add county	Caller's county
Post code	Caller's Postcode
Caller phone	Caller's Phone number
Date time requested	Time the call came in
Category 1 (as defined below)	First category of the call
Category 2 (as defined below)	Second category of the call
Category 3 (as defined below)	Third category of the call
Summary	Summary of the call
Details	More details about the call

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Appendix H/3: Updates on the Status of Customer Enquiries

Information to be supplied by the Company to the Traffic Customer Care Line Operator when providing updates on the status of customer enquiries shall, as a minimum, include:

Data Field	Description
Service Request ID	Traffic Customer Care Line Operator call reference.
Customer Enquiry Status	<p>Containing:</p> <p>'Received'</p> <p>The Traffic Customer Care Line Operator shall be updated via email, data file transfer or telephone call by the Company with a 'received' classification when the customer enquiry has been acknowledged by the Company but no remedy has been undertaken.</p> <p>or</p> <p>'WIP (work in progress)'</p> <p>The Traffic Customer Care Line Operator shall be updated via email, data file transfer or telephone call by the Company with a 'WIP' classification when the customer enquiry has been acknowledged by the Company and a remedy has been undertaken but not completed.</p> <p>or</p> <p>'Closed'</p> <p>The Traffic Customer Care Line Operator shall be updated via email, data file transfer or telephone call by the Company with a 'closed' classification when the customer enquiry has been acknowledged by the Company and a remedy has been completed and no further work is required to be undertaken.</p>
Comments	
Issued date and time	
Actual completion Date and Time	
Deleted Date and Time	

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Appendix H/4: Third Party Damage

Typical Information collected and supplied by the Traffic Customer Care Line Operator to the Company regarding third party damage shall include:

Time and Date of Incident
Location (including direction of travel and lane travelled in)
Vehicle Make, Model and Registration Number
Driver's full particulars
Alleged damage to vehicle
Caused of damage e.g. pothole, struck debris etc.
Additional information: (i) Where an Company vehicle is involved in any damage, the Traffic Customer Care Line Operator shall obtain from the caller the registration of any Company vehicle involved. Such data shall be controlled in accordance with the Data Protection Act 1998.

Appendix H/5: Network Customer Information Sign Showing Customer Contact Telephone Number



CO Name = The name of the Company

Appendix H/6: Principles and Process Governing the use of Social Media

1. Introduction

- 1.1. Social media is the term commonly given to websites and online tools which allow users to interact with each other in some way – by sharing information, opinions, knowledge and interests. As the name implies, social media involves the building of communities or networks, encouraging participation and engagement.

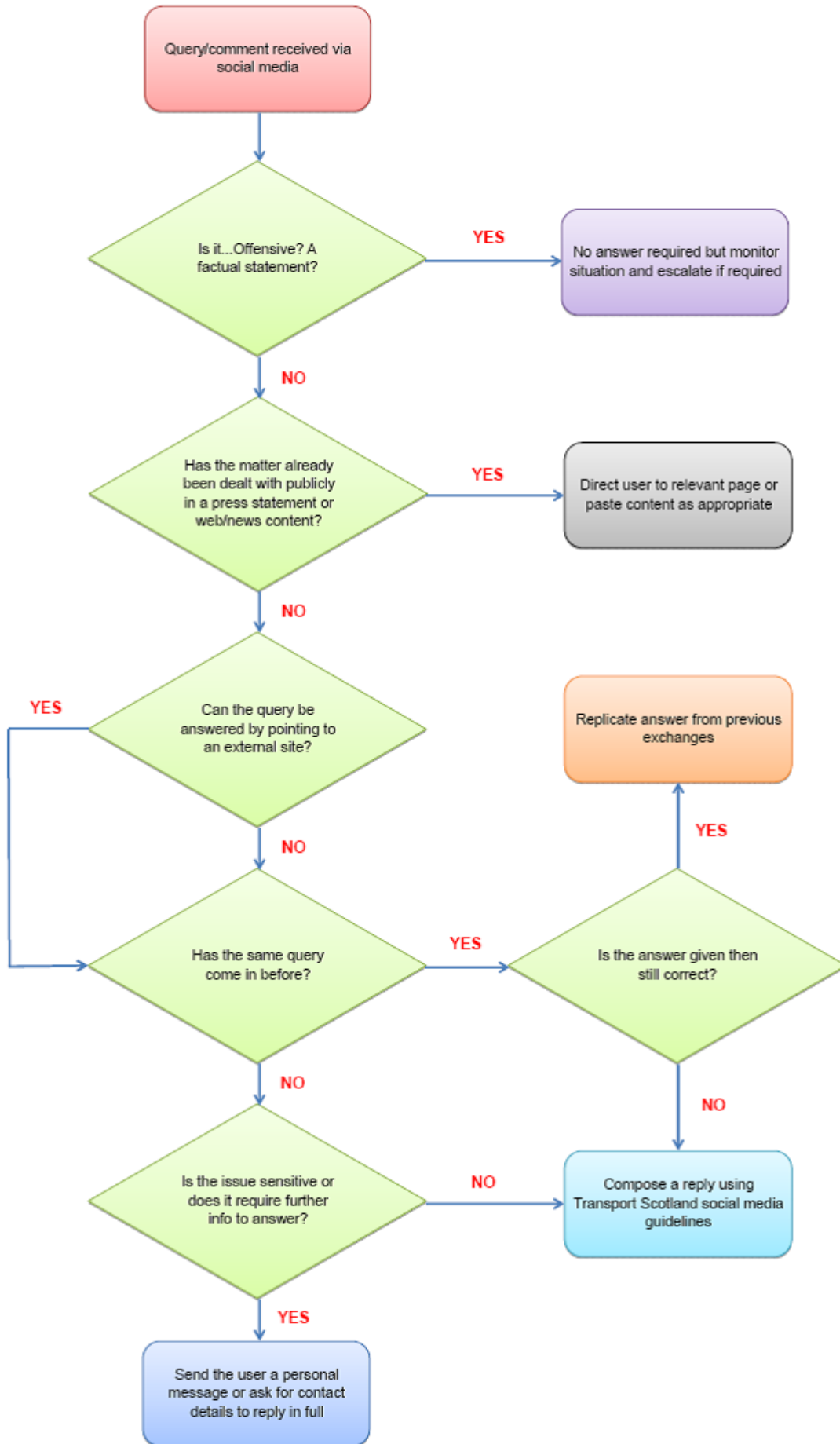
2. Principles

- 2.1. These principles shall apply to online participation in social media and set out the standards of behaviour expected of the Company:
 - 2.1.1. Be professional, remember that Company and its staff are ambassadors for the Company and the Scottish Government. Wherever possible, staff shall disclose their position within the Company.
 - 2.1.2. Be responsible, be honest at all times and when the Company gains insight, share it with the Contracting Authority where appropriate.
 - 2.1.3. Be credible, accurate, fair, and thorough.
 - 2.1.4. Always remember that participation online results in the Company's comments being permanently available and open to being republished in other media.
 - 2.1.5. Never give out personal details like home address and phone numbers.
 - 2.1.6. Stay within the legal framework and be aware that defamation, copyright and data protection laws apply.

3. Process for Replying through Social Media.

- 3.1. The following process shall be followed when replying through social media:

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APPENDIX I - MEDIA ENQUIRIES

Media Enquiries and Procedure and Media Enquiries Form

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Appendix I/1: Media Enquiries and Procedure

1. Procedure

- 1.1. This procedure sets out the arrangements for handling media enquiries received by the Company.
- 1.2. The Media and Communications Officer shall speak for the Company and shall liaise with the Transport Scotland media desk.
- 1.3. Information requested, and the Company's proposed response, shall be recorded on the media enquiry form provided in Annex 3.5/B of this Part and this shall be sent immediately to the Contracting Authority, the Performance Audit Group and the Transport Scotland media desk.
- 1.4. The Company shall identify on the media enquiry form further actions required and the proposed response, together with the timescale proposed for undertaking the further actions.
- 1.5. The Media and Communications Officer shall telephone the Transport Scotland media desk to discuss the proposed response within one hour of the media enquiry form having been sent.
- 1.6. The Company shall have discretion to give an immediate response when the media question is about factual, non-controversial matters. In these circumstances, the Transport Scotland media desk and the Contracting Authority shall be notified immediately of such questions and responses using the media enquiry form. The form shall be marked 'Factual – Non Controversial Media Call' for identification purposes.
- 1.7. Any media questions on Transport Scotland and Scottish Government policy, Transport Scotland or Scottish Government funding or matters where there is a possibility of political sensitivity shall be passed to the Transport Scotland media desk for action.
- 1.8. A copy of the Transport Scotland response shall be passed to the Media and Communications Officer by the Transport Scotland media desk for information.
- 1.9. The Media and Communications Officer shall maintain frequent and regular contact with the Transport Scotland media desk. The Transport Scotland media team shall be notified of all contact from television companies, radio stations and the press with the Media and Communications Officer and shall be given the opportunity to comment on all proposed media statements other than those described above.
- 1.10. All media releases from the Company shall be sent to the Contracting Authority, the Performance Audit Group and the Transport Scotland media desk.

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Appendix I/2: Media Enquiries Form

To

From

As required in Appendix I/1, please find information requested by the following organisation that requires a response from the Company and Transport Scotland.

Source of Enquiry

Organisation	Contact	Date and Time received	Company Contact and telephone number

Details of Enquiry

Details of Proposed Response

Further Action Proposed

Deadline

This notice has been sent to

Name				Transport Scotland media officer
Name				TRBO
Name				Performance Audit Group

APPENDIX J - NEW ROADS AND STREET WORKS ACT 1991

Additional Requirements

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Appendix J : Additional Requirements Relating to the 1991 Act

1. The Scottish Road Works Register

1.1. Establishing and Maintaining the Register

- 1.1.1. Pursuant to the requirements of Section 112 of the 1991 Act and any amendments to that section the Company shall employ competent persons to populate and keep up to date at all times a roadworks register using the register proscribed under the Scottish Road Works Register.
- 1.1.2. The Company shall provide not later than the 60 days prior to the Full Services Commencement Date and shall maintain until the end of the last Contract Year:
 - (i) the necessary telecommunication links and access to the Scottish Road Works Register; and
 - (ii) a suitable computer terminal loaded with the appropriate software to access the Scottish Road Works Register.
- 1.1.3. Notwithstanding any other provisions of this Agreement during the 60 days prior to the Full Services Commencement Date the Company shall:
 - (i) become fully familiar with the operation of the Scottish Road Works Register; and
 - (ii) liaise daily with the North East Management Unit and attend any meetings in relation to Undertakers works which shall be due to continue into or commence during the Service Period.
- 1.1.4. After the Company has completed the connection to the Scottish Road Works Register the Company shall have access to a copy of the Scottish Road Works Register for the O&M Works Site. The Company shall arrange to collect all other 1991 Act records from the North East Management Unit for the roads in the O&M Works Site not later than 15 days prior to the Full Services Commencement Date.
- 1.1.5. The Company shall keep the road works register up-to-date not later than 5 Business Days after the commencement of the Service Period and shall pass a copy of the part of the register relating to the O&M Works Site and any other paper register information pertaining to the O&M Works Site to the Contracting Authority at the end of the final Contract Year or as otherwise required in writing by the Contracting Authority. The Contracting Authority shall be entitled to have access to the road works register at any time. The Contracting Authority may require the Company to provide a paper copy of the roadworks register in a format acceptable to the Contracting Authority.

2. The National Street Gazetteer

2.1. Establishing and Maintaining the Gazetteer

- 2.1.1. The Company shall within 7 weeks of commencement of the Service Period complete a review of the entries and the associated data referred to in paragraph 3.1 of this Appendix J for the O&M Works Site and contained in the National Street Gazetteer which is published by the Ordnance Survey, and update the Scottish Road Works Register. Within this 7 week period the Company shall bring the gazetteer up-to-date and thereafter keep it up-to-date at all times. Where this updating requires assistance from the local authorities the Company shall provide the necessary information to allow the local authorities to update the National Street Gazetteer.

3. Designations

3.1. Reviewing and Updating of Designations

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-
- 3.1.1. Before the Restricted Services Commencement Date the Company shall access from the Scottish Road Works Register the inventory of the existing associated data consisting of:
- (i) the designation of traffic sensitive roads;
 - (ii) the designation of roads with special engineering difficulties;
 - (iii) the designation of protected roads;
 - (iv) the reinstatement categories; and
 - (v) all non-statutory designations for the roads within the O&M Works Site.
- 3.1.2. The Company shall keep under review the associated data for all the roads within the O&M Works Site and shall provide a report to the Scottish Ministers with recommendations for any changes to the associated data for the roads within the O&M Works Site no later than 7 weeks after the commencement of the Service Period and annually thereafter.
- 3.1.3. The Company shall obtain the written consent of the Contracting Authority before:
- (i) Adding;
 - (ii) Removing; or
 - (iii) Amending;
- any associated data on any existing part or additional part of the roads within the O&M Works Site.
- 3.1.4. The Company shall maintain and keep up-to-date the associated data and shall provide a copy of the National Street Gazetteer information and the associated data to the Contracting Authority at the end of the final Contract Year in a format acceptable in writing to the Contracting Authority.

4. Inspections and Investigatory Work

4.1. Requirements

- 4.1.1. Pursuant to the requirements of sections 131 and 134 of the 1991 Act the Company shall prepare and submit to the Contracting Authority the Company's programme of:
- (i) investigatory inspections;
 - (ii) investigatory works;
 - (iii) coring; and
 - (iv) testing;
- of the reinstatements by Undertakers of roads within the O&M Works Site prior to carrying out any such inspections and investigatory work.
- 4.1.2. The Company's first programme shall be provided to the Contracting Authority not later than 30 days prior to the Full Services Commencement Date and not later than 30 April in each Contract Year thereafter.
- 4.1.3. The programme for the first Contract Year shall be prepared by the Company in consultation with the adjacent North East Management Unit who shall have been responsible for the existing roads of the trunk road network within the O&M Works Site.
- 4.1.4. The Company shall carry out inspections and investigatory works in addition to that identified in paragraph 4.1.1 and shall ensure as a minimum all the following

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inspections shall be undertaken on 100 per cent of reinstatements within the O&M Works Site:

- (i) an inspection to all reinstatements during the Undertaker's initial reinstatement works which shall not otherwise have been inspected in accordance with the requirements of code of practice;
- (ii) a further inspection within 28 days of the date on which the excavation commenced; and
- (iii) investigatory works, including coring when relevant, of reinstatements where any Defects are observed.

4.1.5. In addition to the inspections and investigatory works to be executed by the Company in accordance with paragraphs 4.1.1 and 4.1.2 of this Appendix J the Company shall carry such further inspections and investigatory work as shall be necessary to confirm an Undertaker's liability and to deal with any defects that shall be the responsibility of an Undertaker.

4.1.6. The Company shall report in a format acceptable to the Contracting Authority:

- (i) the results and analysis of results of all inspections and investigatory works as part of the monthly report required in accordance with paragraph 7.1.3 of this Appendix J; and
- (ii) an annual report in respect of each coring programme in accordance with the requirements of paragraph 7.1.5.

The Company shall liaise with the local authorities regarding the national coring programme. The Company shall submit to the Contracting Authority in accordance with the requirements of Section 27 of this Part 1 proposals for a coring programme to assist the national coring programme. The Contracting Authority shall consider the coring programme submitted by the Company in accordance with the Liaison Procedures of Part 9 of these O&M Works Requirements. One electronic copy and one paper copy of the results of the coring programme executed by the Company shall be forwarded to:

- (iii) the local authorities carrying out the national coring programme; and
- (iv) the Contracting Authority.

4.1.7. The results of all inspections and investigatory works shall be analysed and retained in a register of inspections and investigatory works or reinstatements which the Company shall establish and keep up to date at all times.

4.1.8. Where Defects in reinstatements carried out by Undertakers shall be identified by inspections and investigatory works the Company shall pursue the relevant Undertaker and require it to rectify such defects within the periods set out in the relevant codes of practice or, if no period is set out, within 30 days.

4.1.9. If the Undertaker fails to rectify the defect within the required time the Company shall advise the Contracting Authority of the matter along with its written recommendations.

4.1.10. The Company shall provide the Contracting Authority with a report every 3 months commencing 3 months after the Full Services Commencement Date of the sums due by each Undertaker during the preceding 3 month period together with any necessary information to support the reason for the fees charges and penalties.

5. Duties in Relation to Road Works Authority and Bridge Authority

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5.1. Requirements

5.1.1. Notwithstanding any other provisions of this Agreement except where specific provision has been made the Company shall undertake the following duties to enable the Scottish Ministers to comply with their obligations as road works authority and bridge authority in accordance with the requirements of sections 122 and 147 of the 1991 Act:

- (i) liaison with Undertakers about plans and sections for proposed work associated with Structures in the O&M Works Site and submission to the Contracting Authority for their written consent details of each Undertaker's proposals together with the Company's recommendations in regard to the Undertaker's proposals within three Business Days of the receipt by the Company of the Undertaker's proposals. The Contracting Authority shall communicate its decision on such matters referred to him to the Company in writing. On receipt of such decisions of the Contracting Authority the Company shall immediately communicate such decisions to the Undertaker in writing;
- (ii) monitoring the progress of work in on or adjacent to Structures on the O&M Works Site at all stages of the Undertaker's work and report to the Contracting Authority when the Company considers that:
 - (a) progress shall not be in accordance with the programme; or
 - (b) work shall not be being carried out in accordance with the designs and specifications consented to by the Company or the Contracting Authority;
- (iii) updating the Trunk Road Bridges Database and obtaining as-built records of all work referred to in this Section 5.1 of this Appendix J from the Undertaker and storing them in the Company's Structure record file for the particular Structure affected by the Undertaker's work; and
- (iv) submitting a copy of such records to the Contracting Authority within 30 days of the Undertaker's work being completed.

6. Private Apparatus

6.1. Company Obligations

6.1.1. Before the Full Services Commencement Date the Company shall liaise with the North East Management Unit responsible for any part of any road in the O&M Works Site and shall collect any details of existing private Apparatus installed pursuant to permission to execute road works under section 109 of the 1991 Act or Section 61 of the Roads (Scotland) Act 1984 or under any other agreement with the Scottish Ministers or the Contracting Authority.

6.1.2. Among the owners of private apparatus is Trafficmaster, which has a license from the Scottish Ministers to:

- (i) Install;
- (ii) Maintain;
- (iii) Operate;
- (iv) Alter; and
- (v) Upgrade;

equipment used for monitoring traffic conditions.

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The equipment consists of sensors fixed to bridge parapets over the carriageway or located in verges and transmission boxes at the side of the roads. Trafficmaster shall be required to give a minimum of six weeks' notice to the Scottish Ministers of installation of additional equipment.

- 6.1.3. In the event that the Company requires the removal or protection of Trafficmaster equipment in order to allow the maintenance of or alteration to any part of the O&M Works Site the Company shall issue a written instruction to Trafficmaster giving 30 days' notice of the requirement for such removal or protection to be arranged by Trafficmaster.
- 6.1.4. In the event that Trafficmaster fails to adequately remove or protect its equipment the Company shall take all necessary measures to remove or protect the equipment and shall seek to recover all costs incurred from Trafficmaster.
- 6.1.5. The Company shall in writing notify the Contracting Authority of any such failures by Trafficmaster and any failure of Trafficmaster to meet the Company's cost.

7. Other Duties

7.1. Liaison Monitoring and Reporting

- 7.1.1. The Company shall attend the meetings of the regional road authorities and utilities committees as formally constituted under the statutory requirements of the 1991 Act whose areas of responsibility include the roads within the O&M Works Site. These meetings shall be held 4 times per year. The Company shall also attend local road authorities and Undertaker meetings as shall be necessary to ensure effective co-ordination of Operations and work by authorised contractors and Undertakers on the O&M Works Site.
- 7.1.2. Before the Full Services Commencement Date the Company shall have agreed with the Contracting Authority key performance indicators for the Undertakers and shall thereafter collect statistics in pursuance of demonstrating the performance of the Undertakers in relation to their obligations under the 1991 Act, and:
 - (i) relevant statutory instruments;
 - (ii) statutory and non-statutory codes of practice;
 - (iii) rules;
 - (iv) regulations;
 - (v) Orders;
 - (vi) notices;
 - (vii) directions;
 - (viii) consents;
 - (ix) permissions;
 - (x) best practice guidance documents; and
 - (xi) advice notes.
- 7.1.3. The Company shall provide monitoring information and performance assessment reports to the Contracting Authority on all Undertakers with Apparatus or equipment on the O&M Works Site on a monthly basis in accordance with the requirements of paragraph 1.3.1 of Part 7 of the O&M Works Requirements.
- 7.1.4. The Company shall provide annual reports on the performance of the Undertakers to the Contracting Authority not later than two months after the end of each Contract Year.

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7.1.5. The annual report shall:

- (i) include a review of the effectiveness of the key performance indicators in measuring the performance of the Undertakers; and
- (ii) propose any amendments and additions which are necessary to improve the effectiveness of the performance monitoring.

When required in writing by the Contracting Authority the Company shall implement monitoring incorporating new and revised key performance indicators proposed by the Company or as otherwise required by the Contracting Authority.

8. Enforcement

- 8.1. The Company shall monitor the Scottish Roadworks Register for potential fixed penalty notices.
- 8.2. The Company shall, on a set of dates to be confirmed in writing with the Contracting Authority, on a monthly basis:
 - (i) discuss potential fixed penalty notices with the Contracting Authority;
 - (ii) provide the necessary background;
 - (iii) make recommendations to the Contracting Authority for their issue or retention;
 - (iv) on receipt of consent from the Contracting Authority to the recommendations, notify the relevant party of the intention to pursue a fixed penalty notice and manage the process up to the point of issuing the penalty; and
 - (v) make recommendations to the Contracting Authority for the final fixed penalty issue or retention.
- 8.3. The Company shall provide support to the Contracting Authority at any hearings held in connection with disputed notices.
- 8.4. The Company shall also create potential fixed penalties, where appropriate, for notices which have not been identified automatically by the Scottish Roadworks Register.
- 8.5. The issuing of fixed penalty notices shall be undertaken by the Contracting Authority.

APPENDIX K - SIGNING

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Part 1: Overall Requirements

1. Tourist Signposting

- 1.1. The Scottish Ministers' policy on tourist signposting shall be as contained within the version current at the time of use of the "Trunk Road and Motorway Tourist Signposting Policy". This document shall be read in conjunction with Scottish Office Development Department Circular 27/1995 and the Scottish Office Industry Department Circular 3/1992. Should either of these documents be superseded the Company shall undertake its duties based on the most recent version.

References in the above documents to the Scottish Ministers or any other Scottish Government officials shall be read as referring to the Scottish Ministers.

- 1.2. The Company shall undertake the duties of the trunk road operator as described in the Trunk Road and Motorway Tourist Signposting Policy.
- 1.3. The Company's duties shall include but shall not be limited to:
- 1.3.1. act as Home Traffic Authority (as defined in the document Trunk Road and Motorway Tourist Signposting Policy and Guidance) where access is direct from a trunk road;
 - 1.3.2. providing full advice on each application under the headings set out in Section 11.2 of the Trunk Road and Motorway Tourist Signposting Policy;
 - 1.3.3. considering the relevant local authority's tourist signposting policy when making recommendations on applications;
 - 1.3.4. advise VisitScotland of tourist operators which are given tourist signs (brown or otherwise);
 - 1.3.5. advise when tourist signs are at the end of their serviceable life and identify their locations;
 - 1.3.6. when notified by VisitScotland, advise of any signs which no longer have accreditation from VisitScotland;
 - 1.3.7. the operation of flaps and covers on existing and new signs; and
 - 1.3.8. inspecting and recording the tourist operator's credentials.
 - 1.3.9. The Company shall implement the process set out in the flow chart shown in paragraph 11.4 of the Trunk Road and Motorway Tourist Signposting Policy.
- 1.4. When responding to applicants the Company shall use the model letter set out in:
- 1.4.1. annex C(1) to the Trunk Road and Motorway Tourist Signposting Policy along with the schedule at annex C(2) to that policy; or
 - 1.4.2. annex D to that policy
- whichever shall be appropriate.
- 1.5. The response shall be suitably amended to reflect the change of responsibility from Secretary of State for Scotland to the Scottish Ministers. The Company shall issue to the Contracting Authority a copy of the signed letter of agreement duly completed by the applicant.
- 1.6. Details of each sign and associated road restraint system shall be added to the RMMS inventory as referred to in these O&M Works Requirements.

2. Temporary Traffic Signs to Special Events

- 2.1. The Company shall undertake the authorisation of temporary traffic signs to special events including, but not limited to:
- 2.1.1. major sporting events;

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- 2.1.2. festivals and concerts;
 - 2.1.3. special exhibitions; and
 - 2.1.4. other public gatherings.
- 2.2. Where special events shall require carriageway or road closures the Company shall follow the procedures referred to in Section 12.
- 2.3. The Company shall immediately notify the Contracting Authority of the details of each request for authorisation for temporary traffic signs to special events.
- 2.4. When making a decision on authorisation of temporary traffic signs the Company shall follow:
- 2.4.1. the “Provision of Temporary Traffic Signs to Special Events” issued by the Department of Transport in May 1993 or any subsequent update thereof; and
 - 2.4.2. any advice issued by the Scottish Ministers.
- 2.5. A decision on each application shall generally be given to the applicant within 14 days of receipt of the application.
- 2.6. Temporary traffic signing for special events shall be erected for a limited period to guide traffic to public events.
- 2.7. The Company shall ensure that temporary traffic signs shall be removed as soon as practicable after conclusion of the public event to which they relate.
- 2.8. If such signs shall not be removed within 48 hours of the end of the public event they shall be treated as unauthorised signs as referred to in section 3 of this Appendix K.

3. Unauthorised Signs

- 3.1. The Company shall identify and advise the Contracting Authority of the details of any unauthorised signs outside the O&M Works Site which may be causing a distraction to drivers in order for the Contracting Authority to notify the local planning authority responsible for authorising such signs.
- 3.2. The Company shall identify any unauthorised signs which shall be placed within the O&M Works Site.
- 3.3. The Company shall take all reasonable steps to determine the ownership of any such unauthorised signs.
- 3.4. Where an unauthorised sign shall be located within the O&M Works Site and the ownership of the sign shall be known the owner shall be contacted by the Company and requested to remove the sign within 2 days.
- 3.5. If this action shall not be successful the Company shall within a further 5 Business Days provide the Contracting Authority with sufficient information to allow the Contracting Authority to issue to the owner a notice to have the sign removed under Section 87 of the Roads (Scotland) Act 1984.
- 3.6. The Contracting Authority shall notify the owner in writing:
- 3.6.1. of the location of the relevant unauthorised sign;
 - 3.6.2. of a prescribed date, that shall be not less than 20 Business Days from the date of such notification, by which time the owner is to collect the unauthorised sign; and
 - 3.6.3. that the Company may dispose of the relevant unauthorised sign if it is not collected by the owner by the prescribed date.

Part 1: Overall Requirements

- 3.7. Should the unauthorised sign not be collected by the prescribed date stated in the notification, the Company shall remove and dispose of the relevant unauthorised sign and inform the owner in writing thereof.
- 3.8. A copy of any such notice shall be sent by the Contracting Authority to the Company.
- 3.9. If the owner of the unauthorised sign fails to remove it within the timescale stated in the notice the Company shall remove the sign within 2 Business Days to a suitable storage area provided by the Company to be available for collection by the owner.
- 3.10. The Company shall pursue recovery of all costs associated with the removal of an unauthorised sign directly from the owner of such signs.
- 3.11. The Company shall on receipt of payment for removal and storage costs from the owner of the sign notify the owner in writing of the location thereof and require the owner to collect such sign by a prescribed date which shall be not less than 14 days from the date of the letter.
- 3.12. Should the sign not be collected by the prescribed date stated in the letter the Company shall dispose of the sign and inform the owner in writing thereof.
- 3.13. Where ownership of the sign cannot be determined the Company shall remove the sign as soon as practicable to a suitable storage area provided by the Company where it shall be held for 28 days before being disposed of by the Company.
- 3.14. Should the owner identify himself during this time the process as referred to in this section 3 of Appendix K shall be followed.
- 3.15. The Company shall keep records of all actions and transactions related to the requirements of this section 3 of Appendix K.

4. Election Advertisements on Trunk Roads

- 4.1. The placing of election advertisements within the O&M Works Site is not permitted. Any registered political party, registered third party or election candidate who approaches the Company seeking authorisation for election advertisements shall be informed of this policy.
- 4.2. Should the Company become aware of any election advertisements placed within the O&M Works Site, the Company shall:
 - 4.2.1. immediately remove the election advertisements to a suitable storage area provided by the Company to be available for collection by the owner;
 - 4.2.2. notify the owner in writing that the election advertisements have been removed and the location where they can be collected by a prescribed date which shall be not less than 10 Business Days from the date of the notification; and
 - 4.2.3. dispose of any election advertisements not collected by the owner by the prescribed date.
- 4.3. The Company shall keep records of all actions related to the requirements of paragraphs 1.4.1 and 1.4.2 of Part 7.

5. Truckstop Signposting

- 5.1. The Company shall adhere to the Scottish Ministers' policy on truckstop facilities signposting as contained within the document *Signposting of Truckstop Facilities from Motorways and Other Trunk Roads – Policy and Guidance* as published by Transport Scotland.
- 5.2. The Company shall follow the evaluation process defined within *Part II of the document Signposting of Truckstop Facilities from Motorways and Other Trunk Roads - Policy and Guidance*.

Part 1: Overall Requirements

- 5.3. The Company shall liaise with the local road authority and the applicant as necessary for the implementation of approved signing schemes.
- 5.4. The Company shall provide the Contracting Authority with the application together with their assessment and report required in accordance with the document Signposting of Truckstop Facilities from Motorways and other Trunk Roads - Policy and Guidance and other associated documentation.
- 5.5. The Company shall:
- 5.5.1. consider the relevant local authority's signposting policy when making recommendations to the Contracting Authority on applications;
 - 5.5.2. advise the Scottish Ministers when truckstop signs are at the end of their serviceable life and identify their locations; and
 - 5.5.3. remove signs after consultation and consent from the Contracting Authority that in line with Transport Scotland procedures, are no longer required due to the truckstop facility no longer being in operation or as a result of a failure on the part of the truckstop facility provider to comply with their agreement with Transport Scotland.
 - 5.5.4. The Company shall ensure the details of each sign and associated road restraint system shall be identified and recorded in the Integrated Roads Information System.

APPENDIX L - THIRD PARTY CLAIMS

Forms and Records

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Part 1: Overall Requirements

1. FORMS

(a) TPCN Form

Claim Reference Number

Part 1 – About yourself

1. Name

.....

2. Address

.....

.....

.....

.....

.....

3. Occupation

.....

4. Date of Birth

.....

5. Daytime Telephone Number (including STD code)

.....

Part 2 – About your vehicle (if damaged)

1. Class (e.g. car, lorry, motorcycle, moped, bicycle)

2. Make and Model

3. Registration Number (if motor vehicle).....

4. Name and address of insurers

.....

.....

.....

5. Policyholder's name (if not claimant).....

6. Have you claimed from your insurers in respect of this incident?

YES _____ No _____

7. If YES policy number

Part 1: Overall Requirements

Part 3 – About your accident

- 1. Time and date of incident
- 2. Location of incident. If you have any photographs relating to the incident please enclose them. (See also 8 below re sketch)
.....
- 3. In which direction were you travelling?
- 4. Please tick the box(es) which best describe(s) conditions at the time of the incident
The road/footpath was wet___ dry___ icy___ other___
The weather was clear___ foggy___ raining___ snowing___ other___
- 5. At what speed were you travelling?
(pedestrians should indicate if they were walking/running etc)
- 6. What warning signs did you see, if any, immediately before the incident
.....
.....
- 7. Brief descriptions of the events leading up to, during and immediately after the incident
.....
.....
.....
- 8. Please provide in the space below a sketch of the location of the incident showing landmarks such as bridges, road signs, motorway marker posts etc.

Part 1: Overall Requirements

Part 4 – Particulars of damage and/or loss

1. Details of damage to vehicle
.....
.....

2. Details of damage to property or other material loss
.....
.....

3. Did you suffer any physical injury as a result of this incident?
YES _____ NO _____

If YES please complete the CRU Section of this form. Please also describe your injuries and indicate who treated you and when
.....
.....

4. Amount of claim (please enclose written estimate/receipts) £.....

5. If you are making a claim in respect of personal injuries please complete the mandate attached. This document authorises the hospital or general practitioner who treated you to disclose your medical history or conditions only as regards the injuries you sustained arising from the circumstances of this claim. Complete the mandate in BLOCK CAPITALS. Do not detach it. Your attention is also drawn to the need to complete the enclosed CRU Section form.

Part 1: Overall Requirements

Mandate

(Enter below the full name and address of the hospital or general practitioner who treated you)

.....
.....

I,

(enter your full name and address)

.....hereby authorise you to provide to the Company and/or to the Contracting Authority and/or to the Scottish Ministers a full medical report or full statement of my medical history relative to injuries sustained by me on (enter date) as a result of (enter circumstances)

.....
.....
.....

Signature Date

NAME IN BLOCK CAPITALS

Part 1: Overall Requirements

Part 5 – About witnesses to the incident

1. Please provide names and addresses of other occupants of your vehicle (if any)

Name.....	Name.....
Address.....	Address.....
.....
.....

Name.....	Name.....
Address.....	Address.....
.....
.....

2. Were the Police involved? Yes_____ No_____

If YES please give details

.....
.....

3. Please provide names and addresses of other witnesses to the incident and say why they are witnesses (e.g. passer-by, other motorist)

.....
.....
.....
.....

Part 6 – Other Information and signature

1. Please use this space to supply any other information you think is relevant to the claim or register any other comments you wish to make

.....
.....
.....
.....

2. Please sign and date the form

Signature..... Date.....

NAME IN BLOCK CAPITALS

(b) CRU Section

Part 1: Overall Requirements

**ONLY TO BE COMPLETED IF
YOU SUFFERED PHYSICAL INJURY**

**THE SOCIAL SECURITY (RECOUPMENT) REGULATIONS 1990
SOCIAL SECURITY ACT 1989**

Please provide the following which must by law be passed to the Department of Social Security by the party being claimed against. (Do not detach this form)

Full Name

National Insurance No

Details of your solicitor or representative (if appropriate)

Name

Address

Post Code

Reference

Details of your employment at the time of the accident (if appropriate)

Name of Employer

Address

Post Code

Department

Clock or Works Number

I declare that the above information is correct to the best of my knowledge.

Signed Date

*Claimant/claimants representative

Block Capitals

*Delete as appropriate

Part 1: Overall Requirements

CRU 1 Form



Notification of a claim for compensation

PLEASE USE CAPITALS WHEN COMPLETING THIS FORM
ALL PARTS SHOULD BE COMPLETED UNLESS STATED OTHERWISE

Injured Person's details		Sex <i>Select F for female, M for male</i>	<input type="checkbox"/> F
National Insurance Number	<input type="text"/>	Date of Birth	<input type="text"/> <i>Office use Enter V or NV</i>
Surname	<input type="text"/>	Date of Death	<input type="text"/> <i>Office use: Enter V or NV</i>
First Forename	<input type="text"/>	Address	<input type="text"/>
Other Forename	<input type="text"/>	Postcode	<input type="text"/>
Any other known surname(s) <i>eg. Maiden name</i>	<input type="text"/>		
Title	<input type="text"/>		

Reason for claim as alleged by the Injured Person	
If accident or alleged clinical negligence:	Full description of injuries resulting from the accident (state Left or Right where appropriate) and condition/reason for which compensation is claimed.
Date of accident/incident	<input type="text"/>
If disease:	Name of disease – if compensation is also being claimed for condition(s) prior to disease being diagnosed, give those details as well
<i>Office use: Disease code</i>	<input type="text"/>

Type of Liability	E for Employer P for Public M for Motor	C for Clinical Negligence O for Other	<input type="checkbox"/>
--------------------------	---	--	--------------------------

Compensator details	On behalf of: (Enter name of compensator if representative's details given opposite)
Name of compensator or compensator's representative	<input type="text"/>
DX address or postal address	Your reference
<input type="text"/>	<input type="text"/>
Postcode	Name of Insured or Policy Holder
<input type="text"/>	<input type="text"/>
	Telephone
	<input type="text"/>
	Fax
	<input type="text"/>

CRU1

Part 1: Overall Requirements

Injured Person's Representative Details

Name of representative
[]

Reference
[]
Telephone
[]

DX address or postal address
[]

Fax
[]

Postcode
[]

Hospital details
*All incidents on or after 29.01.07
Road Traffic Accidents only before 29.01.07*

If the incident is on or after 29.01.07 and the compensator is the same as the Trust, or in Scotland the NHS Board who provided treatment, do not provide own hospital details.

Did the injured person receive NHS treatment because of the incident? Yes No
Give details of the hospital(s) or trust(s) the Injured Person attended or was admitted to in order of attendance

Name & Address of hospital (1)
[]

Name & Address of hospital (2)
[]

Address
[]

Address
[]

Postcode []

Postcode []

For Road Traffic accidents before 29.01.07: - If you are claiming exemption from recovery of NHS Charges on the grounds of nil requirement to carry compulsory insurance, (section 144, Road Traffic Act 1988) state category of exemption here:

Employment details

Only complete in disease cases or if date of accident is before 06.04.1994

Did the Injured Person work for an employer at the time of the accident OR Was the Injured Person absent from work prior to 06.04.1994 as a result of the disease/condition(s) for which compensation has been claimed? Yes No

If Yes, please give name and address of employer(s) and employee payroll number, if known, on a separate sheet and attach it to this CRU1. If this is an Employer Liability claim you must also provide details of any SSP paid when you request a Certificate of Recoverable Benefits.

Do you require a certificate of recoverable benefits

Please send a certificate of recoverable benefits and if appropriate a certificate of NHS charges. Yes No

What to do now

Send this form to :- Compensation Recovery Unit
Durham House
Washington
Tyne & Wear
NE38 7SF
DX68560
Washington 4
Tel. 0191 2010500
Fax. 0191 2252324
Date:.....

OFFICE USE STB [] [] [] [] IS [] [] [] [] AA [] [] [] [] DWA [] [] [] []

Benefit Offices DISB [] [] [] [] JSA [] [] [] [] [] [] [] [] DLA [] [] [] []

Scrutinized by:..... CRU Ref:.....

Part 1: Overall Requirements

2. RECORDS

(a) TPCCR Form

Claim Reference Number

1. Company

2. Trunk Road and Exact location of incident (sketch, OS extract, photograph etc. shall be attached)
.....

3. Date and Time of Incident
.....

4. State source of information provided at question 2 and 3 above
.....

Particulars of witnesses (other than those provided by claimant) to the incident. If Company employees this shall be stated and precognitions attached.

Name

Address

Name

Address

5. Were the Police involved? YES NO
If YES a Police Report shall be obtained and sent out as soon as possible.

6. Does the claim refer to an incident alleged to be due to roadworks?
YES NO
If YES, by whom were the works being carried out?
Local Authority ContractorPublic Utility

7. Local Authority, Contractor, Public Utility name and address if appropriate
.....

Part 1: Overall Requirements

8. Nature of Roadworks

9. What were the weather and road conditions at the time of the incident
.....

10. Were the gritters called out? YES NO
If YES what are the Company's arrangements for gritting the road
.....
.....

11. Was the locus gritted prior to the incident? YES NO
If YES, give time and date
.....
.....

NB In the event that the claimant/Police Report alleges that the road surface was icy or had poor skid resistance etc, full details countering/agreeing this allegation should be given. Pertinent gritting times/testing results shall be included.

12. Is the incident alleged to have been caused through a defect or obstruction in the road?
YES NO

If NO go to question 13

Part 1: Overall Requirements

If YES

12.1 Had the Company received notice or were they otherwise aware of the defect or obstruction prior to the incident?

.....
.....
.....

12.2 If unaware please comment on why regular inspections failed to identify the defect?

.....
.....
.....

12.3 What is the inspection regime for this Trunk Road? (7 day, 28 day etc)

.....

12.4 Please include records of dates and findings (Routine Management and Maintenance System output) of inspections immediately before and after this incident

.....
.....
.....
.....
.....
.....
.....

12.5 How was the inspection carried out? (on foot, by van etc)

12.6 If by van state whether the driver, driver and mate etc.....

12.7 When had work last been undertaken at the Site, and by whom, prior to the incident?

.....
.....
.....
.....

Part 1: Overall Requirements

13. Please use this space to comment fully on the TPCN form, and give any other relevant information including details of any damage to Scottish Ministers Property.

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Part 1: Overall Requirements

14. Company's views on liability. Please indicate whether any reasonable action could have prevented this accident and whether there are other grounds for treating the claim sympathetically.

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15. Form completed by:

NAME IN BLOCK CAPITALS.....

Designation Telephone No.

Signature Date

16. Form Countersigned by Traffic Officer

Signature..... Date.....

(b) Records for Damages to Crown Property

Electronic record DCPCR shall be completed by the Company when Scottish Ministers Property shall have been damaged.

Damage to Scottish Ministers Property Cost and Recovery Reporting Forms shall be completed when repair, replacement and clearance shall have been completed (form DCPCRR, being an extension of previous DCPCRR1 & 2 and DCPCC).

Notes on completion of fields

- (a) Unique damage identification number – this shall be a unique damage reference made up of Company/route/consecutive claim no as agreed with the Contracting Authority.
- (b) Location – this shall be based on a geographical description and CHART references.
- (c) Name of Culprit - Where a culprit has been identified, the name and address shall be inserted. Where a Police response shall be awaited regarding the identity of a culprit then the word “investigating” shall be inserted. Where the police confirm that they have been unable to identify a culprit then “unknown” shall be entered.

Part 1: Overall Requirements

(1) DCPCR

Fields shall be as listed below:

- (i) Name of Company;
- (ii) Unique damage identifier;
- (iii) Trunk Road/Motorway;
- (iv) Date and time of incident;
- (v) Source of this information;
- (vi) Location - Link, section and chainage and geographically (Geographical Information System reference);
- (vii) Description of property;
- (viii) Type and extent of damage;
- (ix) Cause of damage including name of culprit;
- (x) Are proceeding being taken by police?;
- (xi) Has emergency work been done and by whom?;
- (xii) Road condition e.g. good, rutted;
- (xiii) Weather conditions;
- (xiv) Was road wet, dry or icy?;
- (xv) Were gritters called out?;
- (xvi) Details of gritting arrangements;
- (xvii) Was location gritted prior to incident;
- (xviii) Estimated/final cost (see DCPCC below);
- (xix) Estimated date for final costs;
- (xx) Other information including names and addresses of witnesses;
- (xxi) Brief account of incident causing damage;
- (xxii) Name and designation of person entering information;
- (xxiii) Telephone number; and
- (xxiv) Date.

Part 1: Overall Requirements

(2) DCPCRR

Fields shall be listed below:

- (i) Unique damage identifier;
- (ii) Date damage logged;
- (iii) Date of repair replacement and clearance;
- (iv) Location of damage Site;
- (v) Details of damage and repair;
- (vi) Name of culprit;
- (vii) Status with regard to recovery;
- (viii) Date Contracting Authority notified where cost of repair replace and clearing exceeds £[REDACTED];
- (ix) Final Company costs for:
 - (a) Repair replacement and clearance of damage
 - (b) Incident Response
 - (c) Temporary traffic management.
- (x) Final third party costs for:
 - (a) Police report
 - (b) Other (describe source / reason in the records)
- (xi) Amount recovered from culprit;
- (xii) Statement number if appropriate; and
- (xiii) Outstanding balance (difference between cost of repair replacement and clearing and amount recovered).

APPENDIX M – NOT USED

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APPENDIX N – NOT USED

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APPENDIX O - INCIDENT RESPONSE – NOTIFICATION OF INCIDENTS

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Part 1: Overall Requirements

Appendix O – Notification of Incidents

Notification of Major, Critical and Minor Incidents

Time of Day	Who to contact	Major Incident			Critical Incident			Minor Incident		
		By Whom	How	When	By Whom	How	When	By Whom	How	When
Normal Working Hours (Mon 0800 - Fri 1800)	TSOp	ILO	Telephone*	Immediately	ILO	Telephone*	Immediately	ILO	Telephone*	Immediately
	TSMO	ILO	Telephone*	Immediately	ILO	Telephone*	Immediately			
	D	ILO	Telephone*	Immediately	ILO	Telephone*	Immediately			
	NNM	ILO	Telephone*	Immediately	ILO	Telephone*	Immediately			
	NM	ILO	Telephone*	Immediately	ILO	Telephone*	Immediately			
	CAT1	ILO	Telephone*	Immediately	ILO	Telephone*	Immediately			
	ANM	ILO	Telephone*	Immediately	ILO	Telephone*	Immediately			
	ILO	ISU	Telephone	Immediately	ISU	Telephone	Immediately	ISU	Daily Record Sheet	End of shift
	PAG	ILO	Telephone*	Immediately	ILO	Telephone*	Immediately			
Outwith Normal Working Hours	TSOp	ILO	Telephone*	Immediately	ILO	Telephone*	Immediately	ILO	Telephone*	Immediately
	TSMO	ILO	Telephone*	Immediately	ILO	Telephone*	Immediately			
	D	ILO	Email*	Immediately	ILO	Email**2	Immediately			
	NNM	ILO	Email*	Immediately	ILO	Email**2	Immediately			
	NM	ILO	Email*	Immediately	ILO	Email**2	Immediately			
	CAT1	ILO	Telephone*	Immediately	ILO	Telephone*	Immediately			
	ANM	ILO	Email*	Immediately	ILO	Email**2	Immediately			
	ILO	ISU	Telephone	Immediately	ISU	Telephone	Immediately	ISU	Daily Record Sheet	End of shift
	PAG	ILO	Email*	Immediately	ILO	Email**2	Immediately			

Note: In addition to the reporting of Major, Critical and Minor Incidents above, the Company must also follow and implement the guidance provided in Appendix Q in the notification of road traffic Incidents involving fatalities.

Part 1: Overall Requirements

Type of Service or Role

TSOp – Traffic Scotland Operator

TSMO – Traffic Scotland Media Officer

D – Contracting Authority/Scottish Ministers

NNM – National Network Manager

NM – Network Manager for the O&M Works Site

ANM – Area Network Manager

ILO – Incident Liaison Officer

PAG – Performance Audit Group field engineer

CAT1 – Category 1 responder in accordance with the Civil Contingencies Act 2004

Contact Mode

Telephone* - TRISS personnel are likely to contact the Police and Traffic Scotland Operator via Airwave radio

Email * - Email immediately and follow up with telephone call not later than 0900 the next day or as soon as they can be contacted

Email*² – Email immediately and follow up with telephone call not later than 0900 the next day

Daily Record Sheet – see Appendix P

APPENDIX P - INCIDENT RESPONSE – DAILY RECORD SHEET

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Appendix P: Incident Response - Daily Record Sheet

Patrol Routes:

Date: Day:

Operative Names:

1. No. of Incidents attended (Line out for each attended)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45

2. Incident Call Outs - Insert Reference Number

1.	6.
2.	7.
3.	8.
4.	9.
5.	10.

3. Incident(s) of Note - Insert Reference Number

1.	2.
3.	4.

4. Defect Identification - Insert Reference Number

1.	5.
2.	6.
3.	7.
4.	8.

Part 1: Overall Requirements

5. Roadside Assistance to Public

Route and Location	Nature	Time Spent (Minutes)
1.		
2.		
3.		
4.		

6. Assistance Rendered to Police (other than Incident Call Outs)

Route and Location	Nature	Time Spent (Minutes)
1.		
2.		
3.		
4.		

7. Safety Patrol(s)

Route	Duration	No. of Faults/Issues
1.		
2.		
3.		
4.		

Part 1: Overall Requirements

8. Updates for the Traffic Scotland Operator and other agencies
 (for example - required Lane closures, Severe Weather, excess surface water)

Time(s)	Route and Location	Nature
1.		
2.		
3.		
4.		

9. Any other information not shown previously (continue overleaf if required).

Completed Daily Logs shall be forwarded to the Company at the end of each shift.

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APPENDIX Q - INCIDENT RESPONSE – FATAL ACCIDENT NOTIFICATION

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Appendix Q: Incident Response - Fatal Accident Notification

FATAL ACCIDENT NOTIFICATION (PART 1)

ACCIDENT REFERENCE

ACCIDENT DETAILS

Locus			
Route No and c/way type		Grid Reference	
Time		Day	Date
Council Area		Police Area	Police Ref No
Weather			Road Condition
Road Works			Light condition

DESCRIPTION OF CIRCUMSTANCES

VEHICLE DETAILS

CASUALTY DETAILS

Prepared by:

Date

Sent to:

TS Area Manager

TS Strategic Road Safety Officer

Contracting Authority


Part 1: Overall Requirements

* The Company shall inform the Contracting Authority, Transport Scotland's area manager, network manager, area network manager and strategic road safety officer immediately by email after the Incident and submit this form within 24 hours.

** At an appropriate time after the Incident, ordinarily within 28 days, the Company should arrange a suitable date to visit the site with representatives from Transport Scotland's accident investigation team and the Police to record the nature of the locus and establish whether any further details have come to light. The site visit is intended to ascertain at that time whether an AIP investigation is worthwhile. Following the site visit, Part 2 of this form shall be completed and submitted electronically to Transport Scotland.

FATAL ACCIDENT NOTIFICATION

LOCATION PLAN



Part 1: Overall Requirements

PHOTOGRAPHS

<p><i>No of photos at Company's discretion</i></p>	
	<p><i>No of photos at Company's discretion</i></p>

FATAL ACCIDENT NOTIFICATION

DETAILS OF INCIDENT RESPONSE UNDERTAKEN BY THE COMPANY

ADDITIONAL NOTES

Part 1: Overall Requirements

FATAL ACCIDENT NOTIFICATION (PART 2)

JOINT SITE OBSERVATIONS

ACCIDENT REFERENCE

ACCIDENT DETAILS

--

Locus				
Route No and c/way type		Grid		
Time		Day		Date
Council		Police Area		Police Ref No
Weather			Road	
Road Works			Light	

SITE VISIT DETAILS

Day/Date and time of inspection			
Weather at time of site		Road	
Attendees at meeting			

OVERALL DESCRIPTION OF THE LOCUS AND SITE OBSERVATIONS

--

Part 1: Overall Requirements

C/Way type and width		Road Surface	
Speed Limit		Road Studs	
Is kerbing present?		Drainage type	
Is footway present?		Verge width	
Carriageway markings		Street Lighting	
Road signs or safety barrier present		Other street furniture	
Pedestrian Crossing		Vehicle hit object off c/way	

3 YEAR ACCIDENT HISTORY (IF APPLICABLE)

--

FATAL ACCIDENT REPORT FORM SUPPLEMENTARY PHOTOGRAPHS

--	--

Part 1: Overall Requirements

SUMMARY

As a result of discussions and information gathered from the site visit as well as consideration given to the concentration and level of accidents throughout the network it is suggested that:

Tick as appropriate

- a) An accident investigation report is undertaken as part of the current year's programme.
- b) An accident investigation study is not required at this time.
- c) A copy of the Police fatal accident report is obtained when it becomes available.

7. Prepared by: Date

Sent to: **TS Area Manager**

TS Strategic Road Safety Officer

Contracting Authority

⇒ A copy of the form should be retained by the Company and copies submitted to the Contracting Authority, Transport Scotland and the Police.

FATAL ACCIDENT PROCEDURES GUIDE

The Company shall notify the following personnel within the Contracting Authority and Transport Scotland in the case of an Incident involving a fatality **immediately by e-mail**:

Managing Agent

Transport Scotland's Area Manager

Transport Scotland's Network Manager

Transport Scotland's National Network Manager

Transport Scotland's Strategic Road Safety Officer
strategicroadsafety@transportscotland.gsi.gov.uk

A detailed report using Part 1 of this form shall be submitted to the Contracting Authority and Transport Scotland's Area Manager and Strategic Road Safety Officer by electronic copy within **24 hours** of the incident. It shall include, but not be limited to, the following information :

- ⇒ Location (preferably with plan)
- ⇒ Brief description of the circumstances
- ⇒ Photographs of the location if possible
- ⇒ Details of casualties and vehicles involved
- ⇒ Details of road conditions
- ⇒ Information such as weather, road works, and furniture
- ⇒ Outline of the Major or Critical Incident Response undertaken
- ⇒ Information about the deceased or the Police incident reference number

A joint site observation at the locus should be undertaken by the Company's AIP representative, the Contracting Authority, Transport Scotland's Strategic Road Safety Officer and the Police, ordinarily within 28 days, of the incident.

Part 1: Overall Requirements

A detailed report using Part 2 of the incident reporting procedure shall be submitted to the Contracting Authority and Transport Scotland's Area Manager and Strategic Road Safety Officer within **1 week** of the site visit having been carried out.

APPENDIX R - NETWORK OPERATIONS

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Appendix R/1– Contact List of Network Operations Service Providers**Group A - Main Network Operations Service Provider****Traffic Scotland Operations and Infrastructure Services Contractor****AMEY OW Ltd**

Precision House

Off McNeil Drive

Eurocentral

ML1 4UR

For the purposes of this Part the Traffic Scotland Operations and Infrastructure Services Contractor undertakes the following roles:

- 1) Traffic Scotland Operator (delivers the Traffic Scotland Service)
- 2) Traffic Scotland Maintenance Contractor
- 3) Transport Scotland's Traffic Database Contractor

Group B – Other Network Operations Services Providers working on the Trunk Road**Post Deliver Support Contractor – Cubic****Cubic Transportation Systems (ITMS) Ltd**

Cavendish House

Clearwater Park

Prince's Wharf

Stockton-On-Tees

TS17 6QY

Transport Scotland Systems Contractor

TBC – Contract award 2016

Part 1: Overall Requirements

Appendix R/2 – Network Access Form for the Request of Information on Planned Operations, Works Contracts, Works and Events from Utilities and Other Third Parties

Input Company references and logo in this area (Document, Issue, Related To, Page No. etc.)	

--

Before completing this form, please read the conditions and general requirements for applicants wishing to carry out work on the network.

Documents required with application	Req	Rec'd	App'd	Sign'd	Unit
Location Plan					
Site Specific TM layout					Ref No.
SRWR ref					
					SRWR Ref No.
Road Opening Permit					
Planning Consent Approval					
TM Method Statement					Depot (if applicable)

	Applicant / Originator of Works:		
	Traffic Management Contractor:		
Contractor for the Works:			
Contractor Address:			Head Office Tel:
			Site Contact Tel:
			Contractor 24hr Tel:
			Traffic Man. 24hr Tel:
Contractor Email Address:			
Route No.:			
Location:			
OS Start	E		N
OS End	E		N
OS Centre Point (if applicable)	E		N
Start Section (7 digits)			
End Section (7 digits)			
Chainage Start*****			
Chainage End*****			
List sections affected from start to finish			
	Description of Works (include direction)		

Part 1: Overall Requirements

Works Supervisor Details:								
		Contact No. for Works Supervisor:						
Lane Occupation Start Date:					Lane Occupation End Date:			
Business Day s	Mon	Tue	Wed	Thu	Fri	Sat	Sun	
Lane Occupation Start Time*								
Lane Occupation End Time*								
Closure Type**:								

Lanes Closed***:	
Speed Limit on Road / Proposed Speed Limit:	
Works Method Statement:	Health & Safety Plan:
Consultation with Local Authorities, Police etc:	
Is Traffic Order required? (If Yes, approval is conditional):	
Expected Delays****	

Notes

Access shall only be granted on condition that the Traffic Scotland Operator is informed by telephone (0141 300 8100) 15 minutes prior to the first cone being placed on the network and again when all traffic management has been lifted.

--

* Time Restrictions may apply

** Standard or Relaxation – See Chapter 8 – Traffic Sign Manual

*** L1, L2, L3, slip lane, hardshoulder, lay-by or verge

**** To be completed by the Traffic Officer

--	--	--

***** Relative to the start of that section

Required for Automated Diary Facility

Required for OC Audit trail

Add to Automated Diary Facility for OC & TS info



Company Response
Approval - Yes / No:
Signed:
Date:

Appendix R/3– Coding for Estimated Traffic Delays

Number	Description	Time
1	Little or no delay	Up to 4 minutes
2	Slight delay	More than 4 minutes but less than 8 minutes
3	Moderate delay	More than 8 minutes but less than 12 minutes
4	Serious delay	12 minutes or more

Escalation of Delays*Base Level – code 1*

The base Level is ascribed to any roadworks (as defined) on the O&M Roads, or in adjacent trunk road operating unit or units, or off O&M Roads.

First Level – code 2

The first escalation is to slight delay as defined above. The notification requirements specified within Schedule 3 Part 7 shall apply.

Second Escalation – code 3

The Second escalation is to moderate delay as defined above. The notification requirements specified within Schedule 3 Part 7 shall apply.

Third Escalation – code 4

The third escalation is to serious delay as defined above. The Company shall determine this escalation level and then seek agreement with the Traffic Scotland Operator. Notification requirements specified within Schedule 3 Part 7 shall apply in such circumstances.

Part 1: Overall Requirements

Appendix R/4 – Information Required for the Severe Weather Bulletin Board for the Automated Diary Facility

The list below provides up-to-date information regarding any current Severe Weather problems being experienced on roads within the [to be inserted] Police Area which may have significant impact on your journey.

Last Page Update: [to be inserted]

ROUTE	LOCATION	ROAD STATUS	COMMENTS	INFORMATION FROM	LAST STATUS CHANGE
		Road Open	Snow. Passable with care.	Grampian Police	
			Icy conditions. Passable with care.		
			Single lane operation. Passable with care.		
			Route not recommended unless journey is absolutely necessary.		
		Road Closed	Heavy snow.		
			Drifting snow.		
			Snow clearing in progress.		
			Road estimated to re-open at	Trunk Road Operator	
		Road Re-opened	Passable with care.		
			Single lane operation. Passable with care.		
			Route not recommended unless journey is absolutely necessary.		

Appendix R/5 – Overview of Delay Modelling Tool

Provision of the Delay Modelling Tool

The delay modelling tool facilities shall be supplied by the Contracting Authority.

Access to the Delay Modelling Tool

No later than 25 Business Days prior to the Restricted Services Commencement Date the Company shall provide and maintain at its main office for the Operations a broadband internet connection for access to the delay modelling tool.

Prior to ordering this connection, the Company shall contact the Contracting Authority to confirm the exact requirements.

Features

The delay modelling tool shall use a simple demand/capacity flow model to simulate conditions at a location on the Scottish trunk road network.

The delay modelling tool shall estimate the delay in minutes and the approximate queue length in kilometres resulting from a reduction in operational capacity at a specified location on the Scottish trunk road network. Estimated delays shall take into account delays that are the result of recurrent congestion. The delay modelling tool shall provide a delay value relating to the additional journey time that is in excess of the free flow journey time (total delay) and a further delay value for the additional time in excess of the typical journey time for the specified time of day and day of week (normal delay). The location shall be defined by network link(s), typically junction to junction, or by subsections of a link.

For roadworks that extend over a number of links, the capacity reduction shall be assumed to apply at the most upstream link or section.

Roadworks interventions that affect both directions at a network location shall require separate analysis and identification by the Company.

The delay modelling tool shall estimate the delay cost based on average traffic composition and value of time figures provided by Scottish Transport Appraisal Guidance (Scot-TAG).

A facility to specify an upstream diversion rate as a percentage of the demand flow in vehicles per hour shall be provided. The Company shall use this to estimate the cost saving resulting from the implementation of the diversion.

The delay modelling tool shall have access to tables of normal flow rates and speeds at different times of the day and days of the week for network links that have monitoring facilities. These shall be in three minute or 15 minute periods depending on the level of equipment provision at the location of the monitoring facilities.

The delay modelling tool shall have access to tables of normal journey times for some network links. The Company may use these in addition to the point information from monitoring sites to improve the accuracy of the delay estimation.

The Company shall record the output from the delay modelling tool analysis relating to a confirmed roadworks entry in the Automated Diary Facility using the appropriate Automated Diary Facility identifier.

The delay modelling tool shall provide details of capacity flow rates and capacity reductions for different road types and typical closure scenarios based on values in the DMRB. These may be overridden by a delay modelling tool user.

Part 1: Overall Requirements

Data Inputs

The delay modelling tool shall contain appropriate details of:

- (i) Normal traffic flow, speed and composition.
- (ii) Normal link journey times.
- (iii) Link length, free flow speed and journey time and capacity.
- (iv) Value of time figures.

Additional information required to model a capacity reduction shall be required to be entered by a delay modelling tool user; this shall include:

- (i) Location of the works in terms of links and/or sections of links.
- (ii) Chainage in metres from start of link/section to start of works.
- (iii) Length of works.
- (iv) Day(s) of week.
- (v) Start/end time.
- (vi) Lanes closed.
- (vii) Confirmation of free flow speed on the link/section (suggested by the delay modelling tool).
- (viii) Confirmation of link capacity remaining after roadworks implemented (suggested by the delay modelling tool).
- (ix) Expected diversion rate (to estimate benefit of diversion).
- (x) Length of diversion route.

Report Outputs

The Company shall estimate the following information for each model analysis:

- (i) Details of works location (links/sections).
- (ii) The delay in minutes during the period while the roadworks are implemented and until resultant queues have cleared (at intervals of three minutes or 15 minutes).
- (iii) The queue length (at intervals of three minutes or 15 minutes).
- (iv) The total delay in vehicle hours.
- (v) The total queue size in vehicle kilometres.
- (vi) The cost/diversion benefit of the roadworks in terms of lost time/saved time.

Appendix R/6 – Notification of Planned Operations and Works Contracts and Works in the Vicinity of Traffic Scotland Maintained Equipment

Notification of fixed Traffic Scotland Maintained Equipment site events	Sheet Ref		(to be continuous with previous sheets – eg 2006/12):
	Date:		(date when sheet submitted)
	Name:		(of individual responsible for sheet contents)
	Network Unit/Project::	AWPR/B-T DBFO	

Site Reference	Date (from)	(Date to)	Provisional or Confirmed	Event Details	Remedial Actions Carried Out or Required	Traffic Scotland Service Provider Acknowledged (Date / Initials)	Additional Information
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)

Column Notes:

- A References must be those contained within the inventory information
- B If the Operations take place on a single day then insert that date here, otherwise start of event.

Part 1: Overall Requirements

- C If B does not reflect a single day then insert finish date here.
- D Indicate if dates are provisional or confirmed.

Part 1: Overall Requirements

Appendix R/7– Notice to Traffic Scotland Service Provider of Damage or Suspected Damage to Traffic Scotland Maintained Equipment

Notice to Traffic Scotland Service Providers of damage/suspected damage to Traffic Scotland Maintained Equipment

Sheet Ref:

--

(to be continuous with previous sheets - e.g. 2004/12)

Date:

--

(date when sheet submitted)

Name:

--

(of individual responsible for sheet contents)

Network Unit/Project:

AWPR/B-T DBFO

Site Reference (A)	Date (s) damage occurred/identified (B)	Details (C)	Operation/ Works/ work Type(D)	Organisation which caused damage (if known) (E)	Additional Notes (F)

Part 1: Overall Requirements

Column Notes:

- A References must be those contained within the inventory information.
- B Insert the date when the damage occurred or the date the damage was identified – indicate which is applicable.
- C Details of the damage and effects of the damage.
- D Insert details of the cause of the damage (if known).
- E Name and contact details of organisation which caused the damage (if known).
- F To include all relevant details not covered elsewhere in the form – to include contact details in all cases.

Use separate additional sheets if required, but make reference to them here.

Appendix R/8– Information Required about Planned Operations, Works and Special Events for Completing the Traffic Scotland Roadworks Diary and Special Events Diary

Create NADICS Events Information

Commence Date:	<input type="text" value="22/02/06"/>	Commence Time:	<input type="text" value="00:01"/>
Start Date:	<input type="text" value="22/02/06"/>	Start Time:	<input type="text" value="00:01"/>
End Date:	<input type="text" value="22/02/06"/>	End Time:	<input type="text" value="00:01"/>
Entered By:	<input type="text" value="SW Unit User"/>	When:	<input type="text" value="Continuously"/>

Event Name:

Event Location:

Event Details:

300 characters remaining on your input limit

Event Contact Details:

<input type="button" value="Preview Event"/>	<input type="button" value="Save Event"/>	<input type="button" value="Events Summary"/>
--	---	---



Aberdeen Western Peripheral Route / Balmedie-Tipperty
AWPR/B-T Managing Agent, Aberdeen Business Centre,
Willowbank House, Willowbank Road, Aberdeen AB11 6YG

Tel: **01224 332322** | Fax: **01224 322 361**

Email: enquiries@awpr.co.uk | Web: www.awpr.co.uk

Working in partnership

Aberdeen Western Peripheral Route / Balmedie - Tippetty

Competition for the Design, Build, Finance and
Operation of the Aberdeen Western Peripheral Route /
Balmedie - Tippetty

Volume Five

Schedule 4: O&M Works Requirements

Part 2: Routine Maintenance

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1 Routine Maintenance: Management

1.1 Introduction

- 1.1.1 This Part of these O&M Works Requirements specifies the maintenance requirements and procedures that shall be adopted and implemented by the Company for the day to day operational management of the O&M Works Site.
- 1.1.2 The inspections, patrols and maintenance requirements include but shall not be limited to the management of and procedural requirements for a range of activities which shall be generally cyclical or short term in nature and necessary to keep the O&M Roads in a good and safe working order and safeguard the environment. The requirements of this Part shall only apply to the O&M Roads subject to an Access Road Level of Service to the extent necessary to comply with the requirements of Part 10 of these O&M Works Requirements and to the Restricted Services Roads, to the extent necessary to comply with the requirements of Part 11 of these O&M Works Requirements.
- 1.1.3 Section 1 of this Part shall not apply to the routine inspection of structural elements of Structures.
- 1.1.4 This Part shall also apply to non-structural elements of Structures.
- 1.1.5 These requirements do not cover major structural maintenance for the replacement or renewal of worn-out road pavements although the procedural requirements may assist in pavement management.
- 1.1.6 There may be instances where the Company is required to carry out additional inspections, Safety Patrols and maintenance requirements to take account of local conditions. Details of such local requirements are provided in Appendix L.
- 1.1.7 At the Restricted Services Commencement Date there may be items of Construction Plant and equipment within O&M Works Site which require maintenance. Such items shall normally be related to safety and include temporary safety barriers, temporary supports to Structures, temporary electrical works and temporary traffic management equipment and related equipment to make safe Category 1 Defects. During the mobilisation period, the Company shall agree the requirements and availability of all such items of Construction Plant and equipment after the Restricted Services Commencement Date with the outgoing Scottish Minister's 'Trunk Road Management O&M Works Site'.
- 1.1.8 Wherever practicable, the Company shall minimise the environmental impacts and disruption to Users arising from inspections and maintenance by undertaking multiple activities concurrently.

1.2 Routine Maintenance and Quality System

- 1.2.1 The Company shall use the routine maintenance and management function (RMMF) of the Integrated Roads Information System as referenced at Section 15 of Part 1 of these O&M Works Requirements, in accordance with this Part to implement, monitor and record all inspections, Safety Patrols, Category 1 Defects and Category 2 Defects and Routine Maintenance Operations undertaken on the O&M Works Site, including maintenance of Traffic Scotland Maintained Equipment.

Where the RMMF and/or the Lighting Management Function (LMF), forming part of the RMMF, is used to make entries relating to Roadside Electrical Assets such entries and records shall include all attributes detailed within the Trunk Road Inventory Manual. Entries and records made relating to inspections, maintenance and defects etc. at Roadside Electrical Assets shall be undertaken in accordance with the Trunk Road Inspection Manual. The identifying ID associated with the Roadside Electrical Assets shall be recorded as part of any entry or record made for such assets.

1.2.2 A data capture device as specified in paragraph 15.1.7 of Part 1 of these O&M Works Requirements shall be used during inspections and patrols to record a range of data relating to the O&M Works and for uploading and downloading such data to and from the RMMF. Data shall include:

- (i) Category 1 Defects and Category 2 Defects;
- (ii) Inspections and Safety Patrol data;
- (iii) Electrical testing data;
- (iv) Electricity meter readings;
- (v) New accessibility barriers that are not recorded in the RMMF; and
- (vi) Missing assets and incorrectly located, described or identified assets or their attributes.

1.2.3 All Category 1 Defects and Category 2 Defects and new accessibility barriers shall be recorded within the RMMF within 24 hours of identification. All other maintenance data and data associated with maintenance shall be recorded within the RMMF within 4 Business Days of the activity being completed on each inventory item. The Inspections and Safety Patrols data shall include but not be limited to:

- (i) date of Inspection or Safety Patrol;
- (ii) time that each section was commenced;
- (iii) link;
- (iv) section;
- (v) start chainage;
- (vi) end chainage;
- (vii) names of the inspectors;
- (viii) method of inspection;
- (ix) details of weather conditions;
- (x) road surface conditions;
- (xi) Category 1 Defects and Category 2 Defects – if none input “none”; and
- (xii) other relevant information.

1.2.4 Records of all Operations shall be incorporated in the RMMF within 4 Business Days of completion of such Operations. Routine Maintenance records shall include but not be limited to:

- (i) dates of execution of Operations;
- (ii) link;

- (iii) section;
- (iv) start chainage;
- (v) end chainage;
- (vi) Operations carried out; and
- (vii) methods used.

1.2.5 The Company shall include in its O&M Works Quality Plan procedures for validation of all data for correctness and completeness before it shall be incorporated within the RMMF. The Company shall maintain the accuracy of the RMMF data at all times. When the Company discovers any error or omission in the RMMF data such error or omission shall be corrected in the RMMF by the Company within 4 Business Days of its discovery.

The Company shall include or procure the inclusion of documented procedures for the effective management of inspections, patrols and Routine Maintenance activities in the O&M Works Quality Plan. The procedures shall include, but shall not be limited to:

- (i) how the Company shall use the RMMF;
- (ii) Operations that shall be carried out by inspection and patrol teams to make Category 1 Defects safe at the time of inspection or patrol, by immediate repairs or removal of hazards or other procedures for making safe or dealing with exceptional circumstances;
- (iii) storage and retrieval of all records using either the RMMF or other storage facilities;
- (iv) checklists that shall be used for all types of inspections and patrols;
- (v) records that shall be maintained to support the robustness of all types of inspections and patrols;
- (vi) how the Company shall validate all data for correctness and completeness before it shall be incorporated into the RMMF;
- (vii) how the Company shall monitor and demonstrate the accuracy and rigorousness of its inspections and patrols;
- (viii) how the Company shall carry out its Safety Inspection and Safety Patrol duties including:
 - (a) the vehicles to be utilised for and the equipment to be carried by them; and
 - (b) details covering inspection and Safety Patrol routes such as programmes, resources, estimated inspection speeds and average durations.
- (ix) how the Company shall carry out its Detailed Inspection duties;
 - (a) the equipment to be used by Detailed Inspection teams;
 - (b) programmes, resources; and
 - (c) method statements.
- (x) how the Company shall carry out its maintenance and how the required timescales will be achieved;
- (xi) how the Company shall group Category 2 Defects together, prioritises the repairs and prepare programmes for the repairs; and

- (xii) method statements for all inspecting and maintaining all types of roadside electrical apparatus in accordance with guidelines within Transport Scotland guidance document 'LDS8023_09 – Electrical Maintenance Guidelines and the O&M Requirements'.

1.2.6 Defects and Response Times

Category 1 Defects shall be dealt with as required by paragraphs 1.2.6 (i) (a) to (k) inclusive. Category 2 Defects shall be dealt with as required by paragraphs 1.2.6 (ii) (a) to (e), inclusive.

Defects shall be classified as either Category 1 Defects or Category 2 Defects by the Company after consideration of the potential impact upon all Users, including but not limited to motorists, motorcyclists and non motorised Users.

- (i) Category 1 Defects
 - (a) Defects that require prompt attention because they represent an immediate or imminent hazard shall be classified as Category 1 Defects. Guidance is provided at Section 4 of Appendix A.
 - (b) Category 1 Defects shall be made safe at the time of inspection, if practicable, by taking one of the following actions:
 - (i) Execute immediate repairs;
 - (ii) Remove hazard; or
 - (iii) Take such other measures as shall be necessary to protect the public and other Users.
 - (c) When a Category 1 Defect cannot be repaired immediately and the hazard cannot be removed by the inspection team or Safety Patrol, warning signs shall be erected immediately on the verge in advance of the Category 1 Defect. Such signs shall be maintained in place until such time as a temporary or permanent repair shall have been completed.
 - (d) Where a Category 1 Defect shall be of a very serious nature rendering the O&M Road unsafe for Users, the Company in co-ordination with the Police shall close the appropriate part of the O&M Road for as short a period as possible whilst remedial action shall be undertaken.
 - (e) Where an immediate permanent repair of a Category 1 Defect or removal of the hazard shall not be practicable, temporary or permanent repairs shall be undertaken as soon as possible but in any case not later than required by the following timescales:
 - (i) Category 1 Defects on Carriageways no later than 06:00 hours following identification; and
 - (ii) All other Category 1 Defects within 24 hours of identification.
 - (f) All Category 1 Defects which have been temporarily repaired shall be permanently repaired within 28 days, with the exception of within 56 days for bridge parapets.
 - (g) Where Category 1 Defects with potentially serious consequences for Users of the O&M Roads shall have been made safe by means of temporary signing or repair the

Company shall make arrangements for a special inspection regime to ensure that the continued integrity of the signing or repair shall be maintained until a permanent repair can be made.

- (h) The Company shall not be permitted to re-categorise Category 1 Defect as Category 2 Defect after the completion of a temporary repair. Category 1 Defects shall remain as that category until the permanent repair shall have been carried out or shall no longer be required.
- (i) Where Category 1 Defects have been made safe by means of temporary signing or repair, the Company shall make arrangements to ensure that the continued integrity of the signing or repair is maintained until a permanent repair can be made.
- (j) For Category 1 Defects associated with missing warning or mandatory traffic signs, temporary repairs must include for the provision of adequate substitute signing.
- (k) Within 24 hours of identification, the Company shall attach a photograph of each Category 1 Defect to the corresponding RMMF record. A photograph of each temporary and permanent repair shall also be attached to the RMMF record within four days of completion of each repair.

Notwithstanding any temporary repair, hazard mitigation measures or interim measures that may be taken by the Company or others in respect of a Category 1 Defect, such Category 1 Defect shall be deemed to exist until permanently remedied.

(ii) Category 2 Defects

Category 2 Defects are those defects that shall not be Category 1 Defects but which shall:

- (a) involve a risk of structural deterioration;
- (b) risk development into a Category 1 Defect prior to the next Detailed Inspection;
- (c) constitute a reduction in safety;
- (d) constitute a reduction in level of service or amenity; or
- (e) constitute an environmental threat.

Category 2 Defects shall be dealt with in accordance with the requirements of paragraphs 1.2.7 to 1.2.9, inclusive.

1.2.7 The Company shall assign a level of priority to each Category 2 Defect – from urgent, high, medium or low, which shall be categorised as 2.1, 2.2, 2.3 or 2.4. Category 2 Defects shall be dealt with in accordance with the following requirements:

Urgent - Category 2.1	Defects shall be repaired within 24 hours; a temporary repair shall be permanently repaired within 28 days.
High – Category 2.2	Defects shall be permanently repaired within 28 days.

Medium – Category 2.3	Defects shall be permanently repaired within 24 weeks.
Low – Category 2.4	Defects shall be noted and incorporated within planned programme of Operations.

- 1.2.8 Category 2 Defects shall be repaired by the Company within planned programmes of Operations, whenever possible, taking into account the relevant priority for repair, which shall be recorded within the RMMF.
- 1.2.9 Identified maintenance activities shall be carried out by the Company within the stated response times unless specified otherwise in this Part.
- 1.2.10 The Company shall programme the check lists for inventory items within the RMMF into the data capture devices used for inspections and patrols such that:
- (i) only the permitted inventory and maintenance codes can be used within the relevant Detailed Inspection codes for each infrastructure item shown in Appendix; and
 - (ii) inventory codes can only be used if the inventory item exists in the individual section.
- 1.2.11 For roadside electrical assets, road lighting and power supplies, collection of information shall include the exact location and as installed unique identification of any faulty asset as identified from site.
- 1.3 Inspections and Patrols
- 1.3.1 The programme of inspections shall commence during the first week following the Restricted Services Commencement Date.
- 1.3.2 The Company shall carry out the following types of inspections:
- (i) Safety Inspections;
 - (ii) Safety Patrols;
 - (iii) Night Time Safety Patrols.
 - (iv) Ad hoc Inspections; and
 - (v) Detailed Inspections.
- 1.3.3 The Company shall operate procedures whereby its staff and employees travelling within the O&M Works Site, for purposes other than carrying out specified inspections, shall report any defects observed.
- 1.3.4 The Company shall undertake the inspections specified in paragraph 1.3.2 at the frequencies specified in Table 1.3, unless the requirements elsewhere in this Part and in Part 5 of these O&M Works Requirements are more onerous, in which case they shall apply.

Table 1.3 Inspection, patrol and Testing Frequencies

Safety Patrol frequency	Carried out such that interval between Safety Inspections and Safety Patrols does not exceed 4 days.
Safety Inspection frequency	Maximum of every 7 days
Night Time Safety Patrols frequency	April to Sept – Every 28 days Oct to March – Every 14 days (Note paragraph 1.7 requirements)
Detailed Inspections frequency	As paragraph 3.3.1 in Appendix A
Electrical Inspection and Testing to BS7671	As defined in TD23 of the DMRB and LDS8005, however electrical inspection and testing shall be at a maximum of 5 year intervals in accordance with Transport Scotland requirements.

1.3.5 At least 8 weeks prior to the Restricted Services Commencement Date the Company shall submit to the Contracting Authority an O&M Works Site inspection programme for the following Contract Year and thereafter at annual intervals.

1.4 Safety Inspections

1.4.1 Safety Inspections shall be designed primarily to identify Category 1 Defects. The inspection shall inspect all that can be seen within the O&M Works Site from a slow moving vehicle. Safety Inspections shall be carried out using trained personnel operating as a two person team. Personnel undertaking Safety Inspections shall deal with debris and hazards as specified in paragraph 1.4.3.

1.4.2 At least one Safety Inspection of all pedestrian and cycle facilities shall be carried out by the Company on foot every 6 months.

1.4.3 Category 1 Defects encountered by the Company shall be dealt with as set out in paragraph 1.2.6. Safety Inspection personnel shall also record other obvious Defects. Appendix A contains schedules of types of defects and some criteria information that should be considered and recorded by the Company.

1.4.4 The vehicle that shall be used for Safety Inspections shall as a minimum meet the following requirements:

- (i) it shall be conspicuously coloured with a sign attached at the rear stating "ROAD SURVEY" in accordance with Chapter 8 of the Traffic Signs Manual;
- (ii) it shall be fitted with roof mounted light bars or at least two amber flashing beacons in accordance with Chapter 8 of the Traffic Signs Manual;
- (iii) it shall be fitted with an automatic distance recorder reading at 1 metre intervals and accurate to +/- 1 percent;
- (iv) it shall be fitted with a communication system which shall enable immediate contact to be made with the appropriate depot; and

- (v) it shall carry signs and cones, to enable defects to be fenced off or to advise road Users of a defect.
- 1.4.5 Where possible Safety Inspections shall be carried out during off-peak traffic periods in order to minimise traffic disruption. At least 2 of these inspections each year shall be carried out either during or immediately following a period of wet weather to identify areas prone to flooding.
- 1.4.6 Safety Inspections shall be recorded against the network referencing and include the date and time each link and section was completed. All Safety Inspection data, including inspection route and defect data, shall be uploaded into the RMMF within 24 hours of the Safety Patrol commencing.
- 1.4.7 Slip roads and link roads within interchanges shall be inspected at the same frequency as the associated main carriageways of the O&M Roads.
- 1.5 Safety Patrols
 - 1.5.1 Safety Patrols supplement Safety Inspections by providing more frequent surveillance of the routes to identify Category 1 Defects.
 - 1.5.2 Safety Patrols, where possible, shall be carried out during off-peak traffic to minimise traffic disruption. The Company shall include documented procedures in its O&M Works Quality Plan for determining the appropriate inspection speeds for Safety Patrols.
 - 1.5.3 Safety Patrols shall be recorded against the network referencing and include the date and time each link and section was completed. All Safety Patrol data, including inspection route and defect data, shall be uploaded into the RMMF within 24 hours of the Safety Patrol commencing.
- 1.6 Night Time Safety Patrols
 - 1.6.1 The Company shall carry out night time Safety Patrols of all illuminated roadside electrical assets in accordance with the requirements of the DMRB except that they shall be carried out at intervals not exceeding 14 days from 1 October to 31 March and at intervals not exceeding 28 days from 1 April to 30 September.
 - 1.6.2 Night time Safety Patrol data shall be downloaded by the Company onto the RMMF within 24 hours of the survey being completed. The night time Safety Patrol data shall include details of weather conditions, road surface conditions, initials of the inspector and all other relevant factors
- 1.7 Ad hoc Inspections
 - 1.7.1 Ad hoc inspections shall be carried out as necessary in response to reports of defects or Incidents on the network from Company staff or any third party. The Company may use Incident Response Resources or other Company resources to carry out ad hoc inspections and investigate reported defects or Incidents.
 - 1.7.2 All confirmed Category 1 Defects and Category 2 Defects identified by ad hoc inspections shall be uploaded into the RMMF within 24 hours of identification.
- 1.8 Detailed Inspection Requirements
 - 1.8.1 Detailed Inspections shall be walking inspections which involve comprehensive scrutiny of the assets and are designed primarily to identify Category 2 Defects, with programmes of routine maintenance usually being derived to deal with them. In respect of Roadside Electrical apparatus the definition of 'Detailed Inspection' shall be as defined within TD23 of the

Design Manual for Roads and Bridges (DMRB).

- 1.8.2 Requirements for the Detailed Inspections are specified in this Part of these O&M Works Requirements, including its Appendix A. Detailed Inspections shall be completed within a maximum of 14 days of their programmed completion date, unless there is prior written agreement from the Contracting Authority to the contrary.
- 1.8.3 Arrangements for Detailed Inspections by the Company shall seek to minimise disruption to traffic, other road Users and the public whilst ensuring adequate access for proper inspection and a safe working environment for the inspection personnel involved. Whenever practicable Detailed Inspections that require Lane Occupations shall be carried out in conjunction with other maintenance work. Where separate Lane Occupations are necessary, inspections shall be undertaken in off-peak traffic conditions.
- 1.8.4 Detailed Inspections by the Company shall be carried out from the footway, hard shoulder, grass verge or nearside Lane, as appropriate.
- 1.8.5 Additional Detailed Inspections by the Company shall be carried out from the central reserve, protected by offside Lane Occupations, at intervals not exceeding 2 years. Inspections shall cover all items within and adjacent to the central reservation. Any centre Lanes and offside Lanes of the carriageway including the road markings and road studs of such Lanes, shall be inspected.
- 1.8.6 Appendix A of this Part defines the items that shall be inspected and the defects to be noted by the Company. The Company shall program check lists into the data capture devices used to record inspections. Detailed Inspection data including those showing a nil return, shall be entered by the Company onto the RMMF database within 4 days of completion of such inspections.
- 1.8.7 The Company shall validate the accuracy of inventory during Detailed Inspections. Any errors shall be recorded as a defect and corrected within four days. Such errors shall also be processed and corrected in accordance with the documented procedures in the Company's Quality System.
- 1.8.8 The maintenance response requirements are defined in this Part of these O&M Works Requirements in paragraph 1.2.7 for Category 2 Defects identified during a Detailed Inspection and in Section 2, including references to Appendix A of this Part, for maintenance activity requirements.

1.9 Observations by the Contracting Authority

1.9.1 General

- (i) The Contracting Authority may observe situations within the O&M Works Site which are immediately hazardous or non compliant with the O&M Works Requirements. In such circumstances a 'notice' shall be issued to the Company.
- (ii) Such notices shall not be deemed as instructions from the Contracting Authority to the Company.
- (iii) Such notices are a method of formally identifying issues on the network.
- (iv) The Company shall ensure it addresses and responds immediately to any hazard notice.

1.9.2 Notifications

- (i) Written confirmation of the hazard or non compliance shall be issued by the Contracting Authority on the same day it shall have been observed. This shall be sent directly to the Company by e-mail.
- (ii) Each such written confirmation shall be given a unique reference number by the Contracting Authority.
- (iii) Each such written confirmation shall include details of the hazard or non compliance and to whom and when the verbal report was given. Link, section and chainage shall be given, if available, for road defects and traffic management hazards and non compliances, together with a textual location description.
- (iv) Where possible a photograph shall be sent with each written hazard confirmation.

1.9.3 Actions by the Company

- (i) Once the Company shall have received a notice the Company shall respond directly to the Contracting Authority.
- (ii) The response from the Company shall be within 7 days unless the notice states otherwise. A faster response, for example 24 hours, may be required if surfacing operations shall be on-going or a slower response, for example 28 days, for issues such as weed growth.
- (iii) Such response time shall not be related to the time taken for action by the Company in dealing with an observation by the Contracting Authority. The response may take the form of a written reply showing the Company's intended actions or reasons for no action. The Company shall be under no obligation to work to any deadline other than those contained in this Agreement.

1.9.4 Monitoring of Notices Issued by the Contracting Authority

- (i) A record of each notice issued by the Contracting Authority, including the date of issue, their required reply date, and the response from the Company, shall be maintained by the Company.

2 Routine and Cyclic Maintenance: Activities

2.1 Carriageway

2.1.1 General

- (i) The requirements of this Section 2.1 shall relate to the surface of carriageways, which shall include, hard strips, hard shoulders, crossovers, lay-bys, central islands and central reserves.
- (ii) These requirements cover minor repairs to surfaces and shall include operations to maintain the carriageway in a safe and acceptable condition. This includes the repair of individual potholes or the patching of limited areas where surface deterioration shall require attention.
- (iii) These requirements do not include the replacement or renewal of those parts of the O&M Works Site which shall have become unserviceable and which require structural pavement maintenance work including surface dressing.

2.1.2 Inspection Requirements

- (i) Inspection of carriageways shall be carried out by the Company in accordance with the requirements of Section 1 of this Part.
- (ii) Inspections shall be carried out at the intervals and frequencies defined in Section 3.3 of Appendix A to this Part. Detailed Inspections of carriageways shall be used by the Company to identify those types of defects likely to require Routine Maintenance, including additional structural pavement condition surveys, and shall not be used by the Company to establish general structural pavement condition.

2.1.3 Cyclic Maintenance

- (i) Cyclic maintenance of carriageways shall include but not be limited to weed control in accordance with Clause 3002 of the Specification.

2.2 Non-Motorised User Facilities

2.2.1 General

- (i) The requirements of this Section 2.2 shall relate to repairs to non motorised User facilities and shall include Operations to maintain the non motorised User facilities in a safe and acceptable condition. This shall include the repair of individual potholes or the patching of limited areas where surface deterioration requires attention. It shall also relate to the identification of areas requiring the replacement or renewal of those parts which have become unserviceable and which shall require structural pavement maintenance.
- (ii) Pedestrian facilities shall be non motorised User facilities and shall include paved areas for pedestrians within the O&M Works Site. Pedestrian facilities include footpaths, footways, the walking surfaces of subways, underbridges, overbridges and pedestrian rights of way within the O&M Works Site.
- (iii) Cycle facilities shall be non motorised User facilities and shall

include paved facilities available for persons with pedal cycles with or without a right of way on foot within the O&M Works Site.

- (iv) Cyclic maintenance of pedestrian and cycle facilities shall include but not be limited to weed control in accordance with Clause 3002 of the Specification.

2.2.2 Inspection Requirements

- (i) Inspection of non motorised User facilities shall be carried out by the Company in accordance with the requirements of Section 1 of this Part.
- (ii) The Company shall carry out Detailed Inspections by employees on foot.

2.2.3 Maintenance Requirements

- (i) Pre-cast concrete or stone footway slabs which shall have only superficial cracks need not be replaced as a routine maintenance operation unless there shall be a need to reset the slab because of another defect.
- (ii) Graffiti shall be treated as a Category 2.1 Defect and shall be removed by the Company.
- (iii) Cyclic maintenance of non motorised User facilities shall include but not be limited to weed control in accordance with Clause 3002 of the Specification.

2.3 Covers, Gratings, Frames and Boxes

2.3.1 General

- (i) The requirements of this Section 2.3 shall relate to repairs and replacement of all types of gratings covers frames and boxes within carriageways, verges and non motorised User facilities within the O&M Works Site.
- (ii) Many covers in carriageway, verges and non motorised User facilities are the responsibility of Undertakers and other parties. The New Roads and Streetworks Act 1991 Act (Section 82) requires an Undertaker to maintain its apparatus in the street to the reasonable satisfaction of the roads authority. Covers, gratings or frames associated with the Traffic Scotland Maintained Equipment are the property of the Scottish Ministers and the responsibility to maintain this apparatus shall fall to the Company.
- (iii) Where an inspection or Safety Patrol by the Company identifies a hazardous defect it shall be made safe in accordance with the requirements of paragraph 1.2.6.
- (iv) Where the cover or frame that has a defect is the property of an Undertaker or third party the Company shall give notice to the Undertaker or third party to carry out permanent repairs within a specified period equal to that in which the Company would be required to complete similar repairs.
- (v) Records of defects of Undertakers' apparatus and of actions taken shall be entered into the RMMF. Category 1 Defects shall remain recorded as un-repaired in the RMMF until the Company shall witness that a permanent repair shall have been completed.

- (vi) The performance of the Undertakers shall be monitored by the Company using the RMMF and reported to the Contracting Authority within 4 weeks of the end of the Contract Year.

2.3.2 Inspection Requirements

- (i) Inspection of gratings covers frames and boxes shall be carried out by the Company in accordance with the requirements of Section 1 of this Part.
- (ii) The Company shall, when inspecting the gratings of gullies and other similar surface water catchment items take the opportunity to check that the item is functioning satisfactorily.
- (iii) Rocking gratings or covers with only small movements under load may nevertheless be a nuisance in semi-urban areas because of the intrusive noise they make. If complaints shall be received the Company shall inspect such defects and if confirmed they shall be treated as Category 2.1 Defects.

2.3.3 Maintenance Requirements

- (i) The Company shall replace a cracked or broken item where it is unstable.
- (ii) Cyclic maintenance of gratings covers frames and boxes shall include but not be limited to weed control in accordance with Clause 3002 of the Specification.

2.4 Kerbs, Edgings and Pre-formed Channels

2.4.1 General

- (i) The requirements of this Section 2.4 shall relate to repairs to kerbs edgings quadrants and pre-formed channels of all types and shall include maintaining these items in a safe and acceptable condition.

2.4.2 Inspection Requirements

- (i) Inspection of kerbs edgings quadrants and pre-formed channels shall be carried out by the Company in accordance with the requirements of Section 1 of this Part.

2.4.3 Maintenance Requirements

- (i) The Company shall include short, sometimes isolated, lengths of kerb serving gullies or grips.
- (ii) Routine Maintenance of kerbs and edgings shall include but not be limited to weed control in accordance with Clause 3002 of the Specification.

2.5 Road Drainage

2.5.1 General

- (i) The requirements of this Section 2.5 shall relate to all types of road drainage including piped drainage systems, gullies, catchpits and interceptors, piped grips, ditches, filter drains, culverts and small span bridges, settlement, attenuation and storage ponds and otherwise, along with any related ancillary items.
- (ii) In determining the requirements for maintenance of road drainage the following points shall be considered by the Company:

- (a) Surface water reduces safety particularly if allowed to pond on a running carriageway;
 - (b) The road pavement structure shall be adequately drained to allow reduction of maintenance responsibilities and prolong the life of the road;
 - (c) The Relevant Authorities have a duty to prevent nuisance to adjoining landowners by flooding and to ensure that polluted effluent from the clearing of road drainage shall not be directed indiscriminately into watercourses.
- (iii) Maintenance considerations in this Section 2.5 shall be in addition to those stated in paragraphs 1.2.7 to 1.2.9, inclusive.
 - (iv) The Company shall identify parts of the road drainage that regularly do not operate satisfactorily and take the necessary remedial action to solve the problem.
 - (v) The Company shall apply the requirements of this Section 2.5 to the requirements of Sections 2.6 to 2.15, inclusive.

2.6 Piped Drainage Systems

2.6.1 General

- (i) The requirements of this Section 2.6 shall relate to piped drainage systems. Piped drainage systems shall include, but shall not be limited to, piped drains, combined drainage and kerb systems, feeder pipes, slot drains, kerb or channel offlet pipes, kerb block drains, channels through chambers, piped grips covered by the Series 500 of the Specification, drainage facilities that are not Structures and other drains not defined in Sections 2.11 or 2.12 as filter drains or culverts and small span bridges.
- (ii) Piped grips shall be defined as short lengths of pipe carrying water from a road channel across a verge to a ditch, piped drainage system or chamber.
- (iii) Piped grips are often located at known sensitive drainage points and therefore shall require regular attention by the Company. The connecting pipe often laid close to the surface and shall therefore be prone to damage which may in turn result in blockage.
- (iv) Piped drainage systems should be self-cleansing and maintenance shall only become necessary when a blockage or other fault occurs.
- (v) The Company shall identify parts of piped drainage systems that regularly do not operate satisfactorily, including from inspections, Safety Patrols, reports from emergency services and complaints, request or comments from the public, and shall rectify those parts that regularly do not operate satisfactorily.

2.6.2 Inspection Requirements

- (i) Detailed Inspection piped drainage systems shall be carried out by the Company in accordance with the requirements of Section 1 at intervals of 1 and 2 years respectively.
- (ii) Detailed Inspections shall be external and carried out from each end of each section of each length of the piped drainage system to determine general structural condition and signs of silting or blockage.

- (iii) The content of Section 2.5 shall be considered by the Company when inspecting or investigating defects or potential defects of piped drainage systems.

2.6.3 Maintenance Requirements

- (i) Maintenance in accordance with Clause 6104AR of Part 5 of the O&M Works Requirements shall be carried out on all piped drainage systems when blockages or major restrictions in capacity shall be detected.
- (ii) The Company shall pressure jet with clean water all slot drains and all kerb block drains once per year to remove any silt and ensure free flow. All debris lodged in the slots or block holes shall be removed at this time.
- (iii) The Company shall clean other drains when blockages or major reductions in capacity leading to flooding occur.

2.7 Gullies, Manholes, Catchpits and Interceptors

2.7.1 General

- (i) The requirements of this Section 2.7 shall relate to gullies manholes catchpits, soakaways, oil separators and other interceptors.
- (ii) The content of Section 2.5 shall be considered by the Company when inspecting or investigating defects or potential defects of gullies manholes catchpits, soakaways, oil separators and other interceptors.

2.7.2 Inspection Requirements

- (i) The inspection shall be carried out by the Company when the items shall be open for emptying.
- (ii) Inspection of gullies manholes catchpits, soakaways, oil separators and other interceptors shall be carried out by the Company in accordance with the requirements of Section 1.

2.7.3 Maintenance Requirements

- (i) The Company shall empty gullies manholes catchpits and interceptors when necessary to ensure water does not stand on the adjacent carriageway or flow past the gully and shall ensure that silt traps and oil separators and otherwise are effective.
- (ii) The Company shall dispose of all collected sediment debris and polluted water to a licensed waste management facility in accordance with the requirements of Scottish Environment Protection Agency (SEPA), unless SEPA agree otherwise. Where SEPA agree, polluted water may be disposed of in an alternative manner provided the necessary discharge consents arrangements with sewerage Undertakers and permits have been obtained.
- (iii) Polluted water shall not be used to dislodge compacted materials in a gully or catchpit if there is any risk of that water being discharged into the drainage system. Polluted water shall not be used to refill gully pots. After emptying shall have been carried out the outlet pipe of gullies shall be jetted with clean water when practicable to ensure that it shall be flowing freely away. Any restrictions in flow shall be noted and the Company shall undertake investigations as necessary.

- (iv) The Company shall cleanse oil interceptors to avoid pollution.
- (v) The Company shall not jet or surcharge gullies with polluted water or discharge polluted water and/or sludge into watercourses or land other than suitably licensed waste management facilities.
- (vi) Cyclic Maintenance shall be carried out in accordance with Clause 6102AR of Part 5 of the O&M Works Requirements at frequencies required by that Clause and in any case not less than once in each Contract Year.

2.8 Drainage Grips

2.8.1 General

- (i) The requirements of this Section 2.8 shall relate to drainage grips defined as open channels cut across rural verges and leading to ditches, piped drainage systems or filter drains.
- (ii) Drainage grips are often located at known sensitive drainage points.
- (iii) The open channel of drainage grips can be prone to damage which may result in blockage.
- (iv) The content of Section 2.5 shall be considered by the Company when inspecting or investigating defects or potential defects of drainage grips.

2.8.2 Inspection Requirements

- (i) Inspection of drainage grips shall be carried out by the Company in accordance with the requirements of Section 1 of this Part.

2.8.3 Maintenance Requirements

- (i) The Company shall clean and recut drainage grips, including at locations where there shall be a drainage need but there shall be no evidence of a drainage grip, as necessary, such that free flow shall not be impeded and water shall not stand on the carriageway adjacent to the grip.
- (ii) Cyclic Maintenance shall be carried out in accordance with Clause 6103AR of Part 5 of the O&M Works Requirements at frequencies required by that Clause and in any case not less than once in each Contract Year and as and when blockages occur.

2.9 Ditches

2.9.1 General

- (i) The requirements of this Section 2.9 shall relate to ditches.
- (ii) If not properly monitored ditches can become overgrown with vegetation, silted up, blocked with debris or rubbish and suffer bank erosion to the extent that the flow becomes impeded.
- (iii) These undesirable effects shall be prevented by the Company. Water in ditches shall not in itself be normally harmful unless stagnation occurs (resulting in a possible health hazard), flooding shall be caused or a resulting higher water table adversely affects the road or other structural foundations. Defects can also cause a nuisance to adjacent land users.
- (iv) The content of Section 2.5 shall be considered by the Company when inspecting or investigating defects or potential defects of

gullies manholes catchpits, soakaways, oil separators and other interceptors.

2.9.2 Inspection Requirements

- (i) Inspection of ditches shall be carried out by the Company in accordance with the requirements of Section 1 of this Part.
- (ii) The Company shall carry out Detailed Inspections at intervals not exceeding 5 years.

2.9.3 Maintenance Requirements

- (i) The Company shall clear out ditches as necessary such that free flow shall not be impeded.
- (ii) Cyclic maintenance of ditches shall include but not limited to weed control in accordance with Clause 3002 of the Specification.

2.10 Filter Material, Filter Drains and Soakaways

2.10.1 General

- (i) The requirements of this Section 2.10 shall relate to filter material, filter drains and soakaways, which may incorporate a properly formed invert or collection pipe. If pipes are incorporated the requirements in this Section 2.10 shall also apply.
- (ii) Filter drains and soakaways act as a drain for surface water run-off from carriageways, hardshoulders, verges, cutting and embankment slopes and adjacent land. Separately or in combination they also control the ground water level below the O&M Works Site and other structures, adjacent verges, and land outside the O&M Works Site.
- (iii) The efficiency of filter drains and soakaways can be impaired by the formation of a silt crust (with attendant vegetation growth) at the top of the filter material or by the accumulation of trapped silt in the lower layers. Each defect can occur with or without the other.
- (iv) The surface defect can be detected by inspection at ground level, but the deeper accumulations can only be confirmed by excavation, usually by means of trial pits. Ponding at the surface may occur if defects are present where the drain performs the dual role of the surface and sub-surface water collection. If there shall be no obvious surface defect, ponding may indicate silt in the lower layers.
- (v) The content of Section 2.5 shall be considered by the Company when inspecting or investigating defects or potential defects of filter material, filter drains and soakaways.

2.10.2 Inspection Requirements

- (i) Inspection of filter material, filter drains and soakaways shall be carried out by the Company in accordance with the requirements of Section 1 of this Part.

2.10.3 Maintenance Requirements

- (i) The Company shall undertake maintenance in accordance with Clause 6105AR of Part 5 of the O&M Works Requirements at the following minimum frequencies:
 - (a) 3 years in verges and central reserves; and
 - (b) 5 years in areas remote from the carriageway.

- (ii) Cyclic Maintenance of filter material shall include but not be limited to weed control in accordance with Clause 3002 of the Specification.

2.11 Culverts, Small Span Bridges and Drainage Structures

2.11.1 General

- (i) The requirements of this Section 2.11 shall relate to culverts, small span bridges and drainage structures.
- (ii) Culverts, small span bridges and drainage structures shall include box culverts and drainage structures other than Structures and other than piped drainage systems.
- (iii) Many culverts, small span bridges and drainage structures can tolerate some silting and vegetation growth before efficiency is impaired to the point where they shall be cleared. Grilles, trash screens or watergates fitted across the ends of some culverts are however particularly prone to blockage restricting the free flow of water through the culvert.
- (iv) The content of Section 2.5 shall be considered by the Company when inspecting or investigating defects or potential defects of culverts, small span bridges and drainage structures.

2.11.2 Inspection Requirements

- (i) Inspection of culverts, small span bridges and drainage structures shall be carried out by the Company in accordance with the requirements of Section 1, subject to paragraph 2.11.2 (ii).
- (ii) The Company shall carry out Detailed Inspection twice yearly in February or March and September or October each year and shall include the inspection of grills, trash screens and watergates.

2.11.3 Maintenance Requirements

- (i) Cyclic Maintenance shall be carried out in accordance with Clause 6106AR of Part 5 of the O&M Works Requirements as required either during the Detailed Inspection or within 28 days of the Detailed Inspection or at such times as may be required when blockages or major reductions in capacity shall be detected.

2.12 Settlement, Attenuation and Balancing Ponds

2.12.1 General

- (i) The requirements of this Section 2.12 shall relate to settlement, attenuation and balancing ponds and otherwise. These requirements exclude any associated feeder pipes or ditches as referred to in Sections 2.6 to 2.9.
- (ii) Settlement, attenuation and balancing ponds and otherwise and associated feeder pipes or ditches are provided for flood control and anti-pollution purposes.
- (iii) The Company shall pay particular attention to the following possible faults and safety aspects. Typical defects that shall be categorised shall include but not be limited to:
 - (a) silting in the settlement, attenuation and balancing ponds and otherwise causing a loss of storage capacity;

- (b) damage or erosion to the banks, walls or bunds of settlement, attenuation and balancing ponds and otherwise;
 - (c) damage or obstruction to the settlement, attenuation and balancing ponds and otherwise outlet which shall or may affect the controlled rate of discharge; and
 - (d) safety aspects including, but not limited to, the maintenance of fences, screens or planting to prevent the public, particularly children, gaining access.
- (iv) Settlement, attenuation and balancing ponds and otherwise may become important sites for nature conservation. Prior to commencing any maintenance of a pond the Contracting Authority shall be consulted by the Company to ascertain whether specialist environmental advice shall be required.
- (v) Settlement, attenuation and balancing ponds and otherwise may be sited some distance from the roads in the O&M Works Site.

2.12.2 Inspection Requirements

- (i) Inspection frequencies in accordance with the requirements of Section 1 shall not apply to settlement, attenuation and balancing ponds and otherwise.
- (ii) The Company shall carry out Detailed Inspections of settlement, attenuation and balancing ponds and otherwise at 6 month intervals. One inspection shall take place in the spring and one in the autumn.

2.12.3 Maintenance Repairs

- (i) The Company shall carry out Operations as necessary to ensure that free flow shall not be impeded and capacity not be measurably or otherwise significantly diminished.
- (ii) There shall be no Cyclic Maintenance requirements for settlement, attenuation and balancing ponds and otherwise. However, maintenance shall include weed control in accordance with Clause 3002 of the Specification and in compliance with 2.12.1 (iv) of this Part.

2.13 Ancillary Drainage Items

2.13.1 General

- (i) The requirements of this Section 2.13 shall relate to ancillary drainage items. Ancillary drainage items shall include but not be limited to outfalls, headwalls, aprons, sluices, tidal flaps, penstocks, valves, spillways, trash screens, watergates, grilles, tidal flaps, pumps and other specialist equipment.
- (ii) The Company shall inspect the complete drainage system which may include many ancillary items. Inspections shall note erosion, mechanical damage and operational efficiency.
- (iii) A schedule of ancillary items for drainage, including but not limited to: headwalls, aprons, spillways, trash screens, watergates, grilles, all sluices, tidal flaps, penstocks, valves and pumps, shall be provided and maintained by the Company.
- (iv) The content of Section 2.5 shall be considered by the Company

when inspecting or investigating defects or potential defects of ancillary drainage items.

2.13.2 Inspection Requirements

- (i) Inspection frequencies in accordance with the requirements of Section 1 shall not apply to ancillary drainage items.
- (ii) The Company shall carry out Detailed Inspections of outfalls headwalls and aprons at intervals of not exceeding 1 year.
- (iii) The Company shall carry out Detailed Inspections of ancillary drainage items other than outfalls headwalls and aprons at 6 monthly intervals during the spring and autumn of each year.
- (iv) The Company shall carry out Detailed Inspections of pumps and other specialised mechanical equipment at intervals not exceeding 6 months or in accordance with the manufacturers' written recommendations and/or instructions if these shall be more frequent.

2.13.3 Maintenance Requirements

- (i) Cyclic Maintenance shall be carried out in accordance with Clause 6107AR of Part 5 of the O&M Works Requirements either during the Detailed Inspection or within 28 days of the Detailed Inspection or as required to ensure free flow shall not be impeded.

2.14 Flooding

2.14.1 General

- (i) The requirements of this Section 2.14 shall relate to maintenance requirements in the event of flooding of the O&M Works Site caused by the inadequate provision or operation of road drainage, abnormally high river and tidal water, or by inadequacies in the non-road drainage system.
- (ii) The Company shall ensure that the drainage systems and associated Structures referred to in this Part are maintained in accordance with the requirements of this Part to be structurally sound and able to remove water from trafficked surfaces and sub-layers without causing pollution and flooding and that the effects of any flooding are mitigated.
- (iii) Flooding shall be defined as a sufficient amount of water lying on the network which:
 - (a) represents a hazard to Users;
 - (b) may interrupt the free flow of traffic; or
 - (c) causes damage to other Structures or the carriageway.
- (iv) Flooding may arise from a blockage or some other fault identified as a result of an inspection, patrol, report from an Emergency Service, report or complaint from the public or complaint from any other source. Flooding may also arise from a blockage or some other fault in the drainage systems on adjoining properties or land which interfaces with the O&M Roads network drainage systems.
- (v) Where immediate repairs do not remove the flooding, the Company shall erect flood warning signs where any or all of the situations referred to in paragraph 2.14.1(iii) of this part occur.

- (vi) A flooding report in the format shown in Appendix M of this Part shall be completed for each occurrence of flooding and attached to the relevant Defect Record in the routine maintenance and management function of the Integrated Road Information System within four days. Additional documentation such as photographs, reports and results of further investigation shall also be attached.

2.14.2 Inspection Requirements

- (i) The Company shall carry out inspections to determine areas prone to flooding and report the findings to the Contracting Authority within 12 months of the Restricted Services Commencement Date and annually thereafter.
- (ii) The Company shall carry out Detailed Inspections during periods of wet weather:
 - (a) at known flooding Disruption Risk Sites, and
 - (b) to identify other areas of flooding or evidence of flooding.
- (iii) The Company shall also carry out Detailed Inspections as necessary to identify any flooding reported as a result of an inspection, patrol, report from Emergency Service, report or complaint from the public or complaint from any other source.
- (iv) Information gathered from such inspections shall be taken into account when preparing the flooding management plan.

2.14.3 Maintenance Requirements

- (i) Where flooding occurs causing hazardous conditions the Company shall immediately place in position warning signs and, if necessary, closure and diversion signs. Road closures, Lane Occupations, diversions and otherwise may be required in certain instances. The Company shall carry out such Operations as are necessary to allow the O&M Works Site to be re-opened promptly. As soon as the O&M Works Site is reopened, the Company shall immediately remove all warning, closure and diversion signs and otherwise.
- (ii) When any serious flooding shall have occurred, the Company shall carry out an investigation into the causes and shall submit to the Contracting Authority within 14 days of such incident a report explaining the cause(s) of the flooding, what actions the Company shall have taken, what further actions the Company shall be planning to take and explaining any limitations on these actions for preventing reoccurrences of the flooding and, if relevant, make recommendations to the Contracting Authority when mitigation actions shall be outside the responsibility of the Company.
- (iii) If the cause of the flooding shall be attributable to the actions of a third party the Company shall notify in writing the third party immediately and request that action shall be taken to prevent the flooding. The Company shall report such incidents in writing to the Contracting Authority.

2.15 Network Operations and Miscellaneous Equipment

2.15.1 General

- (i) The requirements of this Section 2.15 shall relate to Traffic Scotland

- Maintained Equipment, miscellaneous equipment and communications equipment, which shall include but not be limited to the equipment described at paragraph 6.1.4.
- (ii) Maintenance of the Traffic Scotland Active Maintained Equipment defined in paragraph 6.1.2 shall be undertaken by authorised contractors under separate contracts which shall be managed directly by Transport Scotland and out with the scope of this Agreement apart from provision of traffic management measures defined in Section 6.
 - (iii) The extent of the Company's inspection, maintenance, replacement, repair and any other Service responsibilities for Traffic Scotland Maintained Equipment required in Section 6 shall take precedence over the requirements in this sub-section 2.15.
 - (iv) The Company shall carry out Detailed Inspections of all the equipment described in paragraph 2.15.2 and the results shall be entered into the RMMF and transferred into the Fault Quality System, as described in Section 1 and Section 6.
 - (v) The Company shall not interfere with any equipment defined in paragraph 6.1.2 which it shall have inspected but shall ensure that any faults identified in that equipment during the course of the Company's Detailed Inspections shall be reported to the Traffic Scotland Manager via the Fault Quality System described in Section 6.
 - (vi) The Company shall hold a record of the above ground equipment in the RMMF. In addition the Company shall maintain record drawings showing the installation location, origin and destination of communication cable runs, electrical supply and associated power cables to equipment and cabinets. These records shall be amended by the Company within 14 days of any change to the installations and copied to the Traffic Scotland Manager.
 - (vii) Where access is required by any of the parties to an electrical equipment cabinet that provides electrical energy to both a Company maintained device and communications and miscellaneous equipment maintained by others, it shall be undertaken in accordance with the access procedure set out in Appendix N of this Part. The maintenance, inspection and testing regime for such electrical equipment cabinets is set out in Appendix N of this Part.

2.15.2 Inspection Requirements

- (i) The Company shall carry out Detailed Inspections on the various items of equipment in accordance with the requirements in Section 1, except as defined otherwise in this Part and as follows:
 - (a) Matrix Signals and Variable Message Signs
 - (i) The Company shall carry out Detailed Inspections of matrix signals and variable message signs for obscuration legibility and physical damage including legibility of the signal identification number every 3 months.
 - (b) Equipment Cabinets
 - (i) The Company shall carry out Detailed Inspections of

cabinet sites to check their structural condition and surface protective finish, the satisfactory operation of seals, hinges and locks, the apparent waterproofness of the installation and that paths, steps and handrails provide safe unobstructed access and to confirm that external identification numbers are still present.

(c) CCTV and Speed Cameras

- (i) The Company shall carry out inspections every 3 months for physical damage and safe access.

2.15.3 Maintenance Requirements

- (i) The following requirements shall be in addition to those stated in paragraph 1.2.6 and Section 6.
- (a) Any breakdown or damage to any of the types of equipment listed in paragraph 2.15.2 which shall render it inoperable or unsafe shall be deemed to be an emergency and where such equipment is the responsibility of others, as referred to in paragraph 2.15.1, the Company shall provide such assistance to the Scottish Minister's authorised contractor as may be required.
- (b) In addition the Company shall comply with the night time Safety Patrols requirements of Section 1.6 of this Part.

2.16 Embankments and Cuttings

2.16.1 General

- (i) The requirements of this Section 2.16 shall relate to inspections by the Company of embankments and cuttings, including rip-rap faces.
- (ii) The Company shall perform the functions of the managing agent as specified in HD 41 of the DMRB.
- (iii) Guidance on inspections by the Company and on failure modes and their identification together with procedures for repairs are specified in HD41 of the DMRB.
- (iv) Geotechnical assets may be in the ownership of the adjacent landowner and if so it may be the landowner's responsibility to maintain the stability of the asset from adversely affecting the O&M Works Site. The Company shall inform in writing any adjacent landowner of any potential geotechnical problems on his land which could affect the O&M Works Site and liaise with the landowner regarding take the necessary remedial action. The Company shall consult with the Contracting Authority on the necessary course of action.

2.16.2 Inspection Requirements

- (i) Inspection frequencies in accordance with the requirements of Section 1 shall not apply to embankments and cuttings.
- (ii) The Company shall carry out Detailed Inspections of all embankments and cuttings to check for any indication of instability at intervals not more than 1 year in accordance with the inspection, maintenance and records, including RMMF, requirements of HD41 of the DMRB.

- (iii) Where the Company finds evidence that an embankment or cutting may be unstable in any way a slope failure report (using Geotechnical Maintenance Form Part A in Appendix B to HD 41 of the DMRB) together with a remedial works proposal (using Geotechnical Maintenance Form Part B in Appendix B to HD 41 of the DMRB) shall be submitted to the Contracting Authority within 14 days of the inspection.
- (iv) In addition to the inspection requirements of this Section 2.16, the Company shall increase the inspection frequency in order to ensure that the safety of Users, the public and adjacent landowners shall be maintained if it shall be found that areas of the O&M Works Site become prone to regular Defects appearing that could in any way be due to geotechnical instability.

2.16.3 Maintenance Requirements

- (i) The Company shall carry out Operations to remove debris from behind netting, repair and replace netting, removal of debris in rock traps and from behind rock fences and shall deal with Emergencies in accordance with these O&M Works Requirements.
- (ii) Other maintenance shall only be undertaken with the agreement of the Contracting Authority following the submission of the Geotechnical Maintenance Forms Part A and Part B as specified in paragraph 2.16.2.

2.17 Geotechnical Assets

2.17.1 General

- (i) Geotechnical assets include cuttings and embankments and a wide range of natural geological strata and man-made materials, many of which may have been reworked, mixed or modified. These materials may also be supported, strengthened or drained to aid stability or reduce subsidence.
 - (ii) Geotechnical assets may be in the ownership of the adjacent land owner. Where they are not the responsibility of the Contracting Authority, it is the landowner's responsibility to maintain the stability of the assets to prevent them from affecting the O&M Roads adversely. The Company shall notify adjacent landowners, in writing, of any potential geotechnical problems on their land which could affect the O&M Roads and liaise with the landowner regarding the necessary remedial action. Copies of all correspondence shall be forwarded to the Contractor. The Company shall report any recommendations regarding remedial action and any failures of the landowners in fulfilling their responsibilities to the Contracting Authority.
 - (iii) Guidance on inspections by the Operating Company and on geotechnical features, their identification and the procedures for repairs shall be as detailed in the DMRB.
- (a)

2.17.2 Inspections

- (i) Detailed Inspections of geotechnical assets shall be carried out at intervals not exceeding 12 months.

2.17.3 Maintenance

- (i) Maintenance of geotechnical assets shall be carried out as necessary in accordance with clause 6130AR of the Specification and shall include the removal of debris from behind netting, in rock.

2.18 Sweeping and Cleansing of Roads

2.18.1 General

- (i) The requirements of this Section 2.18 relate to the Scottish Ministers' duty under Sections 89(1) and (2) of the Environmental Protection Act 1990 to keep motorways and special roads clear of litter and refuse and to keep motorways and special roads clean.
- (ii) In carrying out this duty the Company shall comply with the Code of Practice on Litter and Refuse and in any case litter shall not be allowed to fall below grade C as specified in the CoP.
- (iii) Special roads to which these requirements shall apply are the A90 and A956 Special Roads.
- (iv) For the purpose of this Agreement any reference to grassed areas in the Code of Practice for Litter and Refuse shall include all areas of the O&M Works Site other than hard surfaced areas.

2.18.2 Inspection Requirements

- (i) Detailed Inspections in accordance with the requirements of Section 1 shall not apply to sweeping and cleansing of roads.

2.18.3 The O&M Works Quality Plan shall document how it shall comply with the requirements referred to in this Section 2.19 and in Clause 3101AR of Part 5 of the O&M Works Requirements.

2.18.4 Maintenance Requirements

- (i) O&M Roads subject to Trunk Road Level of Service
 - (a) The Company shall ensure all areas within the boundaries of the O&M Roads subject to Trunk Road Level of Service shall be swept and/or scavenged as the need arises in order to remove litter, refuse and debris and achieve the standards of cleanliness set out in the Environmental Protection Act 1990: Code of Practice on Litter and Refuse. If a particular source of wind blown litter can be identified the Company shall request the owners to control their site more effectively. The Company shall send a report to the Contracting Authority detailing the problem and action taken.
 - (b) Dealing with detritus and vegetation growth in channels which is likely to obstruct the flow of water or cause structural deterioration does not fall within the scope of the Environmental Protection Act 1990.
- (ii) O&M Roads subject to Access Road Level of Service
 - (a) On O&M Roads subject to Access Road Level of Service the Company shall ensure all road maintenance requirements of sweeping and cleansing shall be met including the service of notices under the Environmental Protection Act 1990.
 - (b) Dealing with detritus and vegetation growth in channels, which is likely to obstruct the flow of water or cause structural deterioration, does not fall within the scope of the Environmental

Protection Act 1990. Such detritus and growth shall be treated in accordance with the requirements of Section 2.12.

2.18.5 Requirements over and above the Environmental Protection Act 1990

- (i) Notwithstanding the requirements of the Environmental Protection Act 1990 the Company shall sweep twice each Contract Year all paved areas including non motorised User facilities within the O&M Works Site where this has not been carried out by the local authority.

2.18.6 Maintenance in respect of sweeping and cleansing and litter and refuse shall comply with the requirements of Clauses 3101AR and 3102AR of Part 5 of the O&M Works Requirements.

2.19 Removal of Dead Animals

2.19.1 General

- (i) The Company shall comply with the requirements of Clause 3103AR of Part 5 of the O&M Works Requirements.
- (ii) Dead animals which constitute a hazard or a risk to health or to the environment shall be treated as Category 1 Defects. All other dead animals will be removed within 24 hours of notification or discovery.
- (iii) If the animal is a domestic pet any microchip identification shall be scanned and any identification tags shall be removed and delivered to the police together with a brief description of the animal.
- (iv) The Company shall attempt to contact the owner of the dead animal and shall keep the carcass of any domestic animal for a period of 2 weeks in conditions to prevent further deterioration in case the owner wishes to claim back the carcass. After this period, the Company shall dispose of the carcass in accordance with the requirements of the local authority.
- (v) There shall be no requirement to keep the carcass of any non-domestic animal, which shall be disposed of in accordance with the requirements of the local authority.

2.19.2 Inspection Requirements

- (i) There shall be no Detailed Inspection requirement for removal of dead animals.

2.19.3 Maintenance Requirements

- (i) There shall be no Routine Maintenance requirement for removal of dead animals.
- (ii) Cleaning shall include as a minimum hand or mechanical sweeping of all hard areas, removal of objects, water supply, removal of sweepings and disposal of material and objects.

2.20 Road Restraint Systems (Pedestrian and Vehicular)

2.20.1 General

- (i) The requirements of this Section 2.20 shall relate to road restraint systems (pedestrian and vehicular) including but not limited to:
 - (a) tensioned corrugated beam safety fence;
 - (b) untensioned corrugated beam safety fence;

- (c) open box beam safety fence;
 - (d) tensioned rectangular hollow section safety fence;
 - (e) wire rope safety fence;
 - (f) concrete barriers; and
 - (g) pedestrian guard railing as defined in paragraph 4.21 of BS EN 1317-1:1998.
- (ii) The requirements of this section shall not relate to vehicle parapets as defined in paragraph 4.14 of BS EN 1317-1:1998.
 - (iii) All inspections and maintenance of road restraint systems shall comply with BS7669 Part 3: 1994.

2.20.2 Inspection Requirements

- (i) Detailed Inspections in accordance with the frequency requirements of Section 1 shall not apply to vehicle road restraint systems.
- (ii) The Company shall carry out Detailed Inspections of all vehicle road restraint systems excluding concrete barriers at intervals not exceeding 2 years, but including in respect of mounting height, surface protective treatment and structural condition. The Detailed Inspection shall be carried out in accordance with the requirements of BS7669 Part 3: 1994.
- (iii) The Company shall carry out Detailed Inspections at intervals not exceeding 2 years of all tensioning devices.
- (iv) The Company shall carry out Detailed Inspections of concrete barriers in respect of height and structural condition at intervals not exceeding 2 years.
- (v) The Company shall carry out inspections of pedestrian road restraint systems in accordance with the requirements of Section 1 with respect to height and condition.

2.20.3 Because of the potential danger to Users, damaged sections of road restraint systems (pedestrian and vehicular) shall be treated as Category 2 Defects.

2.20.4 Maintenance Requirements

- (i) The following requirements shall be in addition to those stated in paragraphs 1.2.6 to 1.2.10.
- (ii) Maintenance of road restraint systems shall include, inter alia, the repair of damaged sections and correct assembly and Operation, including the tension of steel tensioned road restraint systems, including wire rope.
- (iii) Where an inspection shows a section of steel road restraint system extending to 20 metres or more to be mounted at heights outside the limits specified in paragraph 2.21.5 the Company shall remedy the situation within 12 weeks of such inspection. Where a survey shows inadequate surface protection this shall be treated as a Category 2 Defect.
- (iv) The Company shall reset road restraint systems connections to the correct torque when inspections shall be undertaken.

2.20.5 Mounting Heights for Steel Road Restraint Systems

- (i) The specified limits of the mounting heights for the various steel road restraint systems shall be:
 - (a) Tensioned Corrugated Beam and Open Box Beam Road Restraint Systems:
580 millimetre to 640 millimetre to the centre of the beam.
 - (b) Wire Rope Road Restraint Systems:
575 millimetre to 595 millimetre to mid point of top ropes; and
480 millimetre to 500 millimetre to centre line of lower ropes.
 - (c) Untensioned Corrugated Beam Road Restraint Systems:
500 millimetre to 560 millimetre to the centre of the beam (where the safety fence was erected to a nominal height of 530 millimetre to the centre of the beam); and
580 millimetre to 640 millimetre to the centre of the beam (where the safety fence was erected to a nominal height of 610 millimetre to the centre of the beam).

2.21 Fences, Walls, Screens and Noise Barriers

2.21.1 General

- (i) The requirements of this Section 2.21 shall relate to all types of fences (excluding road restraint systems), walls, screen fences, snow fences and noise barriers which shall be the responsibility of the Contracting Authority.
- (ii) These requirements do not relate to parapets and guard rails on Structures, including the structural elements of noise barriers except in the case of Category 1 Defects.
- (iii) These requirements do not relate to retaining walls which shall be classified as Structures.
- (iv) Fences, walls, screens or noise barriers along the boundaries of roads other than Special Roads shall generally be the responsibility of the adjoining landowner.
- (v) Walls which retain a road within the O&M Works Site shall generally be the responsibility of the Contracting Authority. Boundary walls which retain land above a road generally shall be the responsibility of the landowner.

2.21.2 Inspection Requirements

- (i) Inspection of fences, walls, screen fences, snow fences and noise barriers shall be carried out by the Company in accordance with the requirements of Section 1 and the additional requirements of this Section 2.22.
- (ii) The Company shall carry out Detailed Inspections of fences, walls, screen fences, and noise barriers in respect of integrity and stockproof qualities. The Company shall identify areas of repeated vandalism and notify the Contracting Authority in writing.
- (iii) The Company shall carry out Detailed Inspections of fences, walls, screen fences, and noise barriers in respect of structural condition at intervals of 2 years.

- (iv) Where defects shall be identified by the Company in fences, walls, screen fences, snow fences and noise barriers which shall not be the responsibility of the Contracting Authority the Company shall notify the owner and shall in writing request that repairs shall be carried out.
- (v) When maintenance shall be required on existing retaining walls, consideration shall be given by the Company to the provision of non motorised User protection in accordance with BA48 of the DMRB. Where the Company considers that such protection would be appropriate, it shall submit a report to the Contracting Authority for written instruction.
- (vi) Detailed Inspection shall identify steel concrete and timber elements which as a result of long term deterioration shall require replacement.

2.21.3 Maintenance Requirements

- (i) There shall be no Cyclic Maintenance requirement for fences, walls, screens and noise barriers.
- (ii) The Company shall treat defects in boundary fences which shall be in urban areas, adjacent to public open spaces, and other high risk locations where children could stray onto the Trunk Roads, as Category 1 Defects.

2.22 Road Studs

2.22.1 General

- (i) The requirements of this section relate to reflective and non-reflective road studs of all types and colours including stainless steel and other studs installed as link and section markers.
- (ii) To be effective, all types of road studs shall be firmly fixed and set at the correct level. Reflecting types shall retain their reflectivity. Some reflecting types are designed to be self cleansing but the lenses can become dirty or obscured by deposits of detritus and can become less effective by becoming more deeply embedded in the road surface.

2.22.2 Inspection Requirements

- (i) Detailed Inspections in accordance with the frequency requirements of Section 1 shall not apply to road studs.
- (ii) The Company shall carry out Detailed Inspections of road studs in accordance with the inspections methods and frequencies of paragraphs 3.6 to 3.11 inclusive of TD26 of the DRMB.
- (iii) Inspections for reflectivity of retro-reflective road studs carried out in accordance with paragraph 3.9 of TD26 of the DRMB shall be made every 14 days during October to March inclusive and every 28 days during April to September inclusive of each Contract Year.
- (iv) The Company shall wherever possible carry out Detailed Inspections when Lane closures for other activities are in operation. Where displacement of road studs is beginning to occur in significant number which may be indicative of a general fault with the road studs then specific Lane closures for road stud inspection shall be undertaken.

- (v) Detailed Inspections of intelligent road studs shall be carried out in accordance with the manufacturer's recommendations.

2.22.3 Maintenance Requirements

- (i) There shall be no Cyclic Maintenance requirement for retro-reflective and non reflective road studs.
- (ii) Maintenance of intelligent road studs shall be carried out in accordance with the manufacturer's recommendations.

2.22.4 Categorisation of Defects and Response Times

- (i) Categorisation of defects in accordance with the requirements of Section 1 shall not apply to road studs.
- (ii) Categorisation of defects and response times shall be carried out in accordance with paragraphs 3.12 to 3.15 inclusive of TD26 of the DRMB.
- (iii) The Company shall programme major maintenance O&M Works to enable the O&M Works to be completed before the onset of winter.
- (iv) All reflecting road studs shall comply with BS EN 1463-1:1998.

2.23 Road Markings

2.23.1 General

- (i) The requirements of this Section 2.23 shall relate to the maintenance of road markings.

2.23.2 Inspection Requirements

- (i) Detailed Inspections in accordance with the frequency requirements of Section 1 shall not apply to road markings.
- (ii) The Company shall carry out Detailed Inspections of road markings in accordance with methods of Inspection and frequencies or paragraphs 2.5 to 2.9 inclusive of TD26 of the DMRB.

2.23.3 Maintenance Requirements

- (i) Categorisation of Defects in accordance with the requirements of Section 1 shall not apply to road markings.
- (ii) Categorisation of Defects and response times for permanent repairs shall be carried out in accordance with paragraphs 2.12 to 2.17 inclusive of TD26 of the DMRB.

2.24 Road Traffic Signs

2.24.1 General

- (i) The requirements of this Section 2.24 shall relate to permanent road traffic signs including, but not limited to, permanent bollards, permanent marker posts, telephone hoods, refuge beacons, ILCS equipment and painted surfaces of vehicle road restraint systems painted for road safety purposes. Road traffic signs shall also include all authorised signs owned by third parties including tourist signs, boundary signs, roadside services signs, motoring organisation signs, Ministry of Defence signs or any other authorised signs.
- (ii) The Company shall maintain record drawings of illuminated signs showing electrical installation, supply and distribution details.

These record drawings shall be amended by the Company within 10 days of any changes being effected.

2.24.2 Inspection Requirements

- (i) Detailed Inspections in accordance with the frequency requirements of Section 1 shall not apply to road traffic signs.
- (ii) The Company shall carry out Detailed Inspections of traffic signs in accordance with the types of inspection and frequencies required by paragraph 2.3 of TD25 of the DMRB.
- (iii) The Company shall carry out testing for electrical safety as required by paragraph 5.1.9 of TD25 of the DMRB, but at not more than 5 yearly intervals.
- (iv) The measured coefficient of retroreflectivity results shall be recorded against each relevant inventory item in the routine maintenance and management function of the Integrated Road Information System.

2.24.3 Maintenance Requirements

- (i) The Company shall carry out cyclic maintenance in accordance with and at the frequencies as referred to in paragraph 5.1 of TD25 of the DMRB.
- (ii) The Company shall maintain power supplies.

2.24.4 Categorisation of Defects and Response Times

- (i) Categorisation of defects in accordance with the requirements of Section 1 requirements shall not apply to road traffic signs.
- (ii) Category 1 Defects for road traffic signs shall be those categories of defects as referred to in Chapter 3 of TD25 of the DMRB as "Category 1" and "Category 2 (High and Medium Priority)".
- (iii) Category 2 Defects for road traffic signs shall be deemed to be of the category of defect referred to in Chapter 3 of TD25 of the DMRB as "Category 2 (Lower Priority)".
- (iv) Response times for completion of permanent repairs shall be as referred to in Chapter 4 of TD25 of the DMRB. For "Category 2 (High and Medium Priority)" an urban trunk road shall be any trunk O&M Road that shall be subject to a speed limit less than the national speed limit for that type of road.

2.25 Road Traffic Signals

2.25.1 General

- (i) The requirements of this Section 2.25 shall relate to permanent traffic signal installations and associated equipment and signalled pedestrian crossings.
- (ii) Traffic signal installations may be equipped with remote monitoring facilities for certain aspects of operation. Where such monitoring is provided the fault log shall be regularly checked.
- (iii) The Company shall maintain record drawings showing installation electrical supply and distribution details. Record drawings shall be amended by the Company within 10 days of any change.
- (iv) Where traffic signals are monitored remotely by a local roads

authority, the maintenance and operation of such traffic signals shall remain the responsibility of the local roads authority. The Company shall maintain the outstation and its associated equipment including the communications line.

- (v) The inspection and maintenance of traffic signals which are the responsibility of the local roads authority shall be undertaken by the Company in liaison with the local roads authority. The Company shall give the local roads authority a minimum of 10 Business Days' notice of any inspection or planned maintenance activity that may require the signals to be off central control, switched off or which is likely to have a significant impact on the normal flow of traffic. Where the inspection is to include an operational review of the performance of the traffic signals, the Company shall consult with the local roads authority to identify any operational issues of which the local roads authority may be aware that should be considered within the review.
- (vi) No later than 12 months after the Restricted Services Commencement Date, the Company shall undertake a full review of the signal equipment for which it is responsible to establish a detailed inventory of the existing equipment, facilities and special provisions and plans in use on the network. This information shall be used to provide and maintain the following records for each installation:
 - (a) installation drawing;
 - (b) electrical supply and distribution details;
 - (c) designer's 'Specification for the Traffic Signal Controller TR2500', (or equivalent);
 - (d) final 'Specification For Traffic Signal Controller TR2500' (or equivalent);
 - (e) communications details;
 - (f) detector location plans;
 - (g) operational strategy;
 - (h) valid electrical test certificate;
 - (i) valid detector test certificate;
 - (j) outstation transmission unit and or remote equipment wiring schedule; and
 - (k) Site maintenance log book.
- (vii) All Site information shall be maintained in a central repository and in the controller cabinet, with the exception of the Site maintenance log book which shall be retained only within the controller cabinet and updated on every visit.
- (viii) Site information and drawings shall be amended by the Company within 10 Business Days of any change being effected.
- (ix) The Company shall provide any missing Records during the first 12 months of Restricted Services.

2.25.2 Inspection Requirements

- (i) Detailed Inspections in accordance with the frequency requirements of Section 1 shall not apply to road traffic signals.
- (ii) The Company shall carry out Detailed Inspections in accordance with the inspection requirements and frequencies of paragraph 2.3 of TD24 of the DMRB and the electrical safety requirements and frequencies as required by paragraph 4.2 of TD24 of the DMRB.
- (iii) Detailed Inspections shall include review of the traffic signal settings for control of traffic.
- (iv) The Company shall report the results of the reviews in writing to the Contracting Authority with recommended changes not later than 28 days after the end of each Contract Year.

2.25.3 Maintenance Requirements

- (i) The Company shall carry out maintenance of traffic signals in accordance with Clause 1276AR of Part 5 of the O&M Works Requirements as required but at the frequencies referred to in paragraph 3.1 of TD24 of the DMRB.
- (ii) The Company shall maintain power supplies.

2.25.4 Categorisation of Defects and Response Times

- (i) Category 1 Defects for road traffic signals shall be deemed to be those categories of defects referred to in Chapter 3 of TD24 of the DMRB as "Category (i)". Category 1 Defects shall be permanently repaired within the period specified in Clause 1277AR of Part 5 of the O&M Works Requirements of such defects being identified or reported.
- (ii) Category 2 Defects for road traffic signals shall be deemed to be those categories of defects as referred to in Chapter 3 of TD24 of the DMRB as "Category (ii)".
- (iii) The Company shall in addition, carry out permanent repairs of Category 2 Defects in traffic signal installations within 6 weeks of identification or as otherwise specified in Clause 1274AR of Part 5 of the O&M Works Requirements.

2.26 Roadside Electrical Assets and Power Supplies

2.26.1 General

- (i) The requirements of this Section 2.26 shall relate to all roadside electrical assets, road lighting and ILCS equipment and power supplies including but not limited to catenary systems, aircraft and marine navigation lights on Structures and high masts up to and including 20 metres including their hoists, winches and cables.
- (ii) Where electrical apparatus is located adjacent to the O&M Road boundary, the Company shall comply with Transport Scotland guidance document 'LDS8022_09-Guidance on the Definition of Electrical Maintenance Responsibilities and Boundaries in relation to Roadside Electrical Equipment and Lighting'.
- (iii) The Company shall liaise with local authorities in accordance with Transport Scotland guidance document 'LDS8017_09 – Special Requirements for Local Authority Roadside Electrical Apparatus'.
- (iv) The Company shall remove any redundant electrical assets in

accordance with Transport Scotland guidance document 'LDS8013_09 – Guidance on making Roadside Electrical Apparatus obsolete, redundant or derelict'.

- (v) The Company shall report any failure of air or sea navigational aids to the relevant authority and respond to the Defect in accordance with the requirements of this Part.
- (vi) The Company shall make reference to Transport Scotland guidance document 'LDS8025_09 – Typical Drawings for Roadside Electrical Apparatus'.
- (vii) The Company shall obtain consent from the Contracting Authority prior to carrying out structural work such as repairs, adjustments, re-riveting, part replacement, modifications and re-welding.
- (viii) Motorway Road Lighting Control System (MoRLiCS) is subject to an Operations Safety System and the associated responsibilities as required.
- (ix) All costs associated with the receiving of data from Transport Scotland relating to traffic flow information and its integration to MoRLiCS and/or IRIS to enable the implementation of a dynamic ILCS shall be borne by the Company.

2.26.2 Inspection Requirements

- (i) The Company shall submit Method Statements and maintenance procedures in relation to the Detailed Inspections and maintenance of roadside electrical assets, road lighting and power supplies to the Contracting Authority for approval. Detailed Inspections shall be in accordance with Clause 1.8 of this Part, TD23 of the Design Manual for Roads and Bridges, and the Transport Scotland Trunk Road Inspection Manual. Detailed Inspections and testing shall be carried out by the Company in accordance with the requirements and timescales of Transport Scotland guidance document 'LDS8023_09 – Electrical Maintenance Guidelines'.
- (ii) Detailed Inspections shall be carried out by the Company on lighting and associated road side electrical assets in accordance with the initial verification, periodic inspection, and testing and minor works certification requirements of Transport Scotland guidance document 'LDS8005 – Electrical Inspection and Testing of Lighting and associated electrical assets and Installations with Model Forms'. The Company shall carry out periodic inspection and testing on approximately twenty percent of the electrical assets on an annual basis from the Restricted Services Commencement Date. All electrical assets shall be tested at least once every five years. The Company shall produce a programme of works for periodic inspection and testing, coinciding where possible with Detailed Inspections.
- (iii) Detailed Inspections shall be carried out by the Company on non lighting roadside electrical assets in accordance with the initial verification, periodical inspection and testing and minor work certification requirements of BS 7671:2008 incorporating

Amendment No. 1:2011 and associated Guidance Note 3 (Inspection & Testing) together with the manufacturer’s requirements for such assets. The Company shall carry out periodic inspection and testing on approximately twenty percent of the electrical assets on an annual basis from the Restricted Services Commencement Date. All electrical assets shall be tested once at least every five years. The Company shall produce a programme of works for periodic inspection and testing, coinciding where possible with Detailed Inspections.

- (iv) Detailed Inspections shall be carried out by the Company on portable and transportable equipment which forms part of the electrical installation in compliance with the Electricity at Work Regulations 1989. The Company shall identify the portable or transportable equipment for the inclusion in or exclusion from the electrical installation periodic testing. The details of the tests shall be agreed with the Contracting Authority, and approved as ‘extent and limitations’ section in accordance with the requirements of BS 7671:2008 incorporating Amendment No. 1:2011 and associated Guidance Note 3 (Inspection & Testing).
- (v) At the end of each quarter the Company shall submit to the Contracting Authority periodic inspection and testing certification, including periodic inspection reports, schedules of inspections, schedules of circuit details and test results.

2.26.3 Maintenance Requirements

- (i) Maintenance shall be carried out by the Company in accordance with the requirements of Transport Scotland guidance document LDS8023_09 – Electrical Maintenance Guidelines and clauses 6120AR, 6122AR and 6124AR of Schedule 4 Part 5.
- (ii) The Company shall clean luminaries every two years or at the time of the Routine Electrical inspection, whichever is sooner.
- (iii) Bulk lamp changes shall be carried out by the Company at the intervals given in Table 2.26.3/1. This Table replaces Tables 4 and 5 in TD23/99 of the DMRB.
- (iv) LED luminaires shall not be subject to bulk lamp change, however they shall be replaced when the luminaire light output is below 80% of its initial design output and/or 10% or more of the individual LEDs of a given luminaire are defective.
- (v) When no bulk lamp change is required all work listed in TD23 and elsewhere in this Agreement that should be carried out coincidental with bulk lamp changes must instead be carried out at intervals no greater than 36 months or as otherwise required in this Agreement.
- (vi) The Company shall maintain all power supplies.

Table 2.26.3/1 Maximum Intervals for Bulk Lamp Changes

Lamp Type	Nomenclature as TD23 of the DMRB	Bulk Change Interval For Dusk to Dawn	Bulk Change Interval For 24 Hour Per Day Operation

C		Operation	
Low Pressure Sodium	SOX		
High Pressure Mercury	MBFU	24 months	12 months
High Pressure Fluorescent	MCFE SLPL		
High Pressure Sodium	SON SON-T	36 months	18 months
Low Pressure Sodium	SOX-E		
Ceramic Metal Halide	CMH		
Light Emitting Diode	LED (Not accommodated for in TD23 of the DMRB)	Refer to clauses 2.26.3 (iv) and (v)	Refer to clauses 2.26.3 (iv) and (v)

2.26.4 Categorisation of Defects and Response Times

- (i) Category 1 Defects for road lighting shall be deemed to be those categories of defects as referred to in Chapter 3 of TD23 of the DMRB as “Category 1” and “Category 2 (High and Medium Priority)” as described in paragraph 3.4 Table 1 and Table 2 of TD23 of the DMRB.
- (ii) Category 2 Defects for road traffic lighting shall be deemed to be the category of defect referred to in Chapter 3 of TD23 of the DMRB as “Category 2 (Low Priority)”.
- (iii) Response times for completion of permanent repairs shall be as referred to in Chapter 4 of TD23 of the DMRB. For “Category 2 (High and Medium Priority)” an urban trunk road shall be any trunk O&M Road subject to Trunk Road Level of Service that shall be subject to a speed limit less than the national speed limit for that type of road.

2.27 Weather Stations

2.27.1 General

- (i) The requirements of this Section 2.27 shall relate to Weather Stations including but not limited to ice prediction equipment. The

requirements for Weather Stations shall also be requirements for 'road sensors'.

- (ii) The Company shall retain or replace all existing Weather Stations on the Project Roads unless otherwise approved in writing by the Contracting Authority.
- (iii) Any failures of Weather Stations shall be classed as a Category 1 Defect. The Company shall be responsible for reporting all Defects, liaising with specialist contractors and providing Defects Status Reports to the Traffic Scotland Service Provider.
- (iv) Electrical maintenance and inspections for Weather Stations shall be carried out in accordance with clause 2.26 of this Part and as necessary throughout each Contract Year.

2.27.2 Inspection Requirements

- (i) The Company shall carry out Detailed Inspections and calibration checks on Weather Stations in accordance with the manufacturers' recommendations during August to September and during December to February in each Contract Year, except for closed circuit television equipment which shall have maintenance carried out as necessary throughout each Contract Year.
- (ii) These Detailed Inspections and calibration checks shall be carried out by a suitably qualified personnel consented to in writing by the Contracting Authority.
- (iii) Calibration and test certificates shall be attached to the relevant inventory records in the routine maintenance and management function of the Integrated Roads Information System.
- (iv) Detailed Inspections in accordance with the frequency requirements of Section 1 shall not apply to Weather Stations.

2.27.3 Maintenance Requirements

- (i) Cyclic Maintenance requirements for Weather Stations shall be in accordance with BS7671 'EE Wiring Regulations' and shall be undertaken every five years.

2.27.4 Categorisation of Defects and Response Times

- (i) Closed circuit television equipment, except for the image server and video link, shall have a response time of 12 hours during the Winter Service Period; and a response time of 24 hours during the non Winter Service Period.
- (ii) Closed circuit television image server and video link shall have a response time of two hours, with a repair within four hours.
- (iii) All other Weather Station equipment shall have response times in accordance with clause 1.2.6 of this Part.

2.28 Removal of Graffiti

2.28.1 General

- (i) The requirements as referred to in this section relate to the removal of graffiti including posters, paint and encrusted deposits.

2.28.2 Inspection Requirements

- (i) Detailed Inspections shall be undertaken as necessary to identify areas of graffiti on the network.
- (ii) Detailed Inspections shall be determined by the Company. The O&M Works Quality Plan shall document how it shall comply with the requirements with Clause 2671AR of Part 5 of the O&M Works Requirements.

2.28.3 Maintenance Requirements

- (i) Maintenance shall be carried out in accordance with Clause 2671AR of Part 5 of the O&M Works Requirements at the following frequencies:
- (ii) Offensive graffiti which is:
 - (a) racist;
 - (b) religiously bigoted;
 - (c) inflammatory;
 - (d) political; or
 - (e) sexually explicit or obscene;shall be removed within 2 days of identification.
- (iii) Other graffiti shall be removed within 25 Business Days.

2.29 Node Markers

- 2.29.1 Detailed Inspections of node markers shall be carried out by the Company at intervals not exceeding 12 months and as necessary to ensure that all node markers on the O&M Roads shall be accurately located and visible at all times.
- 2.29.2 During inspections, the node marker location shall be checked against the location coordinates and documents stored in the Integrated Road Information System.
- 2.29.3 Any node markers that are found to be missing or defective shall be replaced by the Company within 25 Business Days of their identification to the location described in the node marker location document.
- 2.29.4 Where node marker location documents are no longer accurate due to changes such as speed limits, changed junction geometry or any other reference points, the Company shall provide revised node marker location documents for approval by the Contracting Authority and replace the node markers within 25 Business Days of receiving approval.
- 2.29.5 In all cases, node studs shall be installed in accordance with the Scottish Executive Advice Note 'Node Marker Standards'.

3 Winter Service - Operations and Management

3.1 Introduction

- 3.1.1 Notwithstanding the provisions of Clauses 2801AR to 2808AR, inclusive contained in Part 5 of these O&M Works Requirements this Section 3 specifies the requirements for Winter Service Operations and management.
- 3.1.2 The requirements for Winter Service Operations and management shall allow the safe movement of Users of the O&M Works Site and keep to a minimum the delay caused to such Users by adverse winter weather (ice and snow). The incidence and severity of winter conditions varies considerably throughout the season and from year to year and the resource requirements can fluctuate widely. The requirement shall be to provide a level of resources to cope with the winter conditions normally associated with North East Scotland with the facility to provide additional resources to deal effectively with all winter weather conditions which can be expected to arise. Notwithstanding the winter service resources which shall be provided by the Company, contained elsewhere within this Agreement, the Company shall provide sufficient resources to ensure that all reasonable measures are taken to keep O&M Roads open to their Users at all times.
- 3.1.3 The Company shall be responsible for providing the Winter Service Operations and management and achieve the level of service specified in this Section and the other provisions of this Agreement. The Company shall nominate a Winter Service Duty Officer who shall be responsible for ensuring the delivery of the Winter Service Operations and management as required by paragraph 3.6.1.
- 3.1.4 The Winter Service Period shall be the period from 1 October to 15 May in the subsequent year, unless specified otherwise in this Agreement.
- 3.1.5 The Company shall provide a pre-wetted system for precautionary salting of all carriageways.
- 3.1.6 If winter conditions shall occur out with the Winter Service Period the Company shall provide and maintain the Winter Service in accordance with this section for the duration of such winter conditions.
- 3.1.7 The Company shall assist the Scottish Ministers in the preparation of an annual Winter Service publicity leaflet and shall carry out its distribution to filling stations, motorist service centres, motoring organisations, libraries and other public and private distribution outlets within the O&M Works Site.

3.2 Planning and Reporting Requirements

3.2.1 Winter Service Plan

- (i) The Winter Service Plan and its appendices shall be a part of the Disruption Risk Management Plan and the O&M Manual and shall be a controlled item within the Quality System. It shall be the Company's proposals for delivering the Winter Service in any Winter Service Period to meet statutory duties and the requirements of this Section 3. The Winter Service Plan applicable at the Restricted Service Commencement Date shall be incorporated in Schedule 3 (Conceptual Design). The Company's Winter Service Plan shall comply with the requirements of Transport Scotland's 'Manual for the Management of the Risk of Unplanned Network Disruption'.

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- (ii) Each Winter Service Plan shall be prepared by the Company in accordance with the requirements noted at Appendices C and D.
 - (iii) The arrangements for Winter Service Operations at the boundaries of the O&M Works Site with the North East Management Unit, local authority areas, or private landowners and for O&M Roads subject to an Access Road Level of Service shall be set out in each Winter Service Plan.
 - (iv) The Company shall provide details in each Winter Service Plan for specific arrangements to ensure precautionary treatments to the same standards are provided for all O&M Roads subject to Trunk Road Level of Service within the O&M Works Site when forecasts issued by the expert weather forecasting service, as referred to in paragraph 3.4.1, indicates that there shall be a low confidence.
 - (v) The Company shall prepare rosters detailing the availability of all Company staff required to provide the Winter Service throughout the Winter Service Period. The rosters shall include names, addresses and telephone numbers of the staff listed and shall be included in each Winter Service Plan.
 - (vi) The Company shall provide details in its Winter Service Plan of the proposed arrangements for safe clearing of all O&M Roads when they are covered in snow or ice. The Winter Service Plan shall include the Company's processes and procedures for deciding when it shall be unsafe to continue with, or commence, clearing Operations; arrangements for dealing with vulnerable gradient locations and other areas requiring special attention and arrangements for controlling access to key routes in severe conditions.
 - (vii) The Company shall provide in its Winter Service Plan its proposals for dealing with freezing rain/ rain falling on extremely cold surfaces including advance planning, operational arrangements and hazard mitigation measures. When preparing its Winter Service Plan the Company shall take into account the guidance related to dealing with freezing rain contained in paragraph 5.6.6 of Part 5 of the Highways Agency Network Management Manual.
 - (viii) The Winter Service Plan shall describe the arrangements and the response times to be used by the Company to mobilise Winter Constructional Plant and such other resources as shall be required to meet the requirements of this Section 3.
 - (ix) In preparing each Winter Service Plan the Company shall consult with:
 - (a) The emergency services;
 - (b) Adjacent local authorities and their agents;
 - (c) North East Management Unit; and
 - (d) Other interested parties.
 - (x) Where the Restricted Services Commencement Date is between 10 October and 15 May, the Company shall provide the Winter Service Plan 60 days prior to the Restricted Services Commencement Date.
 - (xi) Prior to 31 July of each Year from the Restricted Services Commencement Date a Winter Service Plan for the O&M Works

Site for the forthcoming Winter Service Period shall be formulated by the Company and submitted for written consent to the Contracting Authority.

- (xii) When consented to by the Contracting Authority, each Winter Service Plan shall be incorporated into the O&M Works Quality Plan.
- (xiii) The Company shall ensure its Winter Service Plan is kept under review prior to and during the Winter Service Period and any amendments required to accommodate changes in resource levels and the like shall be made. The Company shall submit its amended Winter Service Plan to the Contracting Authority for written consent. When consented to, the Company's amended Winter Service Plan shall be incorporated into its Quality System.
- (xiv) Prior to the commencement of each Winter Service Period, the company shall provide one controlled Electronic copy of each approved Winter Service Plan to:
 - (a) The Contracting Authority;
 - (b) Transport Scotland;
 - (c) The Emergency Services;
 - (d) North East Management Unit;
 - (e) adjacent local authorities and their agents;
 - (f) the Performance Audit Group; and
 - (g) other operating companies.
- (xv) The Company shall support Transport Scotland in the operation of the Scottish Salt Group as directed by the Contracting Authority. For the purposes of this Part, the "Scottish Salt Group" includes representatives from the Society of Local Authority Chief Executives (SOLACE), the Society of Chief Officers of Transportation in Scotland (SCOTS), Convention of Scottish Local Authorities (COSLA) and Transport Scotland. Its function is to monitor local authority and trunk road service provider's salt returns, identify pressure points, arrange Mutual Aid, input to the United Kingdom Salt Cell, liaise with salt suppliers, provide salt conservation guidance, identify alternative salt suppliers and identify alternative de-icers.

3.2.2 Notification

- (i) The Company shall notify the Contracting Authority immediately by telephone of any major incident arising on the O&M Works Site as a result of winter conditions and in particular of any roads or parts of roads closed to traffic followed up within 12 hours with written confirmation. An electronic text report shall be submitted to the Contracting Authority within 12 hours of the Company becoming aware of such incident occurring.

3.2.3 Records

- (i) The Company shall keep daily records held electronically which can be easily accessed for all Winter Service Operations, including management activities. Records shall be held within the O&M Works Quality Plan and be available for inspection by the

Contracting Authority at any time during the Service Period. The records shall include but not be limited to:

- (a) Decisions taken when and by whom;
- (b) Planned and actual treatment records;
- (c) Planned and actual response times achieved;
- (d) Planned and actual commencement times;
- (e) Planned and actual route times;
- (f) Planned and actual spread rates;
- (g) Observations and actions taken by the Winter Service Patrols;
- (h) Output from Winter Constructional Plant on-board data capture devices;
- (i) Winter Constructional Plant down time and software faults;
- (j) Winter Constructional Plant deployment records (including global positioning system records) and driver operator logs;
- (k) Logs (both manual and electronic) of telephone, e-mail and two way communication calls;
- (l) Loading point de-icing stocks and replenishment orders;
- (m) Ice prediction system records;
- (n) Weather forecasts and actual weather experienced;
- (o) Complaints from members of the public and Users;
- (p) Accidents resulting from winter conditions;
- (q) Road closures due to winter conditions;
- (r) Weights and volumes as appropriate from de-icing material(s) spread for each route;
- (s) Pre and mid-season road sensor calibration systems;
- (t) Winter Constructional Plant calibration certificates;
- (u) Actual salt stocks held including strategic salt stocks; and
- (v) A log of hours for each operative spent on "call out" or "standby" shall be kept in accordance with the procedures in the O&M Works Quality Plan.

3.2.4 Reporting

- (i) A Winter Service report shall be an annual review by the Company of the Winter Service Operations for the previous Winter Service Period which shall help inform the Contracting Authority and the Company as to the requirements for the next Winter Service Plan.
- (ii) Prior to the 31st of May of each year the Company shall submit to the Contracting Authority a Winter Service report prepared for the immediately preceding Winter Service Period ending 15th May.
- (iii) Each Winter Service annual report shall provide:
 - (a) An executive summary of the annual report;
 - (b) An overview and review of the service provided;

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- (c) A summary of key performance reports;
 - (d) Information on significant events and related actions;
 - (e) An assessment of the accuracy of weather forecasts provided;
 - (f) An assessment of road sensor performance;
 - (g) An analysis of the ability of the O&M Works Quality Plan to capture reported non compliances;
 - (h) Innovations and improvements implemented;
 - (i) Planned continuous improvements, including recommendations for the Contracting Authority;
 - (j) An executive summary of the annual report;
 - (k) Actions taking during periods of low confidence forecasts of variable and marginal winter weather conditions; and
 - (l) Use of reserve spreading vehicles and mechanical snow clearance plant.
- (iv) An annual review meeting between the Company and the Contracting Authority shall take place no later than 10 Business Days after each annual Winter Service report shall have been submitted to the Contracting Authority to consider the finding(s) of such Winter Service report.
 - (v) Within 24 hours of completing any Winter Service Operations, a report shall be completed by the Company. Such report shall be in an electronic format, agreed with the Contracting Authority, based on information taken directly from the spreading vehicles' data logging and reporting system.
 - (vi) The report shall be held electronically in accordance with the procedures in the O&M Works Quality Plan.
 - (vii) Each day during the Winter Service Period the Company shall produce planned treatments for the following 24 hour period and actual treatments the previous 24 hour period for each precautionary treatment route and each Winter Service patrol route. These reports which shall be recorded by the Company in an electronic format and shall include:
 - (a) summary forecast and actual weather data;
 - (b) planned and actual spread rates;
 - (c) planned and actual commencement times;
 - (d) completion times for each route;
 - (e) amount of de-icing material spread for each route and the cumulative amount spread by weight during the current Winter Service Period;
 - (f) plough usage;
 - (g) number of treatment days (capability) of de-icing material available for each depot based on six treatments per route per day at 20 grammes per square metre;
 - (h) the weather forecast accuracy; and
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- (i) any other relevant information.

The Company shall upload its daily report on planned treatments for the following 24 hour period onto the Traffic Scotland website by 15:00 hours each day during the Winter Service Period.

- (viii) The Company shall provide the Contracting Authority with a monthly salt stock monitoring report for the O&M Works Site detailing salt stocks held, past usage and a forecast of usage and supply arrangements including actual and imminent salt orders. Such reports shall be produced and submitted to the Contracting Authority on the first Business Day of each month during the Winter Service Period.
- (ix) For each operative, a log of hours spent on “call out” or “standby” shall be kept in accordance with the documented procedures in the O&M Works Quality Plan.

- 3.2.5 The Company shall include procedures for the Winter Service Plan and specified records and reports in the O&M Works Quality Plan and shall procure and include therein all other procedures, records and reports associated with an Operation in respect of the Winter Service.

3.3 Basic Facility

- 3.3.1 Operatives operating winter Constructional Plant shall hold current recognised qualifications and shall have the skills and experience to operate such Plant safely.
- 3.3.2 The Company shall ensure that at least 30 days prior to the commencement of each Winter Service Period sufficient drivers and operatives shall be available to provide the Winter Service Operations and to meet the required response times.
- 3.3.3 The Company shall ensure that, throughout each Winter Service Period, sufficient trained operatives are available for each item of front line and loading winter Constructional Plant such that up to 24 hours per day working can be carried out
- 3.3.4 Every operative based at a vehicle loading point shall be familiar with and able to undertake every precautionary treatment route serviced by that point.
- 3.3.5 Every driver based at a vehicle loading point shall have a basic knowledge of every precautionary treatment route serviced by that point and shall be capable of undertaking that route if necessary.
- 3.3.6 The Company shall ensure that, throughout the Winter Service Period, sufficient resources are available to minimise disruption to Winter Service Operations caused by breakdown or any other similar circumstance and that Winter Service Operations shall not be delayed.

The Company shall arrange for the necessary repairs to be carried out without delay unless such repair compromises delivery of the Winter Service Operations, in which case the Company shall mobilise the reserve winter Constructional Plant to meet the required response times. The Company shall ensure that repairs are carried out to main fleet vehicles without delay while the reserve fleet is operational.

- 3.3.7 A system that allows spoken communication with other winter Constructional Plant and the Winter Service Duty Officer shall be fitted in all winter Constructional Plant. Such system shall be effective at all times and

within all parts of the O&M Works Site including at the location of the Winter Service Duty Officer.

- 3.3.8 The Company shall be responsible for all arrangements necessary to ensure the availability of the operatives to meet the response times detailed in this Part.

Prior to 1 October each year the Company shall:

- (i) travel the whole length of each precautionary treatment route in the winter Constructional Plant to be used for precautionary treatment for such route at speeds not exceeding those required by this Section 3 for such precautionary treatment; and
- (ii) fit and remove the plough to all winter Constructional Plant to be so equipped,

in order to ensure its operatives are familiar with the route and plant to be used.

- 3.3.9 Records requirements of this sub-section 3.3 shall include but not be limited to details of:

- (i) time taken from depot to start of treatment route;
- (ii) time taken to travel the route;
- (iii) time taken to travel the treated route;
- (iv) time taken to fit the plough;
- (v) any problems encountered and actions taken to resolve them;
- (vi) proposed longer term solutions to prevent the recurrence of such problems; and
- (vii) any other relevant information.

These records shall be held electronically by the Company in accordance with the documented procedures in the Quality System.

3.4 Equipment and Services

- 3.4.1 The Company shall provide the following to assist with its decision making process:

- (i) The Company shall have continuous access to an expert weather forecasting service;
- (ii) a computerised road weather information system including hardware, software and telecommunication links required to obtain, interpret and display as a minimum:
 - (a) road sensor data (forecast and actual);
 - (b) historical thermal maps (where these are available, they shall be provided to the Company by the Contracting Authority but these will not be up to date);
 - (c) weather data;
 - (d) weather camera images;
 - (e) frontline winter Constructional Plant sensor data (air, road surface temperature and spreading rates) in real time;
 - (f) visual warnings and audible alarms for winter duty staff; and

- (g) other relevant information; and
- (h) weather camera images.

in a manner that predicts trends in weather and road conditions.

- 3.4.2 The computerised road weather information system shall be accessible to the expert weather forecasting service and shall be able to accept and access data from road sensors, mobile road sensors, alarms and action logs that shall be outside the O&M Works Site or otherwise shall be additional to those provided on the O&M Works Site by the Company or the Scottish Ministers as at Appendix D.
 - 3.4.3 The Company shall be responsible for the provision of everything within the system with the exception of road sensors, weather cameras and historical thermal maps.
 - 3.4.4 The computerised road weather information system shall be proposed by the Company for consent in writing by the Contracting Authority and details submitted at least 4 weeks prior to the Restricted Services Commencement Date. The Contracting Authority shall require a minimum of 14 days notice to consider and issue their consent. If consent is refused, the Company shall submit a revised system for approval within 10 Business Days of such refusal.
 - 3.4.5 The computerised road weather information system required at 3.4.1(ii) shall have suitable computer terminals and software for the display of weather related radar information from the expert weather forecasting service. Such information shall be accessible to the Company at all times during the Winter Service Period to assist in the Winter Service Operations decision making process.
 - 3.4.6 The Company shall provide the Contracting Authority with real time access to computerised road weather information system and arrange for access to the expert weather forecaster's website to allow remote monitoring of proposed daily actions.
- 3.5 Other Provisions
- 3.5.1 The Company shall be responsible for all telecommunication links to meet the provisions of this Part of these O&M Works Requirements.
 - 3.5.2 Telecommunications charges associated with the computer systems and all necessary links to third parties to allow the Company to meet its obligations to this Agreement shall be the responsibility of the Company.
 - 3.5.3 All road sensors and weather prediction equipment shall use an open protocol based upon the Department for Transport developed TR2020C protocol. Updated protocols may be used but only where open access of the protocol shall be available to the Contracting Authority to allow access to such protocol to other providers of equipment or service. For new and replacement weather stations, open protocol shall be provided at outstation level to ensure full functionality is available to other providers of equipment or service.
 - 3.5.4 Road sensors shall be maintained by the Company in accordance with the requirements of this Part of these O&M Works Requirements.
 - 3.5.5 Road sensors shall be polled by the Company at intervals of 20 minutes between 1 October and 15 May inclusive and hourly at all other times during the Winter Service Period to obtain updates of road conditions.

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- 3.5.6 The words 'road sensors' and 'weather stations' shall have the same meaning.
- 3.5.7 The Company shall ensure that all cameras are operational throughout each Contract Year and as a minimum weather camera images shall be updated every 10 minutes. These images shall be delivered to the Traffic Scotland Service website in a format agreed with the Contracting Authority.
- 3.5.8 The Company shall hold welfare kits and shall distribute these in the event of a Critical Incident as defined in Part 1 which involves stranded vehicles. The welfare kit shall be carried by each Winter Service patrol and shall as minimum include 24 space blankets, 24 bottles of water and 24 energy bars.
- 3.6 Winter Service Duty Officer
- 3.6.1 The Winter Service Duty Officer shall be authorised by the Company to take decisions and to issue instructions on behalf of the Company for implementing and directing the Winter Service and shall take such decisions and issue instructions as shall be required for implementing and directing the Winter Service at all times as required by this Section 3. The Winter Service Duty Officer shall be trained and competent to undertake this role and shall keep all Records relating to each decision made. The Winter Service Duty Officer shall be on duty in the control room whenever Winter Service Operations are planned.
- 3.7 Decision Making
- 3.7.1 The Contracting Authority shall provide road sensor data and historical thermal maps where available to the Company prior to the Restricted Services Commencement Date.
- 3.7.2 During the Winter Service Period the Company shall monitor and interpret:
- (i) weather conditions;
 - (ii) O&M Roads conditions;
 - (iii) data from road and mobile road sensors;
 - (iv) the computerised road weather information system;
 - (v) actual weather conditions and Traffic Scotland cameras; and
 - (vi) historical thermal maps (when provided by the Contracting Authority);
- to ensure that the Winter Service Duty Officer receives and monitors climatic and road information to assist in the decision making process and in taking appropriate actions.
- 3.7.3 Thermal mapping and weather station data, where available prior to the Restricted Services Commencement Date, shall be supplied to the Company by the Contracting Authority.
- 3.7.4 When conditions described in paragraph 3.2.1(iv) shall be forecast, action shall be taken by the Company to maintain the O&M Works Site in a safe condition based on the Winter Service Plan.
- 3.7.5 Following any precautionary treatment undertaken by the Company the Winter Service Duty Officer shall continue to monitor the weather forecasts and the actual weather conditions including, but not limited to, data from the
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computerised road weather information system, to determine the on-going effectiveness of the treatment and to instruct further treatment when this shall be required. This shall be particularly important in situations where:

- (i) precipitation shall be forecast or has occurred that may reduce the effectiveness of a treatment; or
- (ii) the trend data from the computerised road weather information system shall change from that predicted.

Notwithstanding any other provisions of this Agreement, where the information available to the Winter Service Duty Officer shall cast doubt on the on-going effectiveness of any precautionary treatment that shall have been undertaken in terms of the ability of residual levels of de-icing material remaining on any pavement surface to deal with forecast or actual weather conditions, the Winter Service Duty Officer shall arrange for further precautionary treatment to be carried out.

3.8 Winter Service Exercises

3.8.1 The Company shall carry out Winter Service “snow desk” exercises prior to 1 October of each Winter Service Period. Such exercises shall be based on scenarios provided by the Contracting Authority and shall serve to test the effectiveness of the Company’s proposed Winter Service personnel.

3.8.2 The Company shall assess its own performance and it shall also be assessed by the Contracting Authority. In the event that the performance is deemed unsatisfactory by any party, the Company shall be required to take remedial action to demonstrably improve the effectiveness of the Winter Service personnel.

3.9 Liaison and Communication

3.9.1 During the Winter Service Period, the Company shall report the known effects of adverse weather conditions to the Traffic Scotland Service Provider. The Company shall liaise closely with:

- (i) the Police;
- (ii) the Traffic Scotland Service Provider;
- (iii) adjacent local road and highway authorities;
- (iv) North East Management Unit; and
- (v) the Contracting Authority

to monitor adverse winter weather and travelling conditions and ensure that its Winter Service Plan for provision of Winter Service Operations at boundary interfaces is implemented.

3.9.2 When a Winter Service Operation shall be planned the Company shall notify electronically:

- (i) the Contracting Authority;
- (ii) Transport Scotland;
- (iii) the Police;
- (iv) adjacent road authorities and/or their agents;
- (v) North East Management Unit; and
- (vi) the Traffic Scotland Provider,

to inform them of such Operations and when appropriate request that messages be displayed on all relevant electronic warning systems and variable message signs.

- 3.9.3 The Company shall liaise with the Police who may supply information to the media regarding road travelling conditions during periods of adverse winter weather.

3.10 Winter Service Patrols

- 3.10.1 From 1 November to 31 March inclusive, the Company shall carry out Winter Service patrols.

- 3.10.2 All Winter Service patrol vehicles shall comprise a pre-wet spreader with a minimum capacity of six cubic metres and with full functionality that meets the requirements of the Part 5 of the O&M Works Requirements.

- 3.10.3 Winter Service patrols shall be carried out between 02:00hrs and 04:00hrs, 04:00hrs and 06:00hrs, 06:00hrs and 08:00hrs and 08:00hrs and 10:00hrs. All parts of the Winter Service patrol route must be covered within each one hour period. Winter Service Patrols shall operate outwith the specified times when forecasts indicate snow and ice conditions causing an increased risk of delays and disruption to road users.

- 3.10.4 When the road surface temperature for any climatic area within a Winter Service patrol route is forecast at any time between 02:00hrs to 10:00hrs to be less than, or equal to, 3°C each Winter Service patrol shall alternate between a one hour patrol and a one hour stand by on each route. All Winter Service patrol routes shall be completed within one hour of commencement.

- 3.10.5 The Winter Service patrol routes shall be further designed so that the patrol vehicle, when working, is able to attend any location on its route within 30 minutes of receiving a call from the Winter Service Duty Officer.

- 3.10.6 Winter Service patrols shall:

- (i) patrol all carriageways of trunk O&M Roads, excluding slip roads;
- (ii) report on road conditions encountered to, and take instruction on treatments from, the Winter Service Duty Officer;
- (iii) provide an immediate response when instructed to carry out treatments or other de-icing Operations by the Winter Service Duty Officer;
- (iv) deal with any situation on the Winter Service patrol route requiring immediate attention;
- (v) Pay particular attention to areas requiring special attention;
- (vi) undertake short stops for minor maintenance such as clearing grips and removing debris; and
- (vii) provide daily reports.

Where any situation on the Winter Service patrol route cannot be resolved by any of the actions described in this paragraph, the company shall deploy additional resources to resolve the situation.

- 3.10.7 The Company shall monitor the operation of Winter Service patrols and shall take any action necessary to ensure that it complies with the requirements of this Part.

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- 3.10.8 Winter Constructional Plant for Winter Service patrols shall be loaded with sufficient de-icing material for the routes to be treated at the commencement of the Winter Service patrol and comply with the requirements of this Part.
- 3.10.9 Winter Service patrols shall allow for rest periods, patrolling both sides of dual carriageways and all actions required in accordance with paragraph 3.10.6 of this Part.
- 3.10.10 Between 02:00hrs and 10:00hrs, winter Constructional Plant for Winter Service patrols shall be used only for its primary function of Winter Service patrols.
- 3.10.11 Between 10:00hrs and 02:00hrs, winter Constructional Plant for Winter Service patrols may be used by the Company for the clearance of snow and ice. Such usage shall only take place where it does not conflict with its primary function or when the extent of the snowfall requires it to be used for snow clearing on the Winter Service patrol route.
- 3.10.12 Areas requiring special attention are described in Appendix B of this Part and are areas where frost or ice is prone to occur or where water run-off is likely to happen.
- 3.10.13 The Company shall review the areas requiring special attention referred to in Appendix B of this Part at least once every year and amend the list as it considers necessary
- 3.11 Airwave Communications
- 3.11.1 Winter Service patrols shall use an encrypted digital radio communications system known as Airwave. The Company shall utilise this equipment as a dedicated communication system between Winter Service patrol personnel, the Traffic Scotland Control Centre, the Winter Service Duty Officer and the police.
- 3.11.2 In order to carry out the services required, the company shall be required to apply for, acquire and operate a TETRA Encryption Algorithm 2 sub-user licence for use with this communication system. The Company shall be solely responsible for the procurement of, and conforming to any conditions of, this licence.
- 3.11.3 The Company shall comply with the various codes of practice that apply to this type of licence. These codes, guidance on the Airwave sharers list and TETRA Encryption Algorithm 2 licensing are available from Ofcom website at <http://licensing.ofcom.org.uk/radiocommunication-licenses/business-radio/guidance-for-licensees/airwave-emergency-services/airwave/>.
- 3.11.4 The Company shall develop a method statement for the use of Airwave in compliance with *Traffic Scotland Airwave Users Guide/Operating/Protocols and Procedures* and include the method statement in the O&M Works Quality Plan.
- 3.11.5 The Company shall indemnify the Contracting Authority against any claims arising as a result of negligence or any other action on its part, relating to the use, storage and compliance of Airwave equipment and the Company's TETRA Encryption Algorithm 2 sub-user licence.
- 3.12 Road Closures
- 3.12.1 The Police are responsible for taking decisions to close roads during periods of adverse weather or road conditions. When the Police, in consultation with the Company, consider that the road is unsafe for
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vehicular traffic, the Company shall arrange with the Police to close the road(s) and, if applicable, snow gates as considered necessary following such consultation.

- 3.12.2 The Company shall provide regular updates to the Traffic Scotland Service Provider by telephone and e-mail of progress on clearing the closed section of road and the expected and actual time of re-opening.
- 3.12.3 The Company shall immediately notify the Traffic Scotland Service Provider by telephone following a Critical Incident which has caused or will cause significant disruption to traffic flow.
- 3.12.4 The Company shall comply with the requirements of Part 1 of this schedule regarding notification of Critical Incidents to the Contracting Authority and Performance Audit Group.

3.13 Salt Bins, Snow fences, Shelter Belts and Snow Poles

- 3.13.1 During each Winter Service Period the Company shall maintain as a minimum the current salt bins provided within the O&M Works Site.
- 3.13.2 The Company shall review the current locations of salt bins and consider provision of additional locations to improve the Winter Service. It shall make appropriate recommendations in each Winter Service Report.
- 3.13.3 By 30 September each year, salt bins shall be provided and placed at existing locations within the O&M Works Site. Throughout the Winter Service Period the Company shall:
 - (i) replenish the salt bins with salt to ensure that a sufficient supply is always available for public use;
 - (ii) replace damaged, vandalised or missing salt bins within 48 hours of the damage, vandalism or absence becoming known by the company; and
 - (iii) at the end of each Winter Service Period, collect and take all salt bins to the Company's depots for storage.

Before storage, the Company shall empty and wash the salt bins and grease their hinges.

- 3.13.4 The Company shall review the need for snow fences, shelter belts and snow poles and where it considers that alterations to existing provisions shall be necessary to improve the Winter Service, it shall make appropriate recommendations in each Winter Service Report.
- 3.13.5 When notified to do so by the Contracting Authority, the Company shall design and erect snow fences in accordance with the recommendations set out in Transport and Road Research Laboratory Report LR 362 "Snow Fences" by L E Hogbin dated January 1970, unless otherwise consented to in writing by the Contracting Authority.

3.14 Records

- 3.14.1 The Company shall complete and keep daily Records for Winter Service Operations requirements. The Records shall be held electronically and have a remote access facility available to the Contracting Authority and the Performance Audit Group. The format of these Records shall be in accordance with the documented procedure in the Company's Quality System as it relates to Winter Service. Data transmitted from the Winter Service Plant shall be received and stored in accordance with Clause 2804AR of Part 5 of the O&M Works Requirements.

3.15 Precautionary Treatment

3.15.1 Precautionary Treatment

- (i) The Company shall undertake such precautionary treatment as is required by this Part.
- (ii) Precautionary treatment Operations shall commence at the time and be carried out at the spread rates instructed by the Winter Service Duty Officer.
- (iii) Precautionary treatment for carriageways
 - (a) The total width of carriageways including but not limited to:
 - (i) slip roads;
 - (ii) hardshoulders;
 - (iii) hard strips;
 - (iv) turning Lanes;
 - (v) central reserve crossovers;
 - (vi) lay-byes;
 - (vii) bus bays;
 - (viii) cycle lanes;
 - (ix) hatched areas; and
 - (x) any other trafficked area.shall receive precautionary treatments
- (iv) The minimum requirements for de-icing material spread rates for precautionary treatment shall be as provided in Tables 1, 2 and 3 of Appendix B.
- (v) The Company shall put into place arrangements for precautionary treatment when road surface temperatures of less than or equal to plus 1° C and relative humidity levels of less than or equal to 80% shall be forecast or present. When such conditions prevail, salt moisture content for precautionary treatment shall be increased to 5%.
- (vi) The Company shall put into place arrangements to ensure that precautionary treatments for carriageways with negative texture surfaces shall be applied as close as shall be practicable to the time forecast for road surface temperatures to be at less than or equal to plus 1° C.
- (vii) The Company shall provide precautionary treatment for carriageways on the O&M Roads when road surface temperatures fall or shall be forecast to fall to less than or equal to plus 1°C or when snow conditions shall be forecast.
- (viii) During precautionary treatments, all winter Constructional Plant shall be driven in a manner appropriate to the prevailing weather conditions, and within the speed limit, but not exceeding 40 miles per hour.
- (ix) A spreading vehicle shall not be used to treat a carriageway of more than 3 Lanes in a single pass. The hardshoulder is a Lane and shall

be counted as such in this context. If the width of carriageway to receive de-icing treatment is greater than 3 Lanes de-icing treatment shall be carried out either:

- (a) with two passes of the spreading vehicle; or
- (b) by the use of a second spreading vehicle.

Spread patterns shall be adjusted to suit the carriageway width and the Lane in which the spreading vehicle is travelling.

- (x) O&M Roads with temporary traffic management including contra-flow running may require the Company to amend a treatment route. Particular care shall be taken by the Company to ensure that all Lanes and contra-flow crossovers shall be adequately treated with de-icing material prior to removal of temporary traffic management and reopening to traffic.
- (xi) In the event of a breakdown on any of the Company's front line winter Constructional Plant details of:
 - (a) the cause of the breakdown;
 - (b) the time of the breakdown;
 - (c) the location of the breakdown; and
 - (d) any other relevant information.

shall be recorded, and the Company shall make immediate arrangements for reserve winter Constructional Plant to be made available in order to comply with the requirements of this Agreement.

- (xii) Where potassium acetate or other approved de-icing agent is to be used it shall be applied before ice forms or snow settles on surfaces whenever there is a likelihood of the road surface temperature falling to less than or equal to plus 1°C.
- (xiii) The Company shall put into place arrangements to deal with variable road and weather conditions that may occur after precautionary treatments have been completed.
- (xiv) Not Used
- (xv) Precautionary treatment for non motorised User facilities:
 - (a) Precautionary treatments shall be carried out on footways when surface temperatures shall be forecast to fall to less than or equal to plus 1°C or when snow conditions shall be expected;
 - (b) Precautionary treatment for non motorised User facilities shall be carried out as a separate Operation to carriageway precautionary treatments utilising equipment suitable for the purpose;
 - (c) The minimum spread rate for de-icing materials for precautionary treatments to non motorised User facilities shall be 20 millilitres per square metre with a minimum concentration of 20 percent. Actual treatment levels shall be discussed with the relevant local roads authorities; and
 - (d) The total width of non motorised User facilities shall be treated.
- (xvi) The Company shall use pre-wetted salt in accordance with the Specification for precautionary de-icing treatments on all

carriageway treatment routes in the O&M Works Site. Details of the Company's proposals for such use shall be provided as shown in Annex WSP2 to Appendix D of this Part and in its Winter Service Plan.

- (xvii) The Company may, within its Winter Service Plan, propose the use of dry salt in accordance with the requirements of Appendix B to enable the effective de-icing of carriageway treatment routes during certain weather conditions.

3.16 Response Times

- 3.16.1 When an immediate response shall be required for snow and ice clearance, precautionary treatment or other de-icing Operations the Company shall mobilise and commence such snow and ice clearance precautionary treatment and other de-icing Operations within one hour of the Winter Service Duty Officer's decision.
- 3.16.2 When a planned response is required for precautionary treatment and other de-icing Operations the Company shall mobilise and commence precautionary treatments to ensure completion before snow or ice conditions shall be predicted to occur as indicated by the expert weather forecasting service.
- 3.16.3 For immediate or planned responses the Company shall complete precautionary treatment routes within two hours from the commencement of precautionary treatment and other de-icing Operations.
- 3.16.4 Should a frontline winter Constructional Plant vehicle break down once it has been mobilised then a reserve winter Constructional Plant vehicle shall require to be mobilised and commence Operations within one hour of the breakdown.
- 3.16.5 The response times for snow and ice clearance for footways, footbridges and cycling facilities shall be as follows:
- (i) Footways and footbridges shall be cleared of all snow and ice by 08:00 or within two hours of snow ceasing to fall during the period 06:00 to 18:00 hours.
 - (ii) Cycling facilities shall be cleared of all snow and ice by 17:00 hours the following weekday (if the following day is a Saturday or Sunday then the area shall be cleared on the next Monday). For the purpose of this paragraph a weekday shall mean Monday to Friday inclusive.

3.17 Snow and Ice Clearance

- 3.17.1 The Company shall ensure sufficient resources are mobilised to prevent snow or ice from remaining on the O&M Roads. The Company shall put into place specific arrangements to ensure that these resources shall be mobilised to keep the roads free of snow and ice.
- 3.17.2 Subject to the other provisions of this Agreement spreading of de-icing materials during ploughing shall be at the rate of spread instructed by the Winter Service Duty Officer. During prolonged periods of snow fall ploughing shall be continuous from the onset of snow to prevent a build-up of snow and compaction by traffic. Ploughing shall continue until the roads shall be clear of snow and ice.
- 3.17.3 The plough blade shall be set as close to the road surface as shall be consistent with removal of the maximum amount of snow whilst avoiding

damage to the road surface, other equipment in the road surface, and the plough blade.

- 3.17.4 The total width of carriageways including but not limited to slip roads, hardshoulders, hard strips, turning Lanes, central reserve crossovers, lay-byes, bus bays, hatched areas and any other trafficked area shall be cleared of snow and ice.
- 3.17.5 When planning and carrying out snow clearance the Company shall pay particular attention to the layout of the carriageway in terms of the overall number of Lanes and the location of entrance and exit slip Lanes. Snow clearance of slip roads shall be co-ordinated with main carriageway clearance. A clear path shall be kept open between those entry and exit points where frequent Lane changes are necessary.
- 3.17.6 On dual carriageway and multi-Lane roads echelon ploughing (2 or more vehicles moving in the same direction one behind each other on adjacent Lanes) shall be employed when required. Only the right hand Lane shall be ploughed towards the central reservation. Irregular windrows caused by ploughing passes, especially those which weave from one Lane to another, shall be avoided. Lanes shall be completely cleared and the windrows of snow remaining shall form a smooth and continuous line without sudden encroachments into the cleared path. Clearance work shall proceed continuously until no snow remains on the carriageway, including hardshoulders/hardstrips.
- 3.17.7 During and after prolonged falls of snow, ploughing shall be used continuously from the onset to prevent snow build up and compaction by traffic and to ensure the snow clearance of all O&M Roads. Such ploughing shall be supplemented by simultaneous de-icing treatment at a rate of not less than 20 grammes per square metre. If the road surface temperature continues to fall and the need for ploughing continues or ice or hard packed snow/ice shall have formed, the salt spread rate shall be increased as necessary up to 40 grammes per square metre in accordance with the minimum requirements in Table 4 of Appendix B.
- 3.17.8 Where conventional ploughing or snow blowing is not possible, for example in built up areas, in exceptional circumstances when the snow on the road shall be deep and cannot be removed, when de-icing treatment over packed snow shall be likely to provide an unacceptable surface, when the traffic shall be insufficient to disperse the snow, or through certain traffic management conditions, the Company shall carry out Operations to lift, remove and dispose of snow and ice by appropriate means. If snow blowers are used then where the snow is being directed onto adjacent land, the Company shall obtain the prior agreement of the landowner and the Scottish Environment Protection Agency. Such Operations shall be followed by de-icing treatment.
- 3.17.9 Where there shall be a formation of hard packed snow and ice not exceeding 20 millimetre thick and the air temperature is above minus 5°C removal shall be achieved by using successive spreading of de-icing material in accordance with Table 4 of Appendix B.

Consideration shall be given to alternative de-icing materials in accordance with paragraph 3.19.3 of this Part.

The Scottish Ministers own two icebreakers (Raiko P16 model). These shall be shared by the Company with operating companies on a priority basis as determined by the Scottish Ministers. The Company shall make all

necessary arrangements with operating companies for the safe storage and sharing of this equipment.

- 3.17.10 When the air temperature shall be less than or equal to minus 5°C or where the snow or ice is more than 20 millimetres thick a single sized abrasive aggregate of particle size of 6 or 5 millimetres, sharp and having low fines content shall be added to the de-icing material on a 1:1 ratio. Application of the initial treatment technique should be resumed as soon as possible since abrasives contribute little to the removal of snow/ice and may block drains and gullies upon thawing. Abrasives should not be used on structures where there shall be any danger of blockage to drains. Abrasive aggregates shall be considered by the Company as a supplement in urban areas where de-icing material alone would provide an unacceptably slippery surface.
- 3.17.11 When snowploughing or snow blowing Operations shall be undertaken care shall be taken that snow shall not build up across or against, railway tracks, gates, bridge parapets, fences, walls and other boundaries.
- 3.17.12 Where snow clearance shall be carried out adjacent to railway overhead electricity cables special care shall be exercised to ensure snow shall not cause electrical short circuits or other damage.
- 3.17.13 During prolonged periods of snow fall at locations where the use of salt for de-icing shall be prohibited, ploughing shall be continuous followed by repeated applications of de-icing chemical.
- 3.17.14 Lifting and removal of snow and ice from grade separated junctions and other locations shall be undertaken where necessary. Sites for the disposal of snow and ice arising from such Operations shall comply with the requirement of the Scottish Environment Protection Agency. The Company shall provide temporary traffic management including road closures where required for these Operations.
- 3.17.15 When ploughing to the nearside, other vehicles (unless stationary or on the hardshoulder) shall not be overtaken. Snow shall not be thrown over bridge parapets onto the road beneath. When ploughing to the central reservation the speed shall be such as shall not throw snow into the path of traffic on the opposing carriageway.
- 3.17.16 In the event of significant snow falls where snow ploughing is being carried out by the front line and reserve winter Constructional Plant is not sufficient the Winter Service Duty Officer shall deploy additional winter Constructional Plant for snow clearance to ensure delays caused by the weather conditions shall be kept to a minimum.
- 3.17.17 When machine snow clearance shall be not suitable (including clearance around carriageway obstructions) hand snow clearance and salting shall be carried out.
- 3.17.18 Snow and ice shall be cleared in such a manner that it shall not be deposited on adjacent or underlying paved surfaces. Following clearance of snow and ice from non-motorised User facilities de-icing material shall be spread at a minimum spread rate of 20 grams per square metre to prevent ice formation on the cleared surfaces with the total width being treated.
- 3.17.19 The application of salting, ploughing or blowing Operations shall otherwise comply with the requirements of Table 4 of Appendix B.
- 3.18 Winter Constructional Plant
- 3.18.1 The Company shall ensure that the winter Constructional Plant listed in

Appendix D shall be available as necessary for the Winter Service Operations such winter Constructional Plant being the minimum to be used in connection with the Winter Service Operations.

- 3.18.2 The Company shall ensure that its winter Constructional Plant shall be maintained in accordance with the manufacturer's recommendations.
- 3.18.3 When used on a public road for operator training and maintenance runs the spinner disc at the rear of the winter Constructional Plant shall be covered in such a way that damage by sharp edges in the event of an accident shall be reduced to a minimum.
- 3.18.4 Front line and reserve winter Constructional Plant shall be fitted with on-board electronic data loggers fitted in accordance with Clause 2803AR of Part 5 of these O&M Works Requirements, with or connected to a global positioning system, all of which shall provide an accurate record of:
- (i) time;
 - (ii) distance travelled;
 - (iii) times when de-icing materials shall have been spread;
 - (iv) rate of spread; and
 - (v) width of spread.

All continuously referenced to the Ordnance Survey grid. The on-board electronic data loggers shall be capable of transmitting their data in near real time to a web accessible database in accordance with the requirements of Clause 2804AR of Part 5 of these O&M Works Requirements. In the event of an on-board electronic data logger malfunction, the Company shall prepare a similar written record within 12 hours.

- 3.18.5 The Company shall measure and record the weight of de-icing material spread on each occasion on each precautionary treatment route. Such apparatus shall be fitted to winter Constructional Plant or shall be located at depots and shall be additional to the data loggers required at paragraph 3.18.4.
- 3.18.6 As a minimum requirement, in September and January of each year the Company shall calibrate all de-icing material spreading equipment. The calibration shall be in accordance with the requirements of BS1622:1989 or equivalent or where BS1622:1989 or equivalent does not provide for the calibration of the Company's de-icing spreading equipment the Company shall carry out calibration in a manner proposed in writing by the Company and consented to in writing by the Contracting Authority and in accordance with the requirements of the specific material being used.
- September testing shall comply with the requirements of tests 'A' and 'B' and January testing shall comply with the requirements of test 'B' of BS1622:1989 or equivalent. Re-calibration and testing shall be carried out after repairs to the spreading equipment and at other times when necessary to ensure the accuracy of de-icing material spreading. All calibration and re-calibration shall be independently carried out and certified. Calibration certificates shall be held in accordance with the requirements of the Winter Service Plan and the Company's Quality System.
- 3.18.7 The winter Constructional Plant that shall be used for spreading de-icing materials shall be of sufficient capacity to enable the Company to fulfil its obligations for Winter Service Operations.

3.18.8 Winter Constructional Plant used for spreading salt shall:

- (i) be of robust construction and shall comply fully with the requirements of the Motor Vehicle Construction and Use Regulations;
- (ii) have a suitable wheelbase to accommodate the appropriate salt spreader body without excessive overhang behind the rear spring suspension brackets;
- (iii) be fitted with an engine that develops sufficient horsepower to cater for snow clearing and Winter Service Operations;
- (iv) be of proven design and comply fully with the requirements of BS.1622 – Spreaders for the Winter Maintenance of Roads, or equivalent;
- (v) be capable of spreading dry salt to BS 3247, or equivalent;
- (vi) be capable of symmetrical and asymmetrical spreading in accordance with the Class A1 requirements of BS 1622, or equivalent;
- (vii) be fitted with a hopper that itself shall be fitted with removable salt screens;
- (viii) be fitted with a spreading mechanism at the rear of the machine designed to minimise damage to passing vehicles when the machine is operating
- (ix) be fitted with a spreader the level of which shall be not greater than 350 millimetres above the road surface and shall be capable of even distribution of salt over the full width of spread at rates between 10 grammes per square metre and 40 grammes per square metre and the trajectory of the salt leaving the spreader shall at no time be higher than 150 millimetres above the point of distribution;
- (x) be fitted with a salt discharge indicator connected to the salt spreading machine that shall inform the operator if spreading shall have ceased;
- (xi) be fitted with an electronic data logger in accordance with in accordance with the requirements of this Section 3;
- (xii) be fitted with an on board global positioning system in accordance with the requirements of this Part;
- (xiii) have as a minimum:
 - (a) 2 rotating amber beacons fitted to the vehicle on the roof of the cab with a visible arc of at least 270° to the front;
 - (b) 1 rotating amber beacon at the rear of the vehicle (which in the case of a vehicle spreading de-icing material shall be at the rear of the salt hopper) with a visible arc of at least 270° to the rear that shall be in operation whilst precautionary treatment and snow and ice clearance Operations are being carried out;
 - (c) be fitted with a sign board reading “SPREADING” fitted to the back of the salt hopper and visible to following vehicles the lettering shall be 160 millimetres ‘x’ height in black capitals from the ‘Transport heavy alphabet’ described in the Traffic Signs

Regulations and General Directions on a yellow Class 1 reflective background in accordance with BS 381C or equivalent lemon yellow No 355 or equivalent;

- (d) be fitted with a passenger seat;
- (e) be painted golden yellow to BS 4800 or equivalent; and
- (f) Comply with any other relevant requirements of this Part relating to winter Constructional Plant.

3.18.9 Winter Constructional Plant used for spreading pre-wetted salt shall:

- (i) be capable of delivering a constant supply of brine of the appropriate concentration;
- (ii) comply with the requirements of this Section 3 where such requirements shall not be inconsistent with the spreading of pre-wetted salt; and
- (iii) comply with any other requirements to ensure the effective distribution of pre-wetted salt to comply with the requirements of this Section 3.

The Company shall demonstrate to the Contracting Authority that the brine delivery system of the winter Constructional Plant used for spreading pre-wetted salt shall meet all the requirements of this paragraph 3.18.10 and the Company shall provide in writing to the Contracting Authority the method that shall be employed to ensure that the quantity of the brine being applied during each route treatment is correct.

3.18.10 Winter Constructional Plant used for spreading potassium acetate salts in solution or other de-icing materials shall comply with the requirements of this Section 3 and ensure the effective distribution of potassium acetate or other de-icing materials.

3.18.11 The Company shall provide a range of snowploughs that shall be capable of clearing all snow conditions in the O&M Works Site.

3.18.12 Snow blowers if used, shall:

- (i) be capable of blowing up to 600 tonnes of snow per hour;
- (ii) have a width of cutter head to be at least 1.8 metres;
- (iii) be capable of operating in up to 4 metres depth of snow; and
- (iv) be fitted with lights to permit effective operation during poor visibility and the hours of darkness.

3.18.13 All winter Constructional Plant used for Winter Service Operations shall:

- (i) comply with the requirements of this Part and Part 5 of these O&M Works Requirements;
- (ii) be fitted with a snowplough; and
- (iii) have a minimum of two additional headlamps fitted to permit forward visibility when a snow plough is fitted.

3.18.14 Front Line Winter Constructional Plant

- (i) The Company's minimum front line, reserve and additional winter Constructional Plant available for the Winter Service Operations shall be as referred to in Annex WSP 5 of Appendix D of this Part. The minimum loading winter Constructional Plant available within

the O&M Works Site for loading front line, reserve and additional winter Constructional Plant shall also be as referred to in Annex WSP 5 of Appendix D of this Part.

- (ii) Front line winter Constructional Plant shall comprise vehicles and equipment permanently available within the O&M Works Site that is required for:
 - (a) precautionary treatments;
 - (b) snow and ice clearance to a fallen or formed depth not exceeding 100mm, but excluding winter Constructional Plant not required to be capable of spreading whilst echelon ploughing;
 - (c) Winter Service patrols; and
 - (d) compliance with the requirements of this Schedule.
- (iii) All front line winter Constructional Plant shall be fitted with measuring devices for air temperature and road surface temperature which shall be capable of transmitting data to the on-board data logging system for remote real time display on the computerised road weather information system.
- (iv) Front line winter Constructional Plant fleet shall, as a minimum, have the ability to:
 - (a) carry out precautionary treatment to all routes simultaneously;
 - (b) clear ice and snow lying to a depth up to 100 mm; and
 - (c) spread pre-wetted salt.

3.18.15 Reserve Winter Constructional Plant

- (i) The Company's reserve winter Constructional Plant shall be that part of the winter Constructional Plant permanently available within the O&M Works Site to supplement front line winter Constructional Plant for the Winter Service Operations in situations:
 - (a) When such front line winter Constructional Plant is not be available for whatever reason for Winter Service Operations; or
 - (b) to clear snow and ice in accordance with the requirements of this Section 3, the reserve winter Constructional Plant may also be used to supplement front line winter Constructional Plant in snow conditions.
- (ii) Subject to the other provisions of this Agreement the minimum reserve winter Constructional Plant shall be as referred to in Annex WSP 5 of Appendix D.

3.18.16 Additional Winter Constructional Plant

- (i) The additional winter Constructional Plant shall be that part of the winter Constructional Plant that is available for Winter Service Operations, either directly under the control of the Company or through contingency arrangements with third parties, to deal with:
 - (a) snow and ice lying to a depth of more than 100mm; and
 - (b) any other winter weather conditions which cannot be managed by front line or reserve winter Constructional Plant.

- (ii) Mobilisation arrangements for additional winter Constructional Plant shall be as referred to in Annex WSP 5 of Appendix D.
- (iii) Subject to the other provisions of this Agreement the Company's minimum front line winter Constructional Plant permanently within the O&M Works Site for the Winter Service Operations for non motorised User facilities shall be as in Annex WSP 5 of Appendix D.

3.18.17 Mobilisation arrangements for winter Constructional Plant for non motorised User facilities shall be as referred to in Table 4 of Annex WSP 5 to Appendix D.

3.18.18 Loading Winter Constructional Plant

- (i) The minimum loading winter Constructional Plant available within the O&M Works Site for loading:
 - (a) front line;
 - (b) reserve; and
 - (c) additional winter Constructional Plant.shall be as referred to in Annex WSP 5 of Appendix D.

3.18.19 Maintenance of Company's Winter Constructional Plant

The Company shall be responsible for ensuring that its winter Constructional Plant shall be maintained in accordance with manufacturers' recommendations.

3.19 Salting and Other De-Icing Agents

3.19.1 General

- (i) The Company shall procure and provide salt and other de-icing materials necessary to comply with the Winter Service requirements.
- (ii) The minimum stock level requirements for de-icing materials shall be as shown in Annex WSP 3 to Appendix D.
- (iii) Salt for de-icing shall be 6.3 millimetres grading particle size complying with BS 3247:1991 or equivalent and shall be treated with anti-caking agent.
- (iv) At loading points the method of salt storage shall ensure that the moisture content of the stored salt shall not exceed 4% equivalent.

Should the moisture content of salt exceed 4% the Company shall take all measures necessary to ensure compliance with the requirements of this Part is regained. Where moisture content is deliberately increased to deal with low humidity conditions the spread rate shall not be increased.
- (v) Within 10 days of delivery salt shall be tested by the Company at loading points in accordance with BS 3247:1991 or equivalent and results recorded to ascertain:
 - (a) moisture content (1 test per 500 tonnes);
 - (b) particle size distribution (1 test per 500 tonnes);
 - (c) chloride content (1 test per 1500 tonnes); and
 - (d) soluble sulphate compounds (1 test per 1500 tonnes).

- (vi) Salt stocks shall be tested by the Company for salt moisture content at monthly intervals throughout each Winter Service Period and the results shall be recorded.
- (vii) An electronic data base shall be provided by the Company for the storage of materials test data.

3.19.2 Pre-wetted Salt

- (i) Salt for de-icing material as part of pre-wetted salt shall be 6.3 millimetres grading particle size complying with BS 3247:1991 or equivalent.
- (ii) Brine added to salt during spreading operations shall comprise 30% of the total spread material by weight, giving a 70% salt: 30% brine solution.
- (iii) Fully saturated brine solution with a minimum concentration of 23% dissolved sodium chloride shall be used as the pre-wetting agent. Where temperatures shall be forecast to fall below minus 15°C the fully saturated brine shall be diluted by the addition of 5%-10% water to prevent recrystallisation of the salt. The addition of water shall be undertaken in such a manner that shall ensure that the water and brine shall be thoroughly mixed to produce a consistent concentration of brine. As soon as temperatures rise above minus 15°C a fully saturated solution shall be used.
- (iv) The Company shall arrange as a minimum for sufficient brine to be stored at each depot to treat simultaneously at a maximum spread rate all precautionary treatment routes serviced from that depot with an additional quantity of 20% brine above that quantity held in reserve. The brine within the storage facilities shall be replenished within 2 hours of being depleted.
- (v) Sensors with digital read outs shall be fitted to the Company's storage facilities to measure automatically the salt concentration of the brine. Daily checks shall be carried out by the Company using a saturation meter and the results shall be stored electronically. Water supplies to saturator units shall be protected from freezing by appropriate measures.

3.19.3 Alternative De-icing Materials

- (i) In extreme conditions, such as when temperatures drop below levels at which sodium chloride is effective, the Company shall use alternative de-icing materials in accordance with guidance on use of such materials. Such alternative de-icing material shall be described in the Company's Winter Service Plan.
- (ii) The Company shall provide in its Winter Service Plan its proposals for using the alternative de-icer material in accordance with published guidance, including the UK Roads Board publication *Treatments for Extreme Cold*.
- (iii) The Company shall provide and store a minimum of 5,000 litres, or equivalent, of alternative de-icing material within the O&M Works Site to deliver the requirements of paragraph 3.19.3 (i).
- (iv) The Company shall replenish the original alternative de-icer stock when the quantity has reduced to a minimum of 2,000 litres.

3.19.4 Abrasive Aggregates

- (i) A single sized abrasive aggregate of particle size of 6 millimetres or 5 millimetres sharp sand having low fines content shall be added to the salt in a 50% salt and 50% grit or sand mixture in accordance with the requirements of this Part.

3.19.5 Material Storage

- (i) The Company shall satisfy itself that the arrangements for storage handling and loading de-icing materials at the loading points shall be adequate to achieve the specified response times.
- (ii) Materials shall be stored in such a manner as to ensure compliance with:
 - (a) paragraph 3.19.1(iv);
 - (b) paragraph 3.19.2(iv) to 3.19.2(v) inclusive; and
 - (c) Current planning and environmental Legislation and supplier's written instructions in the case of:
 - (i) additives;
 - (ii) potassium acetate; and
 - (iii) any other de-icing materials.

3.19.6 As salt de-icing material shall be removed from storage areas by the Company a positive slope shall be maintained to avoid danger to operatives and winter Constructional Plant from the collapse of faces of de-icing material stockpiles.

3.19.7 The Company shall be responsible for safeguarding and management of all de-icing material stock and storage facilities.

3.19.8 The Company shall ensure that the de-icing material stock does not become contaminated with matter likely to cause damage to winter Constructional Plant, cause the de-icing material to fail to comply with the requirements of this Part, or adversely affect road Users.

3.19.9 Materials shall be stored in a covered structure within the Company's depots to ensure compliance with the requirements of this Part and the supplier's written instructions in the case of additives, potassium acetate and any other de-icing materials.

4 Maintenance of Road Pavements

4.1 Assessment Types

4.1.1 There shall be four principal assessments to be considered by the Company in determining future maintenance needs:

- (i) Road condition using high speed surveys (Surface Condition Assessment of the National Network of Roads (SCANNER) system surveys), SCRIM, deflectograph and recognised visual condition surveys;
- (ii) Equipment, installations and information associated with the road, using the RMMF as specified in Section 2;
- (iii) Bridges and other Structures as specified in Section 5; and
- (iv) Road safety as specified in Part 3 of Schedule 8.

4.2 Road Condition

4.2.1 Three types of survey to assess the condition of the O&M Works Site in accordance with Section 3 to Volume 7 of the DMRB shall be used by the Company. The survey types required are:

- (i) High Speed Surveys as specified in Part 2 of Section 3 to Volume 7 of the DMRB which shall be carried out during spring and summer on a 2 year cycle;
- (ii) SCRIM surveys Category 1 equivalent as specified in Part 1 of Section 3 to Volume 7 of the DMRB which shall be carried out during summer on a 2 year cycle. Seasonal adjustment surveys shall be undertaken in spring and autumn; and
- (iii) Deflectograph surveys as specified in Part 2 of Section 3 to Volume 7 of the DMRB which shall be carried out during spring/summer on a 4 year cycle.

4.2.2 Survey contractors employed by the Scottish Ministers shall undertake road condition surveys and the Company's responsibilities in relation to such surveys shall be as stated in Section 15.8. of Part 1 of these O&M Works Requirements.

4.3 Programmes

4.3.1 The Company shall be responsible for analysing and interpreting the pavement management function data to identify structural pavement maintenance schemes and devise programmes of structural pavement maintenance as stated in Section 15.8. of Part 1 of these O&M Works Requirements.

4.4 Performance Criteria

4.4.1 The performance criteria for the road pavement which shall be maintained during the Services Period shall be as detailed on Tables 4/1 and 4/2 of this Section 4.

4.4.2 Unless stated otherwise in the relevant standard, investigatory levels and minimum performance levels shall apply to each 1 kilometre length of Lane measured from the node markers at the boundary of the O&M Works Site. Where the surface of the pavement changes or where traffic levels change by more than 25% within each kilometre, then data shall be provided for each representative length, subject to a practical minimum length of 100

metres.

4.4.3 Where the levels for skidding resistance are approaching or have reached the investigatory levels detailed in Table 4/1 the Company shall carry out the following:

- (i) place appropriate warning signs;
- (ii) carry out additional investigations; and
- (iii) prepare recommendations for maintenance and implement accordingly.

4.4.4 Where the pavement reaches the investigatory levels for rutting, cracking or residual life, the detailed assessment and interpretation procedure described in the HD30 of the DMRB shall be carried out.

4.4.5 Where the minimum performance levels are not achieved the Company shall rectify such defects within 90 days. In the event of such Defects increasing in severity or extent, such that there shall be a potential risk to the safety of Users, the Company shall place suitable warning signs and remedy such defects within 28 days.

4.5 Extent of Maintenance

4.5.1 The Company shall be responsible for the maintenance of all road pavements within the O&M Works Site in accordance with this Agreement.

Table 4/1 : Maintenance Assessment Surveys Surface Characteristics

LANE SURVEY METHOD	RELEVANT STANDARD		DATA PROCESSING METHOD	SURVEY FREQUENCY (YEARS)				INVESTIGATORY LEVELS				MINIMUM PERFORMANCE LEVELS DURING SERVICE PERIOD				MINIMUM PERFORMANCE LEVELS AT HANDBACK			
	REFERENCE	SURVEY CATEGORY		H/S	L.1	L.2-L.4	Slip Roads	H/S	L.1	L.2-L.4	Slip Roads	H/S	L.1	L.2-L.4	Slip Roads	H/S	L.1	L.2-L.4	Slip Roads
SCRIM (SKIDDING RESISTANCE)	HD28 of the DMRB	CATEGORY 1 EQUIVALENT	SKID	REFER TO NOTE 3	2	2	2	TABLE 4.1 OF HD28 of the DMRB				NOT LESS THAN THE INVESTIGATORY LEVELS IN TABLE 3.1 OF HD28 of the DMRB				i) AVERAGE MSSC > INVESTIGATORY LEVEL+ 0.10 ii) MINIMUM LEVEL AS TABLE 3.1 OF HD28 of the DMRB			
HSS SCANNER (Ride Quality)	HD29 of the DMRB		GROUP 3	REFER TO NOTE 3	1	2			CATEGORY 3 TABLE 2.1)to HD29 of the DMRB				CATEGORY 2 TABLE 2.1to HD29 of the DMRB					i) AVERAGE CATEGORY 1 ii) MINIMUM CATEGORY 2 TABLE 2.1 to HD/29 of the DMRB	
HSS SCANNER (Rutting)	HD29 of the DMRB		GROUP 3	REFER TO NOTE 3	1	2			> 5 %WITH 10mm OR MORE				NOT MORE THAN 10% WITH 10mm OR MORE					AVERAGE RUT DEPTH OF 5 mm AND NOT MORE THAN 5 % WITH 10 mm OR MORE	

NOTES:

1. Key to general terms : H/S – Hard shoulder ; L1, L2, L3 and L4 – Lane 1, Lane 2, Lane 3 and Lane 4
2. Seasonal factor to be agreed with the Contracting Authority.
3. Assessment to be carried out as required in accordance with Section 4.3.

Table 4/2 : Maintenance Assessment Surveys – Structural Performance

LANE SURVEY METHOD	RELEVANT STANDARD		DATA PROCESSING METHOD	ASSESSMENT FREQUENCY (YEARS)				INVESTIGATORY LEVELS				MINIMUM PERFORMANCE LEVELS DURING SERVICE PERIOD				MINIMUM PERFORMANCE LEVELS AT HANDBACK			
	REFERENCE	SURVEY CATEGORY		H/S	L.1	L.2-L.4	Slip Roads	H/S	L.1	L.2-L.4	Slip Roads	H/S	L.1	L.2-L.4	Slip Roads	H/S	L.1	L.2-L.4	Slip Roads
VISUAL CONDITION (Cracking/Spalling)	REFER TO NOTE 1 BELOW	BITUMINOUS SURFACING	—	REFER TO NOTE 2	4	8	4	LTRC > 5 %				LTRC not > 10 %				LTRC not > 5 %			
DEFLECTOGRAPH (Residual life of flexible pavement)	HD29 of the DMRB	CATEGORY 1A OR 1B	PANDEF VERSION 3 OR EQUIVALENT	REFER TO NOTE 2	4	8	4	RESIDUAL LIFE (YEARS)				RESIDUAL LIFE (YEARS)				Refer to Note 5 MINIMUM RESIDUAL LIFE FOR EACH LANE: (i) 100 metre: 85% with 10 YEARS or more ii) 1 km: - 9x100m lengths with 10 YEARS or more - 100m lengths all 1 YEAR or more			
								<4	<4	<8	<4	>0	>0	>0	>0				

NOTES:

- Key to Visual Condition terms : LTRC Major Area Cracking, Minor Area Cracking, Major Transverse Crack and Minor Transverse Crack as defined in DMRB 7.3.2.3 Table 3.1 - LTRC in ten percent of wheelpath length.
- Assessment to be carried out as required, as detailed in sub-Section 4.2.
- Key to Deflectograph terms : RESIDUAL LIFE – Residual life to investigatory conditions in years, based on 85% deflection levels within each 100m length and, as per PANDEF Version 3 (or equivalent), 50% probability of achieving the residual life.
- Key to general terms: H/S – Hardshoulder; L1, L2, L3 and L4 – Lane 1, Lane 2, Lane 3 and Lane 4.
- Based on 99% of individual readings within specific sections. Detailed requirements are described in Part 3 of these O&M Works Requirements.

5 Maintenance and Management of Structures

5.1 General

This Section 5 defines the requirements for the maintenance and management for Structures within the O&M Works Site for which the Company shall be responsible. Defined terms for Structures are contained in Part 1 of these O&M Works Requirements.

5.2 The Company shall appoint a Bridges Manager who shall be a member of the Company's core management team and who shall be responsible for management of the O&M Works in respect of Structures and for reviewing and approving how the Company shall propose complying with the O&M Works Requirements in respect of Structures, including movements of abnormal loads. The Bridges Manager shall fulfil the requirements in BD63 of the Supervising Engineer.

5.3 Maintenance Management

5.3.1 General

- (i) The structures management function of the Integrated Road Information System database shall be used to record the information and programmes relating to the management, monitoring and maintenance of existing and proposed Structures. The Company shall use and update the structures management function of the Integrated Roads Information System database in accordance with the procedures specified in the system user manual and the 'Transport Scotland Inspection Manual – Principal Inspections of Trunk Road Structures and Location System' as issued by the Scottish Ministers and as amended and re-issued by the Scottish Ministers from time to time. The structures management function of the Integrated Road Information System shall be kept up to date by the Company throughout the Contract Period.
- (ii) The Company shall update all data held in the structures management function of the Integrated Road Information System, as follows:
 - (a) within three Business Days of becoming aware of any new data or changes to existing data, particularly after any inspections of Structures have been undertaken, and
 - (b) when existing Structures including sign gantries have been: demolished or infilled; newly constructed; widened; maintained and subjected to remedial works; or strengthened and/or improved.

5.3.2 Maintenance and Operations Manuals and Health and Safety Files

- (i) Any maintenance and operations manuals and health and safety files for Structures shall be reviewed not less than once each year and updated by the Company when necessary to comply with current legislation, safe working practices and any changes to the maintenance requirements of the structure. The Company shall prepare a report setting out the findings and changes made as part of the annual review and submit a copy in writing to the Contracting Authority within 3 Business Days of completion of the review.

- (ii) The Bridges Manager shall oversee preparation and storage of the Structures maintenance files for each Structure for the Company. These shall be in paper and electronic copy and referenced by route name, the junctions between which they are located, and national ordnance survey grid coordinates.
- (iii) Maintenance files for Structures shall contain:
 - (a) copies of all inspections together with details of structural maintenance and repair;
 - (b) drawings and records showing:
 - (i) location and extent of maintenance Operations and Works;
 - (ii) materials employed;
 - (iii) date of implementation;
 - (iv) details of Works contractors and subcontractors employed; and
 - (v) costs of O&M Works.
 - (iv) The Company shall notify the Contracting Authority of missing maintenance and operations manuals and missing health and safety files for Structures which should be available and shall use reasonable endeavours to replace them.
 - (v) No later than 15 Business Days after completion of any works to new or existing Structures by the Company, the Company shall submit to the Contracting Authority new and amended as-built records, including maintenance and operations manuals and health and safety files required by the DMRB.

5.4 Inspection Requirements

5.4.1 General

- (i) The Company shall undertake:
 - (a) Structures Safety Inspections;
 - (b) General Inspections;
 - (c) Principal Inspections;
 - (d) Scour Inspections and Scour Assessments; and
 - (e) Special Inspections.

5.4.2 All inspections shall be undertaken in accordance with the standards and advice notes contained in the DMRB and Guidance including the following documents:

- (a) 'Transport Scotland Inspection Manual – Principal Inspections of Trunk Road Structures and Location System';
- (b) 'Structures Management System user manual'; and
- (c) Inspections Further Data Collection Requirements.
- (ii) Inspections on Structures that are accommodation bridges for private Users shall include the road surface on the Structure and for a further five metres beyond either end of the Structure, together with any provided surface water drainage. Vehicular

restraint systems, where provided, shall be inspected for a minimum of 30 metres from each terminal or anchorage at the parapet interface.

5.4.3 Structures Safety Inspections

- (i) Structures Safety Inspections shall be undertaken by the Company at the same time as other inspection and maintenance duties.
- (ii) Structures Safety Inspections shall be undertaken to identify any deficiencies which, if not rectified, represent or may result in:
 - (a) a danger to the public and which therefore require immediate or urgent action,
 - (b) accidents,
 - (c) deterioration or behaviours indicating a reduction in load carrying capacity, and
 - (d) high repair costs.
- (iii) The Company shall undertake two types of Structures Safety Inspections:
 - (a) random, and
 - (b) reactive.
- (iv) The Company shall undertake random Structures Safety Inspections during maintenance of Structures. When undertaking the random Structures Safety Inspection the Company shall:
 - (a) observe the Structure,
 - (b) record any signs of problems or deficiencies, and
 - (c) report them to the Bridges Manager.
- (v) The Company shall undertake reactive Structures Safety Inspections after a problem or deficiency has been observed or reported by:
 - (vi) any of the Company's staff, or
 - (vii) the Police or the public,
 - (viii) and report them to the Bridges Manager.
- (ix) The Company shall submit a monthly report to the Contracting Authority detailing the findings of all random and reactive Structures Safety Inspections.
- (x) The Company shall identify, classify and record Defects observed as either Category 1 or Category 2 Defects in accordance with the requirements of this Part. The Company shall take action appropriate to the category and severity of such Category 1 or Category 2 Defects.

5.4.4 General Inspections

- (i) The Company shall plan and implement a programme of General Inspections of Structures by competent personnel to take place at intervals of no more than two years after the last General Inspection or Principal Inspection. This shall exclude any

Structures on which a Principal Inspection has been carried out during the same Contract Year in which the General Inspection is due to be conducted.

- (ii) A General Inspection shall consist of a visual inspection of representative parts of the Structure in accordance with the documentation listed in paragraph 5.4.2.
- (iii) Inspections shall be programmed relative to the inspection cycle for a specific Structure (that is: Principal Inspection – 2 year interval – General Inspection – 2 year interval – General Inspection – 2 year interval – Principal Inspection).
- (iv) General Inspection's shall be recorded in accordance with the documentation listed in paragraph 5.4.2. in particular the proforma at Appendix B to BA63/94 of the DMRB.
- (v) The defect description and prioritisation ranking shall be in accordance with these documents. The Company shall review the outcomes of the inspections and incorporate the findings into future maintenance works accordingly.
- (vi) General Inspections shall be recorded on a proforma provided within the structures management function of the Integrated Roads Information System. For any Defects found, the Defect description and priority ranking used shall be in accordance with the requirements in 'The Inspection Manual for Highways Structures Volume 1 and the Transport Scotland Inspection Manual – Principal Inspections of Trunk Road Structures and Location System'.

5.4.5 Principal Inspections

- (i) The Company shall plan and implement a programme of Principal Inspections of Structures by competent personnel to take place at intervals of no more than six years after the last Principal Inspection.
- (ii) A Principal Inspection shall consist of a close examination, within touching distance, of all inspectable parts of a Structure in accordance with the documentation listed in paragraph 5.4.2.
- (iii) Principal Inspections shall be recorded in accordance with the documentation listed in paragraph 5.4.2.
- (iv) The defect description and prioritisation ranking shall be in accordance with these documents. The Company shall review the outcomes of the inspections and incorporate the findings into future maintenance works accordingly.
- (v) Unless requested otherwise by the Contracting Authority, the result of a Principal Inspection shall be recorded within the structures management function of the Integrated Roads Information System.
- (vi) All Principal Inspections of Structures with a span of greater than 10 metres shall be undertaken by a chartered civil or structural engineer.

5.4.6 Special Inspections

- (i) Special Inspections shall be undertaken by the Company to

investigate a Defect identified during a General Inspection or to investigate a particular concern.

- (ii) Details of Special Inspections together with examples of when these may be required are given in BD 63 of the DMRB.
- (iii) The requirement for Special Inspections shall be determined by the Company and the Company shall be responsible for implementing these.
- (iv) Special Inspections shall be recorded in accordance with the documentation listed in paragraph 5.4.2.
- (v) The defect description and prioritisation ranking shall be in accordance with these documents. The Company shall review the outcomes of the inspections and incorporate the findings into future maintenance works accordingly.
- (vi) Unless requested otherwise by the Contracting Authority, the result of a Special Inspection shall be recorded within the structures management function of the Integrated Roads Information System.

5.4.7 Scour Inspections and Scour Assessments

- (i) Scour Inspections and Scour Assessments shall be implemented for Structures where the foundations and parts of the Structure are below water level. The Company shall carry out Scour Inspections and Scour Assessments at the same time as carrying out Principal Inspections unless otherwise directed by the Contracting Authority.
- (ii) The Company shall carry out Scour Inspections in accordance with BD97 of the DMRB and include a report as part of the Principal Inspection report. The Company shall review the outcomes of the inspections and incorporate the findings into future maintenance works accordingly.
- (iii) Prior to carrying out a Scour Inspection, the Company shall review any previous Stage 1 and Stage 2 Scour Assessments undertaken in accordance with BA74 and/or BD97 of the DMRB so that any changes in conditions can be identified during the Scour Inspection.
- (iv) The Company shall assess the potential for scour and record any observations as part of Principal Inspections together with any observations related to the scour noted and recorded during General Inspections. Scour Inspection reports shall be included as a part of the Principal Inspection report.
- (v) The need for additional Scour Inspections to Structures after periods of heavy rainfall shall be assessed by the Company as a reactive Safety Inspection of this Part and where required a Special Inspection shall be undertaken.

5.4.8 Weather Resistant Steel Bridge Monitoring

- (i) The management and monitoring of weather resistant steel bridges shall be undertaken by the Company in accordance with BD7 of the DMRB and the requirements of this Section 5.
- (ii) The Company shall ensure that steel thickness measurement data

shall be recorded stored and presented in Principal Inspection reports in order that corrosion trends shall be apparent. The Company shall measure, record, store and present the results of the actual steel thicknesses at the critical locations in the Principal Inspection reports.

- (iii) The Company shall incorporate in its General Inspection procedures methods of obtaining, recording and reporting the required data detailed in BD97 of the DMRB.
- (iv) Weather resistant steel bridges that shall require to be monitored shall be listed within the structures maintenance function of the Integrated Roads Information System. The structures maintenance function of the Integrated Roads Information System shall show the year in which the next Principal Inspection shall be due and the year in which the steel thickness measurements have most recently been taken.

5.4.9 Structural Assessment

- (i) The requirement for structural assessments shall be determined by the Company and the Company shall be responsible for implementing these. Inspections for Assessment shall be undertaken concurrently with Principal Inspections where possible.
- (ii) Assessments shall be undertaken in accordance with BD 21 of the DMRB.

5.4.10 Identifying and Categorising Defects

- (i) Defects shall be identified and categorised as described in the documentation listed in paragraph 5.4.2. These are summarised generally as:

INSIGNIFICANT	1	No immediate concern:- leave for further examination at next PI. Defects not likely to deteriorate significantly within 6 years.
MINOR	2	No immediate concern, but Defects likely to get worse and significantly more expensive within 6 years.
UNACCEPTABLE	3	Should not be left for 6 years until the next PI. Deterioration of defects and escalation of repair cost inevitable if not repaired. Could become severe to affect integrity of Structure.
SEVERE – ACTION NEEDED	4	Currently affecting the integrity of the Structure. Essential to repair defects at an early date. Could become hazardous if left. Cost of repair/damage to Structure escalating rapidly.

- (ii) The Company shall be responsible for identifying, categorising and prioritising defects to Structures from inspections to facilitate a maintenance programme that ensures the successful operation and maintenance of the Structures to these O&M Works Requirements.

5.5 Cyclic Maintenance of Structures

- 5.5.1 Cyclic Maintenance shall comprise activities relating to the servicing of the Structure. The requirements and scope of Cyclic Maintenance shall be as detailed in Clauses 6110AR to 6118AR of Part 5 of the O&M Works Requirements.
- 5.5.2 The Company shall carry out Cyclic Maintenance to each relevant Structure at least twice each year or at pre-determined intervals in accordance with any operations manual, log book or maintenance schedule to meet as a minimum the requirements of this Agreement.
- 5.5.3 For each Structure a Cyclic Maintenance schedule shall be prepared by the Company which shall also include any specific requirements identified in the individual Structure maintenance manual. The schedule shall include the frequencies at which routine maintenance operations shall be carried out.
- 5.5.4 All graffiti shall be dealt with in accordance with the requirements of Section 2.

5.6 Structural Maintenance of Structures

- 5.6.1 Structural Maintenance of Structures as referred to hereafter shall cover the repair or renewal of structural elements or components that have become unserviceable due to general wear and tear or have deteriorated for other reasons. Such work shall be identified by the Company during inspections and assessments and included in the planned programmes of Structural Maintenance.
- 5.6.2 The Company shall be responsible for the Structural Maintenance of all Structures within the boundaries of the O&M Works Site. Structures shall be maintained in a safe and serviceable condition at all times and shall comply with the requirements of contemporary standards and codes of practice.
- 5.6.3 Where Structures have been identified as requiring Structural Maintenance, appropriate steps shall be taken by the Company to carry out the Structural Maintenance works as soon as possible.
- 5.6.4 Structural Maintenance shall comply with the standards referred to in these O&M Works Requirements as the same may be amended from time to time.
- 5.6.5 On an annual basis the Company shall be required to demonstrate to the Contracting Authority that any proposed maintenance to Structures provides the Contracting Authority with long term value for money.
- 5.6.6 Where Structural Maintenance of Structures requires the alteration of the appearance of a Structure this shall require the written approval of the Contracting Authority.
- 5.6.7 The Company shall be responsible for obtaining all statutory approvals for Structural Maintenance of Structures.
- 5.6.8 Where defects in the Structure which constitute an imminent hazard to Users are revealed by inspections, immediate steps shall be taken to provide suitable protection measures for the safety of the public and of the Structures and to alert the public to the hazard.
- 5.6.9 After measures have been taken to ensure safety, further steps shall be taken to:

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- (i) assess the serviceability of the Structure;
 - (ii) temporarily or permanently repair as soon as possible thereafter;
 - (iii) replace temporary repairs by permanent repairs as soon as possible; and
 - (iv) maintain suitable protection measures until temporary or permanent repairs have been carried out.
- 5.6.10 Where defects do not constitute an imminent hazard to Users they shall be categorised and prioritised by the Company by reviewing the defects in conjunction with all other information relating to the Structure and incorporated into the maintenance programme accordingly. The Company shall then be responsible for undertaking these works.
- 5.6.11 Where a Structure forms part of a private or accommodation works access the Company shall be responsible for all elements of the Structure. The Company shall be responsible for arranging access for the maintenance of these Structures with the interested party concerned.
- 5.7 Technical Appraisal and Certification
- 5.7.1 In all cases where structural integrity is affected, but excluding situations where emergency measures are required the procedure for the technical appraisal and certification of Structures shall be in accordance with BD 2 of the DMRB.
- 5.8 Structural Assessments
- 5.8.1 Structural assessments and subsequent actions are of crucial importance in ensuring that all Structures remain in a safe and serviceable state.
- 5.8.2 The Company shall be responsible for undertaking structural assessments as required. The Company shall be responsible for determining the requirement for structural assessments which shall include, but shall not be limited to assessments due to:
- (i) increases in vehicle loadings above those used for the Design of a Structure;
 - (ii) assessments of a Structure or part of a Structure that is noted in an inspection to have deteriorated, and whose design or assessed load carrying capacity may have been reduced; and
 - (iii) assessments of a Structure or part of a Structure as a result of accidental damage; and
 - (iv) assessments arising from Guidance and which are notified by the Contracting Authority.
- 5.8.3 Structural Assessment Process
- (i) The assessment levels applicable to Structures requiring an assessment shall be as specified in BD79 of the DMRB. Generally levels 1 to 3 inclusive shall be appropriate.
 - (ii) In exceptional circumstances, reliability-based methods of assessment may be required. Such levels of assessment shall be likely to require specialist knowledge and expertise. Where the requirement for a reliability-based method of assessment has been agreed with the Contracting Authority the Company shall be responsible for procuring this work by experienced assessing engineers.
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- (iii) Technical approval shall be required for structural assessments and the Company shall follow the requirements set out in Appendix F.

5.9 Management of Sub-standard Structures

5.9.1 General

- (i) The Company shall be responsible for identifying sub-standard Structures and recommending any necessary interim measures.
- (ii) The Company shall manage sub-standard Structures in accordance with the requirements of BD79 of the DMRB. This is necessary to maintain public safety and to enable sub-standard Structures to remain in service during the period when further assessments are carried out and/or until any replacement or strengthening if required can be completed.
- (iii) The Company shall be responsible for undertaking assessments as necessary to determine whether interim measures can be removed.
- (iv) Where a Structure is found to be sub-standard following all exhaustive assessment methods the Company shall be responsible for developing proposals for cost effective strengthening or replacement.

5.9.2 Interim Measures to Enable Sub-standard Structures to Remain in Service

- (i) The Company shall design, implement, maintain and monitor appropriate interim measures for each sub-standard Structure until it is re-assessed as adequate or strengthened or replaced. The Company shall submit proposals for any new interim measures or amendments to existing interim measures for the written consent of the Contracting Authority.
- (ii) All Structures that shall require to be monitored shall be as listed within the structures maintenance function of the Integrated Roads Information System.

5.9.3 Replacement and Strengthening

- (i) The Company shall determine the programme of strengthening and replacement of sub-standard Structures and shall be responsible for developing proposals for cost effective strengthening or replacement. These shall be developed to provide the Contracting Authority with long term value for money and the Company shall provide evidence of this to the Contracting Authority when requested in terms of a whole life cost analysis.
- (ii) In developing proposals for strengthening or replacement the Company shall be required to provide alternative options where relevant together with supporting information as required by the Contracting Authority. Supporting information shall include but shall not be limited to costs, durability, maintenance, health & safety and decommissioning.
- (iii) All proposals for replacement Structures shall require the written approval of the Contracting Authority.
- (iv) All proposals for strengthening of Structures which require the alteration of the appearance of a Structure shall require the written

Approval of the Contracting Authority.

- (v) The Company shall be responsible for obtaining all statutory approvals for strengthening or replacement of Structures.

5.9.4 Management of Sub-Standard Structures and Structures with Known Defects

- (i) The Company shall undertake the management of sub-standard Structures and the management of Structures with known defects in order to:
 - (a) maintain public safety, and to
 - (b) enable sub-standard Structures to remain in service whilst further assessments are carried out and until any replacement or strengthening is completed or the Structure shall be no longer deemed sub-standard.

These obligations may change during the Agreement and any additional obligations shall be notified by the Contracting Authority.

The Company shall manage sub-standard Structures in accordance with the requirements of the DMRB.

5.10 Access Systems

5.10.1 General

- (i) The Company shall employ a Gantry Manager to deliver the requirements of paragraph 5.10 of this Part who shall report directly to the Bridges Manager. The Gantry Manager shall supervise the use of all Access Systems and carry out the duties referred to in this section.
- (ii) Structures which have permanent bridge access gantries and or runway beams which are required to remain certified for use throughout the duration of the Agreement.
- (iii) The Company shall be responsible for the inspections, testing, maintenance and operation of any Access Systems. The Company shall ensure that prior to use, all Access Systems comply in all respects with current regulations and standards including:
 - (a) British Standard 6037: Code of practice for the planning, design, installation and use of permanently installed access equipment, or equivalent;
 - (b) British Standard 5974: Temporary installed suspended scaffolds and access equipment or equivalent;
 - (c) British Standard EN 1808: Safety requirements on suspended access equipment – design calculations, stability criteria, construction, or equivalent; and
 - (d) The Operation and Maintenance of Bridge Access Gantries and Runways. (Second Edition 2007) published by the Institution of Structural Engineers.
- (iv) The Company shall be responsible for and provide:
 - (a) method statements for inspections and testing;

- (b) certification; and
 - (c) provide and maintain bridge maintenance files and health and safety files;
- in relation to all Access systems.
- (v) Where relevant and available, the Contracting Authority shall provide the Company with operations and maintenance manuals and manufacturers' instructions in relation to existing Access Systems.
 - (vi) The Company shall make use of the Access Systems to allow Undertakers to inspect and maintain their plant and equipment where this is fixed to a Structure.
 - (vii) The Company shall liaise with, supervise and accompany all:
 - (a) Statutory Authorities;
 - (b) Undertakers;
 - (c) authorised contractors; and
 - (d) other interested third parties;who are using the Access Systems.
 - (viii) The Company shall ensure that routine inspection and testing and periodic electrical inspections and testing of the Access Systems are carried out in accordance with the operations and maintenance manuals. Certificates shall be held on the health and safety file for the work. The Company shall also ensure that the gantry operations and maintenance manual shall be kept up to date with the following:
 - (a) Design and Check Certificates for access gantries and runway beams, which shall be signed by a chartered engineer;
 - (b) an electrical installation completion certificate in relation to any electrical works that are undertaken on the gantry in accordance with British Standard 7671: 1992;
 - (c) periodic electrical inspections and testing shall be carried out on existing installations; and
 - (d) test certificates for all lifting devices and the system as a whole;

5.10.2 Construction Design and Management

- (i) The Construction Design and Management Coordinator appointed by the Company shall ensure that a Health and Safety Plan covering all Works or Operations relating to or requiring the use of all Access Systems shall be prepared.
- (ii) The Principal Contractor appointed by the Company for any Works or Operations utilising the Access System shall develop the Health and Safety Plan and prepare a full and detailed method statement to cover the specific site operations involved.
- (iii) Where a temporary access platform is installed, or equipment supported or attached to the permanent Structure, the Company shall satisfy itself regarding:

- (a) the competence of the Designer and Contractor for the design, installation and operation of the temporary Access System and equipment, and
 - (b) ensure that the existing Structure has been assessed and certified as adequate to support all loading conditions resulting from the installation and operation of the temporary Access Systems.
- (iv) Before any temporary Access System shall be used, the Company shall ensure that the:
- (a) design, installation and required certification for the temporary Access System, and
 - (b) the associated operations manual, incorporating all health and safety procedures,
- are up to date and in accordance with current regulations and standards.

5.10.3 General and Principal Inspections of Access Systems

- (i) General and Principal inspections shall be carried out on all Access Systems, whether they are gantries or suspended scaffold installations. The inspections shall be reported separately but in the same format to those undertaken on the Structure at two year and six year intervals.
- (ii) The Company shall maintain an inspection regime and register for suspended scaffolding installations. This shall be placed on the health and safety file for the work and in the Structures maintenance manual.
- (iii) For new temporary or permanent access installations, or for existing systems that are brought back into use, the Company shall provide the appropriate Design and Check Certificates which shall be placed on the health and safety file for the work. These shall be signed by a chartered civil or structural engineer where they relate to any suspended Access System installation.
- (iv) The Company shall ensure that its management procedures are in place and kept up to date for the operation and maintenance of any Access Systems which are required to be kept in service. Details of procedures and required staffing levels shall be included in the gantry operations and maintenance manual and this information shall be updated regularly throughout the duration of this Agreement.
- (v) The Company shall ensure that the Gantry Manager and gantry operators receive any training necessary for the management and operation of the existing Access Systems and for any new system that is commissioned. Records of training together with the assessment of the suitability of the selected personnel shall be retained by the Company. The Gantry Manager shall be responsible for the control of gantry operations and for ensuring that operations and maintenance manuals are reviewed at regular intervals and kept up to date.
- (vi) The Company shall ensure that in the event of emergencies or Access System breakdown, a safe means of exiting the Access

System is available. Each operational Access System shall include the appropriate safety and first aid equipment.

6 Maintenance of Traffic Scotland Maintained Equipment

6.1 General

6.1.1 The Company shall be responsible for maintenance of Traffic Scotland Passive Maintained Equipment as detailed in this Section 6 and Appendix I. Maintenance of Traffic Scotland Active Maintained Equipment shall be the responsibility of the Traffic Scotland Service Provider.

6.1.2 The Traffic Scotland Active Maintained Equipment that the Traffic Scotland Service Provider shall maintain includes existing Traffic Scotland Active Maintained Equipment within the Project Roads until its replacement with Transport Scotland Issued Equipment installed by the Company, comprising:

- (i) VMS; and
- (ii) TMUs.

Together with Traffic Scotland Maintained Equipment installed as part of the New Works, comprising:

- (i) VMS elements of Cantilever and Offset-T VMS;
- (ii) VMS Roadside Controllers;
- (iii) CCTV Cameras;
- (iv) Journey Time Cameras;
- (v) IP Switches;
- (vi) Voice Gateways;
- (vii) DSL Modems;
- (viii) MPC4s;
- (ix) TMUs;
- (x) CECs;
- (xi) UPS;
- (xii) WIM equipment excluding inductive loops; and
- (xiii) Data Service cabinet equipment.

6.1.3 The Company shall be responsible for the maintenance of the soft and hard landscaping at sites where Traffic Scotland Maintained Equipment is located. This activity shall ensure that any infrastructure intended to provide access to the Traffic Scotland Maintained Equipment provides a safe and unhindered method of working for the Traffic Scotland Service Provider. The activities in relation to Traffic Scotland Maintained Equipment shall include:

- (i) Grass cutting and clearing of a swathe one metre wide around all equipment and access paths and maintaining this clean swathe throughout the growing season;
- (ii) Removal of any undergrowth immediately adjacent to equipment;
- (iii) Clearing of all paths and slabbed areas of weeds and grass

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- cuttings;
 - (iv) Repair and maintenance of broken or otherwise damaged or uneven paving slabs;
 - (v) Repair and maintenance of broken or otherwise damaged or uneven access steps, stairs, handrails, gates, ladders, and the like;
 - (vi) Removal of litter, refuse and debris from around the equipment sites;
 - (vii) Maintenance of clear access to vehicle hardstanding areas; and
 - (viii) Removal of graffiti in accordance with Section 2.28 of this Part.
- 6.1.4 The Company shall be responsible for the maintenance of those items of infrastructure that support Traffic Scotland Active Maintained Equipment that are deemed to be a Structure. This activity shall ensure that the foundation, the post substructure and superstructure with sign enclosure are maintained in a safe and watertight condition. In this context "Structure" means:
- (i) Sign and signal gantries, including all associated cladding, that are Structures that display fixed or variable driver information over or adjacent to the O&M Roads;
 - (ii) Masts for supporting closed circuit television cameras;
 - (iii) service ducts that are Structures for Structures Management System purposes; and
 - (iv) retaining walls that are Structures constructed as a component of an O&M Road that retain heights of infill material or natural ground level greater than 1.5 metres (ground level to ground level).
- 6.1.5 The Company shall report faults and defects that are observed for which the Traffic Scotland Service Provider is responsible
- 6.1.6 Where access is required by any of the parties to an electrical equipment cabinet that provides electrical energy to both Company maintained equipment and equipment maintained by others, it shall be undertaken in accordance with the access procedure set out in Appendix N of this Part. The maintenance, inspection and testing regime for such electrical equipment cabinets is set out in Appendix N of this Part.
- 6.2 Inspection Requirements
- 6.2.1 The Company shall carry out Detailed Inspections on the Traffic Scotland Maintained Equipment in accordance with the requirements of this Schedule 4.
- 6.3 Maintenance Requirements
- 6.3.1 Any failure or damage to any of the Traffic Scotland Maintained Equipment which shall render it inoperable or unsafe shall be deemed to be an emergency and where such equipment is the responsibility of the Traffic Scotland Service Provider, the Company shall provide such assistance to the Traffic Scotland Service Provider as may be required, to including provision of Traffic Management.
- 6.3.2 Inspection and maintenance of the Traffic Scotland Maintained Equipment

by the Traffic Scotland Service Provider shall include the provision by the Company of all associated traffic management measures and required liaison by the Company with the appropriate Operational Partners, adjacent DBFO Companies, Traffic Scotland Service Provider and the Police.

- 6.3.3 The Company shall provide a team of service personnel to carry out the duties relating to Traffic Scotland Maintained Equipment inspection and maintenance as described in Section 6.4. The Company shall provide sufficient skilled staff numbers with appropriate facilities to maintain this equipment in good working order through Routine Maintenance.
- 6.3.4 A computer based Fault Management System (FMS) is integrated within the Traffic Scotland operating system. The FMS facilitates:
- (i) the reporting of faults (whether automatic or manual);
 - (ii) fault referencing numbering;
 - (iii) the classification of the faults;
 - (iv) fault report time;
 - (v) fault response time;
 - (vi) fault attendance details;
 - (vii) fault clearance time;
 - (viii) other details pertinent to the individual faults; and
 - (ix) inventory, asset evaluation and management of Traffic Scotland Maintained Equipment.
- 6.3.5 Where the Company reports a fault to the Traffic Scotland Service Provider, or the Traffic Scotland Service Provider reports a fault to the Company, the Company shall provide information as follows to allow population of the FMS:
- (i) fault report time;
 - (ii) fault response time;
 - (iii) fault attendance details;
 - (iv) fault clearance time; and
 - (v) other details pertinent to the individual faults.
- 6.3.6 Prior to the Full Services Commencement Date the Company shall only report to the Traffic Scotland Service Provider those faults that occur in relation to the variable message signs provided as part of the New Works where such faults are the responsibility of others. Faults shall be reported within 4 (four) hours of identification by the Company and shall be notified to the Transport Scotland Service Provider via e-mail and by copy to the Contracting Authority.
- 6.4 Traffic Scotland Maintenance Requirements
- 6.4.1 The provision and maintenance requirements of the Traffic Scotland Maintained Equipment under this Agreement are designed to enable the provision of a service to the Traffic Scotland Manager, Traffic Scotland Service Provider, the Police and the public in the most efficient manner possible to achieve high equipment performance and availability and to keep fault levels to a minimum.

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- 6.4.2 The Company shall ensure that the equipment performance criteria are complied with throughout the duration of the Agreement and shall replace any of the equipment for which it holds maintenance responsibility that has operationally degraded and no longer complies with the equipment performance and availability requirements.
- 6.4.3 The Company shall at all times maintain the Traffic Scotland Passive Maintained Equipment with the minimum of disturbance to Traffic Scotland Service and shall agree Traffic Scotland Maintained Equipment down-time in advance with the Traffic Scotland Service Provider and shall telephone the Traffic Scotland Service Provider prior to taking the Traffic Scotland Passive Maintained Equipment into a down-time state.
- 6.4.4 The Company shall have management responsibility for the servicing, repair and reinstatement of this Traffic Scotland Passive Maintained Equipment in order to keep all such Traffic Scotland Maintained Equipment fully operational under any conditions.
- 6.4.5 The Company shall supply details of personnel, backup facilities, training etc. as the Traffic Scotland Manager may require to demonstrate the Company's ability to comply with this Section 6.
- 6.4.6 Where the performance of the Traffic Scotland Maintained Equipment is partly or wholly affected by faults or other operational activities, the problems shall be resolved by the Company, unless provided otherwise under this Agreement, as quickly as possible thereby minimising the delay in restoring the Traffic Scotland Maintained Equipment.
- 6.4.7 The Company shall respond to faults within the response and repair times defined herein and shall maintain the Traffic Scotland Passive Maintained Equipment, including spares and Traffic Scotland test equipment, to the level of performance and availability required.
- 6.4.8 The Company shall ensure that power supplies to all Traffic Scotland Maintained Equipment on the O&M Works Site shall be isolated from any adjacent supplies and maintained, including payment for supply and use.
- 6.5 Personnel and Resources
- 6.5.1 The Company shall provide sufficient resources for the purpose of carrying out these O&M Works Requirements.
- 6.5.2 The Company shall ensure that the resources and any replacement staff are able to comply with these maintenance requirements and that staff are competent, appropriately trained, and experienced in working in these particular environs.
- 6.5.3 The Company shall be responsible for the day to day management of the resources and shall liaise with the Traffic Scotland Manager, Traffic Scotland Service Providers and any other Relevant Authorities, as necessary concerning the programme for maintenance of the Traffic Scotland Passive Maintained Equipment.
- 6.5.4 A member of the Company's staff shall be nominated as the maintenance representative, who shall liaise with the Contracting Authority and the Traffic Scotland Manager regarding the programme for maintenance.
- 6.5.5 Only fully trained team members shall deal with call-outs.
- 6.5.6 All personnel on fault callout duty shall have nominated backup reserves available to provide support in the case of multiple faults.
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- 6.5.7 The Company shall supply all resources, labour, transport, tools, replacement spares, Traffic Scotland test equipment and office and depot facilities necessary to carry out its duties.
- 6.5.8 Each member of the maintenance staff shall be supplied with appropriate information regarding the Traffic Scotland Maintained Equipment and shall have access to all workshop and information system facilities.
- 6.5.9 The Company shall advise the Traffic Scotland Manager of the arrangements for contacting each member of the maintenance team whilst they are working on the system and on callout duty.
- 6.6 Traffic Scotland Alterations
- 6.6.1 To facilitate development of Traffic Scotland Maintained Equipment, the Traffic Scotland Manager shall reserve the right to:
- (i) make any tests or adjustments considered appropriate for the network as a whole;
 - (ii) alter the configuration of the Traffic Scotland Maintained Equipment; and
 - (iii) add, remove or replace Traffic Scotland Maintained Equipment.
- 6.6.2 In the event of additional works being required the Contracting Authority shall issue a notice to the Company to that effect and shall be responsible for the Company's costs for instructed alterations to the Traffic Scotland Maintained equipment.
- 6.6.3 To enable the Company to comply with these O&M Works Requirements, the Company shall be entitled, subject to giving prior notice and with the written consent of the Contracting Authority and the Traffic Scotland Manager to:
- (i) make any test or adjustment considered necessary;
 - (ii) alter the configuration of the Traffic Scotland Maintained Equipment; and
 - (iii) add, remove or replace Traffic Scotland Maintained Equipment.
- 6.7 Fault Classification
- 6.7.1 The faults associated with Traffic Scotland Maintained Equipment shall be classified as follows:
- (i) Class 1 : High Priority;
 - (ii) Class 2 : Urgent;
 - (iii) Class 3 : Non-Urgent;
 - (iv) Class 4 : Deferred.
- 6.7.2 Class 1 High Priority faults shall include:
- (i) A failure any of the Traffic Scotland Maintained Equipment, field communication cabling or communications infrastructure that causes loss of service associated with any of the Traffic Scotland Service functionality over 3 kilometres or more of the O&M Roads.
 - (ii) Failure of any Traffic Scotland Maintained Equipment where it is deemed that the circumstances require a Class 1 Response and the Company is given an instruction to attend from the Traffic Scotland Service Provider.
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- 6.7.3 Class 2 Urgent faults shall include:
- (i) A failure of any of the Traffic Scotland Maintained Equipment, field communication cabling or communications infrastructure that causes loss of service associated with any of the Traffic Scotland functionality over less than 3 kilometres of the O&M Roads, for example loss of a single MPC at a Node Site where the MPC supports multiple devices; and
 - (ii) Failure of any Traffic Scotland Maintained Equipment where it is deemed that the circumstances require a Class 2 Response and the Company is given an instruction to attend from the Traffic Scotland Service Provider.
- 6.7.4 Class 3 Non-urgent shall include any fault not classified as Class 1 or Class 2 where it is deemed that the circumstances require a Class 3 Response and the Company is given an instruction to attend from the Traffic Scotland Service Provider.
- 6.7.5 Class 4 Deferred shall include all faults which can, with the consent of the Traffic Scotland Manager, be rectified during the next planned maintenance activities.
- 6.7.6 Where the fault repair time is outwith the direct control of the Company this may be promoted by the Company as a Contended Fault, subject to the agreement of the Contracting Authority. Contended Faults retain their original Fault Classification but can be removed from the Company's Key Performance Indicator calculations. Contended Faults could include, for example, third party service provider faults. This does not relieve the Company of its obligations to pursue the third party.
- 6.7.7 An Emergency Fault shall be a fault arising from an incident on or off a Traffic Scotland Maintained Equipment site (or part of the site) that: renders the site (or part of the site) unsafe and that shall require the Company to execute actions in accordance with this Schedule 4 Part 2; or renders any road or area unsafe and that shall require the Company to execute actions in accordance with this Schedule 4 Part 2.
- 6.8 Fault Notification and Callout
- 6.8.1 The Company shall be responsible for attending to faults 24 hours per day every day of the year.
- 6.8.2 The Company shall set up a Fault Reporting Centre, through which all activities pertaining to Traffic Scotland fault reporting and repair shall be co-ordinated. Fault reports made by telephone shall be to a single dedicated telephone number. All fault reports to the Company's Fault Reporting Centre shall be automatically timed and date stamped at the time of receipt. The dedicated fault reporting telephone number shall not be changed unless unavoidable, and in such circumstances the Company shall give the Contracting Authority and the Traffic Scotland Manager a minimum of 30 days notice of the intended change of telephone number for fault reporting.
- 6.8.3 The Fault Reporting Centre shall be manned continuously during normal working hours of 08:00 hours and 18:00 hours Monday to Friday, and between 08:30 hours and 12:30 hours on a Saturday, excluding public and statutory holidays. During normal working hours the dedicated fault telephone number shall be manned at all times: telephone automatic answering and recording systems are not permitted for the purpose of

fault reporting.

- 6.8.4 No later than 4 weeks prior to the Full Services Commencement Date the Company shall submit in writing to the Contracting Authority for their approval a procedure for the reporting of Class 1 and Class 2 faults outwith normal working hours.
- 6.8.5 Fault notification shall be made in any one of the following ways:
- (i) By a telephone call from:
 - (a) The Traffic Scotland Control Centre;
 - (b) Police Control Rooms;
 - (c) Company's Staff;
 - (d) The Contracting Authority or his representatives;
 - (e) The Chief Constables or their representatives;
 - (f) Any of the Traffic Scotland Service Providers; and
 - (g) Any other party using verbal or electronic means.
 - (ii) By the Company's staff, who shall make daily contact with each Police Centre between 0800 hrs and 1000 hrs every day to ascertain if any faults exist.
- 6.8.6 The management of faults in respect of Traffic Scotland Maintained Equipment shall be monitored using the FMS. All faults shall be passed to the Traffic Scotland Service Provider for recording on the FMS including those that are reported automatically and those that originate manually.
- 6.8.7 The Company shall inform the Traffic Scotland Manager of any false call-out, within 7 days of it occurring, providing details in full as to why the Company considers a false call-out has occurred.
- 6.9 Performance Requirements for Fault Management
- 6.9.1 In response to a fault report, the Company shall arrange for an appropriately trained team member or sub-contract and, if appropriate, a representative from the Traffic Scotland Service Provider, to attend at the fault location to diagnose and repair the fault, or to make other arrangements for its repair as necessary. The Traffic Scotland Service Provider shall only be called where the fault relates to Traffic Scotland Active Maintained Equipment. The activities for diagnosing a fault, repairing a fault, or making arrangements for repair of a fault shall be subject to the following response and repair times:
- (i) the fault report time shall be the time that a fault is reported to the Company either by telephone or fax or logged by the FMS;
 - (ii) the fault attendance time shall be the time that a dedicated team member arrives on site at the location of the fault and notifies the Traffic Scotland Service Provider;
 - (iii) the response time shall be the period between the fault report time and the fault attendance time;
 - (iv) the fault clearance time shall be the time that the Traffic Scotland systems detects that the fault has been cleared, or in the case of a fault which has not been detected automatically by the Traffic Scotland system, it shall be the time that the repair is reported as being cleared by the team member or the Traffic Scotland Service

Provider to the FMS;

- (v) the repair time shall be the period between the fault attendance time and the fault clearance time.
- 6.9.2 For Class 1 high priority faults, the response time shall be less than 4 elapsed hours and the repair time shall be less than 4 elapsed hours – the combined response and repair time shall not be greater than 6 elapsed hours.
- 6.9.3 For Class 2 urgent faults, the response time shall be less than 4 working hours and the repair time shall be less than 4 working hours – the combined response and repair time shall not be greater than 6 working hours.
- 6.9.4 Where the Traffic Scotland Manager considers a Class 2 urgent fault merits an accelerated response outwith working hours, he may modify the fault classification.
- 6.9.5 For Class 3 non-urgent faults, the combined response and repair time shall not be greater than 10 working hours.
- 6.9.6 Where the Traffic Scotland Manager considers a Class 3 non-urgent fault merits an accelerated response outwith working hours, he may modify the fault classification.
- 6.9.7 For a Class 4 fault, the Company shall prepare and provide an acceptable programme to the Traffic Scotland Manager for the repair of the fault covering the period from the first reporting of the fault through to completion of the repair.
- 6.9.8 For an Emergency Fault the response time shall be considered to be the time taken from notification of the Emergency Fault to the Company up to the commencement of appropriate action at the site of the Emergency Fault. The response time for an Emergency Fault shall always be as short as can be safely achieved but shall not exceed a maximum of 1.5 hours.
- 6.9.9 Repeat faults may, at the discretion of the Contracting Authority, be classified as Class 1 and be subject to the response and repair times thereof. A repeat fault shall be deemed to be have been rectified when it has not reappeared for a period of no less than six weeks.
- 6.9.10 For faults caused by damage to Traffic Scotland Maintained Equipment by others, including accident damage, the faults shall be appropriately classified and be subject to the response and repair times for that class. Without prejudice, the Company shall endeavour to restore equipment functionality and bring such Traffic Scotland Maintained Equipment into normal operation by the end of the next Business Day.
- 6.10 Procedures
- 6.10.1 It is the responsibility of the Company to ensure that all faults are effectively and efficiently progressed with due diligence to meet the required response and repair times. The Company shall remain responsible for the satisfactory and timely restoration of the Traffic Scotland Maintained Equipment functionality, including where work on the fault is the responsibility of the Traffic Scotland Service Provider.
- 6.10.2 On arrival at the site of the Traffic Scotland Maintained Equipment to

attend to a fault, the Company shall: immediately record the time of arrival which shall be recorded as the fault attendance time within the Traffic Scotland FMS; and record any further details of the reported fault for passing to the Traffic Scotland Service Provider.

- 6.10.3 The Company shall obtain clearance from the Traffic Scotland Manager prior to commencing any work where it is necessary to temporarily interrupt or degrade the normal operation of Traffic Scotland Maintained Equipment in order to effect a repair.
- 6.10.4 Following investigation of a fault, if, in the opinion of the Company, the time required to repair the fault will exceed 2 hours, the Company shall update the Traffic Scotland Service Provider. This update shall include the nature of the confirmed fault and an estimate of the time required to effect a full repair. The Company shall update the Traffic Scotland Service Provider at two hourly intervals thereafter until such time as a full repair is effected or it has been determined that a further visit is required.
- 6.10.5 If the Company is unable to complete a full repair in a single visit or within the performance requirements, it shall immediately update the Traffic Scotland Service Provider accordingly and indicate a proposed route of action to restore the Traffic Scotland Maintained Equipment to full operation.
- 6.10.6 Having attended to a fault and restored the Traffic Scotland Maintained Equipment to normal operational use and before leaving the site, the Company shall: immediately inform the Traffic Scotland Service Provider and other relevant bodies; and update the Traffic Scotland Service Provider with details of a fault found and the action taken.
- 6.10.7 During attendance on site the Company shall record fault report details for entering into the FMS by the Traffic Scotland Service Provider in connection with reported faults. The fault report shall contain, as a minimum, the following information:
- (i) unique fault reference number;
 - (ii) brief description of reported fault;
 - (iii) time and date of fault report;
 - (iv) fault reporter;
 - (v) time and date of attendance on site;
 - (vi) name of personnel in attendance;
 - (vii) where a full repair is not achievable then a comprehensive report including proposed remedial action and timescales shall be added to the attendance details to be recorded in the FMS;
 - (viii) details of full repair;
 - (ix) time and date of full repair;
 - (x) name of repairer;
 - (xi) impact, if any, on Company's spares holding, such as parts used and delivery time to repair/replenish items; and
 - (xii) Usage of material taken from Traffic Scotland's spares holding, such as parts used and delivery time to repair/replenish items.

- 6.10.8 The requirements placed on the Company with respect to notification or other communication with the Traffic Scotland Service Provider or any other relevant party shall not in any way relieve the Company of any of its other obligations.
- 6.11 Fault Clearance Methodology
- 6.11.1 The Company shall record all visits to Police centre(s) in the logbook provided at these centres and comply with all other attendance requirements at these location(s).
- 6.11.2 The Company shall, when repairing a fault:
- (i) ensure faults are cleared, where practicable, by the replacement of components or equipment with components or equipment from the spares held;
 - (ii) ensure that each withdrawn component, sub-unit and item of equipment is repaired or replaced to prevent the level of spares held from falling below the minimum recommended level; and
 - (iii) maintain a log of the usage of withdrawn items, showing when each item was withdrawn and when it again became available for service. This log shall be made available to the Traffic Scotland Manager on request.
- 6.11.3 In the case of a cable fault, the Company shall adopt the following procedures:
- (i) Precisely identify the location of the fault;
 - (ii) Make all necessary arrangements to rapidly restore essential works over the defective section of cable by temporary means, if necessary; and
 - (iii) where it is not possible to rapidly restore normal operation by temporary or other means, the Company shall take the steps necessary to restore normal operation with minimum delay.
- 6.11.4 Where, in exceptional circumstances, any component part, sub-assembly or peripheral item of the Traffic Scotland Maintained Equipment needs to be removed, and no replacement item is available, the Company shall:
- (i) during normal working hours, seek permission from the Traffic Scotland Manager, before any such disconnection or removal is undertaken; and/or
 - (ii) outside normal working hours, the Company shall use its own judgement in deciding whether to make such a disconnection or removal. The Traffic Scotland Manager shall be informed without delay during the next working day by the Company of any such action or decision.
- 6.11.5 Any permission given by the Traffic Scotland Manager to the Company to remove, replace, modify or repair any component part, sub-assembly or peripheral item of the Traffic Scotland Maintained Equipment shall not relieve the Company of any responsibility to comply with these O&M Works Requirements.
- 6.11.6 The Company may, at its own discretion, undertake a temporary repair to the Traffic Scotland Maintained Equipment. In undertaking such a temporary repair, the Company shall meet the following requirements:

- (i) The temporary repair shall be safely implemented and be capable of safely providing normal operation for a minimum of 30 days without further attention. It shall be implemented in a workmanlike and safe manner consistent with the quality requirements of this Agreement;
 - (ii) the Company shall seek written approval of the Traffic Scotland Manager to change the fault classification to Class 4, with a 30 day repair time. The Company shall ensure that a full repair is made within this time; and
 - (iii) The Company shall advise the Traffic Scotland Service Provider of any temporary repair of Traffic Scotland Maintained Equipment as soon as is practical and provide details of its exact location.
- 6.11.7 Where the Company fails to undertake a permanent repair as detailed above, unless such failure is authorised by the Traffic Scotland Manager, the Contracting Authority shall undertake the permanent repair at the Company's cost.
- 6.11.8 Where accident damage has occurred and the Company is required to attend, the Company shall;
- (i) immediately make the site electrically safe;
 - (ii) inform the Traffic Scotland Manager regarding the extent of the damage, any required actions and the time for the expected resumption of normal operations; and
 - (iii) repair accident damage as if the accident damage had been reported as a fault.
- 6.11.9 Having attended to a fault and restored the Traffic Scotland Maintained Equipment to operational use, the Company shall immediately inform the Traffic Scotland Manager.
- 6.12 Damage by Others to Maintained Equipment
- 6.12.1 Where damage by others has occurred to Traffic Scotland Maintained Equipment including accident damage and the Company is required to attend such damage on site, the Company shall:
- (i) whenever it is safe to do so, and physically possible, make the site safe from dangerous electrical potentials and provide appropriate warning notices at the site and at the point of isolation. The Company may enter any cabinet to make the isolation without requiring the authority of the party responsible for the cabinet but shall, within 24 hours, provide written notice to that party;
 - (ii) if not already in attendance, immediately call out the responsible party(s) whose infrastructure has been damaged and advise the Contracting Authority and the Traffic Scotland Manager of the actions taken;
 - (iii) wherever possible obtain digital photographic evidence indicating the extent and, where possible, the cause of the damage and/or the party responsible for the damage. Where the damage is the result of a road traffic accident, it may not be appropriate to take photographic evidence. In these circumstances contemporaneously written evidence will be considered adequate;
 - (iv) undertake, when possible, immediate action to protect salvageable and undamaged Traffic Scotland Maintained Equipment from being

subjected to further defect; and

(v) if the Police are in attendance at such a site, then the Company shall comply with any instructions given by the Police.

6.12.2 The Company shall obtain verbal approval from the Contracting Authority before starting any repair works, as a result of damage by others, which may be required, except in the event that the repair works may reasonably be considered as a Class 1 or Class 2 fault.

6.12.3 If, in the opinion of the Company, the fault may reasonably be considered as urgent, the Company, with the approval of the Contracting Authority, shall supply resources and other facilities as necessary to expedite the reinstatement of the Traffic Scotland Maintained Equipment.

6.12.4 The Company shall collect any defective Traffic Scotland Maintained Equipment that is salvageable or contains salvageable items and retain for a reasonable period pending instructions on disposal from the Contracting Authority.

6.12.5 The Company shall provide a detailed report of the damage and works undertaken to rectify such damage to the Contracting Authority within 10 working days of completing the full repair. The report shall contain a written statement of the defect that has occurred, photographic and written evidence as required, a detailed breakdown of all costs associated with the defect, a copy of any Police Report and a completed TRDAM 2 form. The Company shall also provide an interim report when requested by the Contracting Authority, normally within 5 working days of such request.

6.13 Third Party and Other Works

6.13.1 The Company shall respond to calls and co-operate with third parties, where appropriate, including Undertakers, the Contracting Authority, the Traffic Scotland Manager and the Traffic Scotland Service Providers in providing technical assistance for the diagnosis and location of faults, tests and subsequent reinstatement of the Traffic Scotland Maintained Equipment.

6.13.2 The Company shall call out the Traffic Scotland Service Provider for any fault that the Company considers requires their attention. The Company shall then inform the Traffic Scotland Manager of the action they have taken.

6.13.3 Where the Company has called out the Traffic Scotland Service Provider, it shall confirm that service has been restored on the completion of the third party works.

6.13.4 Where the Company has difficulties with third parties, the Company shall inform the Contracting Authority and the Traffic Scotland Manager as soon as possible.

6.13.5 The Company shall be responsible for the reinstatement of all Traffic Scotland Maintained Equipment for which he is responsible under this Agreement, which has been damaged by a third party.

6.14 Testing

6.14.1 The Company may request the Traffic Scotland Manager to arrange the testing of equipment which has been repaired, replaced or modified, where it is essential to prove that a fault has been cleared.

6.14.2 Where tests are carried out which affect the operation of the Traffic

Scotland Maintained Equipment the Company shall inform the Traffic Scotland Manager and the Traffic Scotland Service Provider of the nature and expected duration of the tests. The Company shall inform the Traffic Scotland Manager when such tests are completed and when the Traffic Scotland Maintained Equipment is returned to normal operation. The Company shall postpone or interrupt the tests if requested to by the Traffic Scotland Manager or the Police.

- 6.14.3 Tests that require traffic restrictions and management shall not be carried out unless it is established with the Contracting Authority and the Traffic Scotland Manager that this is the only way to verify the clearance of a fault. These tests shall only be carried out in exceptional circumstances and only with the full approval of the Police and, where necessary, approved 'Sign under Test' signs shall be displayed to traffic in advance of the signal.
- 6.14.4 All relevant Traffic Scotland test equipment used for maintenance and repair shall be calibrated at the manufacturer's recommended periods. The date of the calibration and the calibration authority shall be clearly marked on the test equipment. Calibration certificates shall be made available for inspection at any time by the Contracting Authority and the Traffic Scotland Manager.

6.15 Records

- 6.15.1 Complete records (including serial numbers), shall be kept of all Traffic Scotland Maintained Equipment, whether in use, spare or under repair.
- 6.15.2 The Company shall keep detailed records of all activities associated with the maintenance of Traffic Scotland Maintained Equipment.
- 6.15.3 The Company shall maintain all appropriate system documentation and drawings.
- 6.15.4 The Company shall provide monthly written reports on the maintenance of the Traffic Scotland Maintained Equipment to the Contracting Authority and the Traffic Scotland Manager. These shall include an analysis of Traffic Scotland Maintained Equipment availability as defined in these O&M Works Requirements, and analysis and details of faults, and Traffic Scotland Maintained Equipment problems. Where possible, solutions and suggestions for improvement to the equipment shall be made.
- 6.15.5 Where the Company has called out the Traffic Scotland Service Provider, or has been called out by a third party, the Company shall, within 2 weeks, provide the Contracting Authority and the Traffic Scotland Manager with details of the work carried out.
- 6.15.6 The Company shall provide a list of fault codes and their associated fault category in their maintenance plan.

6.16 Spares

- 6.16.1 The Company shall provide, maintain and replenish, as necessary, sufficient spares for those items of Traffic Scotland Maintained Equipment for which it is responsible. These shall be held for first-line maintenance as part of the Company's maintenance plan. The spares to be provided shall be in accordance with the manufacturers' recommendations, and shall include consumable items and any specialised Traffic Scotland test equipment necessary for the proper maintenance of the equipment. All spares identified as being necessary shall be detailed on a list which,

together with such spares, shall be provided by the Company before the Expiry Date.

- 6.16.2 At the Expiry Date, the Company shall hand over to the Traffic Scotland Manager all Traffic Scotland Maintained Equipment spares as detailed in paragraph 6.16.1.

6.17 Training

- 6.17.1 Not less than 2 months before the Expiry Date, the Company shall undertake all training required to enable another party to take over the maintenance of the Traffic Scotland Maintained Equipment and the infrastructure associated with the Traffic Scotland Maintained Equipment.

7 Road Safety and Traffic Management

7.1. Compliance with Requirements

- 7.1.1. The Company shall ensure that all road safety and traffic management arrangements within the O&M Works Site comply with the requirements of this Section and with Appendix 1/17 to Part 5 of these O&M Works Requirements. The Company shall ensure that all O&M Works and works carried out by other contractors including undertakers within the O&M Works Site include the additional signing as defined in the Scottish Office Industry Department's Circulars 2/1992 and 1/1994 'Information Signs at Roadworks'.

7.2. Reduction of Traffic Delays at Roadworks

- 7.2.1. Where O&M Works shall be carried out on roads open to vehicles the Company shall ensure that due account is taken of the Code of Practice 'The Reduction of Traffic Delays at Roadworks' published by The Scottish Office and the County Surveyor's Society of Scotland in 1992.

7.3. Optimise Use of Traffic Management Measures

- 7.3.1. The Company shall ensure that optimum use shall be made of all traffic management measures for any O&M Works and works carried out by other contractors, including Undertakers, to minimise overall disruption to traffic.

7.4. Methods of Working

- 7.4.1. The Company shall ensure that methods of working within the O&M Works Site shall be such that wherever practicable all obstructions shall be removed from a carriageway and that traffic Lanes or hardshoulders shall be re-opened to vehicles within 30 minutes of a decision by the Contracting Authority or the Company to have the traffic management removed.

7.5. Mobile Lane Closures

- 7.5.1. The Company shall ensure that the procedure "Mobile Lane Closure Risk Assessment Check List" contained in Appendix G shall be followed wherever mobile Lane closures shall be proposed for use within the O&M Works Site. Copies of the completed "Mobile Lane Closure Risk Assessment Checklist" and the "For Use at Time of Mobile Lane Closure" checklist shall be held within the Company's local office and shall be available for inspection by the Contracting Authority at any time.

7.6. Traffic Safety and Control Officer (TSCO)

- 7.6.1. The Company shall nominate to the Contracting Authority and appoint a suitable person from its staff to act as the TSCO who shall make all arrangements necessary for traffic safety and control at temporary traffic management schemes including the provision and operation of breakdown recovery vehicles as required in Appendix 1/17 of Part 5 of these O&M Works Requirements. The Company shall also appoint a suitable deputy to cover periods when the nominated TSCO is not on the O&M Works Site. The responsibilities of the traffic safety and control officer shall include but shall not be limited to the following:
- (i) all necessary liaison with the Contracting Authority, the New Works Contractors, Undertakers, Network Operations Services Providers, adjacent Road Authorities, other companies and the Police in relation to temporary traffic management schemes but excluding matters related to journey time reliability;
 - (ii) receive and record details of all traffic management measures proposed for use by others on the road network within the O&M Works Site and monitor compliance with agreed measures;
 - (iii) co-ordinating all road safety and traffic management Operations within the O&M Works Site and ensuring compliance with the Code of Practice "The Reduction of Traffic Delays at Roadworks";
 - (iv) checking that where mobile Lane closure techniques shall be proposed that the procedures contained in "Mobile Lane Closure Risk Assessment Checklist" shall be adopted and that the technique shall not be used to close Lane 1 (left hand Lane) of the carriageway where the percentage of heavy goods vehicles exceeds 15%;
 - (v) ensuring that breakdown recovery vehicles shall be available on standby when appropriate;
 - (vi) keeping a written record as detailed in Appendix H of all traffic management measures proposed within the O&M Works Site and issuing the weekly programme of intent of Lane Occupations to the Contracting Authority before noon on the Thursday of the preceding week and keeping the Journey Time Reliability Coordinator referred to in Sections 31.4 and 31.5 of Part 1 of these O&M Works Requirements apprised of said weekly programme. Records of all traffic management carried out within the O&M Works Site shall be maintained and shall be available for inspection by the Contracting Authority at any time; and
 - (vii) Ensuring compliance with Clauses 113SR and 117SR and Appendix 1/17 of Part 5 of the O&M Works Requirements in all respects.
- 7.6.2. The Company shall include procedures in the O&M Works Quality Plan for effective communication between the TSCO, Incident Liaison Officer and the Journey Time Reliability Coordinator and co-ordination of their roles.

7.7. Traffic Regulation Orders

- 7.7.1. Notwithstanding other provisions of this Agreement, one Lane for use by all permitted classes of vehicles and one narrow Lane for the use of cars and other light vehicles shall be provided in each direction on the mainline carriageway of the O&M Roads during O&M Works, as a minimum requirement except as provided in paragraph 7.7.2.
- 7.7.2. In exceptional circumstances, the Company may apply to the Contracting

Authority for written approval to reduce the Lane provisions described in paragraph 7.7.1 to a minimum of one Lane in each direction on the mainline carriageway of a motorway in the O&M Works Site between the hours 2000 and 0600 Monday to Friday and all day Saturday and Sunday, during O&M Works. The Company shall demonstrate to the Contracting Authority that such applications are necessary in terms of either buildability or health and safety. Applications shall be made a minimum of 4 weeks in advance of any planned reduction to the provisions of paragraph 7.7.1 above during O&M Works.

- 7.7.3. Reduction to the provisions of paragraph 7.7.1 shall not be permitted during the following periods, except in the case of emergencies or Exceptional Adverse Weather Conditions such as very heavy snow:
- (i) Christmas and New Year holidays (24 December to 2 January inclusive);
 - (ii) Good Friday to Easter Monday inclusive;
 - (iii) Between Friday and Monday inclusive on any local bank holiday or public holiday weekend during May or September;
 - (iv) The weekends at the start and end of the Aberdeen Trades Fortnight; and
 - (v) As directed by the police.
- 7.7.4. On roads other than trunk roads reduction to the existing provision of Lanes shall be subject to the prior written approval of the Contracting Authority, a Relevant Authority or land owners or occupiers and a temporary replacement route or temporary diversion is in operation. The company shall provide Consultation Certificates in accordance with the Certification Procedure in respect of this requirement.
- 7.7.5. Any necessary Traffic Regulation Orders shall be promoted by the appropriate Relevant Authorities to allow one carriageway of a road to be closed provided that a contraflow shall be installed and the adjacent carriageway shall be used as the alternative route. The closure of only one Lane or hardshoulder shall not require a Traffic Regulation Order provided that the remainder of the carriageway or hardshoulder shall still be available for traffic.
- 7.7.6. Where a carriageway or slip road shall require to be closed and the diversion involves any road other the adjacent carriageway then a Temporary Traffic Regulation Order may be required. The Company shall confirm to the Contracting Authority during the planning of O&M Works whether a Temporary Traffic Regulation Order shall be required for the Operation being undertaken within the O&M Works Site. If a Temporary Traffic Regulation Order shall be required the Company shall undertake the necessary preparatory work and produce a draft Temporary Traffic Regulation Order and submit it to the Contracting Authority.
- 7.7.7. The Contracting Authority shall arrange with the appropriate Relevant Authority for the publication and making of all Temporary Traffic Regulation Orders. It shall be noted that the minimum notice required from receipt of the draft Traffic Regulation Order by the Contracting Authority to the making or amending of such Traffic Regulation Orders shall be eight weeks.
- 7.7.8. The Relevant Authority shall issue a Traffic Regulation Order for the use

of speed limits on certain occasions and the Company shall make due allowance for the fact that the necessary Traffic Regulation Orders shall take not less than eight weeks to effect. Blanket Traffic Regulation Orders for a range of speed limits (30, 40 and 50 mph) shall be promoted by the appropriate Relevant Authorities and these Traffic Regulation Orders may be utilised provided that they shall be associated with and required for roadworks. The Contracting Authority shall arrange with the appropriate Relevant Authority for the publication and making of all Temporary Traffic Regulation Orders. It shall be noted that the minimum notice required from receipt of the draft Traffic Regulation Order by the Contracting Authority to the making or amending of such Traffic Regulation Orders shall be eight weeks.

- 7.7.9. The Company shall consult with the Contracting Authority in the case of carriageway closures required as a result of an emergency.

7.8. Events Affecting the O&M Works Site

- 7.8.1. From time to time there may be events occurring which affect traffic flows on the O&M Works Site which shall prevent or constrain the use of traffic management for planned O&M Works although emergency operations will not be affected. Such impediments or constraints shall be notified in writing to the Company by the Contracting Authority as far in advance of the event as possible. The Company shall make any necessary alterations to traffic management measures or programmes to take account of such events.

7.9. Planning of Traffic Management Measures

- 7.9.1. The Company shall seek written consent by the Contracting Authority should the Company require to undertake O&M Works or works which are inconsistent with any constraints set out in Appendix 1/17 of Part 5 of these O&M Works Requirements.
- 7.9.2. The Company shall as far as is possible ensure that O&M Works are planned in such a way that traffic management measures can be removed at the end of a Business Day. The Company shall implement reasonable overtime working if that means an O&M Works Operation can be completed in one day or on a Friday to avoid the need for retaining traffic management measures overnight or through a weekend where O&M Works shall not be undertaken during the weekend.
- 7.9.3. The Company shall ensure that all signs erected for traffic management purposes which are no longer relevant to the situation shall be removed or covered as soon as they become no longer relevant.

7.10. Records

- 7.10.1. The traffic safety and control officer shall obtain a daily record by 09:30 hours on the following day of all traffic management installations. The form which shall be used for this purpose is the programme of intent form shown at Appendix H. The traffic safety and control officer shall supply to the Contracting Authority on a weekly basis a detailed summary of all traffic management which shall have been in use on the O&M Works Site.

8. Landscape Maintenance

8.1. General

8.1.1. Establishment and Growth Performance

All new planted areas shall be healthy at the end of the Establishment Period. All plants shall have demonstrably increased in height and spread. Plant numbers and proportions of species shall be as originally planted.

8.1.2. Appearance and Amenity

All planted areas within the O&M Works Site, including existing vegetation, shall be managed to encourage biological diversity, to consolidate the surrounding landscape character, to provide for the safety and enjoyment of Users and to comply with these O&M Works Requirements.

8.1.3. Road Safety

- (i) Visibility for Users and non motorised Users at junctions, accesses and bends and of road signage shall not be obstructed. The criterion shall be to maintain desirable minimum stopping distances and the full overtaking sight distance.
- (ii) Trees and shrubs, particularly those which shall have self-propagated or outgrown their positions, may also encroach upon the carriageway, restrict available road width or otherwise pose a potential hazard. Appropriate action shall be taken to eliminate hazards.

8.1.4. Nuisance

- (i) Weeds listed in the Weeds Act 1959 and in Part 2 of Schedule 9 of the Wildlife and Countryside Act 1981 and other pernicious weeds shall be controlled by uprooting, cutting or chemicals to prevent them becoming a nuisance.
- (ii) Inflammable plants and materials such as gorse, tall grasses or dead wood shall be cut back or otherwise controlled to ensure they do not become a fire risk or nuisance.
- (iii) Other plants may occasionally cause a nuisance and appropriate control shall be taken when necessary.

8.1.5. Chemical Weed Control

- (i) The use of herbicides shall be avoided where practicable and only the minimum amount of herbicides necessary to meet these O&M Works Requirements shall be used.
- (ii) Grass growth retarders shall not be permitted.
- (iii) Herbicides should not be used in close proximity to watercourses / wetland areas.
- (iv) Control in accordance with Clause 3002 of the Specification.

8.1.6. Invasive Species

- (i) Invasive species include:
 - (a) broad leafed dock;

- (b) curled dock;
 - (c) common ragwort;
 - (d) creeping thistle;
 - (e) spear thistle;
 - (f) Himalayan balsam;
 - (g) Japanese knotweed;
 - (h) giant hogweed;
 - (i) rhododendron ponticum;
 - (j) rosebay willow herb;
 - (k) horsetail;
 - (l) oil seed rape; and
 - (m) rabbits
- (ii) Detailed Inspections of all invasive species shall be carried out at intervals not exceeding 12 months and for plant based invasive species this shall be during their growing season.
 - (iii) During Detailed Inspections the accuracy of inventory areas, locations and attributes shall be checked and any necessary amendments made to the relevant inventory item in theRMMF.
 - (iv) Maintenance of plant based invasive species shall include weed control in accordance with Clause 3002 of the Specification.

8.1.7. Special Ecological Measures

- (i) Detailed Inspections of all special ecological measures such as fencing, tunnels, underpasses and all other provisions for wildlife shall be carried out at intervals not exceeding 24 months.
- (ii) During Detailed Inspections the accuracy of inventory areas, locations and attributes shall be checked and any necessary amendments made to the relevant inventory item in theRMMF.
- (iii) Maintenance of special ecological measures shall be in accordance with Clause 3012 of the Specification and at frequencies referred to inthe Specification.
- (iv) Maintenance of special ecological measures shall include weed control in accordance with Clause 3002 of the Specification.

8.1.8. Pests and Disease

Action to prevent and control the spread of serious pests and diseases shall be taken as soon as their presence is identified.

8.1.9. Browsing Animals and Vermin

- (i) All planting shall be adequately protected against browsing animals and vermin. If damage is identified action to prevent and control effects shall be taken as soon as possible.
- (ii) Control of browsing animals and vermin shall be in accordance with Clause 3003 ofthe Specification.

8.2. Grassed Areas

8.2.1. Introduction

- (i) Grassed areas include verges, central reserves, cuttings, embankments and other areas.
- (ii) The Company shall submit a grass cutting programme to the litter authority no later than 90 days prior to the start of each Contract Year and no later than one month prior to grass cutting Operations. The Company shall liaise with the litter authority to coordinate litter picking Operations prior to grass cutting Operations.
- (iii) The Company shall consult and comply with the requirements of the Relevant Authorities where any designated site of natural, cultural or historical interest or its curtilage is affected by the O&M Works.
- (iv) Grass planting shall be in accordance with Clauses 3005 of the Specification.

8.2.2. Inspection and Survey Requirements

- (i) Detailed Inspections of grassed areas shall be carried out seasonally during their growing period at intervals not exceeding 12 months.
- (ii) During Detailed Inspections, the accuracy of inventory areas, locations and attributes shall be checked and any necessary amendments made to the relevant inventory item in the RMMF.

8.2.3. Maintenance Requirements

- (i) Maintenance of grassed areas shall be carried out in accordance with clause 3007 of the Specification and at the frequencies stated in the Routine Maintenance Management System. Maintenance shall include cutting and edging. The Maintenance record entered in the Routine Maintenance Management System shall also include details of the main cut, strimming, the percentage of area not cut, reasons for incomplete cutting and any other problems encountered.
- (ii) Maintenance of grassed areas shall include weed control in accordance with Clause 3002 of the Specification.

8.3. Bulb and Wildflower Areas and Ornamental Planting

8.3.1. Introduction

- (i) Bulb and wildflower areas are areas of naturalised or planted flowers. Ornamental planting is formal planting for decorative purposes.
- (ii) All ornamental planting areas within the O&M Works Site shall be managed to provide visual amenity and the safety and enjoyment of users.
- (iii) The Company shall consult and comply with the requirements of the Relevant Authorities where any designated site of natural, cultural or historical interest or its curtilage is affected by the O&M Works.

8.3.2. Inspection and Survey Requirements

- (i) Detailed Inspections of bulb and wildflower areas shall be carried out during their flowering season at intervals not exceeding 12 months.
- (ii) Detailed Inspections of ornamental planting shall be carried out at

the frequencies referred to in the Specification.

- (iii) During Detailed Inspections, the accuracy of inventory areas, locations and attributes shall be checked and any necessary amendments made to the relevant inventory item in the RMMF.

8.3.3. Maintenance Requirements

- (i) Maintenance of bulb and wildflower areas and ornamental planting areas shall be carried out in accordance with clause 3007 of the Specification and at the frequencies referred to in the Specification.
- (ii) Maintenance of bulb and wildflower areas and ornamental planting shall include weed control in accordance with clause 3002 of the Specification.
- (iii) The Company shall coordinate routine litter picking as part of ornamental planting maintenance operations.

8.4. Scrub Areas, Shrub Areas and Hedges

8.4.1. Introduction

- (i) The following requirements apply to the maintenance and control of all tree, shrub and hedge planting within the O&M Works Site boundary. This includes 'Hedgerow H1', 'Hedgerow H2', 'Shrub Scrub S1', 'Shrub Scrub S2', 'Wet Woodland Scrub S3', 'Feathered Tree Planting', 'Heavy Standard Tree Planting', 'Semi Natural Woodland W1', 'Semi Natural Woodland W2', 'Screening Woodland W3', 'Wet Woodland W4' and 'Roundabout Tree Planting'. In addition the requirements will cover all existing trees and hedges within the O&M Works Site. These requirements shall also relate to trees, shrubs and hedges beyond the O&M Works Site where they shall create an actual or potential hazard, nuisance or obstruction to Users in which case the matter shall be reported to the Contracting Authority without delay. These requirements shall apply to maintenance of all such areas following the issue of the relevant Permit to Use.
- (ii) Trees, shrubs and hedges within the O&M Works Site shall be managed to encourage sustainable development and the conservation and promotion of biological diversity.
- (iii) The Company shall consult and comply with the requirements of the Relevant Authorities where any designated site of natural, cultural or historical interest or its curtilage is affected by the O&M Works.

8.4.2. Inspection and Survey Requirements

- (i) Detailed Inspections of scrub areas, shrub areas and hedges shall be carried out during the growing season at intervals not exceeding 12 months.
- (ii) During Detailed Inspections, the accuracy of inventory areas, locations and attributes shall be checked and any necessary amendments made to the relevant inventory item in the RMMF.

8.4.3. Maintenance Requirements

- (i) Maintenance of scrub areas, shrub areas and hedges shall be carried out in accordance with clause 3010 of the Specification.

- (ii) Maintenance of scrub areas, shrub areas and hedges shall include weed control in accordance with clause 3002 of the Specification.
- (iii) Maintenance of trees, shrubs and hedges shall include weed control in accordance with Clause 3002 of the Specification.

8.5. Wetland Areas

8.5.1. Introduction

- (i) The following requirements apply to the maintenance and control of all wetland areas including waterbodies such as lagoons, SUDS ponds, balancing ponds, attenuation structures and associated inlets, outlets, reed beds, open ditches, marginal plants and areas of 'wet flowering rough grassland' seeding within the O&M Works Site. These requirements shall also relate to wetlands beyond the O&M Works Site where they shall create an actual or potential hazard, nuisance or obstruction to Users in which case the matter shall be reported to the Contracting Authority without delay. These requirements shall apply to maintenance of all such areas following the issue of the relevant Permit to Use.
- (ii) Wetlands within the O&M Works Site shall be managed to encourage sustainable development and the conservation and promotion of biological diversity.
- (iii) The Company shall consult and comply with the requirements of the Relevant Authorities where any designated site of natural, cultural or historical interest or its curtilage is affected by the O&M Works.

8.5.2. Inspection and Survey Requirements

- (i) Detailed Inspections of wetland areas shall be carried out at intervals not exceeding 12 months.
- (ii) During Detailed Inspections, the accuracy of inventory areas, locations and attributes shall be checked and any necessary amendments made to the relevant inventory item in theRMMF.
- (iii) Detailed Inspections of 'wet flowering rough grassland' shall be carried out during their flowering season at intervals not exceeding 12 months.

8.5.3. Maintenance Requirements

All Wetland areas within the O&M Works Site shall be maintained following the issue of the relevant Permit to Use in accordance the Specification and areas of 'wet flowering rough grassland' shall be reseeded as necessary to ensure establishment of a full cover of plants. Maintenance of wetland areas shall be carried out in accordance with Clause 3011 of the Specification and at frequencies referred to in Part 5 of the O&M Works Requirements.

8.6. Woodland Areas and Trees

8.6.1. Introduction

- (i) The following requirements apply to the maintenance and control of all existing mature woodland within the O&M Works Site. These requirements also relate to existing mature woodland beyond the O&M Works Site where they shall create an actual or potential

hazard, nuisance or obstruction to Users in which case the matter shall be reported to the Contracting Authority without delay. These requirements shall apply to maintenance of all such areas following the issue of the relevant Permit to Use.

- (ii) Existing mature woodland within the O&M Works Site shall be managed to encourage sustainable development and the conservation and promotion of biological diversity.
- (iii) The Company shall consult and comply with the requirements of the Relevant Authorities where any designated site of natural, cultural or historical interest or its curtilage is affected by the O&M Works.

8.6.2. Inspection and Survey Requirements

- (i) Detailed Inspections of all woodland areas and trees shall be carried out at intervals not exceeding 12 months.
- (ii) During Detailed Inspections, the accuracy of inventory areas, locations and attributes shall be checked and any necessary amendments made to the relevant inventory item in the RMMF.
- (iii) Detailed Inspections of all mature woodland areas and trees shall be carried out by a qualified arboriculturalist, approved in writing by the Director, at intervals not exceeding five years. A report detailing the condition and any recommended actions shall be completed within 28 days of the inspections of each area or individual tree and shall be attached to the relevant RMMF inspection and inventory record.

8.6.3. Maintenance Requirements

- (i) Maintenance of woodland areas and trees shall be carried out in accordance with clause 3010 of the Specification and at the frequencies referred to in the Specification.
- (ii) Maintenance of woodland areas and trees shall include weed control in accordance with clause 3002 of the Specification.

8.7. Landscape Development Process

8.7.1. No later than 30 days after the start of the Restricted Services Commencement Date, the Contracting Authority will provide the Company with a copy of the current landscape management information including the:

- (i) landscape strategy,
- (ii) landscape inventory,
- (iii) landscape maintenance plan,
- (iv) Landscape Development Plan, and
- (v) annual landscape management report.

8.7.2. The Company's Landscape Architect shall be responsible for the preparation and delivery of:

- (i) the landscape strategy,
- (ii) the Landscape Development Plan, and
- (iii) the annual landscape management report.

8.7.3. The Company shall ensure the landscape inventory, including detailed inspection records and maintenance requirements, are complete and kept

up to date and shall continuously update the landscape inventory in the RMMF and ensure the landscape inventory is complete and accurate at all times.

- 8.7.4. The Company shall submit one hard copy and one electronic copy with drawings in portable document format (pdf) to the Contracting Authority of the:
- (i) landscape strategy,
 - (ii) Landscape Development Plan, and
 - (iii) annual landscape management report,
 - (iv) at the timescales detailed within this Part.
- 8.7.5. The Company's Landscape Architect shall attend all landscape and environmental progress meetings arranged with the Contracting Authority. The Landscape Architect shall also attend as necessary meetings with others, including the Contracting Authority's staff and any third party organisations or individuals, concerning landscaping issues related to the O&M Works Site.

8.8. Landscape Strategy

- 8.8.1. The Company shall prepare a detailed landscape strategy for the O&M Works Site which takes full account of the landscape strategy developed by the previous operating company. The detailed landscape strategy shall be submitted for the Contracting Authority's consent no later than 50 Working Days before the end of the Establishment Period..
- 8.8.2. The Company shall annually review and update the landscape strategy and submit this to the Contracting Authority's consent no later than 25 Working Days prior to the end of the first complete Contract Year.
- 8.8.3. The landscape strategy shall be produced on a route by route basis and shall identify and describe in detail the specific landscape character of the route. This shall include the relevant features and elements within and adjacent to each route.
- 8.8.4. The landscape strategy shall include:
- (i) clear cross-referencing to the landscape inventory,
 - (ii) Ordnance Survey based location plans clearly showing the routes and areas under review,
 - (iii) brief descriptions of the Routes and areas under review, highlighting the general character of the extent of the route, the appearance and value of the landscape, comments on the quality of the landscape and any ecological elements which may impact on, or be affected by, the maintenance and management of the Trunk Road soft estate,
 - (iv) a range of photographs depicting the various character zones,
 - (v) the perceived main issues relating to the continued management of the Trunk Road soft estate in this location, taking into account topics such as safety, visual aspects, general amenity and biodiversity. This may also require consideration of the interests and elements of land immediately adjacent to, but outwith, the Trunk Road boundary,

- (vi) consideration of any relevant, related studies, plans or strategies for the location, including route action plans and route accident reduction plans,
- (vii) general proposals for the future development of the environment related to the Trunk Road, and
- (viii) any other issues that may be relevant to the landscape strategy, including information and advice from third parties such as Scottish Natural Heritage and relevant National Parks Authority.

8.9. Landscape Development Plan

- 8.9.1. The Company shall take account of the landscape strategy in preparing the Landscape Development Plan. The Landscape Development Plan shall be developed to ensure compliance with the Specification and take account of the opportunities identified in the schedule of landscape opportunities referred to in this Part.
- 8.9.2. No later than 50 Working Days before the end of the Establishment Period the Company shall prepare and submit a Landscape Development Plan for the second Contract Year for the Contracting Authority's consent.
- 8.9.3. The Company shall review, revise and update the Landscape Development Plan during each subsequent Contract Year. The updated Landscape Development Plan shall be submitted for the Contracting Authority's consent no later than 25 Working Days prior to the end of the first complete Contract Year following end of the Establishment Period and each subsequent Contract Year.
- 8.9.4. When developing the Landscape Development Plan, the Company shall take account of the following guidance:
 - (i) the Scottish Executive's landscape design and management policy contained in Cost Effective Landscape: Learning From Nature,
 - (ii) the Scottish Executive's Inventory of Wildlife Mitigation Measures.
 - (iii) When developing the Landscape Development Plan, the Company shall take account of Transport Scotland's commitment to the protection and enhancement of biodiversity through all relevant legislation and documents including:
 - (iv) the Trunk Roads Biodiversity Action Plan, and
 - (v) the Scottish Government's biodiversity strategy Scotland's Biodiversity – It's in your hands.
- 8.9.5. The Landscape Development Plan shall include:
 - (i) recommendations in accordance with the landscape strategy,
 - (ii) recommendations resulting from the annual landscape management report, and
 - (iii) recommendations resulting from the Company's landscape opportunities inspections referred to in this Part.
- 8.9.6. For each potential landscape scheme and intervention identified in the schedule of landscape opportunities, the Landscape Development Plan shall include:
 - (i) route number,

- (ii) Scheme name,
- (iii) location reference,
- (iv) outline details of the proposed Operations,
- (v) justification for selection,
- (vi) cost estimate, and
- (vii) priority rating (high, medium and low) with relevant justification.

8.9.7. The Contracting Authority shall determine which of the proposed landscape Schemes shall be developed further and inform the Company.

8.10. Schedule of Landscape Opportunities

8.10.1. The Company's Landscape Architect shall prepare and maintain a schedule of landscape opportunities and use this in the preparation of the Landscape Development Plan. The schedule of landscape opportunities shall be informed by the results of the regular landscape opportunities inspections and by ad hoc inspections and visits to the network by the Landscape Architect.

8.10.2. The landscape opportunities inspections shall be undertaken by the Landscape Architect regularly at intervals not exceeding 12 months throughout the O&M Works Site to identify potential opportunities to improve the landscape associated with the Trunk Road network.

8.10.3. The schedule of landscape opportunities shall:

- (i) record potential landscape schemes and interventions, and
- (ii) identify landscape areas which could be improved by changing the maintenance requirements detailed in this Part.

8.10.4. The Company shall provide an estimate for all potential landscaping schemes and interventions as well as cost estimates for improvements to maintenance requirements.

8.10.5. Both of the categories identified in paragraph 8.10.3 of this Part shall also be considered and developed in terms of:

- (i) general amenity,
- (ii) more efficient and more appropriate maintenance,
- (iii) road safety and reliability,
- (iv) improved biodiversity and nature conservation,
- (v) sustainability and climate change, and
- (vi) any other issues identified as significant by the Landscape Architect.

8.10.6. When identified within the schedule of landscape opportunities, the Company shall submit to the Contracting Authority a report detailing the proposed changes to the maintenance requirements for landscape areas and a Company Notice of Change for the proposed changes. The report shall include a full description of the benefits of the proposed change and any cost savings or cost increases associated with undertaking the alternative maintenance activities. Subject to confirmation that the proposed changes are a Qualifying Variation, the Company shall implement the proposed changes to the maintenance requirements.

8.11. Landscape Scheme Implementation Information

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- 8.11.1. The Company shall prepare a Statement of Intent and Value for Money Assessment for all potential Schemes, interventions and alterations to maintenance Operations as identified in the schedule of landscape opportunities.
- 8.11.2. The Statement of Intent shall include the following information:
- (i) description of the proposal,
 - (ii) large scale plan showing the context of the area,
 - (iii) more detailed plans and drawings with supporting sketches or photographs illustrating the specific proposal,
 - (iv) written description of the relevant objectives,
 - (v) demonstration of the proposal's relationship to the landscape strategy for the relevant route or section of route,
 - (vi) detailed cost estimate,
 - (vii) details and justification of the priority rating given, and
 - (viii) Design and construction programme.
 - (ix) A Company Notice of Change
- 8.11.3. Subject to a potential Scheme being confirmed as a Qualifying Variation, the Company shall design and execute landscape Schemes and interventions.
- 8.11.4. The Company shall provide and maintain throughout each Contract Year, a detailed programme for all landscape Schemes and interventions that have been ordered. The detailed programme shall include the:
- (i) period of construction,
 - (ii) activities to be undertaken, and
 - (iii) estimated completion dates.
- 8.11.5. This programme shall be submitted to the Contracting Authority when requested.
- 8.12. Annual Landscape Management Report
- 8.12.1. No later than 25 Working Days prior to the end of each Contract Year, the Company shall submit an annual landscape management report to the Contracting Authority. The report shall provide a review of all landscaping Operations undertaken within the O&M Works Site during that Contract Year.
- 8.12.2. The annual landscape management report shall correspond to the various routes within the O&M Works Site as described in the RMMF.
- 8.12.3. The annual landscape management report shall record:
- (i) the general condition of the landscape areas within the O&M Works Site including a short statement for each route,
 - (ii) details of the effectiveness of maintenance Operations undertaken,
 - (iii) details of the effectiveness of the changes consented to by the Contracting Authority, that have been made to the maintenance Operations as stated in paragraph 8.10.6 of this Part,
 - (iv) a summary of all Operations undertaken as part of the Landscape
-

- Development Plan including a statement on the progress of all approved schemes,
- (v) details of the additional landscape areas added into the Company's maintenance programme resulting from the completion of Schemes undertaken by others working on behalf of the Contracting Authority,
 - (vi) information on all newly created landscape areas within the O&M Works Site created by the Company (or any contractors working on its behalf) during the period covered by the report that are subject to establishment maintenance,
 - (vii) the performance of any contractors and sub-contractors responsible for landscape Operations within the O&M Works Site,
 - (viii) a statement advising the Contracting Authority on the progress on delivering the requirements of the landscape strategy,
 - (ix) the Company's achievement of the requirements of the pesticide plan referred to in this Part, specifying the general level of pesticide use throughout the O&M Works Site and noting locations subjected to significant applications. If requested by the Contracting Authority, pesticide record forms that are produced by the Company in accordance with the landscape specification shall be included as an annex to the annual landscape management report,
 - (x) details of the Operations undertaken in support of enhancing biodiversity and nature conservation, including works associated with creating, repairing or improving any wildlife mitigation measures within the O&M Works Site,
 - (xi) a statement from the Company detailing any problems or specific unforeseen issues that have affected the delivery of the landscaping requirements which may have arisen during the period covered by the annual report and recommendations for action required,
 - (xii) details of any significant amendments made by the Company to the landscape inventory in the RMMF,
 - (xiii) a grassland report to include the activities identified in Appendix O/1 of this Part, setting out the Company's achievements and any concerns and opportunities for the grassed areas in each section of route identified within the landscape strategy,
 - (xiv) an injurious species report referring to the approved injurious species management plan required by this Part, detailing the location, nature and extent of the injurious species infestations that can be found within the O&M Works Site and the success or otherwise of the measures taken by the Company to reduce the area and extent of the known infestations, and
 - (xv) a summary report of road kill records within the O&M Works Site recorded in the RMMF and details of the impact of the species identified within the report.
 - (xvi) As part of its annual landscape management report, the Company shall prepare and submit a pesticide plan including targets for the potential reduction of pesticide usage through the use of alternative, but equally effective, proposals. The pesticide plan shall take account of the relevant requirements contained within the Specification.

- (xvii) As part of its annual landscape management report, the Company shall prepare and submit an injurious species management plan. The injurious species management plan shall include:
 - (xviii) details contained within the injurious species report of infestations within O&M Works Site,
 - (xix) proposals for achieving a reduction in infestation during the next Contract Year, and
 - (xx) proposed targets for reducing infestations during the next Contract Year.
- 8.12.4. The Contracting Authority shall consider the report and confirm the Company's targets for reducing infestations during the next Contract Year. All areas of infestation shall be recorded within RMMF and updated annually before the end of each Contract Year.
- 8.12.5. As part of its annual landscape management report, the Company shall prepare and submit a deer management plan including the activities identified in Appendix O/2 of this Part, setting out the Company's achievements in respect of deer management and its strategy and future proposals for the next Contract Year.

Appendix A

Detailed Inventory and Inspection Procedures

Appendix A

Detailed Inventory and Inspection Procedures

This Appendix A details the inventory and Inspection procedures which the Company shall follow for the operation of the RMMF and describes various conventions which shall be adopted by the Company when undertaking surveys in order to ensure consistency in the database record.

1 General Survey Rules (Inventory and Inspection)

1.1. All of the attributes of inventory items recorded in the RMMF shall as a minimum be as defined in the Transport Scotland 'Inventory Collection Manual'. In the event of a conflict between the other requirements of this Appendix A and the Transport Scotland 'Inventory Collection Manual' the Transport Scotland 'Inventory Collection Manual' shall take precedence.

1.2. Network Node Points

1.2.1. Each network node point represents a fixed definable point on the road surface to which chainage can be related. In the RMMF database, the start and end nodes define the direction of survey.

The Company shall use the following conventions:

- (i) For dual carriageways the start and end of a section shall be specified in the direction of traffic flow;
- (ii) On single carriageway roads the normal survey direction shall be that of increasing section numbers; and
- (iii) Inventory items or defects lying outside the node positions shall be recorded at the chainage of the node, e.g. at approaches to roundabouts.

1.3. Cross-Sectional Position

1.3.1. The position of an inventory item or defect within a section shall be recorded by chainage and cross-sectional position. The longitudinal distance measured to the nearest metre along the left-hand edge of the carriageway forms the chainage and the cross-sectional position shall be defined using a single character code which shall be entered by the Company's survey team at the time of data collection.

The following list of codes shall be used:

KEY	POSITION
1	Left Outside Verge (including side slopes)
2	Left Footway
3	Left Verge
4	Lane 1 (hard shoulder on Motorway)
5	Lane 2 (left Lane on Motorway)
6	Lane 3 (middle Lane on Motorway)
7	Lane 4 (right Lane on Motorway)
8	Right Verge
9	Right Footway
0	Right Outside Verge (including side slopes)
Q	Acceleration splay
W	Lane for left turning traffic*
E	Lane for right turning traffic*, or Lane 5 on Motorway
R	Bus Lane – other traffic prohibited at all times*, or Lane 6 on
T	Crawler Lane*
Y	Other*

* To be used where extra width shall be created and not where existing Lane use shall be redesignated.

1.3.2. An optional overlay for fitting over the keyboard of some data capture devices shall be available to assist in the recording of the cross-sectional positions. The details of which keys are applicable to various road types are shown in the table below.

Road Type	KEY										
	1	2	3	4	5	6	7	8	9	0	Others
Motorway 3 Lane			Verge	Lane 1	Lane 2	Lane 3	Lane 4	Central Reserve			Qwerty
Dual C/way	O/S Verge	Footway	Verge	Lane 1	Lane 2	Lane 3		Central Reserve			Qwerty
Single 3 Lane	O/S Verge	Footway	Verge	Lane 1	Lane 2	Lane 3		Verge	Footway	O/S Verge	Qwerty
Single 2 Lane	O/S Verge	Footway	Verge	Lane 1	Lane 2			Verge	Footway	O/S Verge	Qwerty
Single 1 Lane	O/S Verge	Footway	Verge	Lane 1				Verge	Footway	O/S Verge	Qwerty

1.3.3. The Company shall take particular care when recording the cross-sectional positions of inventory items and defects at complex junctions and roundabouts.

1.4. Survey Procedure

1.4.1. The Company shall apply the following rules and conditions when conducting surveys:

- (i) It shall be required where possible that sections are surveyed in the direction of traffic flow but surveys in the reverse direction shall be supported by the system and may be used (e.g. for safety reasons). If a survey shall be carried out in the reverse direction to that specified by the start and end nodes in the RMMF database such as against the traffic on dual carriageways and in the reverse direction on single lane roads, the cross-sectional positions must be entered facing the position at which the survey started (looking backwards);
- (ii) The Company's inspection team shall be informed of the survey direction indicated by the RMMF database before starting its measurements;
- (iii) In general, all chainage measurements shall be made along the left-hand edge of the carriageway (hard shoulder on Motorways) from start node to end node as referred to in the RMMF database, in the direction of the traffic flow;
- (iv) An item or defect along the left-hand edge of the carriageway such as a kerb, channel block, gully or edge road marking shall be recorded in the left-hand cross-sectional position 3. If these items occur along the right-hand edge of the carriageway they shall be recorded in cross-sectional position 7 for up to 4 Lanes and 'E' or 'R' for 5 and 6 Lanes respectively;
- (v) If an inventory item or a defect occurs at the boundary of two cross-sectional positions, it shall be recorded in the cross-sectional key position to its left (the left-hand rule);
- (vi) An item or defect on the left road boundary shall be recorded in the cross-sectional position immediately to its right (That shall be cross-sectional position 1);

An item or defect which occurs in the central reserve of a dual carriageway or Motorway and which shall be common to both sections shall only be recorded in the nominated section. Examples include, but shall not be limited to:

Examples:

Double guardrail	- record in nominated section
Double bracket lamp column	- record in nominated section
Single guardrail	- record in relevant section
Single bracket lamp column	- record in relevant section
Uni-directional sign	- record in relevant section
Bridges	- record in nominated section

- (vii) For items which require an identity code, an asterisk (*) shall be entered if the identity code shall be not present or shall be unreadable;
- (viii) A large roundabout but not a mini-roundabout shall be designated as a separate section and its start/end point shall be identified. Measurements of chainage shall be made around the outside of the roundabout in the direction of the traffic flow. An item or defect occurring on the central island shall be recorded in cross-sectional position 8;

- (ix) Roundabouts shall be defined as separate sections. Service roads, remote cycle tracks, remote footpaths and some redundant road lay-bys may need to be treated as separate sections;
- (x) Any item outside the road boundary, but adversely affecting the carriageway (e.g. overhanging trees) shall be recorded under cross-sectional position 1 if on the left and cross-sectional position 0 if on the right;
- (xi) It shall be not possible to have two identical continuous items running in the same cross-sectional position. Position Y shall be used for one of them. In the case of point items, it shall be necessary to 'move' one item by 1 metre when recording chainage;
- (xii) On all but obvious 'constant cross section' roads such as Motorways, widths shall be checked at least every 100 metres and changes recorded. At 10 metre intervals the Company's inspector shall ensure that all 'clocked-on' items are still running, no new ones are present and unrecorded. The Company's inspector shall also record any changes of width at not more than 20 metre intervals;
- (xiii) All measurements of area calculated within RMMF are calculated as rectangles. Therefore, where the width of an area changes, an average measurement of width shall be taken and entered at the start of the change;
- (xiv) Some inventory items shall have an off-site entry to denote ownership. This entry may be either the Contracting Authority, relevant local authority or others.

1.5. Standard Procedures and Consistency

- 1.5.1. The Company shall record all inventory items in a consistent way and to do this the personnel carrying out the survey shall be instructed clearly about the following:
 - (i) the start and end of the section;
 - (ii) reverse direction;
 - (iii) working systematically from left to right;
 - (iv) following the inventory rules exactly; and
 - (v) the maintenance requirements.
- 1.5.2. The following points shall be considered when an Inspection survey shall be undertaken:
 - (i) identify the activity first and then select the appropriate defect code;
 - (ii) record the defect as seen, not the cause;
 - (iii) when categorising a defect as either a Category 1 Defect or a Category 2 Defect, the Company shall consider cyclists, pedestrians and local circumstances; and
 - (iv) record sufficient information for the repair to be carried out.

1.6. Data Capture Device and Data Collection Software

- 1.6.1. A range of data capture devices and data collection software are commercially available. Any device shall be acceptable to the Contracting Authority if it shall be suitably adapted to comply with all the requirements of this Appendix. The Company shall be required to demonstrate to the

Contracting Authority prior to the Restricted Services Commencement Date that the data capture hardware and software he intends to utilise during the Agreement complies with this Appendix.

Inventory Collection

1.7. Schedule of Inventory Items to be Collected by the Company

<u>ITEM</u>	<u>MNEMONIC</u>	<u>TYPE</u>
ANCILLIARY EQUIPMENT	AI	P
ARRESTER BED	AB	P
BALANCING POND	BP	P
BOLLARDS (safety)	SB	P
BULB	BB	C
CARRIAGEWAY	CW	C
CATCHPIT	CP	P
CCTV AND SPEED CAMERAS	TV	P
CENTRAL ISLAND	CI	C
CENTRAL RESERVE	CR	C
CHANNEL	CH	C
COMMUNICATON CABINET	CC	P
COUNTERFORT DRAIN	CD	C
CROSSOVER	XO	P
CYCLE FACILITY	CT	C
CULVERT	CV	C
DITCH	DI	C
EMBANKMENTS AND CUTTINGS	EC	C
EMERGENCY TELEPHONE BOX	TB	P
FENCES AND BARRIERS	FB	C
FOOTWAY	FW	C
FILTER DRAIN	FD	C
GRASSED AREAS	GA	C
GRIP	GP	P
GULLY	GY	P

<u>ITEM</u>	<u>MNEMONIC</u>	<u>TYPE</u>
HARD SHOULDER	HS	C
HEDGE	HG	C
WEATHER STATION	IS	P
INTERCEPTOR	IN	P
KERB	KB	C
LAYBY	LB	C
MANHOLE	MH	P
OUTFALL, HEADWALL OR APRON	OF	P
OVERBRIDGE	BO	C
PEDESTRIAN CROSSING	PX	P
PEDESTRIAN GUARDRAIL	PR	C
PIPED DRAINAGE	PD	C
PIPED GRIP	PG	P
REFERENCE MARKER POINT	RF	P
RETAINING WALL	RW	C
ROAD LIGHTING POINT	LP	P
ROAD MARKINGS (hatched)	LH	C
ROAD MARKINGS (longitudinal)	LL	C
ROAD MARKINGS (transverse and special)	RM	P
ROAD STUDS	RS	C
ROAD TRAFFIC SIGNS	TS	P
SAFETY FENCE	SF	C
SCRUB	SC	C
SHRUB	SH	C
SIGNS	SG	P
SLUICES AND VALVES	SV	P
SNOW POLES	SP	P
TRAFFIC CONTROL BARRIER	CB	P
TREE	TR	P

<u>ITEM</u>	<u>MNEMONIC</u>	<u>TYPE</u>
UNDERBRIDGE	BU	C
VERGE	VG	C
WETLAND	WT	C
WOODLAND	WD	C

Notes:

All inventory items shall be categorised as either 'point' (P) or 'continuous' (C):

- 1.7.1. Point items are those that occur at a specific location along the section and have virtually the same start and end chainage; and
- 1.7.2. Continuous items are those that occur over a particular length and have a start and end chainage.

1.8. Notebook Facility

- 1.8.1. The notebook facility (NT) shall be not an inventory item but shall be provided to enable the Company's inspector to record notes directly on the data capture device, particularly inventory errors and extra inventory codes not defined in the RMMF. The notebook facility shall be used to describe in more detail an inventory item. For example, gabions shall be recorded as 'Retaining Wall – Other', and the text 'Gabion' shall then be entered into the notebook.

1.9. Sign Dimensions

- 1.9.1. To simplify the entry of sign sizes a set of default dimensions, such as width and height, have been specified for triangular, rectangular and circular signs. Sign dimensions shall be recorded to the nearest 0.1m. The width and heights listed cover a range of plus or minus 0.05 metres from the value stated. If a size does not conform to the default values the width and height shall be entered directly into the data capture device. The mounting height of a sign shall be defined as the height from the bottom of the sign to the ground level.

1.10. Item Length

- 1.10.1. The inventory items in this section are categorised a either 'Point' or 'Continuous'.
 - (i) Point items are those that occur at a specific location along the section and have virtually the same start and end change. A point item shall be located by its cross-sectional position, with its chainage measured from the start of the section and its section identifier.
 - (ii) Continuous items are those that occur over a particular length and have a start and end chainage. A continuous item shall be located by its start and end chainage, section identifier and usually cross-sectional position (except where the cross-sectional position shall be not required e.g. transverse culverts, carriageways, bridges).

1.11. Double Counting

- 1.11.1. In general when collecting inventory data, only the position of the end node shall be recorded in the data capture device to avoid double

counting. However, it may be necessary to record the position of the start node if it would not otherwise be recorded (e.g. at the O&M Works Site boundary or on the exits from roundabouts).

- 1.11.2. Care shall be taken to avoid double counting of other inventory items at start and end sections (e.g. carriageway, lighting points, signs).

1.12. Intermediate

- 1.12.1. The intermediate feature shall be used to amend the details of a particular continuous inventory item whilst the item remains running. For example, where the carriageway surface type changes but the carriageway continues.

Inventory Items in Detail

1.13. Introduction

- 1.13.1. This section of Appendix A describes in detail those items on the O&M Works Site network which shall be recorded as inventory items within the RMMF database and subsequently inspected in accordance with the requirements laid out in this Part of these O&M Works Requirements. Items identified during the inventory survey shall be entered into the data capture device and then downloaded on to the RMMF database.
- 1.13.2. A detailed description of each inventory item follows together with the information on each item which the Company shall be required to observe and record:
- (i) A definition or description of each item;
 - (ii) A schedule of details to be entered into the data capture device, including, but not limited to, details of units of measurement and ranges for data input;
 - (iii) Details of conventions which shall be adopted in defining the item; and
 - (iv) Rules which shall be adhered to in defining the item.
- 1.13.3. Some attributes have been added or had the codes changed in the records for the existing network. The Company shall review and update the inventory during the first annual period to ensure that all attributes are populated and recorded in accordance with the details in sections 1.13 to 1.37 of this Appendix A.

1.14. CW - Carriageway

That part of the road constructed for use by vehicular traffic but excluding hard shoulders, lay-bys and crossovers.

1.14.1. Input Details

- (i) Site Entries:

Item Code	{CW}	
Geographical Information System	Linear Shape	Recorded along left edge
Chainage	{----}	(To nearest metre)
Surface	{--}	1 = Hot Rolled Asphalt

2 = Bituminous Macadam

3 = Concrete

4 = Surface Dressed

5 = Grass

6 = Gravel

7 = Concrete Flags

8 = Block Paving

9 = SMA

10 = Other

11 = High Skid Resistant
Surfacing

12 = Coloured Surfacing

Width

{----

(To nearest 0.1 metre between
0.0 and 99.9)[0.0 < W < 99.9])

1.14.2. Convention

- (i) A carriageway shall be defined as a continuous item with no cross-sectional position.

1.14.3. Rules

- (i) Intermediate – use this entry when surface type or width changes but the carriageway continues.
- (ii) Widths shall be recorded where changes occur.
- (iii) Slip roads entering the main carriageway section are separate sections. Their presence shall be indicated by the crossover (XO) item. The width of the crossover shall be measured from the intersection of the slip road at right angle across its Lane.

1.15. **HS** - Hard Shoulder

A surfaced strip, usually of one traffic Lane width, adjacent to and abutting a carriageway. Intended for use by vehicles in the event of difficulty or during obstruction of the carriageway.

1.15.1. Input Details

- (i) Site Entries

Item Code {HS}**Geographical Information System** Linear Shape Recorded along fight edge**Cross-Sectional Position** {- }Position See Section 1.2 of this Appendix A Functional Keys**Chainage** {----} (To nearest metre)**Surface** {--} 1 = Hot Rolled Asphalt
2 = Bitumen Macadam

3 = Concrete
4 = Surface Dressed
5 = Grass
6 = Gravel
7 = Concrete Flags
8 = Block Paving
9 = SMA
10 = Other
11 = High Skid Resistant Surfacing
12 = Coloured Surfacing
Width {----} (To nearest 0.1 metre between 0.0 and 99.9) [0.0 < W < 99.9])

1.15.2. Convention

- (i) A hard shoulder shall be defined as a continuous item.

1.15.3. Rules

- (i) A hard shoulder shall usually be recorded in cross-sectional position 4.
- (ii) Intermediate – use this entry when surface type or width changes but the hard shoulder continues.

1.16. **LB** - Lay-by

A part of the road set aside for vehicles to draw out of the traffic Lanes and wait for short periods.

1.16.1. Input Details

- (i) Site Entries

Item Code	{LB}	
Geographical Information System	Linear Shape	Recorded along left edge
Cross-Sectional Position	{-}Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)
Surface	{--}	1 – Hot Rolled Asphalt 2 = Bitumen Macadam 3 = Concrete 4 = Surface Dressed 5 = Grass 6 = Gravel

7 = Concrete Flags

8 = Block Paving

9 = SMA

10 = Other

11 = High Skid Resistant
Surfacing**Width**

{----

(To nearest 0.1 metres between
0.0 and 99.9)[0.5 < W < 10.0])

1.16.2. Convention

- (i) A lay-by shall be defined as a continuous item.

1.16.3. Rules

- (i) A lay-by on the left shall be recorded in the cross-sectional position of the verge, i.e. 3. A lay-by on the right shall be recorded in cross-sectional position 7 for up to 4 Lanes.
- (ii) Intermediate – use this entry when surface type or width of the lay-by changes but the lay-by continues.
- (iii) If the verge or footway terminates over the length of the lay-by, these items shall be 'clocked off' and re-started on the other side of the lay-by if they are present.

1.17. **XO** - Crossover

A pedestrian or vehicular crossing of a footway, verge or central reserve. Includes minor junctions, driveways, field entrances and central reserve crossovers.

1.17.1. Input Details

(i) Site Entries

Item Code	{XO}	
Geographical Information System	Linear Shape	Recorded along left edge
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)
Surface	{--}	1 = Hot Rolled Asphalt 2 = Bitumen Macadam 3 = Concrete 4 = Surface Dressed 5 = Grass 6 = Gravel 7 = Concrete Flags 8 = Block Paving 9 = SMA 10 = Other 11 = High Skid Resistant Surfacing 12 = Coloured Surfacing
Width	{----}	(To nearest 0.1 metre between 0.0 and 99.9)[0.1 < W < 99.9])
Text	{-----}	(20 characters maximum)
Sweeping Method	{-}	1 = Machine 2 = Hand 3 = No Sweeping

1.17.2. Convention

- (i) A crossover shall be defined as a point item.

1.17.3. Rules

- (i) A crossover occurs when the surface type shall be different to the surface of the item crossed.
- (ii) A crossover shall be recorded in the cross-sectional position that shall be actually crossed, such as the verge, footway or central reserve.
- (iii) Continuous items which are crossed shall NOT be 'clocked off' by the inventory program.

- (iv) A text entry (maximum 20 characters) to describe the crossover shall be required (e.g. factory entrance, field entrance).
- (v) Central reserve crossovers shall be recorded even when barriers are present to prevent the passage of vehicles.
- (vi) A crossover shall be used to indicate slip roads abutting the carriageway.

1.18. CI - Central Island

An obstruction in the road to split traffic into Lanes and/or to provide a pedestrian refuge.

1.18.1. Input Details

- (i) Site Entries

Item Code	{CI}	
Geographical Information System	Point	OSGR coordinate of island centre
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----	(To nearest metre)
Surface	{--}	1 = Hot Rolled Asphalt 2 = Bitumen Macadam 3 = Concrete 4 = Surface Dressed 5 = Grass 6 = Gravel 7 = Concrete Flags 8 = Block Paving 9 = SMA 10 = Other 11 = High Skid Resistant Surfacing 12 = Coloured Surfacing
Width	{----	(To nearest 0.1 metre between 0.0 and 99.9)[0.1 < W < 99.9]

1.18.2. Convention

- (i) A central island shall be defined as a continuous item.

1.18.3. Rules

- (i) Intermediate – use this entry only when either the surface type or width of the island changes but the island continues.
- (ii) A central island shall be recorded in the cross-sectional key position of the Lane immediately adjacent on its left-hand side.
- (iii) The width of a central island shall be the ‘average’ width. If distant

changes in width occur intermediate measurements shall be recorded.

- (iv) Other inventory items situated on a central island shall be allocated the same cross-sectional position as the island. On single Lane roads the right-hand kerb of the island shall be recorded with cross-sectional position Y if a right-hand carriageway kerb exists. Hatched road markings associated with a central island are a separate inventory item.
- (v) Central islands constructed in two parts with a pedestrian refuge shall be treated as a single inventory item. If information about the pedestrian refuge (e.g. surface type) shall be required, use crossover (XO) to record the details.
- (vi) A roundabout, including a mini roundabout, with a raised centre, and not defined as a separate section shall be treated as a central island having a width equal to its diameter. However, a mini roundabout without a raised centre shall be regarded as transverse and special road markings.
- (vii) The maintainable grass width of a central island (if required) can be recorded using the verge item (VG).

1.19. CR - Central Reserve

An area that separates the carriageways of a dual carriageway road.

1.19.1. Input Details

- (i) Site Entries

Item Code	{CR}	
Geographical Information System	Linear Shape	Recorded along centre
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)
Surface	{--}	1 = Hot Rolled Asphalt 2 = Bitumen Macadam 3 = Concrete 4 = Surface Dressed 5 = Grass 6 = Gravel 7 = Concrete Flags 9 = SMA 10 = Other 11 = High Skid Resistant surfacing 12 = Coloured Surfacing
Width	{----}	(To nearest 0.1 metre between 0.0 and 99.9)[0.0 < W < 99.9]

1.19.2. Convention

- (i) A central reserve shall be defined as a continuous item.

1.19.3. Rules

- (i) A central reserve shall be recorded in cross-sectional position 8 and in the nominated section.
- (ii) Intermediate – use this entry when either the surface type or width of the central reserve changes but the reserve continues.
- (iii) The width of a central reserve shall be the ‘average’ width. If distinct changes in width occur, intermediate measurements shall be recorded.
- (iv) Other inventory items situated on a central reserve shall be allocated the same cross-sectional position as the reserve.
- (v) An item which occurs in the central reserve of dual carriageways and Motorways and which shall be common to both sections shall be recorded in the nominated section ONLY, for example safety fence with a shared post. An item distinctly associated with both directions (e.g. single safety fences with separate posts) shall be recorded in the section to which it applies.
- (vi) Hatched road markings associated with a central reserve are a separate inventory item.
- (vii) When the central reserve shall be crossed by a crossover it shall be allowed to continue and not ‘clocked off’ by the inventory program. Thus crossover shall be used to record a change of surface which avoids termination and re-commencement of the central reserve.
- (viii) The maintainable grass width of a central reserve (if required) can be recorded using the verge item (VG).

1.20. **FW** - Footway

1.20.1. Input Details

- (i) Site Entries

Item Code	{FW}	
Geographical Information System	Linear Shape	Recorded along right edge
Cross-Sectional Position	{-}Position	See Section 1.2 of this Appendix A Functional
Chainage	{----}	(To nearest metre)
Surface	{--}	1 = Hot Rolled Asphalt 2 = Bitumen Macadam 3 = Concrete 4 = Surface Dressed 5 = Grass 6 = Gravel 7 = Concrete Flags

		8 = Block Paving
		9 = SMA
		10 = Other
		11 = High Skid Resistant surfacing
		12 = Coloured Surfacing
Width	{----	(To nearest 0.1 metre between 0.0 and 99.9)
Footway Category	{-}	(0.5 < W < 99.9) 1,2 or 3 as defined

1.20.2. Convention

- (i) A footway shall be defined as a continuous item.

1.20.3. Rules

- (i) A footway shall be usually recorded in cross-sectional position 2 when on the left and position 9 when on the right of the carriageway.
- (ii) Intermediate – use this entry when surface type width or the sweeping type changes but the footway continues.
- (iii) When a footway shall be crossed by a crossover (XO) it shall be allowed to continue and not ‘clocked off’ by the inventory program. Thus crossover shall be used to record a change of surface which avoids termination and re-commencement of the footway.
- (iv) When a footway and cycle facility occur together, the item which has the principal use takes priority, and no entry shall be required for the other item. If in doubt, the entry for FW takes priority.

1.21. CT - Cycle Facility

A part of the road, normally within the road boundary, reserved specifically for the use of pedal cycles.

1.21.1. Input Details

- (i) Site Entries

Item Code	{CT}	
Geographical Information System	Linear Shape	Recorded along right edge
Cross-Sectional Position	Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----	(To nearest metre)
Surface	{--}	1 = Hot Rolled Asphalt 2 = Bitumen Macadam 3 = Concrete 4 = Surface Dressed 5 = Grass

- 6 = Gravel
 - 7 = Concrete Flags
 - 8 = Block Paving
 - 9 = SMA
 - 10 = Other
 - 11 = High Skid Resistant Surfacing
 - 12 = Coloured Surfacing
- (To nearest 0.1 metre between 0.0 and 99.9)[1.0 < W < 10.0]

Width {----}

1.21.2. Convention

- (i) A cycle facility shall be defined as a continuous item.

1.21.3. Rules

- (i) A cycle facility shall be either recorded in the cross-sectional position of the footway or as part of a road Lane.
- (ii) Intermediate – use this entry when surface or width changes but the cycle facility continues.
- (iii) When a cycle facility shall be crossed by a crossover (XO) it shall be allowed to continue and not ‘clocked off’ by the inventory program. Thus crossover shall be used to record a change of surface which avoids termination and re-commencement of the cycle facility.
- (iv) When a cycle facility and footway occur together, the item which has the principal use takes priority, and no entry shall be required for the other item. If in doubt, the entry for FW takes priority.

1.22. **KB - Kerb**

A border, usually upstanding, of natural or man-made material at the edge of a carriageway or hard shoulder.

1.22.1. Input Details

- (i) Site Entries

Item Code	{KB}	
Geographical Information System	Linear Shape	Recorded along kerb
Cross-Sectional Position	{-}Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)
Material	{--}	1 = Concrete 2 = Natural Stone

Type	{-}	3 = Extruded Asphalt 4 = Other 1 = Normal 2 = Safety Kerb 3 = Other 10 = Half Battered 11 = Bull Nosed 12 = Splayed 13 = Offlet 14 = Safety (High Deflection) 15 = Heel 16 = Transition
-------------	-----	--

1.22.2. Convention

- (i) A kerb shall be defined as a continuous item.

1.22.3. Rules

- (i) Kerbs located on the left-hand side of the carriageway are recorded in cross-sectional position 3. Those on the right-hand edge of the carriageway shall be recorded in position 7 for up to 4 Lanes and position E or R for 5 and 6 Lanes respectively.
- (ii) Intermediate – use this entry when surface type or width changes but the hard shoulder continues.
- (iii) When a kerb shall be crossed by a crossover (XO) it shall be allowed to continue and not 'clocked off' by the inventory program.
- (iv) A combined kerb and drainage unit shall NOT be recorded under this item. It shall be recorded under the inventory item Channel (CH).

1.23. CH - Channel

A narrow longitudinal strip, generally near the edge of the carriageway, constructed to carry and lead away surface water.

1.23.1. Input Details

- (i) Site Entries

Item Code	{CH}	
Geographical Information System	Linear Shape	Recorded along centre
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix
Chainage	{----}	A Functional Keys (To nearest metre)
Block Type	{-}	1 = Continuous Concrete Preformed Concrete Blocks 3 = Natural Stone

4 = Metal Grating
 Combined Kerb & Channel
 6 = Other

1.23.2. Convention

- (i) A channel shall be defined as a continuous item.

1.23.3. Rules

- (i) Channels shall always be recorded in cross-sectional position 3 if they are along the left-hand edge of the carriageway and cross-sectional position 7 if they are on the right for up to 4 Lanes. Cross-sectional positions E or R are used for 5 and 6 Lanes respectively.
- (ii) Intermediate – use this entry when the channel type changes but the channel continues.
- (iii) A lined channel not running parallel to the carriageway shall be recorded under the inventory item grip (GP).

1.24. GY - Gully

A chamber at the side of the road connected to a drainage system to receive surface water and to trap debris. The chamber shall be usually surmounted by a grating.

1.24.1. Input Details

- (i) Site Entries

Item Code	{GY}	
Geographical Information System Cross-Sectional Position Chainage	Point {- }Position {---}	OSGR Coordinate See Section 1.2 of this Appendix A Functional Keys (To nearest metre)
Type	{-}	1 = Top Entry 2 = Side Entry 3 = Other

1.24.2. Convention

- (i) A gully shall be defined as a point item.

1.24.3. Rules

- (i) Gullies located on the left-hand edge of the carriageway shall be recorded in position 3. Those on the right-hand edge of the carriageway shall be recorded in position 7 for up to 4 Lanes and position E or R for 5 Lanes and 6 Lanes respectively.
- (ii) A gully which occurs in a central reserve and collects water from both carriageways (e.g. at a crossover), shall be recorded in cross-sectional position 8 but ONLY in the nominated section.
- (iii) A gully shall be a chamber which requires to be emptied periodically and shall be usually surmounted by a grating. A grating and other ironwork which shall be not associated with a gully (i.e. which will not require to be emptied) shall NOT be recorded.
- (iv) Footway gullies are included in this inventory item and shall be

recorded in the cross-sectional position of the footway.

- (v) Gullies shall be recorded in the cross-sectional position of the grating or entry point even though the gully pot may be located in a different cross-sectional position (e.g. side entry gullies in a central reserve).

1.25. IN - Interceptor

A structure similar to a catchpit at the point where the surface water enters a drainage system and designed to prevent unwanted material entering the system.

1.25.1. Input Details

- (i) Site Entries

Item Code	{IN}	
Geographical Information System	Point	OSGR Coordinate
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)

1.25.2. Convention

- (i) An interceptor shall be defined as a point item.

1.25.3. Rules

- (i) It may not always be possible to identify an interceptor without prior knowledge. The presence of an interceptor shall be verified before this inventory item shall be recorded.

1.26. CP - Catchpit

A pit provided in a drainage system to collect silt or solid material and prevent it from blocking inaccessible parts of the drains.

1.26.1. Input Details

- (i) Site Entries

Item Code	{CP}	
Geographical Information System	Point	OSGR Coordinate
Cross-Sectional Position	{-}Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)

1.26.2. Convention

- (i) A catchpit shall be defined as a point item.

1.26.3. Rules

- (i) Unless it shall be clear that a catchpit exists below a manhole cover, the chamber shall be recorded under the inventory item manhole (MH). However, if a catchpit shall be definitely present, the chamber shall be recorded as a catchpit and the cover shall NOT be recorded

separately.

1.27. MH - Manhole

1.27.1. Input Details

(i) Site Entries

Item Code	{MH}	
Geographical Information System	Point	OSGR Coordinate
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)
Type	{-}	1 = Top Entry 2 = Side Entry 3 = Other

(ii) Off Site Entries

See Rules (a)

1.27.2. Convention

(i) A manhole shall be defined as a point item.

1.27.3. Rules

- (i) A manhole shall only be recorded if it does not occur with a catchpit or interceptor or if it shall be not known what shall be beneath. If in doubt, a note of link identifier, section, chainage and cross-sectional position shall be made. This will include all road manholes plus other indistinguishable sewer authority manholes, but NOT BT or other Undertakers' Apparatus.
- (ii) Manholes which occur in the central reserve of dual carriageways and Motorways and which are common to both sections must be recorded in the nominated section ONLY.

1.28. PG - Piped Grip

A piped grip conduit across the verge of a road to lead surface water away from the carriageway.

1.28.1. Input Details

(i) Site Entries

Item Code	{PG}	
Geographical Information System	Point	OSGR coordinate at piped grip entrance
Cross-Sectional Position	Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)
Length	{---}	(To nearest metre between 1 and 30 inclusive)

1.28.2. Convention

- (i) A piped grip shall be defined as a point item.

1.28.3. Rules

- (i) A piped grip shall be recorded in the cross-sectional position of the offlet. Where the offlet shall be located in the kerb, it shall be recorded in the cross-sectional position of the kerb.
- (ii) Ironwork associated with a piped grip (including gratings not surmounting a gully) shall NOT be recorded as a separate inventory item.
- (iii) A kerb offlet (weir) associated with a piped grip shall be NOT a separate inventory item (i.e. gully inlet with no pot).

1.29. PD - Piped Drainage

A piped conduit to carry surface water, usually connected to manholes, interceptors, gullies or otherwise

1.29.1. Input Details

- (i) Site Entries

Item Code	{PD}	
Geographical Information System	Linear Shape	Recorded along centre of pipe. As a minimum, this shall be a straight line between the two end points of the pipe
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----	(To nearest metre)
Diameter	{----	(To nearest 0.1 metre between 0.1 and 9.99)
Length	{----	(To nearest metre between 1 and 30 inclusive)
Material	{-}	1 = Clay 2 = Concrete 3 = Plastic 4 = Ceramic 5 = Steel 10 = Other

1.29.2. Convention

- (i) A piped drainage shall be defined as a linear item.

1.30. GP - Grip

A shallow trench across the verge of a road to lead surface water away from the carriageway.

1.30.1. Input Details

(i) Site Entries

Item Code	{GP}	
Geographical Information System	Point	OSGR coordinate of grip entrance
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----	(To nearest metre)
Width	{----	(To nearest 0.1 metre between 0.1 and 5.0)
Length	{----	(To nearest 0.1 metre 0.1 and 9.9)
Type	{-}	1 = Lined 2 = Unlined

1.30.2. Convention

- (i) A grip shall be defined as a point item.

1.30.3. Rules

- (i) A grip shall be recorded over each cross-sectional position it crosses.
- (ii) Both hand-cut grips (unlined) and pre-formed concrete (lined) types shall be recorded.

1.31. DI - Ditch

A trench adjacent to a carriageway for drainage, generally running parallel to the carriageway.

1.31.1. Input Details

(i) Site Entries

Item Code	{DI}	
Geographical Information System	Linear Shape	Recorded along centre of ditch
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----	(To nearest metre)
Type	{-}	1 = Lined 2 = Unlined

1.31.2. Convention

- (i) A ditch shall be defined as a continuous item.

1.31.3. Rules

- (i) A ditch on the left road boundary line shall be recorded in cross-sectional position 1 and if on the right road boundary line in position 0.

- (ii) When a ditch shall be crossed by a crossover (XO) it shall be allowed to continue and not 'clocked off' by the inventory program.

1.32. FD - Filter Drain

A field drain, usually adjacent and running parallel to a carriageway surrounded by granular material such as gravel, within which may be laid a porous or perforated pipe.

1.32.1. Input Details

- (i) Site Entries

Item Code	{FD}	
Geographical Information System	Linear Shape	Recorded along centre of filter drain
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)

1.32.2. Convention

- (i) A filter drain shall be defined as a continuous item.

1.32.3. Rules

- (i) Filter drains which occur in the central reserve of dual carriageways and Motorways and which are not common to both sections shall be recorded in the nominated section only.
- (ii) When a filter drain shall be crossed by a crossover (XO) it shall be allowed to continue and not 'clocked off' by the inventory program.
- (iii) Counterfort drains are recorded as a separate item.

1.33. CD - Counterfort Drain

A field drain other than a filter drain running parallel to a carriageway surrounded by granular material such as gravel including herringbone and intercepting drains

1.33.1. Input Details

- (i) Site Entries

Item Code	{CD}	
Geographical Information System	Linear Shape	Recorded along centre of counterfort drain
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)

1.33.2. Convention

- (i) A counterfort drain shall be defined as a continuous item.

1.33.3. Rules

- (i) The start chainage of a counterfort drain occurs when the measuring wheel shall be level with the point at which the drain shall be first

encountered.

- (ii) The end chainage occurs when the measuring wheel shall be level with the point at which the drain shall be last encountered.

1.34. CV - Culvert

An enclosed channel or large pipe for conveying water below ground, usually under a road.

1.34.1. Input Details

- (i) Site Entries

Item Code	{CV}	
Geographical Information System	Linear Shape	Recorded along centre of culvert. As a minimum this shall be a straight line between the two end points of the culvert
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----}	(To nearest metre)

- (ii) Off site Entries

Length	{----}	(To nearest 0.5 metre)
Diameter	{----}	(To nearest 0.1 metre)

1.34.2. Convention

- (i) A culvert shall be defined as a point item, but with no cross-sectional position.

1.34.3. Rules

- (i) Culverts parallel to the carriageway shall be recorded at their mid-point (a written note of their length and diameter shall be taken).
- (ii) Culverts which occur in the central reserve of dual carriageways and Motorways and which are common to both sections must be recorded in the nominated section ONLY.

1.35. BP – Balancing Pond

A catchment area adjacent to a carriageway to collect surface run-off following heavy rain and then discharge it into a road drainage system.

1.35.1. Input Details

- (i) Site Entries

Item Code	{BP}	
Geographical Information System	Point	OSGR coordinate of balancing pond centre
Cross-Sectional	Functional	See Section 1.2 of this

Position	Keys{-}	Appendix A
Chainage	{----	(To nearest metre)
Distance From Carriageway	{----	(To nearest metre between 1 and 9999)

- (ii) Off-Site Entries

Outflow Control	1 = No Outflow Control
	2 = Outfall Flow Regulating Device

1.35.2. Convention

- (i) A balancing pond shall be defined as a point item

1.35.3. Rules

- (i) Balancing ponds do not necessarily occur within the road boundary and may be located some distance from the carriageway.
- (ii) Where a balancing pond occurs outside the road boundary it shall be recorded as cross-sectional position 1 if it shall be on the left and cross-sectional position 0 if it shall be on the right.

1.36. **OF** – Outfall, Headwall or Apron

Outfall, headwall or apron associated with road drainage or culverts.

1.36.1. Input Details

- (i) Site Entries

Item Code	{OF}	
Geographical Information System	Point	OSGR coordinate at outfall centre
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----	(To nearest metre)

1.36.2. Convention

- (i) An outfall, headwall or apron are defined as a point item

1.36.3. Rules

- (i) Outfalls, headwalls or aprons do not necessarily occur within the road boundary and may be located some distance from the carriageway.
- (ii) Where an outfall, headwall or apron occurs outside the road boundary it shall be recorded as cross-sectional position 1 if it shall be on the left and cross-sectional position 0 if it shall be on the right.

1.37. **SV** – Sluices and Valves

Sluices, tidal flaps, penstocks and valves associated with road drainage, culverts or water courses.

1.37.1. Input Details

(i) Site Entries

Item Code	{SV}	
Geographical Information System	Point	OSGR coordinate of sluice and valve centre
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----}	(To nearest metre)

1.37.2. Convention

- (i) Sluices and valves are defined as a point item

1.37.3. Rules

- (i) Sluices and valves do not necessarily occur within the road boundary and may be located some distance from the carriageway.
- (ii) Where sluices and valves occur outside the road boundary it shall be recorded as cross-sectional position 1 if it shall be on the left and cross-sectional position 0 if it shall be on the right.

1.38. AI – Ancillary Equipment

Ancillary equipment, including pumps, associated with road drainage.

1.38.1. Input Details

(i) Site Entries

Item Code	{AI}	
Geographical Information System	Point	OSGR coordinate of ancillary equipment centre
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----}	(To nearest metre)

1.38.2. Convention

- (i) Ancillary equipment shall be defined as a point item

1.38.3. Rules

- (i) Ancillary equipment does not necessarily occur within the road boundary and may be located some distance from the carriageway.
- (ii) Where ancillary equipment occurs outside the road boundary it shall be recorded as cross-sectional position 1 if it shall be on the left and cross-sectional position 0 if it shall be on the right.

1.39. CC - Communication Cabinet

A cabinet containing electronic equipment associated with communication installations, traffic signals and other road features.

1.39.1. Input Details

(i) Site Entries

Item Code	{CC}	
Geographical Information System	Point	OSGR Coordinate
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)
Identity Code	{-----}	(Optional)
Type code	{----}	(Optional)

1.39.2. Convention

- (i) A communication cabinet shall be defined as a point item.

1.39.3. Rules

- (i) When the cabinet identity code shall be either not present or unreadable, an asterisk (*) shall be entered.
- (ii) Fog detectors and weather stations shall also be recorded under this item. Type codes can be utilised if desired.

1.40. TB - Emergency Telephone Box

A telephone located adjacent to the carriageway, solely for use in an Emergency.

1.40.1. Input Details

(i) Site Entries

Item Code	{TB}	
Geographical Information System	Point	OSGR Coordinate
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)
Identity Code	{-----}	Optional

1.40.2. Convention

- (i) An emergency telephone box shall be defined as a point item.

1.40.3. Rules

- (i) In an identity code shall be not present or unreadable, an asterisk (*) shall be used.
- (ii) Only emergency telephone boxes which are the sole responsibility of the Roads Authorities shall be recorded.

1.41. **TV** – CCTV and Speed cameras

A Closed Circuit Television camera or speed camera. Closed circuit television cameras and speed cameras have previously been collected under CC – Communications Camera inventory item. The Company shall extract all CCTV or speed camera inventory from the Communications Cabinet inventory during the first annual period

1.41.1. Input Details

- (i) Site Entries

Item Code	{TB}	
Geographical Information System	Point	OSGR Coordinate
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----}	(To nearest metre)
Identity Code	{-----}	Optional

1.41.2. Convention

- (i) A Closed Circuit Television or speed camera shall be defined as a point item.

1.41.3. Rules

- (i) In an identity code shall be not present or unreadable, an asterisk (*) shall be used.
- (ii) Only emergency telephone boxes which are the sole responsibility of the Roads Authorities shall be recorded.

1.42. **EC - Embankments** and Cuttings

An embankment shall be an area where the carriageway has been raised above existing ground level usually using earth or rock construction. A cutting shall be an area where the carriageway shall be below existing ground level within an excavation.

1.42.1. Input Details

- (i) Site Entries

Item Code	{EC}	
Geographical	Polygon	Polygon around boundary of

Information System		embankment or cutting
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)
Angle	{--}	(To nearest 5 degrees between minus 90 and plus 90)
Height	{---}	(To nearest 5 metres between 0 and 100)

1.42.2. Convention

- (i) An embankment or cutting shall be defined as a continuous item.

1.42.3. Rules

- (i) Intermediate – use this entry when either the angle or height of the embankment/cutting changes but the embankment/cutting continues.
- (ii) When an embankment/cutting shall be crossed by a crossover (XO) it shall be allowed to continue and not 'clocked off' by the inventory program.
- (iii) To distinguish between an embankment and a cutting, the angle shall be recorded as positive for an embankment (e.g. +30) and negative for a cutting (e.g. -30). The actual angle shall be recorded to the nearest 5 degrees, where possible.
- (iv) Minor occurrences, less than 3 metres in height, shall be ignored.
- (v) Record side slopes between slip road and main carriageway as part of and relative to the main carriageway.
- (vi) A central reserve slope shall be recorded as part of and relative to the nominated section except where it comprises two slopes, in which case each shall be recorded with adjacent carriageway sections.
- (vii) If required, the maintainable grass width of an embankment/cutting shall be recorded using the verge item (VG).

1.43. Landscape Areas

1.44. **VG** - Verge

The part of the road outside the carriageway and generally at substantially the same level.

1.44.1. Input Details

- (i) Site Entries

Item Code	{VG}	
Geographical Information System	Linear Shape	Recorded along carriageway edge of verge
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)

Actual Width	{----	(To nearest 0.1 metre between 0.0 and 99.9)
Maintained Width	{----	(To nearest 0.1 metre [between 0.0 and 99.9])
Angle	{-}	1 = Level 2 = Inclined 3 = Steep

1.44.2. Convention

- (i) A verge shall be defined as a continuous item.

1.44.3. Rules

- (i) The maintained verge width shall be the 'maintainable' width including visibility splays and if in doubt shall be regarded as a single swathe width.
- (ii) Intermediate – use this entry when the width or angle changes but the verge continues.
- (iii) When a verge shall be crossed by a crossover (XO) it shall be allowed to continue and not 'clocked off' by the inventory program.
- (iv) Left or right verges and left or right outside verges shall be recorded separately so that obstacles to mowing can be counted.

1.45. **GA** – Grassed Areas

1.45.1. Input Details

- (i) Site Entries

Item Code	{GA}	
Geographical Information System	Polygon	Polygon denoting the outside of the grassed area
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----	(To nearest metre)
Cut Frequency	{-}	1 – High Frequency 2 – Medium Frequency 3 – Low Frequency 4 – Minimum Frequency
Plot Number	{----	Landscape Action Plan plot number
Boundary	{----	Relevant information on surrounding borders
Gradient	{----	Note of any particular slopes
Special Considerations	{----	e.g. obstacles to mowing

1.45.2. Convention

- (i) A grassed area shall be defined as an area item
- (ii) Different areas are defined for each cut frequency

- (iii) High frequency cut areas are high amenity areas within specified cities, towns and villages where grass areas are to neatly and close mown all year round
- (iv) Medium frequency cut areas are amenity areas within all cities, towns and villages not subject to the high amenity threshold, urban roundabouts, areas where a speed restriction of 40mph or less shall be imposed and adjacent to lay-bys including 50 metres from end and of merge and diverge sections
- (v) Low frequency cut areas are general road verges (predominantly 1.2meters swathe), central reserves and visibility swathes
- (vi) Minimum frequency cut areas are generally embankments, cuttings, ditches and wild flower areas

1.45.3. Rules

- (i) Each grassed area shall be recorded in the cross sectional position in which it occurs
- (ii) Grassed areas that occur in the central reserve of dual carriageways and motorways and are common to both sections shall be recorded in the nominated section only
- (iii) When a grassed area shall be crossed by a crossover (XO) it shall be allowed to continue and not “clocked off” by the inventory program
- (iv) If there shall be any doubt as to the ownership of a grassed area, then it shall be recorded within the Works site network inventory

1.46. HG - Hedge

Distinct linear planting strips within the road corridor (usually marking boundary lines) which are intended to be formally shaped and maintained

1.46.1. Input Details

- (i) Site Entries

Item Code	{HG}	
Geographical Information System	Linear Shape	Recorded along centre of hedge
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----	(To nearest metre)
Plot Number	{----	Landscape Action Plan plot number
Support	{----	e.g. fence, wall etc.

Species	{----	Text description of species content
Purpose	{----	Text description of form and purpose of planting
Date of Planting	{----	Date of Planting

1.46.2. Convention

- (i) A hedge shall be defined as a continuous item.

1.46.3. Rules

- (i) A hedge shall be recorded in the cross-sectional position in which it occurs.
- (ii) Hedges which have been laid to provide stockproof barriers and are the responsibility of the Roads Authorities shall be recorded.
- (iii) Only hedges which front on to the road and which are the responsibility of the Roads Authorities or which, although the responsibility of others may cause nuisance or obstruction to the road, are to be recorded in this inventory item.
- (iv) Hedges which occur in the central reserve of dual carriageways and Motorways and which are common to both sections must be recorded in nominated section ONLY.
- (v) When a hedge shall be crossed by a crossover (XO) it shall be allowed to continue and not 'clocked off' by the inventory program.
- (vi) If there shall be any doubt as to the ownership of the hedge, then it shall be recorded.

1.47. TR - Tree

A perennial plant with a single woody, self-supported trunk and branches including:

- (a) Lone trees, or where there shall be no interlocking canopy with the nearest neighbour
- (b) Sporadic trees where there shall be a loose arrangement of established trees with occasional interlocking canopies

1.47.1. Input Details

- (i) Site Entries

Item Code	{TR}	
Geographical Information System	Point	Point denoting the centre of the tree
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Plot number	{----	Landscape Action Plan plot number
Species	{----	Text description of species content
Purpose	{----	Text description of form and purpose of planting

Date of Planting {----} **Date of Planting**

1.47.2. Convention

- (i) A tree shall be defined as a point item.

1.47.3. Rules

- (i) Only trees with a diameter and height greater than 0.2 metre and 1 metre respectively shall be recorded.
- (ii) Each individual lone tree where there shall be no interlocking canopy with the nearest neighbour shall be recorded
- (iii) Each individual sporadic tree where there shall be a loose arrangement of established trees with occasional interlocking canopies shall be recorded
- (iv) Only trees which are the responsibility of the Roads Authorities or which, although the responsibility of others may cause nuisance or obstruction to the road, shall be recorded. If there shall be doubt as to the ownership, then the presence of trees shall be recorded

1.48. SR - Shrub

An ornamental or woodland planted area

1.48.1. Input Details

- (i) Site Entries

Item Code	{SH}	
Geographical Information System	Polygon	Polygon denoting the outside of the shrub area
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----}	(To nearest metre)
Plot number	{----}	Landscape Action Plan plot number
Boundary	{----}	Relevant information on surrounding borders
Species	{----}	Text description of species content
Purpose	{----}	Text description of form and purpose of planting
Date of Planting	{----}	Date of Planting

1.48.2. Convention

- (i) A shrub area shall be defined as an area item
- (ii) Different areas shall be defined for each type of shrub area
- (iii) Ornamental shrub areas are normally planted as a visual element of

the road corridor usually associated with settlements and cities, towns and villages and urban roundabouts

- (iv) Woodland scrub areas are generally native major and minor shrub species (excluding gorse and broom) informally planted or developing along road corridors up to a height of approximately 3.5 metres

1.48.3. Rules

- (i) A shrub area shall be recorded in the cross sectional position in which it occurs
- (ii) Shrub areas that occur in the central reserve areas of dual carriageways and motorways and which are common to both sections shall be recorded in the nominated section only
- (iii) When a shrub area shall be crossed by a crossover (XO) it shall be allowed to continue and shall be not "clocked of" by the inventory program
- (iv) If there shall be any doubt as to the ownership of the shrub area then it shall be recorded

1.49. **WD** - Woodland

A collection of trees

1.49.1. Input Details

- (i) Site Entries

Item Code	{WD}	
Geographical Information System	Polygon	Polygon denoting the outside of the woodland area
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----}	(To nearest metre)
Type	{-}	1 = New Woodland 2 = Established Woodland 3 = Maturing Woodland
Plot number	{----}	Landscape Action Plan plot number
Boundary	{----}	Relevant information on surrounding borders
Species	{----}	Text description of species content
Purpose	{----}	Text description of form and purpose of planting
Date of Planting	{----}	Date of Planting

1.49.2. Convention

- (i) A woodland area shall be defined as an area item

- (ii) Different areas shall be defined for each type of woodland
- (iii) New woodland (under 5 years old) shall be newly planted or seeded areas of predominantly tree species with the potential of maturing into a mature wooded area
- (iv) Established woodland (5-10 years old) shall be areas of tree species, with or without woodland shrubs, and with the potential of developing into a mature wooded area
- (v) Maturing woodland (over 10 years old) shall be areas of dense tree cover, whether single or mixed species or varieties, and with or without a woodland shrub layer

1.49.3. Rules

- (i) A woodland area shall be recorded in the cross sectional position in which it occurs
- (ii) When a woodland area shall be crossed by a crossover (XO) it shall be allowed to continue and shall be not "clocked of" by the inventory program
- (iii) If there shall be any doubt as to the ownership of the woodland area then it shall be recorded

1.50. SC - Scrub

An area of undesired, self seeded vegetation predominantly but not exclusively gorse, broom, birch and/or bramble up to a height of 2.5 metres

1.50.1. Input Details

- (i) Site Entries

Item Code	{SC}	
Geographical Information System	Polygon	Polygon denoting the outside of the scrub area
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----}	(To nearest metre)
Plot number	{----}	Landscape Action Plan plot number
Boundary	{----}	Relevant information on surrounding borders
Species	{----}	Text description of species content
Impact	{----}	Text description of impact or effect on surrounding environment

1.50.2. Convention

- (i) A scrub area shall be defined as an area item

1.50.3. Rules

- (i) A scrub area shall be recorded in the cross sectional position in

which it occurs

- (ii) Scrub areas that occur in the central reserve areas of dual carriageways and motorways and which are common to both sections shall be recorded in the nominated section only
- (iii) When a scrub area shall be crossed by a crossover (XO) it shall be allowed to continue and shall be not “clocked of” by the inventory program
- (iv) If there shall be any doubt as to the ownership of the scrub area then it shall be recorded

1.51. **BB** - Bulb

An area of naturalised or planted bulbs

1.51.1. Input Details

- (i) Site Entries

Item Code	{BB}	
Geographical Information System	Polygon	Polygon denoting the outside of the scrub area
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----}	(To nearest metre)
Plot number	{----}	Landscape Action Plan plot number
Species	{----}	Text description of species content

1.51.2. Convention

- (i) A bulb area shall be defined as an area item

1.51.3. Rules

- (i) A bulb area shall be recorded in the cross sectional position in which it occurs
- (ii) Bulb areas that occur in the central reserve areas of dual carriageways and motorways and which are common to both sections shall be recorded in the nominated section only
- (iii) When a woodland area shall be crossed by a crossover (XO) it shall be allowed to continue and shall be not “clocked of” by the inventory program

1.52. **WT** - Wetland

An area associated with permanent or semi-permanent water from open water bodies to areas of boggy ground

1.52.1. Input Details

- (i) Site Entries

Item Code	{WT}	
Geographical Information System	Polygon	Polygon denoting the outside of the scrub area
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----}	(To nearest metre)
Plot number	{----}	Landscape Action Plan plot number
Boundary	{----}	Relevant information on surrounding borders
Description	{----}	Text description of feature

1.52.2. Convention

- (i) A wetland area shall be defined as an area item

1.52.3. Rules

- (i) A wetland area shall be recorded in the cross sectional position in which it occurs
- (ii) When a wetland area shall be crossed by a crossover (XO) it shall be allowed to continue and shall be not “clocked of” by the inventory program

1.53. SF – Safety Fence

A vehicle restraint system in the form of a continuous barrier erected alongside a carriageway, including safety barriers on bridges.

1.53.1. Input Details

- (i) Site Entries

Item Code	{SF}	
Geographical Information system	Linear Shape	Recorded along centre of safety fence
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)
Type	{-}	1 = Tensioned 2 = Untensioned 3 = Concrete 4 = Wire
Shape	{-}	1 = Single Sided 2 = Double Sided
Post	{-}	1 = Wood 2 = Metal

Beam Profile	{-}	3 = Other
		1 = Corrugated
		2 = Box Beam
		3 = Other

1.53.2. Convention

- (i) A safety fence shall be defined as a continuous item.

1.53.3. Rules

- (i) Intermediate – use this entry when the type, shape or post type of the fence changes but the fence continues.
- (ii) Safety fences which occur in the central reserve of dual carriageways and Motorways and which are common to both sections shall be recorded in the nominated section ONLY.
- (iii) A safety fence with separate posts shall be recorded in the section to which it applies.

1.54. **PR** – Pedestrian Guardrail

A protective fence, usually on the edge of a footway intended to restrain pedestrians from stepping on to the carriageway or other area likely to be hazardous.

1.54.1. Input Details

- (i) Site Entries

Item Code	{PR}	
Geographical Information system	Linear Shape	Recorded along centre of safety fence
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)
Material	{-}	1 = Steel 2 = Alloy 3 = Timber 4 = Other

1.54.2. Convention

- (i) A pedestrian guardrail shall be defined as a continuous item.

1.54.3. Rules

- (i) A pedestrian guardrail associated with a footway shall be recorded on the cross-sectional position of the footway (left or right).
- (ii) Intermediate – use this entry when the material from which the guardrail shall be made changes, but the guardrail continues.

1.55. **FB** - Fences and Barriers

A boundary fence, wall or barrier for screening noise, headlight glare or to prevent access

1.55.1. Input Details

(i) Site Entries

Item Code	{FB}	
Geographical Information system	Linear Shape	Recorded along centre of fence or barrier
Cross-Sectional Position	{-}Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)
Function	{-}	1 = Anti-glare 2 = Noise 3 = Boundary 4 = Other
Material	{-}	1 = Timber 2 = Timber Post and Wire 3 = Metal Post and Wire 4 = Mesh 5 = Vane 6 = Other 7 = Brick 8 = Stone

1.55.2. Convention

- (i) A fence or barrier shall be defined as a continuous item.

1.55.3. Rules

- (i) A fence along the left-hand road boundary shall be recorded in cross-sectional position 1 (i.e. to its right) and in cross-sectional position 0 if it shall be on the right-hand road boundary.
- (ii) Intermediate – use this entry when the type of fence or barrier changes but the fence or barrier continue
- (iii) All fences and barriers for which the Relevant Authorities are responsible shall be recorded (not private). If there shall be any doubt of their ownership, they shall be included.
- (iv) Safety barriers are recorded under the inventory item of Safety Fence (SF).
- (v) When a fence or barrier shall be crossed by a crossover (XO) it shall be allowed to continue and not 'clocked off' by the inventory program.
- (vi) Fences and barriers which occur in the central reserve of dual

carriageways and Motorways and which are common to both sections shall be recorded in the nominated section ONLY.

1.56. RW - Retaining Wall

A Structure constructed to resist lateral pressure from the adjoining ground, or to maintain a mass of earth in position.

1.56.1. Input Details

(i) Site Entries

Item Code	{RW}	
Geographical Information system	Linear Shape	Recorded along centre of fence or barrier
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----}	(To nearest metre)
Type	{-}	1 = Mass Concrete 2 = Reinforced Concrete 3 = Reinforced Earth 4 = Stone 5 = Brick 6 = Gabion 7 = Sheet Piles 8 = Other
Height	{----}	(To nearest 0.1 metre between 0.0 and 99.9)
Position	{-}	1 = Above Road Level 2 = Below Road Level

1.56.2. Convention

- (i) A retaining wall shall be defined as a continuous item.

1.56.3. Rules

- (i) Intermediate – use this entry when the height of a wall changes but the wall continues.
- (ii) A wall along the left-hand road boundary shall be recorded in cross-sectional position 1 and in cross-sectional position 0 if it shall be on the right-hand road boundary.

1.57. CB - Traffic Control Barrier

A moveable barrier or gate which controls the flow of traffic or which shall be used to close sections of the road in Severe Weather conditions.

1.57.1. Input Details

(i) Site Entries

Item Code	{CB}	
Geographical Information system	Linear Shape	Recorded along centre of fence or barrier
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----}	(To nearest metre)
Location	{-}	1 = Rail Crossing 2 = Canal Crossing 3 = Toll Barrier 4 = Snow Gate 5 = Other
Type	{-}	1 = Barrier 2 = Gate 3 = Other
Arrangement	{-}	1 = Full Width/Single 2 = full Width/Double 3 = Half Width 4 = Other
Control	{-}	1 = Automatic/Local 2 = Automatic/Remote 3 = Manual/Attended 4 = Manual/User Operated 5 = Other

1.57.2. Convention

- (i) A traffic control barrier shall be defined as a point item.

1.57.3. Rules

- (i) Traffic signals (wig wags) and road markings at a traffic control barrier are separate inventory items.
- (ii) Only one barrier shall be recorded at a particular chainage regardless of whether it shall be in two parts or more.

1.58. **RS** - Road Studs

A stud placed in the carriageway to guide traffic.

1.58.1. Input Details

- (i) Site Entries

Item Code	{RS}	
Geographical Information system	Linear Shape	OSGR coordinate
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Functional Keys
Chainage	{----	(To nearest metre)
Type	{-}	1 = Reflective ('Catseye') 2 = Stick on/Single Sided 3 = Stick on/Double Sided 4 = Non-reflective 5 = Other
Class	{-}	1 = Prohibitory 2 = Warning/Informatory 3 = Other
Spacing	{----	(To nearest 0.1 metre between 0.1 and 25.0)
Colour	{-}	1 = White 3 = Red 4 = Amber 5 = Green 6 = Other

1.58.2. Convention

- (i) Road studs are defined as a continuous item.

1.58.3. Rules

- (i) This item shall be for longitudinal road studs only.
- (ii) For the purposes of this inventory item, all depressible road studs shall be recorded as reflective.
- (iii) Road studs occurring at the boundary between Lanes shall be recorded in the cross-sectional position of the Lane to their left.
- (iv) Intermediate – use this entry when the type, class, spacing or colour of the road studs change but the studs continue.
- (v) Transverse road studs associated with a pedestrian crossing are NOT recorded. These studs are incorporated in the inventory item pedestrian crossing (PX).
- (vi) Road studs along the right-hand edge of hatched road markings shall be recorded with a cross-sectional position of Y.
- (vii) Use 1 = PROHIBITORY (usually red or amber) for studs which occur in continuous single or double lines and 2 = WARNING/INFORMATORY (usually white or green) for studs which occur in dotted lines and where road markings are non-prohibitory or advisory.
- (viii) White studs may also be prohibitory when employed in a double

white line system.

1.59. LH - Road Markings (Hatched)

Road markings on the carriageway with a distinctive hatched design.

1.59.1. Input Details

(i) Site Entries

Item Code	{LH}	
Geographical Information system	Linear Shape	Recorded along centre
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----}	(To nearest metre)
Width	{----}	(To nearest 0.1 metre between 0.1 and 99.9s [0.1<W<99.9])
Material	{-}	1 = Thermoplastic Spray 2 = Thermoplastic Screed 3 = Thermoplastic Extrusion 4 = Other
Pattern	{-}	1 = Diagonal 2 = Chevron 3 = Cross 4 = Solid 5 = Bars 6 = Other
Type of Edge Line	{-}	1 = Prohibitory 2 = Warning/Informatory 3 = None

(ii) Off-Site Entries:

Diagram Number	{-----}	Alphanumeric (Optional)
-----------------------	---------	-------------------------

1.59.2. Convention

- (i) Hatched road markings are defined as a continuous item.

1.59.3. Rules

- (i) Intermediate – use this entry when the width, material or pattern changes but the markings continue.
- (ii) The cross-sectional position OTHER shall be used to indicate that bars (transverse yellow bar markings) or cross hatching (e.g. box junctions) extend across the whole of the carriageway.
- (iii) Lines around the edge of hatched road markings shall be included

as part of the hatching and NOT recorded as a separate inventory item.

- (iv) The width of an area of hatched markings shall be the 'average' width. In the case of a tapered marking this will occur roughly half way along its length.
- (v) Diagonally hatched road markings can occur in a variety of situations. In the following cases they shall be allocated to the cross-sectional position indicated:
 - (a) As an extension to a central reserve at the end of a dual carriageway and in the same section. Record in cross-sectional position 8 in the nominated section;
 - (b) as an extension to a central reserve at the end of a dual carriageway and in a different section. Record in the cross-sectional position of the Lane immediately adjacent on the left-hand side; and
 - (c) where hatching occurs between two Lanes, record it in the cross-sectional position of the Lane immediately adjacent on the left-hand side.
- (vi) Road studs associated with road markings are recorded as a separate inventory item.
- (vii) If road markings occur at the boundary of two cross-sectional positions, they shall be recorded in the cross-sectional position to their left.
- (viii) For details of the Diagram Number (optional off-site entry) refer to the Traffic Signs Regulations and General Directions.

1.60. LL - Road Markings (Longitudinal)

Road markings which lie along the carriageway or along the edge of the carriageway.

1.60.1. Input Details

- (i) Site Entries

Item Code	{LL}	
Geographical Information system	Linear Shape	Recorded along centre
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----	(To nearest metre)
Diagram Number	{-----}	Alphanumeric
Class	{-}	1 = Double 2 = Single 3 = Hazard 4 = Other

Colour	{-}	1 = White 2 = Yellow 3 = Red 7 = Conservation Yellow
Type	{-}	1 = Broken 2 = Unbroken 3 = Broken and Unbroken 4 = Zig Zag 5 = Other
Material	{-}	1 = Thermoplastic Spray 2 = Thermoplastic Screed 3 = Thermoplastic Extrusion 4 = Other 7 = Raised Edge Rib
Length	{----}	(To nearest 0.1 metre between 0.0 and 10.0)
Gap	{----}	(To nearest 0.1 metre between 0.0 and 25.0 [0.0 < G < 25.0])
Width	{----}	(To nearest 0.1 metre between 0.0 and 9.99 [0.0 < W < 9.99])

(ii) Off-Site Entries

Diagram Number	{----}	Alphanumeric (Optional)
-----------------------	--------	-------------------------

1.60.2. Convention

- (i) A longitudinal road marking shall be defined as a continuous item.

1.60.3. Rules

- (i) The length and gap entries only apply to broken lines and shall be entered as 0 for other types.
- (ii) Intermediate – use this entry when the class, colour, type, material, length or gap change but the markings continue.
- (iii) For the 'broken' and 'broken and unbroken' type options the length and gap of the broken line shall be recorded.
- (iv) The zigzag lines at zebra crossings are an integral part of the crossing and shall NOT be recorded separately.
- (v) Where a road marking lies on the boundary between two Lanes, it shall be recorded in the left-hand Lane position.
- (vi) A left-hand edge line shall be recorded in cross-sectional position 3. A right-hand edge line shall be recorded in position 7 for up to 4 Lanes and position E or R for 5 Lanes and 6 Lanes respectively.
- (vii) Single or double yellow edge markings shall be recorded as single or double, yellow and in the appropriate cross-sectional position.

- (viii) A longitudinal solid white line lying one metre from the left-hand edge of the carriageway shall be recorded in cross-sectional position 3. If it shall be on the right-hand side it shall be recorded in position 7 for up to 4 Lanes and position E or R for 5 and 6 Lanes respectively.
- (ix) For details of the Diagram Number (optional Off-Site Entry) refer to the Traffic Signs Regulations and General Directions.

1.61. RM - Road Markings (Transverse and Special)

Road markings which lie across the carriageway, on the kerb, at the edge of the carriageway or are special markings.

1.61.1. Input Details

(i) Site Entries

Item Code	{RM}	
Geographical Information System	Point	OSGR coordinate
Cross-Sectional position	{-}	See Section 1.2 of this Appendix A
Chainage	{----}	(To nearest metre)
Diagram Number	{-----}	Alphanumeric
Class	{-}	1 = Stop 2 = Give-way 3 = Words 4 = Roundabout 5 = Arrow 6 = Loading 7 = Other
Colour	{-}	1 = White 2 = Yellow 3 = Red 4 = Conservation Yellow
Material	{-}	1 = Thermoplastic Spray 2 = Thermoplastic Screed 4 = Other 7 = Raised Edge Rib
Width	{----}	(To nearest 0.1 metre between 0.0 and 9.9[0.1<W<99.9])
Length	{----}	To nearest metre between 0.0 and 10.0

Gap {----} To nearest metre between 0.0 and 25.0

- (ii) Off-Site Entries

Diagram Number {-----} Alphanumeric (Optional)

1.61.2. Notes

'1 = STOP' shall be a continuous line.

'2 = GIVE WAY' shall be a broken line.

'3 = WORDS' – e.g. BUS STOP, STOP SLOW, TURN LEFT.

1.61.3. Convention

- (i) Transverse and special road markings are defined as POINT items.

1.61.4. Rules

- (i) If a road marking occurs at the boundary between Lanes it shall be recorded in the cross-sectional positional position to its left
- (ii) Road markings are to be recorded for each cross-sectional position in which they occur.
- (iii) Lines and symbols associated with 3 = WORDS e.g. the solid line associated with the word STOP, shall be recorded separately except in the case of a bus bay within the carriageway whereby the lines defining the bay and the words BUS STOP shall be recorded as one item. The triangle associated with a give-way line shall be recorded as 2 = GIVE WAY.
- (iv) Two or more words which are connected shall be recorded as one entry, e.g. BUS STOP.
- (v) Double or triple road markings on the kerb are to be recorded as one entry for each occurrence.
- (vi) The chainage of a transverse road marking shall be recorded at the point which shall be first encountered.
- (vii) A mini roundabout with a raised centre shall NOT be recorded. It shall be recorded as a central island.
- (viii) VASCAR and other speed enforcement road markings shall be recorded under this inventory item as class = OTHER.
- (ix) Width shall be measured transversely across the carriageway.
- (x) For details of the diagram number (optional Off-Site Entry) refer to the Traffic Signs Regulations and General Directions.

1.62. **SG** - Signs

A sign, signal or other device for the purpose of regulating, warning, guiding or informing Traffic.

1.62.1. Input Details

- (i) Site Entries:

Item Code {SG}

Geographical Information System	Point	OSGR Coordinate
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----}	(To nearest metre)
Diagram Number	{-----}	Alphanumeric
Identify Code	{-----}	(Alphanumeric)
Category	{-}	1 = Warning 2 = Regulatory 3 = Informatory 4 = Bus, Tram and Cycle 5 = Hazard Warning 6 = Matrix 7 = VMS 8 = Hidden Message 9 = Other
Illuminated	{-}	1 = No 2 = Internal 3 = External 4 = Remote 5 = Reflectorised
Diagram Number	{-----}	
Mounting Height	{----}	(To nearest 0.5 metres between 0.1 and 25.0)
Mounting Method	{-}	1 = Post 2 = Bridge 3 = Gantry 4 = Wall 5 = Lamp Post 6 = Traffic Signal 7 = Other
Standard Size Code	{--}	Options T1 T2 T3 T4 R1 R2 R3C4 C1(see Section C3) C2 C4

Or enter ACTUAL width and height

Width	{----	(To nearest 0.1 metres between 0.1 and 200.0
Height	{----	(To nearest 0.1 metres between 0.1 and 10.0
Ownership	{-}	1 = Scottish Ministers 2 = Local Authority

(ii) Off-Site Entries:

Photograph Number	{-----}	(Alphanumeric)
Installation Date	{DD/MM/YY}	
Regional Electricity Company	{-}	1 = Scottish Power 2 = Scottish and Southern
Electricity Billing Company	{-}	1 = Scottish Power 2 = Scottish and Southern Energy
Operating Hours	{-}	1 = Continuous 2 = Dusk to Dawn 5 = Other

1.62.2. Convention

- (i) A sign shall be defined as a point item.

1.62.3. Rules

- (i) Only permanent signs shall be recorded.
- (ii) If an identity code shall be not present or unreadable, an asterisk (*) shall be used.
- (iii) For details of the diagram number refer to the Traffic Signs Regulations and General Directions.

1.62.4. Categories

- 1 = Warning (usually triangular diagram numbers 501 to 580)
- 2 = Regulatory (usually circular diagram numbers 601 to 662)
- 3 = Informatory (usually rectangular diagram numbers 701 to 925)

1.62.5. Care shall be taken when selecting a diagram number. If the inspector shall be unsure, or an exact match cannot be made, an asterisk (*) shall be entered, and an off-site entry made by the Company.

1.62.6. The mounting height shall be the distance from the lower edge of the sign to the road surface.

1.62.7. If two identical signs occur on the same post they must be recorded as two signs occurring one metre apart.

1.62.8. Electrical signs and hidden message signs are included under this inventory item. A simple description shall be entered in place of the diagram number (maximum 6 characters) for example:

- (i) HAZARD – hazard warning light
 - (ii) MATRIX – matrix sign
 - (iii) CLOSE – ‘Following too close’ message
 - (iv) HEIGHT – low bridge warning sign
- 1.62.9. Where signs share a common lighting arrangement the offsite lighting details shall only be recorded against one of the signs. Both signs shall be recorded as lit.
- 1.62.10. The control box (even when not integral) shall be assumed to be included with the sign.
- 1.62.11. If the sign dimensions do not conform to the pre-defined ‘standard’ values, enter the width and height directly.
- 1.62.12. Signs which occur in the central reserve of dual carriageways and Motorways and which are common to both sections must be recorded in the nominated section ONLY. However, uni-directional signs shall be recorded in the section to which they apply.
- 1.62.13. Signs on a gantry shall be recorded in the cross-sectional position to which they apply.
- 1.62.14. Black and white edge of carriageway marker posts shall be recorded as a sign with mounting height = 1.0 metres and Diagram No. = 560 if the reflector shall be circular or 561 if the reflector shall be rectangular. If two identical reflectors are present then the rule at 1.29.5 will apply.
- 1.62.15. Standard Sign Dimensions Codes

	Horizontal Width (metres)	Vertical Height (metres)	Diameter (metres)
Triangular Signs T1		0.6	
T2		0.75	
T3		0.9	
T4		1.2	
Rectangular Signs R1	0.5	0.5	
R2	0.7	1.2	
R3	1.5	0.7	
Circular Signs C1			0.45
C2			0.6
C3			0.75
C4			0.9

Since sign dimensions are recorded to the nearest 0.1m, the width and heights above cover a range of $\pm 0.05\text{m}$ from the value stated. If a size does not conform to the above values enter the width and height directly.

1.63. SB - Bollards (Safety)

A device placed on a refuge or traffic island to warn drivers of those obstructions, or to prevent the passage of vehicles.

1.63.1. Input details

(i) Site Entries:

Item Code	{SB}	
Geographical Information System	Point	OSGR Coordinate
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage Diagram	{----}	(Alphanumeric)
	{-----}	(Alphanumeric)
		2 = Internal
		1 = No
		4 = Other
		3 = Reflectorised
		4 = Other
Type	{----}	(Alphanumeric – See Rule (vi)) HALD = Haldo MORR = Morrison CLAU = GEC/Claudgen BERG = Bergo FORC = Forest City FRAN = Franco HALE = Hale and Hale PGOW = Pearce Gowshall CONC = Concrete METL = Metal WOOD = Wood PLAS = Plastic OTHR = Other
Sign Diagram Number	{-----}	(Alphanumeric)

(ii) Off-Site Entries:

Installation Date	{DD/MM/YY}	
Regional Electricity Company	{-}	1 = Scottish Power 2 = Scottish and Southern Energy

Electricity Billing Company	{-}	1 = Scottish Power 2 = Scottish and Southern Energy
Operating Hours	{-}	1 = Continuous 2 = Dusk to Dawn 5 = Other

1.63.2. Convention

- (i) A bollard shall be defined as a point item.

1.63.3. Rules

- (i) Bollards usually occur in conjunction with a central island or central reserve and care shall be taken to ensure they are given the same cross-sectional position.
- (ii) When an identify code shall be not present or unreadable an asterisk (*) shall be entered.
- (iii) Where no sign shall be present or not sign diagram number can be determined, an asterisk (*) shall be entered.
- (iv) Where a bollard occurs with no island, it shall be allocated to the Lane immediately adjacent on the left-hand side.
- (v) For details of the diagram number refer to the Traffic Signs Regulations and General Directions.
- (vi) The type of bollard shall be recorded by entering a 4 character code.
- (vii) Where a bollard shall be placed to warn drivers of an obstruction, the type of bollard shall be selected from the following codes:

Type	Code
Haldo	HALD
Morrison	MORR
GEC/Claudgen	CLAU
Bergo	BERG
Forest City	FORC
Franco	FRAN
Hale and Hale	HALE
Pearce Gowshall	PGOW
Other	OTHR

- (viii) Where bollards are installed to prevent the passage of vehicles or for any other reason, the type shall be selected from the following codes:

Type	Code
Concrete	CONC
Metal	METL
Wooden	WOOD

Plastic	PLAS
Other	OTHR

Either list of codes may be extended by the Company as required.

- (ix) Plastic bollards permanently installed on Emergency crossover points shall be recorded under this item using type ECP and Diagram No.578.
- (x) Reference shall be made to the paragraph “2 Electrical Inventory Requirements” in this Appendix A for additional electrical inventory requirements.

1.64. RF - Reference Marker Point

An item specifically placed to indicate the position within the road network.

1.64.1. Input Details

- (i) Site Entries:

Item Code	{RF}	
Geographical Information System	Point	OSGR Coordinate
Cross-Sectional Position Chainage	{- }Position {----}	See Section 1.2 of this Annex A Function Keys (To nearest metre)
Type	{-}	1 = Marker Post 2 = Metal Studs (2 nodes) 3 = Metal Studs (3 nodes) 4 = Thermoplastic Cores (2 5 = Thermoplastic Cores (3 6 = Bar Code 7 = Other
Identify Code	{-----}	(Alphanumeric)

1.64.2. Convention

- (i) A marker point shall be defined as a point item

1.64.3. Rules

- (i) Only marker points which refer to the O&M Works Site network shall be recorded.
- (ii) If an identity code shall be not present or shall be unreadable, an asterisk (*) shall be entered.
- (iii) In general when collecting inventory data, only the position of the end node shall be recorded in the data capture device to avoid double counting. However, it may be necessary to record the position of the start node if it would not otherwise be recorded (e.g. at the O&M Works Site boundary or on the exits from roundabouts).

1.65. TS – Road Traffic Signals

A system of different coloured lights, including arrow-shaped lights, for stopping streams of traffic and permitting them to move.

1.65.1. Input Details

(i) Site Entries:

Item Code	{TS}	
Geographical Information System	Point	OSGR Coordinate
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----}	(To nearest metre)
Remotely Monitored	{---}	Yes No
Ownership	{-}	1 = Scottish Ministers 2 = Local Authority
Identify Code	{-----}	(Alphanumeric)
Manufacturer	{-}	1 = Plessey 2 = GEC 3 = Other
Number of Lamp Units	{--}	Whole number between 1 and 25
Mounting Method	{-}	1 = Post 2 = Arm 3 = Wall 4 = Other
Type	{-}	Traffic Controlled Junction 2 = Pelican 7 = Other

(ii) Off-Site Entries:

Installation Date		{DD/MM/YY}
Layout	{---}	(See Figures 1 and 2 below)
Regional Electricity Company	{-}	1 = Scottish Power 2 = Scottish and Southern Energy
Electricity Billing Company	{-}	1 = Scottish Power 2 = Scottish and Southern Energy
Operating Hours	{-}	1 = Continuous

2 = Part Time

5 = Other

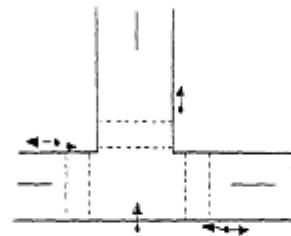
1.65.2. Convention

- (i) A traffic signal shall be defined as point item.

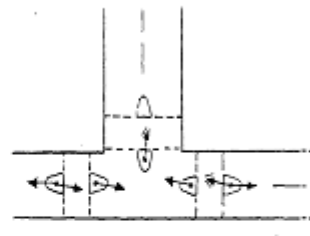
1.65.3. Rules

- (i) Each post supporting a set of traffic signals must be included as a separate inventory item. When there shall be doubt as to which section a post shall be in, it shall be recorded in the section which contains the control box.
- (ii) A lamp unit shall be an individual light, i.e. a set of red/amber/green counts as 3 lamp units. The red and green figures and all lamps within a push button box at a pedestrian operation pelican crossing shall also be counted.
- (iii) If an identity code shall be not present or shall be unreadable, an asterisk (*) shall be used.
- (iv) Wattage shall be recorded as total wattage for all lamps in the traffic signal.
- (v) Approved traffic signal layouts are provided below for guidance
- (vi) Control cabinets associated with a set of traffic signals are a separate inventory item. They shall be recorded as a communication cabinet (CC).
- (vii) Detector loops associated with a set of traffic signals shall be a separate inventory item. They shall be recorded as a detector loop (DL).
- (viii) Lights associated with a pelican crossing shall be recorded under this inventory item
- (ix) Reference shall be made to the paragraph "2 Electrical Inventory Requirements" in this Appendix A for additional electrical inventory requirements.

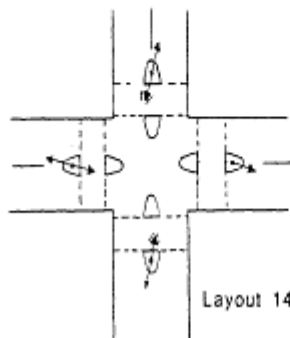
Traffic Signal Layout Diagrams



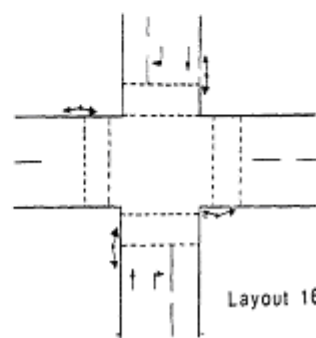
Layout 100



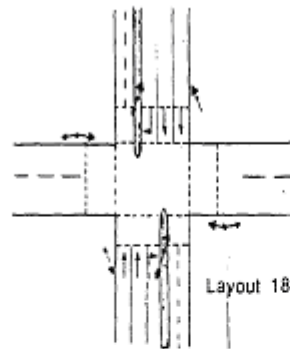
Layout 120



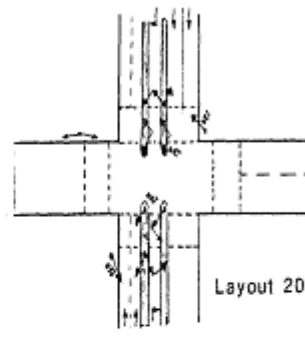
Layout 140



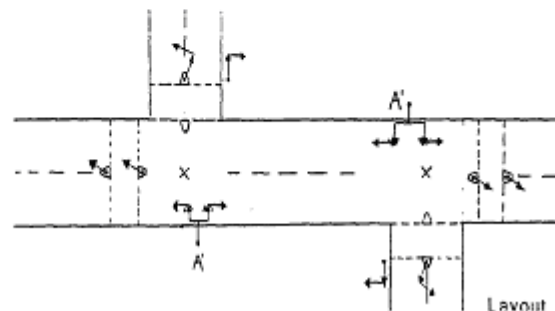
Layout 160



Layout 180

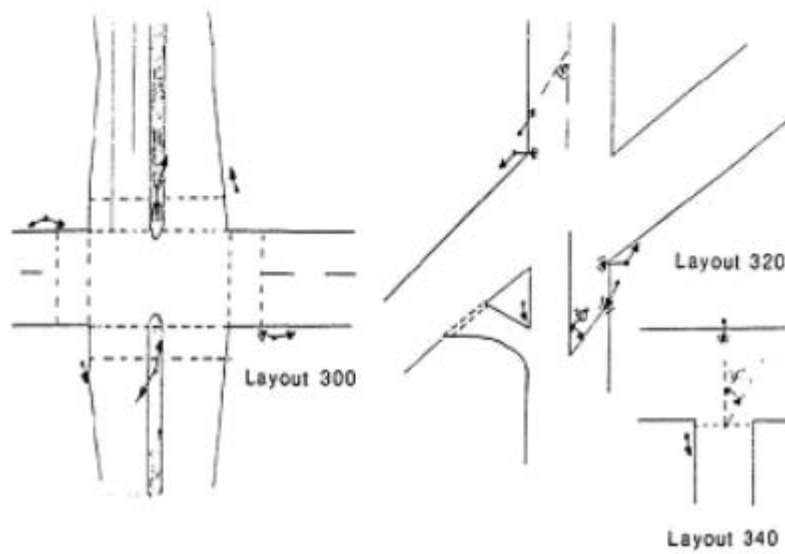
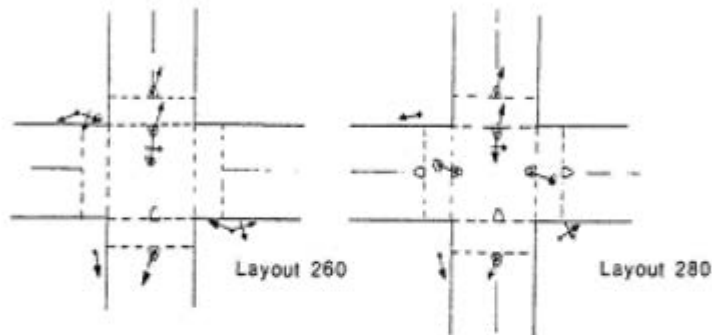
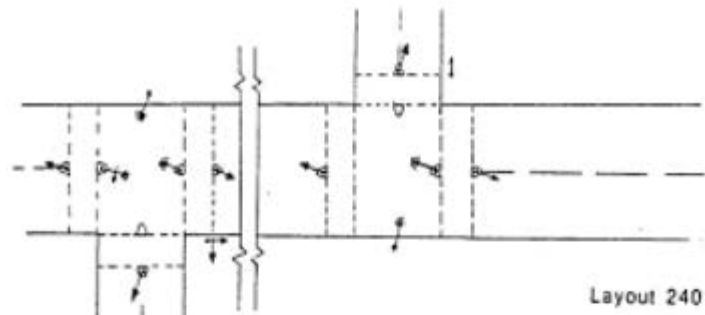


Layout 200



Layout 220

Traffic Signal Layout Diagrams



1.66. **PX** - Pedestrian Crossing

A transverse strip of carriageway marked to indicate where pedestrians have priority to cross the road.

1.66.1. Input Details

(i) Site Entries:

Item Code	{PX}	
Geographical Information System	Point	OSGR Coordinate
Chainage	{----	(To nearest metre)
Type	{-}	1 = Pelican 2 = Zebra 3 = Other
Material	{-}	1 = Thermoplastic Spray 2 = Thermoplastic Screed 4 = Sheet 5 = Studs Only 6 = Other

1.66.2. Convention

- (i) A pedestrian crossing shall be defined as point item.

1.66.3. Rules

- (i) Each individual lighting post associated with a pedestrian crossing shall be a separate inventory item and shall be recorded separately under Traffic Signals (TS).
- (ii) All road markings and studs associated with a pedestrian crossing are an integral part of the crossing and shall NOT be recorded separately.
- (iii) Beacons associated with a pedestrian crossing (Zebra) must be recorded separately under lighting point (LP), with identity code = ZEBRA.
- (iv) Any associated control boxes shall be recorded separately under communications cabinet (CC).
- (v) Reference shall be made to the paragraph "2 Electrical Inventory Requirements" in this Appendix A for additional electrical inventory requirements.

1.67. **DL** – Detector Loops

Detector loops are normally associated with traffic signals or automatic traffic counters.

1.67.1. Input Details

(i) Site Entries:

Item Code	{DL}	
Geographical Information System	Point	OSGR Coordinate
Chainage	{----	(To nearest metre)
Type	{-}	1 = Traffic Signal 2 = Traffic Counters 3 = NADICS 4 = Other

1.67.2. Convention

- (i) A detector loop shall be defined as point item.

1.67.3. Rules

- (i) An item shall be recorded for each lane in which a detector loop shall be present.

1.68. LP – Road Lighting Point

A lighting installation usually consisting of a column, lantern housing and lamp.

1.68.1. Input Details

(i) Site Entries:

Item Code	{LP}	
Geographical Information System	Point	OSGR Coordinate
Cross-Sectional Position	{- }Position	See Section 1.2 of this Appendix A Function
Chainage	{----	(To nearest metre)
Identify Code	{-----}	(Alphanumeric)
Column Type	{-}	1 = Concrete 2 = Steel 3 = Aluminium 4 = None 5 = High Mast 6 = Other
Height	{----	(to nearest 0.1 metres between 0.0 and 50.0)
Mounting Bracket		1 = Single 2 = Double 3 = Triple 4 = Catenary

		5 = Post Top
		6 = Wall Mounted
		7 = Other
Supply Type	{-}	1 = Underground
		2 = Overhead
Position of Column	{-}	1 = On Kerb
		2 = Set Back
Installation Type	{-}	1 = Staggered
		2 = Single Sided
		3 = Opposite
		4 = Central
		5 = Opposite plus Central
		6 = Roundabout
		7 = Other

1.68.2. Off-Site Entries:

Installation Date		{DD/MM/YY}
Regional Electricity Company	{-}	1 = Scottish Power
		2 = Scottish and Southern Energy
Electricity Billing Company	{-}	1 = Scottish Power
		2 = Scottish and Southern Energy
Operating Hours	{-}	1 = Continuous
		2 = Dusk to Dawn
		5 = Other

1.68.3. Convention

- (i) A lighting point shall be defined as a point item.

1.68.4. Rules

- (i) If an identify code shall be not present or shall be unreadable, an asterisk (*) shall be entered.
- (ii) Posts made of more than one material shall be entered as type 6 = OTHER
- (iii) Where Catenary lighting shall be present it shall be recorded as follows:
- (a) The first lamp unit after a column shall be recorded in conjunction with the column using LP;
- (b) The next lamp unit shall be recorded with column type 4 = NONE using LP;

- (c) The remaining lamp units to the next column shall be recorded using the lighting point repeat facility (LR);
- (d) The last lamp unit and the last column at the end of the catenary lighting shall be recorded together using LP.
- (iv) A lighting point with double bracket or post top and a shared column which occurs in the central reserve of a dual carriageway or Motorway and which shall be common to both sections must be recorded in the nominated section ONLY.
- (v) A lighting point with a single bracket on a separate column shall be recorded in the section to which it applies.
- (vi) Beacons associated with a pedestrian crossing (Zebra) must be recorded separately under this item, lighting point, with identity code ZEBRA.
- (vii) Reference shall be made to the paragraph "2 Electrical Inventory Requirements" in this Appendix A for additional electrical inventory requirements.

1.69. **BO** - Overbridge

A Structure which spans the road being surveyed and which carries another road, railway, pedestrians or other feature.

1.69.1. Input Details

- (i) Site Entries:

Item Code	{BO}	
Geographical Information System	Point	OSGR Coordinate
Chainage	{----	(Alphanumeric)
Identity Code	{-----}	(Alphanumeric)
Type	{-}	1 = Road 2 = Rail 3 = River 4 = Canal 5 = Footway 6 = Gantry 7 = Tunnel 8 = Other

Convention

- (ii) An overbridge shall be defined as a continuous item.

1.69.2. Rules

- (i) When the bridge identity code shall be either not present or unreadable, an asterisk (*) shall be entered.
- (ii) The start chainage of an overbridge occurs when the measuring

wheel shall be level with the start of the Structure. The end chainage occurs when the measuring wheel shall be level with the end of the Structure. Hence, an overbridge passing diagonally over the road being surveyed will have a total recorded width greater than its nominal width.

- (iii) On dual carriageways, an overbridge shall only be recorded in the nominated section but the start and end chainage shall be assessed in respect of the total length spanning both carriageways.
- (iv) If the Bridge type shall be not included in the option menu, up to 8 characters may be used as the identity code (if one does not exist) to describe it.
- (v) Tunnels, footbridges and gantries are recorded under this inventory item.

1.70. BU - Underbridge

A Structure carrying the road being surveyed over another road, railway, river, ravine or other feature.

1.70.1. Input Details

- (i) Site Entries:

Item Code	{BU}	
Geographical Information System	Point	OSGR Coordinate
Chainage	{----	(Alphanumeric)
Identity Code	{-----}	(Alphanumeric)
Type	{-}	1 = Road 2 = Rail 3 = River 4 = Canal 5 = Footway 6 = Gantry 7 = Ravine 8 = Other

1.70.2. Convention

- (i) An underbridge shall be defined as a continuous item starting and finishing on some convenient feature such as the expansion joints or the ends of the parapets. It has no cross-sectional position.

1.70.3. Rules

- (i) When the bridge identity code shall be either not present or unreadable, an asterisk (*) shall be entered.

- (ii) Whereas parapets are part of the bridge and need not be recorded separately, a safety fence over a bridge shall be recorded under its own inventory item.
- (iii) The start and end of an underbridge occurs when the measuring wheel shall be level with some feature of the underbridge such as an expansion joint or the end of a parapet.
- (iv) On dual carriageways and underbridge shall only be recorded in the nominated section but shall be assessed in respect of the total length spanning both carriageways.
- (v) If the Bridge type shall be not included in the option menu, up to 8 characters may be used as the identity code (if one does not exist) to describe it.

1.71. **WS** – Weather Station

A remote electronic monitoring device to detect road surface and atmospheric conditions to give early warning of ice and frost.

1.71.1. Input Details

- (i) Site Entries:

Item Code	{WS}		
Geographical Information System	Point	OSGR Coordinate	
Cross-Sectional Position	{-}	See Section 1.2 of this Appendix A	
Chainage	{----}	To nearest metre	
Identity Code	{-----}	Alphanumeric	
Site Name	{----}	Alphanumeric	
Site Type	{-}	1 = Mark 5 2 = Mark 6 3 = ROSA 6 = Other	
Manufacturer	{-}	1 = Findlay Irvine 2 = Vaisala 3 = Other	
Model	{-----}	Alphanumeric (optional)	
Power Source	{-}	1 = Mains Electricity 2 = Solar	
Number of Road Surface Sensors	{-}	1 = Sensor 2 = 2 Sensors 3 = 3 Sensors 4 = Other	
Deep Sensor	{-}	Y = Yes	N = No
Air Sensor	{-}	Y = Yes	N = No

Dew/RH Sensor	{-}	Y = Yes	N = No
Wind Sensor	{-}	Y = Yes	N = No
Precipitation Sensor	{-}	T = Yes	N = No
Year Installed	{----}		

1.71.2. Convention

- (i) An weather station shall be defined as a point item.

1.71.3. Rules

- (i) If an identity code shall be not present or unreadable, an asterisk (*) shall be used.
- (ii) The cross-sectional position relates only to the cabinet/pole, not the sensors.
- (iii) Reference shall be made to the paragraph “2 Electrical Inventory Requirements” in this Appendix A for additional electrical inventory requirements.

1.72. **SP** - Snow Poles

Poles Mounted at the side of the road to aid snow clearing operations.

1.72.1. Input Details

- (i) Site Entries:

Item Code	{SP}	
Geographical Information System	Point	OSGR Coordinate
Cross Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----}	(To nearest metre)
Material	{-}	1 = Plastic 2 = Metal 3 = Other

1.72.2. Convention

- (i) Snow Pole shall be defined as a point Item.

1.73. **AB** – Arrester Bed

Normally a bed of loose gravel to stop vehicles.

1.73.1. Input Details

- (i) Site Entries:

Item Code	{AB}	
Geographical Information System	Point	OSGR Coordinate
Cross Sectional Position	{-}	See Section 1.2 of this Appendix A
Chainage	{----}	(To nearest metre)
Length	{----}	To the nearest 0.1 metre between 0.1 and 100.0
Width	{----}	To the nearest 0.1 metre between 0.1 and 20.0

1.73.2. Convention

- (i) An Arrester Bed shall be defined as a point Item.

2 Electrical Inventory Requirements

2.1 Additional attributes listed in Annex E Tables 10 and 11 of TD23 or equivalent shall be held in the Routine Maintenance and Quality System database or the separate street lighting management system if approved by the Contracting Authority for those inventory items with electrical details such as:

- (i) SB - Bollard (Safety);
- (ii) LP - Lighting Point;
- (iii) SG - Sign; and
- (iv) TS - Traffic Signal

Additional attributes listed in TD23, Annex E, Tables 10 and 11 of the DMRB shall be held in the RMMF database, or the separate street lighting management system if approved by the Contracting Authority.

2.2 The Company shall also ensure that all relevant data required to be collected for operating competitive electrical supply agreements shall be held in the database.

3 Inspection Details

3.1 Introduction

3.1.1 General

- (i) The Contracting Authority requirements for routine maintenance of the O&M Works Site are incorporated in this Part of these O&M Works Requirements. These requirements call for inspections to be carried out on a regular basis and set out the frequencies of inspections to determine what routine maintenance tasks are required.
- (ii) The following describes in detail the defects which may be identified when the Company shall be conducting these inspection surveys and the procedures for recording the defects on the RMMF database.
- (iii) For both detailed Safety Inspections and Safety Patrols the Company shall record details of defects together with sufficient information about their location, the date and time they were inspected, and what action will be required in order to rectify them. All this information shall be entered onto the RMMF database in a systematic format via electronic data capture devices and the use of inspection codes and defect codes. 3.1.3 to 3.1.7 inclusive and 3.2 of this Appendix contains a schedule of the information required when the Company shall undertake detailed and Safety Inspections.
- (iv) This section includes general information on the recording of inspection surveys. Paragraph 3.3 below summarises, in tabular format, the inspection intervals / frequencies to be set in the RMMF database.
- (v) Paragraphs 3.4 to 3.32 inclusive of this Appendix contain for each maintenance activity the relevant details required by the Company's inspector to undertake and record an inspection survey. This information includes:
 - (a) A list of the various inspection codes relating to an activity and a schedule of the inventory items to which they apply;
 - (b) A definition of each activity;
 - (c) A schedule of defect codes specific to the activity, divided into specialist and non-specialist defects. This schedule includes the defect attribute, unit of measurement, and minimum and maximum values;
 - (d) Notes on specific individual defects. (where applicable); and
 - (e) General notes on defects. (where applicable).

3.1.2 Treatment Category Codes

- (i) The Company shall develop its own list of treatment codes for each defect to record a standard treatment to rectify a defect. The treatment codes provide a uniform shorthand method for the inspector to record a standard treatment to rectify a defect. Appropriate text fields shall then only be used to provide additional information to enable the repair to be carried out. The combination of the treatment codes (if applicable) and the text shall be sufficient

to initiate the repairs.

3.2 Entries to be made during Inspections

3.2.1 Detailed Inspections

(i) Section Header

Link Identifier:	(Up to 10 alphanumeric characters)
Section Number:	(Numeric between 0 and 99)
Reverse Direction:	(Y or N)
Inspector:	(Up to 3 alphanumeric characters)
Type:	(detailed)
Initiation:	(NRM = Normal Routine Maintenance)
Weather:	(FINE, RAIN, SNOW or FOG)
Road Condition:	(DRY, WET, SNOW or ICE)
Start of Section:	(Y or N)
New Activity Code List	(Y or N)

(This stage allows the entry of a new set of activities which are going to be inspected within the section if starting a survey, or of they are different from the activities that were inspected in the previous section.)

(ii) Activities

Activity Code:	(2 alphanumeric characters)
Inventory Code:	(2 Alphanumeric characters)
Cross Sectional Position:	(any digit and Q, W, E, R, T, Y)
Chainage:	(Numeric between 0 and 9999)
Location (Optional):	(Up to 40 alphanumeric characters)
Identity Code:	(Up to 8 alphanumeric characters)

(iii) Road Traffic Signs, Road Lighting and Traffic Scotland Maintained Equipment

Diagram Number:	(Up to 6 alphanumeric characters)
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(iv) Road Studs

Road Studs Class:	(1,2 or 3)
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(v) Defects

Defect Code:	(4 alphanumeric characters)
Attribute: (if	(Numeric between 0 and 999)

(e.g. area / length / number)

(vi) Decisions

Depending upon the nature of the defect, one or more of the following shall be recorded.

Does the Defect	(Y/N)	
require 24 hour action		
Action	1 = Immediate	(1, 2 or 3)
	2 = Temporary	
	3 = Permanent	
Action	1 = Temporary	(1 or 2)
	2 = Permanent	
Action	1 = Immediate	(1 or 2)
	2 = Permanent	
	1 = High Priority	(1, 2 or 3)
	2 = Medium Priority	(Permanent Action)
	3 = Low Priority	
Is temporary repair	(Y or N)	
being undertaken at		
time of survey?		
Is permanent repair	(Y or N)	
being undertaken at		
time of survey?		

(vii) Action

The appropriate actions shall be recorded as follows:

Record Immediate Action Taken

Record Temporary Action Taken

Record Permanent Action Taken

Record Recommended

Record Recommended

Treat Code (Optional): (/followed by 3 alphanumeric

Record Action (Up to 40 alphanumeric characters)

DATE and TIME shall be automatically recorded from the data capture device's calendar / clock for actions taken at the time of inspection.

3.2.2 Safety Inspections

(i) Section Header

Reverse Direction:	(Y or N)
Inspector:	(Up to 3 alphanumeric characters)
Initiation:	(NRM, PAT, POL, PBL, DUM,OTH) (Normal Routine Maintenance, patrol, Police, Public Complaint, Other)
Weather:	(FINE, RAIN, SNOW or ICE)
Road Condition:	(DRY, WET, SNOW or ICE)
Start of Section	(Y or N)
Full:	(F) (Full activity code list)
Link Identifier:	(Up to 10 alphanumeric characters)
Section Number:	(Numeric between 0 and 99)

(ii) Activities

Activity Code:	(2 alphanumeric from list provided)
Inventory Code:	(2 Alphanumeric from list provided)
Cross Sectional Position:	(Any digit and Q, W, E, R, T, Y)
Chainage:	(Numeric between 9 and 9999)
Location (Optional)	(Up to 40 alphanumeric characters)
Identity Code:	(Up to 40 alphanumeric characters)

(iii) Road Traffic Signs, Road Lighting and Traffic Scotland Maintained
Equipment

Diagram Number:	(Up to 6 alphanumeric characters)
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(iv) Road Studs

Road Studs Class: (1, 2 or 3)

(v) Defects

Defect Code (4 alphanumeric characters)

Attribute (if appropriate): (Numeric between 0 and 999)

(e.g. area / length / number)

(vi) Decisions

Depending upon the nature of the defect, one or more of the following shall be recorded.

Action 1= Immediate (1, 2 or 3)

2= Temporary

3= Permanent

Action 1= Temporary (1 or 2)

2= Permanent

Action 1= Immediate (1 or 2)

2= Permanent

Is temporary repair being (Y or N)

undertaken at time of survey?

Is permanent repair being (Y or N)

undertaken at time of survey?

(vii) Action

The appropriate actions shall be recorded as follows:

Record Immediate Action Taken

Record Temporary Action Taken

Record Permanent Action Taken

Record recommended Temporary Action

Record Recommended Permanent Action

Treat Code (Optional): (/ followed by 3
alphanumeric
characters)

Record Action: (Up to 40
alphanumeric
characters)

3.3 Intervals and Frequencies

3.3.1 General

- (i) The following Tables 3.3.1 (a) to 3.3.1 (c) are a summary of the inspection intervals and frequencies that shall be set in the RMMF database.
- (ii) In a number of instances, the RMMF database shall define only a single inspection interval / frequency (e.g. 6 months for retention ponds) although two or more possible inspection frequencies may be given for that activity in the requirements, depending upon the specific circumstances. In these cases, the more onerous frequency shall be set within the RMMF.

Table 3.3.1(a) – Non Specialist Inspections

Activity Code	Text	Int or Freq	Inspection Interval/ Frequency	Local Variation Allowed	Cat 1 – Repair Time Allowed	
					Temp	Perm
MC	Minor carriageway repairs	Int	12 months		24 hrs	28 days
DM	Concrete minor c/way repairs	Int	12 months		24 hrs	28 days
FC	Pedestrian and cycle facilities	Int	12 months		24 hrs	28 days
CG	Covers and gratings	Int	12 months		24 hrs	28 days
KC	Kerb & channel	Int	12 months		24 hrs	28 days
PD	Piped drain	Int	12 months		24 hrs	28 days
GC	Gully/catchpit/interceptor	Int	12 months		24 hrs	28 days
PG	Piped Grip	Int	12 months		24 hrs	28 days
GP	Grip	Int	12 months	Y	24 hrs	28 days
DI	Ditch	Int	5 years	Y	24 hrs	28 days
FD	Filter / counterfort drain	Int	12 months		24 hrs	28 days
CV	Culvert	Int	6 months		24 hrs	28 days
RP	Retention ponds	Int	6 months		24 hrs	28 days
AI	Headwall / aprons etc.	Int	1 or 2 years		24 hrs	28 days
AS	Sluices / tidal flaps etc.	Int	6 months		24 hrs	28 days
AP	Pumps / special equipment	Int	As specified		24 hrs	28 days
FL	Flooding	Int	12 Months		N/A	N/A
FB	Road Restraint Systems metal / concrete	Int	2 years		24 hrs	28 days

Table 3.3.1(a) – Non Specialist Inspections

Activity Code	Text	Int or Freq	Inspection Interval/ Frequency	Local Variation Allowed	Cat 1 – Repair Time Allowed	
					Temp	Perm
BF	Barriers & fencing metal / conc	Int	2 years		24 hrs	28 days
BT	Barriers and fencing timber	Int	2 years		24 hrs	28 days
FN	Road Restraint Systems steel – tension	Int	2 years		24 hrs	28 days
SN	Snow gates	Int	12 months		N/A	N/A
GA	Grassed Areas	Int	12 Months		N/A	N/A
HT	Hedges & trees (Roads Auth)	Int	18 months		24 hrs	28 days
HN	Hedges & trees(Non Roads Auth)	Int	18 months		24 hrs	28 days
HX	Hedges & trees (soundness)	Int	18 months		24 hrs	28 days
RS	Road studs	Int	12 months		24 hrs	28 days
RC	Road studs conspicuity	Int	6 months		24 hrs	28 days
RM	Road Markings	Int	2 years		24 hrs	28 days
SG	Sign face / struct / fixing	Int	12 months		24 hrs	28 days
TS	Traffic signals	Int	6 months		24 hrs	28 days
LP	Lamp Columns	Int	12 months		24 hrs	28 days
LE	Road lighting (Electrical)	Int	12 months		24 hrs	28 days
SL	Road lighting (Lamps)	Int	12 months		24 hrs	14 days
CI	Motorway Communications Installations	Int	12 months		24 hrs	14 days
CX	Comms Equip. (Emgncy phones)	Int	14 days		N/A	N/A
CB	Comms Equip (Cable ducts)	Int	N/A		N/A	N/A

Table 3.3.1(a) – Non Specialist Inspections

Activity Code	Text	Int or Freq	Inspection Interval/ Frequency	Local Variation Allowed	Cat 1 – Repair Time Allowed	
					Temp	Perm
CS	Comms Equip (Matrix & signals)	Int	3 months		N/A	N/A
CF	Comms Equip (Bolts & hinges)	Int	12 months		N/A	N/A
CY	Comms Equip (M/way warning)	Int	12 months		N/A	N/A
CA	Comms Equip (Alignment)	Int	12 months		N/A	N/A
CE	Comms Equip (Electrical)	Int	N/A		N/A	N/A
CO	Comms Equip (Operations)	Int	N/A		N/A	N/A
EC	Embankments and cuttings	Int	12 months		24 hours	N/A
IS	Weather Stations	Int	6 months		N/A	N/A

Table 3.3.1(b) – Specialist Inspections

Activity Code	Text	Int or Freq	Inspection Interval/ Frequency	Local Variation Allowed	Cat 1 – Repair Time Allowed	
					Temp	Perm
RP	Retention Ponds – no outflow control		2 years	Y	24 hours	28 days
RP	Retention Ponds – outflow control		6 months	Y	24 hours	28 days
AS	Sluices / tidal flaps etc.		6 months		24 hours	28 days
AP	Pumps / special equipment		As recommended		24 hours	28 days
FN	Tension of safety fences		2 years		24 hours	28 days
HX	SE Hedges and trees: soundness		18 Months		24 hours	28 days
HN	Non SE Hedges and trees: soundness		18 Months		24 hours	28 days
RC	RS conspicuity (prohibitory)		2 Weeks or Monthly		24 hours	28 days
RC	RS conspicuity (warn & advisory)		2 Weeks or Monthly		24 hours	28 days
SR	Road markings skid resistance		2 years		24 hours	28 days
RR	Road markings retro-reflectivity		2 years		24 hours	28 days
SM	Signs : moving parts		12 months		24 hours	28 days
SE	Signs: electrics		12 months		24 hours	28 days
SV	Signs: visibility		12 months		24 hours	28 days
TM	TS: electro mechanical parts		6 months		24 hours	28 days
TE	TS: electrical		12 months		24 hours	28 days

Table 3.3.1(b) – Specialist Inspections

Activity Code	Text	Int or Freq	Inspection Interval/ Frequency	Local Variation Allowed	Cat 1 – Repair Time Allowed	
					Temp	Perm
LE	Lamp columns: electrical		12 months		24 hours	28 days
CB	Comms cabinet: electrical		N/A		N/A	N/A
CE	Comms cabinet: electrical		N/A		N/A	N/A
ES	Embankment / cutting condition		12 months		24 hours	28 days

Table 3.3.1(c) – Lamp Scout Inspections

Activity Code	Text	Int or Freq	Inspection Interval/ Frequency	Local Variation Allowed	Cat 1 – Repair Time Allowed	
					Temp	Perm
SS	Signs – lamp failure		14 days		2 hours	24 hours
SL	Lighting Column – lamp failure	Oct to Mar	14 days		2 hours	24 hours
		Apr to Sept	28 Days		2 hours	24 hours

3.4 Minor Carriageway Repairs – Flexible

3.4.1 The following inspection code relation to this activity:

Minor Carriageway Repairs MC

3.4.2 The following inventory items are applicable to this inspection activity:

Central Island CI
 Hard Shoulder HS
 Central Reserve CR
 Lay-by LB
 Carriageway CW

Crossover

XO

Note

3.4.3 Minor carriageway repairs do NOT relate to larger scale work needed to strengthen the carriageway or to work linked with structural maintenance, including surface dressing.

3.4.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Localised cracking Cracking confined to a discrete area of the Carriageway and not associated with structural maintenance activities	LOCK	area	m ²	1	200
Localised edge deterioration Cracking confined to a discrete area of the Carriageway and not associated with structural maintenance activities	LODT	Length	Metres	1	50
Surfacing joints Open or excessive joints	SRJT	Length	Metres	1	50
Cracking around ironwork	CKIR	Area	m ²	1	200
Patch – adjacent cracking	PACK	Area	m ²	1	200
Patch – loss of material (fretting)	PLMT	Area	m ²	1	200
Patch – difference in level Difference in level of a patch with the surrounding carriageway	PDLV	Area	m ²	1	200
Trench RI – adjacent cracking Cracking around reinstated trench	TACK	Area	m ²	1	200
Trench RI – loss of material Loss of material (fretting) from a reinstated trench	TLMT	Area	m ²	1	200
Trench RI – difference in level Difference in level between a reinstated trench and the surrounding carriageway	TDLV	Area	m ²	1	200
Pothole	POTH	Area	m ²	1	50
Single crack	CRCK	Area	m ²	1	50
Patch – material cracking Cracking of the material used for patching	PMCK	area	m ²	1	200
Trench R1 – material cracking Cracking of the material used to reinstate the trench	TMCK	Area	m ²	1	200
Blacktop fretting Loss of material from the carriageway surface	BFRT	Area	m ²	1	200

Description	Code	Attribute	Units	Min	Max
Other	OTHR				
None	NONE				

3.4.5 General Notes

- (i) Detailed Inspections shall only record those types of defect likely to require routine maintenance rather than to establish general structural condition.
- (ii) Some defects recorded may be repaired within structural maintenance work due to be carried out within the timescale of the Detailed Inspection frequencies.
- (iii) Where a large number of cracks occur within an area of the carriageway, a single entry provided a reasonable estimate of the length of cracking within that area shall be recorded.
- (iv) The Company shall pay particular attention to potholes and other localised carriageway defects since these often constitute an immediate or imminent hazard.
- (v) Where there shall be more than one inspection interval defined for this inspection activity in this Part of the O&M Works Requirements, the most onerous interval shall be set within the RMMF database and the Company shall ensure that the appropriate intervals for the individual items are established.

3.5 Minor Carriageway Repairs – Concrete

3.5.1 The following inspection code relates to this activity

Minor carriageway repairs – Concrete CM

3.5.2 The following inventory items are applicable to this inspection activity:

Central Island CI
 Hard Shoulder HS
 Central Reserve CR
 Lay-by LB
 Carriageway CW
 Crossover XO

3.5.3 Convention

- (i) Minor carriageway repairs do NOT relate to larger scale work needed to strengthen the carriageway or to work linked with structural maintenance including surface dressing.

3.5.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Joint seals	JTSL				
Shallow spalling at joints / cracks	SSPL				

Description	Code	Attribute	Units	Min	Max
Standing Water	STWT	Length	metres	1	50
Slab profile – uneven/trips/gap>20mm	SLPF	Area	m ²	1	200
Slab cracking	SLCK	Area	m ²	1	200
Slab rocking	SROK	Area	m ²	1	200
Block profile	BKPF	Area	m ²	1	200
Black top – potholes>25mm	BPOT	Area	m ²	1	200
Black top – local cracking. Cracking confined to a discrete area of the footway / cycle track	BLCK	Area	m ²	1	200
Black top – extensive cracking. Cracking affecting the major part of a footway / cycle facility	BECK	Area	m ²	1	500
Black top – fretting Loss of material from the footway / cycle facility surface	BFRT	Area	m ²	1	200
Failed patch – adjacent cracking	FPCK	Area	m ²	1	200
Failed patch – loss of material Loss of material (fretting) from an existing area of patching	FLMT	Area	m ²	1	200
Failed patch – difference in level	FDLV	Area	m ²	1	200
Overgrown by vegetation	OVGV	Length	metres	1	100
Trench RI – adjacent cracking Cracking around a reinstated trench	RACK	Area	m ²	1	200
Trench RI – loss of material Loss of material (fretting) from a reinstated trench	RLMT	Area	m ²	1	200
Trench RI – difference in level	RDLV	Area	m ²	1	200
Other	OTHR				
None	NONE				

3.6.4 Notes on Defects

- i) BKPF Includes ridges, projections, sharp edges (trips), cracks and gaps which are greater than 20 millimetres.
- ii) DPOT Includes potholes and small area depressions greater than 25 millimetres in depth which are creating a hazard.
- iii) FDLV Includes ridges, projections, sharp edges (trips), cracks and gaps which are greater than 20 millimetres and also depressions greater than 25 millimetres in depth which are creating a hazard.

- iv) SLCK Cracked slabs shall not be replaced as a routine maintenance operation unless there shall be a need to reset the slab because of some other defect.
- v) RDLV Applies when a trench has subsided or has been left proud following reinstatement and includes ridges, projections, sharp edges (trips), cracks and gaps which are greater than 20 millimetres and also depressions greater than 25 millimetres in depth which are creating a hazard.

3.6.5 General Notes

- (i) When interpreting defects recorded during an inspection survey, the Company shall differentiate between those relating to routine maintenance and those applicable to structural maintenance.
- (ii) Correction of defects arising from the activities of Undertakers shall not be charged to the owner if they are still within the timescale of the 1991 Act.
- (iii) The Company shall pay particular consideration to defects, such as trips, which may constitute an immediate danger to non motorised Users.
- (iv) Where there shall be more than one inspection interval defined for this inspection activity in this Part of these O&M Works Requirements, the most onerous interval shall be set within the RMMF database and the Company shall ensure that the appropriate intervals for the individual items are established.

3.7 Covers, Gratings, Frames and Boxes

3.7.1 The following inspection code relates to this activity:

Covers, Gratings, Frames and Boxes CG

3.7.2 The following inventory items are applicable to this inspection activity:

Catchpit	CP
Manhole	MH
Gully	GY
Piped Grip	PG
Interceptor	IN

3.7.3 Definition

This section relates to the repairs to and replacement of (where necessary) all types of covers, gratings, frames and boxes which are the responsibility of the Relevant Authorities.

3.7.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Difference in level with road. Differential levels between items and abutting carriageway, footway or cycle track surface exceeding 20 millimetres.	IDLV				

Description	Code	Attribute	Units	Min	Max
Difference in components levels. Differential levels between different components exceeding 20 millimetres.	ICLV				
Rocking under load	IRLD				
Cracked or broken	IBCK				
Missing	MISS				
Parallel gratings	PARL				
Smooth surface	SMTH				
Blockage. Applies to surface water catchment items.	BLOK	Percentage	Per cent	1	100
Seized	SIEZ	Percentage	Per cent	1	100
Other	OTHR				
None	NONE				

3.7.5 Notes on Defects

- i) MISS Attention shall be paid to missing items, which are likely to constitute a hazard.
- ii) PARL Gullies and other gratings in carriageways and cycle tracks which have gaps more than 20 millimetres wide parallel to the normal line of movement of pedal and motor cycles shall be classed as defects.
- iii) SMTH Worn covers which may cause pedal motor cycle Users to skid in wet conditions shall generally be considered to constitute an immediate hazard.

3.7.6 General Notes

- (i) The Company shall not ignore covers situated in verges which are not traversed by pedestrians.
- (ii) The majority of covers in carriageways, footways and cycle tracks are the responsibility of the public utilities and other parties. Hazardous defects shall be coned and /or temporarily repaired and the owners notified. If permanent repairs are not then carried out in the appropriate time by the owners, the Company shall carry them out and recover the costs from the owners.

3.8 Kerbs, Edgings and Pre-formed Channels

3.8.1 The following inspection code relates to this activity:

Kerbs, Edgings and Pre-formed Channels: KC

3.8.2 The following inventory items are applicable to this inspection activity:

Channel CH

Kerb KC

3.8.3 Definition

This section relates to the repairs to and replacement of (where necessary) all types of covers, gratings, frames and boxes which are the responsibility of the Contracting Authority.

3.8.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Vertical projection > 20 millimetres Vertical projections greater than 20mm.	EVPJ	Length	metres	1	50
Horizontal projection > 50 millimetres Horizontal projections greater than 50mm	EHPJ	Length	metres	1	50
Loose / rocking	ELRK	Length	metres	1	50
Damaged	DAMG	Length	metres	1	50
Channel block alignment	CHAL	Length	metres	1	50
Missing	MISS	Length	metres	1	50
Impeded water flow (detritus).	IMWF	Length	metres	1	50
Weed growth	WEED	Length	metres	1	100
Other	OTHR				
None	NONE				

3.8.5 Notes on Defects

- a) ELRK Loose or rocking items which are creating or are likely to create a hazard
- b) DAMG Damaged or shattered items which are creating or are likely to create a hazard or led to loss of support or protection.
- c) CHAL Poor local alignment of pre-formed channels which could give rise to danger or nuisance from standing water or damage to the road structure caused by water penetration.
- d) IMWF Detritus at the edge of the carriageway preventing over edge run-off and / or flow along the channel which could give rise to danger or nuisance from standing water or damage to the road structure by water penetration.
- e) WEED Vegetation growth at the edge of the carriageway preventing over-edge run-off and/or flow along the channel which could give rise to danger or nuisance from standing water or damage to the road structure by water penetration.

3.8.6 General Notes

- (i) Where there shall be more than one inspection interval defined for this inspection activity in this Part of these O&M Works

Requirements, the most onerous interval shall be set within the RMMF database and the Company shall ensure that the appropriate intervals for the individual items are established.

3.9 Piped Drainage Systems

3.9.1 The following inspection code relates to this activity:

Piped Drainage Systems PD

3.9.2 The following inventory items are applicable to this inspection activity;

Counterfort Drain CD

Gully GY

Filter Drain FD

Piped Grip PG

3.9.3 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Blockage	BLOK	Length	metres	1	100
Other malfunction	OMAL				
Flooding	FLOD	Area	m ²	1	500
Drainage damage to road / verge	DRRD	Length	metres	1	100
Flood nuisance to properties	NPRP				
Flood nuisance to services	NSER				
Silted	SILT	Length	metres	1	100
Roots present	ROOT				
Cracking	CRCK	Area	m ²	1	200
Deformation	DEFM	Percentage	Per cent	1	100
Collapsed	COLP				
Alignment irregular	LINE				
Standing water	STWT	Length	metres	1	100
Scour	SCOR				
Other	OTHR				
None	NONE				

3.9.4 General Notes

- (i) The Company shall make maximum use of emptying and cleansing operations to check that piped drainage systems are operating satisfactorily.
- (ii) Symptoms of blockage or fault which shall normally prompt a Detailed Inspection are, backing up and flooding at the entry points to the system, dry outfalls, wet areas and the presence of lush vegetation.

- (iii) The Company shall determine the ownership of the drainage system before any work shall be carried out.

3.10 Gullies, Catchpits and Interceptors

- 3.10.1 The following inspection code relates to this activity:

Gullies, Catchpits and Interceptors GC

- 3.10.2 The following inventory items are applicable to this inspection activity:

Catchpit CP

Interceptor IN

Gully GY

- 3.10.3 Definition

This section relates to the removal of detritus and other substances from all traps of all types of road gullies, catchpits and interceptors and the inspection of them and their operation.

- 3.10.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Damaged	DAMG				
Collapsed	COLP				
Silted	SILT	Length	metres	1	100
Blockage	BLOK	Percentage	Per cent	1	100
Shaft defective	SHFT				
Chamber / benching / pot defective	CHAM				
Invert / sump defective	INVT				
Ancillaries defective	ANCS				
Other	OTHR				
None	NONE				

- 3.10.5 General Notes

- (i) This section does NOT relate to ironwork associated with gullies, catchpits and interceptors. Ironwork shall be considered in Section 5.6 of this Appendix (Covers, Gratings, Frames and Boxes).

3.11 Piped grips

- 3.11.1 The following inspection code relates to this activity:

Piped Grips PG

- 3.11.2 The following inventory item shall be applicable to this inspection activity:

Piped Grip PG

- 3.11.3 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Blockage	BLOK	Percentage	Per cent	1	100
Detritus / Refuse. Presence of detritus likely to impede the function of the piped grip	DETR				
Broken	BROK				
Other	OTHR				
None	NONE				

3.11.4 General Notes

- (i) Gratings where fitted shall be dealt with under Section 5.6 of this Appendix (Covers, Gratings, Frames and Boxes.)

3.12 Grips

3.12.1 The following inspection code relates to this activity:

Grips GP

3.12.2 The following inventory item shall be applicable to this inspection activity:

Grip GP

3.12.3 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Weed growth	WEED	Length	metres	1	100
Detritus / Refuse. Presence of detritus within a grip	DETR				
Blockage	BLOK	Percentage	Per cent	1	100
Flooding	FLOD	Area	m ²	1	500
Other	OTHR				
None	NONE				

3.13 Ditches

3.13.1 The following inspection code relates to this activity:

Ditches DI

3.13.2 The following inventory item shall be applicable to this inspection activity:

Ditch DI

3.13.3 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Weed growth	WEED	Length	metres	1	100
Collapsed bank	CLBK	Length	metres	1	100

Culvert

CV

3.15.3 Definition

This section relates only to the maintenance of free flow of water through culverts and small span bridges with spans or diameters between 2 and 3 metres inclusive, multi-cell culverts where the cumulative span or diameter shall be less than 5 metres and corrugated metal structures 0.9 metres or more on span not falling within the scope of BD63 of the DMRB.

3.15.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Scour	SCOR				
Free flow impeded. Inadequate flow of water through the culvert.	FRFL				
Silted	SILT	Length	metres	1	100
Roots present	ROOT				
Cracking	CRCK	Area	m ²	1	200
Deformation	DEFM	Percentage	Per cent	1	100
Collapsed	COLP				
Alignment irregular	LINE				
Standing water	STWT	Length	metres	1	100
Other	OTHR				
None	NONE				

3.15.5 General Notes

- (i) Smaller culverts are generally short lengths of pipe which are treated as piped drainage systems.
- (ii) Larger culverts shall be maintained as Structures and are outside the scope of the RMMF. See paragraph 2.5.8 to Part 2 of these O&M Works Requirements.

3.16 Settlement, Attenuation and Storage Ponds and Otherwise

3.16.1 The following inspection code relates to this activity:

Settlement, Attenuation and Storage Ponds
and Otherwise BP (specialist)

3.16.2 The following inventory item shall be applicable to this inspection activity:

Settlement, Attenuation and Storage Ponds and Otherwise
BP

3.16.3 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Function outfall regulating device. Damage or obstruction to the pond	OUTF				

outlet which will affect the controlled rate of discharge.					
Blockage of inlet Blockage of feeder pipe or ditch.	INLT				
Blockage of outlet Blockage of outlet pipe or ditch	OUTL				
Silted Silt in the pond causing a loss of storage capacity.	SILT	Length	metres	1	100
Erosion of banks / walls / bunds. Damage or erosion to the pond banks, walls, bunds.	ERSN				
Surcharge Excess water overflowing from the settlement, attenuation and storage ponds and otherwise	SURC				
Other	OTHR				
None	NONE				

3.16.4 General Notes

- (i) Settlement, attenuation and storage ponds and otherwise may sometimes be situated some distance from the road.
- (ii) Where there shall be more than one inspection interval defined for this inspection activity in this Part of these O&M Works Requirements, the most onerous interval shall be set within the RMMF database and the Company shall ensure that the appropriate intervals for the individual items are established.

3.17 Ancillary Items

3.17.1 The following inspection codes relate to this activity:

Headwalls and Aprons	AI
Sluices and Tidal Flaps	AS (Specialist)
Pumps and Specialised Equipment	AP (Specialist)

3.17.2 There are no inventory items applicable to this inspection activity:

Settlement, Attenuation and Storage Ponds and Otherwise - BP

3.17.3 Definition

This section includes headwalls, aprons, sluices, tidal flaps and pumps.

3.17.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Pump malfunction	PUMP				
Sluice malfunction	SLUI				

Tidal flap malfunction	TIDL				
Headwall / apron condition	HAFL				
Trash screen blocked	TRSH				
Penstock malfunction	PSTK				
Other	OTHR				
None	NONE				

3.17.5 Specialist Defects

Description	Code	Attribute	Units	Min	Max
Pump malfunction	PUMP				
Sluice malfunction	SLUI				
Penstock malfunction	PSTK				
Other	OTHR				
None	NONE				

3.17.6 General Notes

- (i) The Company shall maintain a schedule of ancillary items, including all sluices, tidal flaps and pumps.

3.18 Flooding

3.18.1 The following inspection codes relates to this activity:

Flooding FL

3.18.2 The following inventory items are applicable to this inspection activity:

Settlement, Attenuation and Storage Ponds and Otherwise BP

Filter Drain FD

Counterfort Drain CD

Grip GP

Channel CH

Gully GY

Catchpit CP

Interceptor IN

Culvert CV

Manhole MH

Ditch DI

Piped Grip PG

3.18.3 Definition

Flooding of the Project Roads caused by the inadequate provision or operation of the road drainage facilities.

3.18.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Flooding	FLOD	Area	m ²	1	500
		Cause	Characters	1	40
Other	OTHR				

None	NONE				
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3.18.5 General Notes

- (i) The cause of flooding shall be ascertained by the Company and if necessary proposals for action submitted to the Contracting Authority.
- (ii) Particular attention shall be paid to areas where excessive water shall be standing on the carriageway or where water shall be discharging onto and / or flowing across the Project Roads, causing an immediate or imminent hazard.

3.19 Traffic Scotland and Miscellaneous Equipment

3.19.1 The following inspection codes relates to the activity Traffic Scotland and miscellaneous equipment:

Hardware	CI [CC,SG,TB]
Emergency phones	CX [CC,TB]
Alignment	CA[CC]
Transmission Stations	CZ[CC]
Cable Ducts CB (Specialist)	CC,[TB,SG]
Electrical CE (Specialist)	CC,[TB,SG]
Bolts & Hinges	CF [CC,TB,SG]
Operations	CO [CC,TB,SG]
Matrix Signs	CS [SG]
M/way Warning O&M Works Site	CY [SG]

3.19.2 The following inventory items are applicable to this inspection activity:

Traffic Scotland Cabinet	CC
Emergency Telephone Box	TB
Signs	SG

3.19.3 Definition

This section includes telephones, matrix signals, loop detectors, surveillance equipment, cabinets, power distribution equipment, cables and ancillary equipment. It does NOT include specialised electrical / electronic plant.

3.19.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Not watertight Housing or surroundings are not watertight.	WTGT				
Damaged	DAMG				
Difficult access to cabinet / security	ACES				

impaired.					
Physical condition of cabinet	PHCD				
Breakdown / poor communications.	BCOM				
Illegibility of Identity numbers	VISN				
Impaired visibility	VISA				
Inadequately drained	INDR				
Other	OTHR				
None	NONE				

3.19.5 General Notes

- (i) The Company shall categorise defective Traffic Scotland Maintained Equipment which shall be either by its condition or lack of operation constitutes an immediate or imminent hazard as a Category 1 Defect.

3.20 Embankments and Cuttings

3.20.1 The following inspection codes relates to this activity:

Embankments and Cuttings: EC

Embankments and Cuttings: ES (Specialist)

3.20.2 The following inventory item shall be applicable to this inspection activity:

Embankments and Cuttings: EC

3.20.3 Definition

This section relates to the slippage of the material within an embankment or cutting or surface sliding of material down an embankment or cutting.

3.20.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Slip (non-rock) Deep seated slippage of the material within an embankment or cutting as typified by the "classic" slip circle..	SLIP	Length	metres	1	50
Slide (non-rock) Surface sliding of material down an embankment or cutting.	SLID	Length	metres	1	50
Rock slide	RSLI	Length	metres	1	50
Seepage	SEEP	Length	metres	1	50
Inadequately drained	INDR	Length	metres	1	50
Foundation failure	FOUN	Length	metres	1	50
Other	OTHR				
None	NONE				

3.21 Grassed Areas

3.21.1 The following inspection code relates to this activity

Grassed Areas: GA

3.21.2 The following inventory items are applicable to this inspection activity:

Central Island CI

Embankment and Cuttings EC

Central Reserve CR

Verge VG

3.21.3 Definition

This section relates to the maintenance of grassed verges, central reserves, roundabout islands and cutting and embankment slopes.

3.21.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Inadequate visibility	IVIS	Length	metres	1	200
		Area	m ²	1	500
Risk to pedestrians	RPED	Length	metres	1	50
Overgrown footway / carriageway	OVER	Length	metres	1	50
Injurious weeds	IWED	Area	m ²	1	50
Other	OTHR				
None	NONE				

3.22 Hedges and Trees

3.22.1 The following inspection codes relates to this activity:

General HT [HG,TR]

(O&M Works Site): Soundness HN (Specialist) [HG,TR]

(Non-O&M Works Site): Soundness HX (Specialist [HG,TR]

3.22.2 The following inventory item shall be applicable to this inspection activity:

Hedge HG

Tree TR

3.22.3 Definition

This section relates to the maintenance of hedges and trees which are the responsibility of the Relevant Authorities or which, although the responsibility of others are causing nuisance or obstruction to the Project Roads.

3.22.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Unstable	UNST				

Accidental or other damage results in an unstable tree / branch					
Dead tree	DTRE	Height	metres	1	25
Dying / diseased tree Any sign of wilting or die-back	DYTR	Height	metres	1	25
Dying / dead branch	DBRA	Length	metres	1	25
		Height	metres	1	25
Obstructed sightline	OBSL				
Obstructed sign / lighting point etc.	OBSN				
Hedges not stockproof	HNST	Length	metres	1	50
Initiate specialist inspection	INSI				
Overhanging / overgrown Branches / trees overgrown or overgrowing onto the carriageway	OVER	Length	metres	1	25
		Height	metres	1	25
Other	OTHR				
None	NONE				

3.22.5 Notes on Defects

- (i) INSI Specialist inspection of hedges and trees shall normally be carried out during a normal Detailed Inspection, but shall meet the requirements of paragraph 2.8 to Part 2 of these O&M Works Requirements.

3.22.6 General Notes

- (i) Any defects associated with dead or dying trees / branches or diseased trees shall be referred by the Company to a qualified landscape architect or other competent person.
- (ii) The Company shall pay particular attention to trees, shrubs and hedge, which by virtue of their position or condition constitute a hazard to road Users.

3.23 Sweeping and Cleansing

3.23.1 The following inspection code relates to this activity:

Sweeping and Cleansing SC

3.23.2 The following inventory items are applicable to this inspection activity:

Channel CH
Footway FW
Central Island CI
Hard Shoulder HS
Central Reserve CR
Lay-By LB
Cycle Track CT

Verge	VG
Carriageway	CW
Crossover	XO
Embankments and Cuttings	EC
Kerb	KB

3.23.3 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Litter Grade C	LITC	Area	m ²	1	500
Litter Grade D	LITD	Area	m ²	1	500
Excessive muck Need for sweeping / cleansing in Road channels, Motorway hard shoulders, traffic Lanes, central reserves, footways and cycle facilities.	MUCK	Length	metres	0	500
		Area	m ²	1	500
Need for herbicide Growth of grass or other vegetation between the channel and kerb which shall be likely to obstruct the flow of water or cause structural deterioration	HERB	Length	metres	0	200
		Area	m ²	1	200
Debris in traffic Lane	DBTL	Length	metres	0	200
		Area	m ²	1	500
Debris in hard shoulder	DBHS	Length	metres	0	200
		Area	m ²	1	500
Other	OTHR				
None	NONE				

3.23.4 General Notes

- (i) The Company shall not carry out Detailed Inspections but shall report on the basis of regular Safety Inspections

3.23.5 The four levels of cleanliness are detailed below:

- (i) Grade A: no litter or refuse
- (ii) Grade B: area predominately free, apart from small items such as cigarette ends and ring pulls.
- (iii) Grade C: widespread distribution of small items (as Grade B) and larger items including beverage containers, fast food packs, animal faeces etc
- (iv) Grade D: heavily littered with small and large items, with accumulations along edges

On the O&M Works Site the Company shall achieve, after cleaning, the following levels of cleanliness, Grade A (paved areas) and Grade B

(verges).

3.24 Road Restraint Systems, Fencing and Other Barriers

3.24.1 The following inspection codes relate to the activity road restraint systems, fencing and other barriers:

Boundary Fences: Metal / Concrete	BF [FB, PR, RW]
Boundary Fences: Timber	BT [FB, PR, RW]
Road Restraint Systems: Metal Concrete	FB [SF, PR, RW]
Road Restraint Systems: Steel – Tension	FN (Specialist) [SF]
Snow Gates:	SN

3.24.2 The following inventory items are applicable to this inspection activity:

Fences and Barriers	FB
Retaining Wall	RW
Road Restraint Systems (Pedestrian)	PR
Road Restraint System (Vehicular)	SF
Traffic Control Barrier	CB

3.24.3 Definition

All types of boundary fences and walls, anti-glare screen fences, noise barriers, snow gates, road restraint systems (vehicular and pedestrian) and other barriers. Does NOT include parapets and guard rails on bridges and other Structures or the structural elements of noise barriers.

3.24.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Rotten – wood fence	RWDF	Length	metres	1	50
Rotten – wood post (fence / barrier)	RWDP				
Corroded – metal (fence / barrier)	CMTF	Length	metres	1	50
Corroded - metal post (fence / barrier)	CMTF				
Corroded – concrete fence	CCTF	Length	metres	1	50
Corroded – concrete post	CCTP				
Missing – section of fence / barrier	MISS	Length	metres	1	50
Accident damage	ACCD	Length	metres	1	100
		Height	metres	1	25
Damaged / deformed – fence / barrier	DAMM	Length	metres	1	50
Loose panel	LOSP	Number			
Loose anchor	LOSA	Number			
Loose bolt	LOSB	Number			
Loose tension bolt	CORT	Length	metres	1	50
Incorrect or no tension(metal fence)	NTEN	Length	metres	1	50
No stockproof	NSTK	Length	metres	1	50

Road restraint system (vehicular) – too high	SBTH	Length	metres	1	999
		Height	metres	0	
Road restraint system (vehicular) – too low	SBTL	Length	metres	1	999
		Height	millimetres	0	
Snow Gate – mechanical fault	SNGA				
Other	OTHR				
None	NONE				

3.24.5 Specialist Defects

Description	Code	Attribute	Units	Min	Max
Loose tension bolts	LTEN				
Incorrect tension	CORT				
Other	OTHR				
None	NONE				

3.24.6 General Notes

- (i) Whilst undertaking the specialist inspection activity FN, the Company shall reset the tension of all loose bolts.

3.25 Fences, Walls, Screens and Environmental Barriers

- 3.25.1 All types of boundary fences and walls, anti-glare screen fences, noise barriers, etc. are included under paragraph 3.24 of this Appendix (Road Restraint Systems, Fencing and Other Barriers).

3.26 Road Studs

- 3.26.1 The following inspection codes relate to this activity:

General	RS
Conspicuity	RS (Specialist)

- 3.26.2 The following inventory items are applicable to this inspection activity:

Road stud	RS
-----------	----

3.26.3 Definition

This section relates to reflective and non-reflective road studs of all types and colours including depressible road studs

3.26.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Loose "catseye" casing	LCAS	Number		1	50
Loose "catseye" rubber	LCAR	Number		1	50
Loose studs	LSTD	Number		1	50

Initiate conspicuity test – “catseye”	REFC				
Initiate conspicuity test – stud	REFS				
Damages “catseye”	DAMC	Number		1	50
Damaged stud	DAMS	Number		1	50
Missing “catseye”	MISC	Number		1	50
Missing stud	MISS	Number		1	50
Perished rubber	PRUB	Number		1	50
Missing reflector	MISR	Number		1	50
Other	OTHR				
None	NONE				

3.26.5 Specialist Defects

Description	Code	Attribute	Units	Min	Max
Conspicuity “catseye” test failure	REFF	Number		0	50
Conspicuity stud test failure	REFT	Number		0	50
Other	OTHR				
None	NONE				

3.26.6 Notes on Defects

- (i) REFC and REFS - Measurement of road stud conspicuity shall not normally be carried out at the time of normal inspections. This code shall be used to indicate the need for a specialist inspection.

3.26.7 General Notes

- (i) The Company shall immediately remove displaced road studs lying on the carriageway, hard shoulder or in lay-bys.
- (ii) The Company shall immediately remove loose road studs.
- (iii) All depressible road studs shall be considered as “cats eyes” for inspection purposes.

3.27 The following inspection codes relate to this activity:

Road Markings: RM[PX, RM, RF, LH, LL]
 Road Markings: (skid resistance) SR(Specialist)
 Road Markings: (reflectivity) RR(Specialist)

3.27.1 The following inventory items are applicable to this inspection activity:

Pedestrian Crossing PX
 Reference Marker Point RF
 Transverse and Special RM
 Hatched Road Markings LH
 Road Markings

Longitudinal Road Markings

LL

3.27.2 Definition

This section relates to all road markings in thermoplastic materials.

3.27.3 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Wear (e.g. erosion)	WEAR	Length	metres	1	999
		% remaining	Per cent	1	100
Spread	SPRD	Length	metres	1	30
		% of original	Per cent	1	100
Colour	COLR	Length	metres	1	100
		Percentage	Per cent	1	100
Initiate skid test	SKID	Length	metres	1	30
Initiate retro-reflectivity measurement	RETR	Length	metres	1	100
Missing node marker	MIRF				
Other	OTHR				
None	NONE				

3.27.4 Specialist Defects

Description	Code	Attribute	Units	Min	Max
Skid resistance test failure	SKIT	Length	metres	1	30
		SRV		0	99
Retro-reflectivity test failure	RETT	Length	metres	0	30
Other	OTHR				
None	NONE				

3.27.5 Notes on Defects

- (i) WEAR - The Company shall take action when % remaining shall be less than 70%.
- (ii) SP - The Company shall take action when spread exceeds +10% of original dimension.
- (iii) COLR - Thermoplastic markings shall have a luminance factor greater than 45%.
- (iv) SKID - Measurement of skid resistance shall not normally be carried out at the time of an inspection. This code shall be used to initiate a

test.

(v) RETR - Measurements of retro-reflectivity shall not normally be carried out during normal inspections. This code shall be used to indicate the need for specialist inspection.

(vi) SKIT - Skidding resistance measurements.

3.27.6 General Notes

(i) The appropriate values of wear, spread, colour and retro-reflectivity can be estimated by visual inspection or measured.

3.28 Road Traffic Signs

3.28.1 The following inspection codes relate to this activity:

Face/structure/fixings	SG	[SG]
Lamp Failures	SV (Specialist)	[SG]
Visibility Inspection	SS (Specialist)	[SG]
Moving Parts	SM (Specialist)	[SG]
Electrical	Se (Specialist)	[SB,SG]

3.28.2 The following inventory items are applicable to this inspection activity:

Reference Marker Point	RF
Sign	SG
Safety Bollard	SB

3.28.3 Definition

This section relates to all road traffic signs including permanent bollards

3.28.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Initiate target distance measurement	TRGD				
Initiate legibility distance measurement	LEGD				
Initiate surface luminance check	SFLM				
Initiate surface colour check	SFCL				
Physical condition of fittings	COFT				
Physical condition of frame	COFR				
Physical condition of post	COPT				
Lamp on during day	LPON				
Lamp failure	LAMP				
Moving part malfunction Refers to moving parts of secret and variable message signs	MOVP				
Electrical condition	COEL				
Exposed wiring	EXPW				

Description	Code	Attribute	Units	Min	Max
Surface corrosion	SFCO				
Accident damage	ACCD				
Loss of surface /paint covering	LOPT				
Obscured sign	OBSG				
Dirty sign	DIRT				
Missing	MISS				
Damaged Damage other than accident damage	DAMG				
Pointing wrong way	RWAY				
Other	OTHR				
None	NONE				

3.28.5 Specialist Defects

Description	Code	Attribute	Units	Min	Max
Target distance test failure	TRGT	Length	metres	0	200
Legibility distance test failure	LEGF	Length	metres	0	200
Surface luminance test failure Inadequate retro-reflectivity	SFLN				
Surface colour test failure	SFCT				
Lamp failure	LAMP				
Moving part malfunction Refers to moving parts of secret and variable message signs.	MOVP				
PECU failure	PECU				
Timeswitch failure	TMSW				
No electricity supply	NOSP				
No fuse	FUSE				
Electrical condition	COEL				
Exposed wiring	EXPW				
Other	OTHR				
None	NONE				

3.28.6 General Notes

- (i) Measurements of target distance (TRGT), legibility distance (LEGD), surface luminance (SFLM and surface colour (SFCL) shall not normally be made at the time of inspection. These codes shall therefore only be used to initiate these tests.

- (ii) The Company shall treat missing cylinders from emergency crossings as Category 1 Defects.
- (iii) The Company shall pay particular attention to damaged, defective, displaced or missing traffic signs, as, depending on the sign category and nature of the defect, these defects may constitute an immediate hazard.
- (iv) The Company shall pay particular attention to dirty or obscured traffic signs which constitute an immediate hazard and shall be treated as Category 1 Defects.

3.29 Road Traffic Signals

3.29.1 The following inspection codes relate to this activity:

Hardware	TS [DL,TS]
TSC and AUX equipment	TA (Specialist)[CC,TS]
Electro-Mechanical Parts	TM (Specialist)[TS]
Electrical	TE(Specialist)[CC,DL,TS]

3.29.2 The following inventory items are applicable to this inspection activity:

Communication Cabinet	CC
Traffic signal	TS
Detector Loop	DL

3.29.3 Definition

This section relates to the routine maintenance of permanent traffic signals at junctions or outside emergency vehicle stations and at controlled pedestrian crossings.

3.29.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Equipment wiring and earth condition	EQWE				
Equipment cabinet condition	EQCB				
Condition of base seals	CBSL				
Presence of gas	PGAS				
Hardware physical conditions	HPCD				
Condition of buttons / detectors	CBDT				
Condition of regulatory signs / illumination Condition of regulatory signs associated with traffic signals and the condition of their illumination	CRSI				
Condition of pole wiring / earth	CPWE				
Alignment or obscuration Alignment, cleanliness and visibility of signal heads	ALOB				
Condition of loop / feeder	CLOF				
Audible circuit failure	AUDC				
Damaged	DAMG				
Signals stuck	STUK				

Description	Code	Attribute	Units	Min	Max
Lamp failure	LAMP				
Counter / loop damaged	CDAM				
Condition poles / caps / heads / boards	PLCD				
No data sheets	NDTA				
Difficult access to cabinet	ACES				
Faulty mast arm assembly	MAST				
Other	OTHR				
None	NONE				

3.29.5 Specialist Defects

Description	Code	Attribute	Units	Min	Max
Equipment wiring and earth condition	EQWE				
Condition of pole wiring / earth	CPWE				
No fuse	FUSE				
Audible circuit failure	AUDC				
No electricity supply	NOSP				
Controller failure	NOOP				
Speed assessment equipment failure	SPED				
Dimming unit failure	LDIM				
Phase times incorrect	TIME				
Red lamp monitor circuit failure	RLMC				
Link failure	LINK				
WAIT lamp failure	WAIT				
Push button failure	PUSH				
Other	OTHR				
None	NONE				

3.29.6 General Notes

- (i) The Company shall pay particular attention to damaged, defective, displaced or missing traffic signals, which will constitute a Category 1 Defect.
- (ii) The Company shall treat dirty or obscured signals as a Category 1 Defect.

3.30 Road Lighting

3.30.1 The following inspection codes relate to this activity:

Columns	LP
Lamp Failures	SL
Electrical	LE (Specialist)

3.30.2 The following inventory item shall be applicable to this inspection activity:

Lighting Point LP

3.30.3 Definition

This section relates to the routine maintenance of road lighting installations

3.30.4 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Lighting failure	LAMP				
Photo-electric circuit failure	PECU				
Lamp on during the day	LPON				
Time switch failure	TMSW				
Electrical condition	ELCN				
Wiring deterioration	WDET				
Exposed wiring	EXPW				
Corrosion of columns	CCOR				
Need for tree pruning	NTPR				
Missing (door / lamp / bowl)	MISP	Number		1	50
Damage post / column Damage to post or column other than accident damage	DAMG				
Loss of surface paint / coating	LOPT				
Obscured lamp	OBLP				
Accident damage	ACCD				
Physical condition of fittings	COFT				
No electrical supply	NOSP				
Other	OTHR				
None	NONE				

3.30.5 Specialist Defects

Description	Code	Attribute	Units	Min	Max
Lighting failure	LAMP				
PECU failure Photo-electric circuit failure	PECU				
Time switch failure	TMSW				
Wiring deterioration	WDET				
No electrical supply	NOSP				
No fuse	FUSE				

Other	OTHR				
None	NONE				

3.30.6 General Notes

- (i) The Company shall pay particular attention to damaged or defective lighting equipment which shall often constitute a Category 1 Defect.

3.31 Weather Stations

3.31.1 The following inspection codes relate to this activity:

Cabinets, Poles etc.	IC
Electronic equipment	IE (Specialist)

3.31.2 The following inventory item shall be applicable to this inspection activity:

Weather Stations:	IS
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3.31.3 Non-Specialist Defects

Description	Code	Attribute	Units	Min	Max
Road sensor failure	ROSE				
Other sensor failure	OTSE				
Damage to cabinets	DAMG				
Other	OTHR				
None	NONE				

3.31.4 Specialist Defects

Description	Code	Attribute	Units	Min	Max
Road sensor failure	ROSE				
Other sensor failure	OTSE				
Processor failure	PROC				
Other	OTHR				
None	NONE				

3.31.5 General Notes

- (i) The Company shall recalibrate the weather station equipment using specialist sub-contractors during the months of September and January each year.

4 Notes for Guidance

4.1 Category 1 Defects

4.1.1 The following defects are examples of the type which shall be reported if they represent an immediate or imminent hazard and constitute a Category 1 Defect. The list shall not be regarded as exhaustive:

- (i) potholes and other local defects in the carriageway, including defective ironware, abrupt level differences and edge deterioration;
- (ii) excessive standing water and water discharging on to and/or flowing across the road;
- (iii) damaged safety fences, parapet fencing and other barriers;
- (iv) debris and spillage in traffic Lanes or on hardshoulders;
- (v) kerbing, edging and channel defects;
- (vi) damaged lighting columns and other street furniture;
- (vii) damaged, defective, displaced or missing traffic signs or signals;
- (viii) dirty or otherwise obscured traffic signs and signals;
- (ix) trees, shrubs, grassed areas and hedges which by virtue of their position in visibility splays and other locations or their condition constitute a hazard to road Users;
- (x) defective, missing, loose or displaced road studs (particularly the "Cats eye" type) lying in the carriageway, hardshoulder or lay-bys;
- (xi) faults in Structures e.g. impact damage to superstructures, supports or parapets, flood damage, insecure expansion joint parts;
- (xii) difference in level between abutting concrete slabs at transverse or longitudinal joints;
- (xiii) rocking gratings or covers in urban areas causing intrusive noise;
- (xiv) damaged boundary fences where animals or children could gain access;
- (xv) dead animals;
- (xvi) defective road and sign lighting;
- (xvii) overhead wires in a dangerous condition;
- (xviii) vandalism particularly if electrical consequences;
- (xix) blocked gully and piped grip gratings and obstructed channels, grips and slot drains;
- (xx) earthslips where debris has encroached or shall be likely to encroach on to the road;
- (xxi) rock or rock faces constituting a hazard to road Users;
- (xxii) TD26 of the DMRB Category 1 criteria for road markings;
- (xxiii) TD25 of the DMRB Category 1 criteria for traffic signs;
- (xxiv) TD24 of the DMRB Category 1 criteria for traffic signals;
- (xxv) TD23 of the DMRB Category 1 criteria for road lighting;

- (xxvi) failure of road sensors during the Winter Service Period;
- (xxvii) empty grit bins during the Winter Service Period; and
- (xxviii) any missing or damaged reference marker or network node marker used to reference and record Routine Maintenance and Quality System data.

APPENDIX B

WEATHER FORECAST AND ROAD CONDITION STATUS, REQUIREMENTS FOR DE-ICING MATERIAL SPREAD RATES

Table 1 – Decision Making Process for Winter Service:

Decision Matrix			
	Predicted Road Conditions		
Road Surface Temperature	Wet	Wet Patches	Dry
May fall below 1°C	Salt before frost	Salt before frost (See note A)	No action likely, monitor weather (See note A)
Expected to fall below 1°C		Salt before frost (see note B)	
	Salt after rain stops		
	Salt before frost and after rain stops (see note C)		
	Salt before frost	Monitor weather conditions	
Expected snow	Salt before snow		
Freezing Rain	Salt before rainfall (see note C)		
	Salt during rainfall (see note C)		
	Salt after rainfall (see note C)		
The decision to undertake precautionary treatments should, if appropriate, be adjusted to take account of residual salt or surface moisture.			

- A. Particular attention should be given to any possibility of water running across carriageways and such locations should be monitored and treated as required.
- B. When a weather warning contains reference to expected hoarfrost considerable deposits of frost are likely to occur and close monitoring will be required. Particular attention should be given to the timing of precautionary treatments due to the possibility that salt deposited on a dry road may be dispersed before it can become effective.
- C. Under these circumstances rain will freeze on contact with running surfaces and full pre-treatment should be provided even on dry roads. This shall be a most serious condition and should be monitored closely and continuously throughout the danger period.

Table 2 – Forecast Weather and Road Conditions Status Codes and Treatment Rates

Table 2 sets out the forecast weather and road condition status codes and treatment rates. Rate of spread for precautionary treatments may be adjusted to take account of residual salt or surface moisture unless stated otherwise.

A road shall be considered to be only damp when water shall be present that clearly darkens the road surface, but there shall be no spray or water flowing across the surface. A wet road shall be one where minimal spray shall be evident and there shall be no water flowing across the surface and no drops of water are formed by trafficking. A very wet road shall be one where trafficking causes drops of water to form in the air; higher spread rates are required for very wet roads or successive treatments are needed.

National research has shown that salt spreading equipment may be delivering more or less than the targeted salt spread rates within the traffic lanes. The research has also shown that residual salt levels reduce remarkably during the initial 12 hours after distribution regardless of whether dry, treated or pre-wetted salting techniques are employed. The loss can be as much as one and a half of the initial material spread during this period on a heavily trafficked road in dry conditions.

Protection shall be only achieved when salt shall be fully dissolved before forecast conditions occur and treatments should be timed to take account of this.

Spread rates for pre-wetted salt are the combined weight of dry rock salt and brine combined at 70:30 proportion by weight respectively with a maximum brine concentration of 23 percent salt.

Treatments should be carried out, wherever possible after traffic has dispersed standing water. The rates in the table below are for precautionary salt treatment prior to snowfall which shall be essential to form a de-bonding layer and snow clearance.

Operational experience has indicated that thin surfacing courses do not benefit from an increase in dosage above that required for hot rolled asphalt but that the effect of residual salt on the carriageway shall be reduced particularly in areas of low traffic, and as such treatment can be applied more frequently. Treatment of thin surface courses should be treated with caution: residual salt should not be relied upon to provide protection: and if there shall be any hint of moisture being present a pessimistic view of the forecast shall be taken.

Table 2 – Treatment Matrix

Treatment Matrix Spread rates for precautionary treatments		
Forecast weather condition	Frost Susceptible/surface water run-off area (grammes/square metre)	Road Surface Wet (grammes/square metre)
A. RST higher than plus 1°C	0	0
B. RST lower than or equal to plus 1°C but higher than minus 2°C	10 to 20	10 to 20
C. RST lower than or equal to minus 2°C but higher than minus 5°C	10 to 20	10 to 20
D. RST lower than or equal to minus 5°C	20	20
E. RST lower than or equal to plus 1°C but higher than minus 2°C following rain	20	30
F. RST lower than or equal to minus 2°C but higher than minus 5°C following rain	30	40
G. RST lower than or equal to minus 5°C following rain	40	40
H. Hoar Frost	20	20
I. Freezing Fog	10	20
J. Freezing Rain	40 <i>(See decision matrix)</i>	40 <i>(See decision matrix)</i>
K. Snow Accumulations up to 30mm	30	40
L. Snow Accumulations over 30mm	40	40
M. Hard Packed Snow/Ice	<i>See clearance matrix</i>	<i>See clearance matrix</i>

Table 3 –Precautionary Treatment Potassium Acetate or other approved de-icing agent Spreading Rates

CONDITIONS FORECAST	SPREAD RATE (litres/square metre)
Road surface temperature lower than or equal to plus 1°C but higher than minus 2°C	0.0156
Road surface temperature lower than or equal to minus 2°C but higher than minus 5°C	0.0312
Frost and road surface temperature lower than -5°C	a minimum of 0.0312 which should be increased with manufacturer's recommendations
Snow	
Freezing conditions after rain	

Table 4 – Snow or Ice Clearance Salt Spreading Rates

Clearance Matrix			
Minimum Salt Spread rates for Snow or Ice Clearance			
Road Surface Condition	Treatment		
	Spreading (grammes/square metre) Salt	Ploughing	Blowing
Ice Formed	20 to 40	No	No
Snow covering of less than 30mm	20	Yes	No
Snow covering exceeds 30mm	20 to 40	Yes	No
Snow accumulations due to prolonged snowfall	20 to 40	Yes (continuous)	Where applicable
Hard packed snow/ice less than 20mm thick	20 to 40 (successive treatments)	No	No
Hard packed snow/ice	salt/abrasive (successive)	No	No

APPENDIX C

WINTER SERVICE PLAN

APPENDIX C**Winter Service Plan**

[Note to Participants: To be inserted prior to contract signature, including the appendices described at Appendix D.]

Winter Service Plan Specification

The Company shall provide an annual Winter Service Plan that includes as a minimum the requirements of the contents specified below in this Appendix C and in Appendix D. Reference shall be made to all points listed below, any items not relevant to the O&M Works or O&M Works Site shall be marked "not applicable" and any additional requirements and other relevant information should be added.

WINTER SERVICE PLAN SPECIFICATION

AWPR/B-T Project DBFO Contract

WINTER SERVICE PLAN NUMBER ...«Date»/«Date»

FOR COMPANY USE

Details of Document Control

Issue/Amendment

Date

Pages

Originator

Approved

Controlled copy no.

FOR THE CONTRACTING AUTHORITY USE

Draft document submitted to the Contracting Authority ___ Signed:

Comments to Company from the Contracting Authority ___ Signed:

Final Document submitted to the Contracting Authority ___ Signed

Strategy Consented to by the Contracting Authority ___ Signed

AWPR/B-T Project DBFO Contract

WINTER SERVICE PLAN NUMBER «Date»/«Date»

1. Introduction and Policy

- 1.1. Refer to Part 2 of these O&M Works Requirements and Series 2800 to the Specification.
- 1.2. Include any procedures specific to the O&M Works Site consented to in writing by the Contracting Authority.

2. Management Arrangements

- 2.1. Winter Service Manager (the Operational Manager)
 - 2.1.1. Name
 - 2.1.2. Qualifications
 - 2.1.3. Experience
 - 2.1.4. Responsibilities
- 2.2. Winter Service Duty Officers
 - 2.2.1. Names
 - 2.2.2. Qualifications
 - 2.2.3. Experience
 - 2.2.4. Responsibilities
- 2.3. Monitoring Arrangements
 - 2.3.1. Monitoring arrangements during normal working hours
 - 2.3.2. Monitoring arrangements outwith normal working hours
- 2.4. Personnel Resources
 - 2.4.1. Names of staff and labour resources
 - 2.4.2. Availability rosters including names, addresses and telephone numbers of the staff listed.
- 2.5. Call out arrangements
 - 2.5.1. Call out arrangements during normal working hours
 - 2.5.2. Call out arrangements outwith normal working hours
 - 2.5.3. Contact arrangements during normal working hours

-
- 2.5.4. Contact arrangements outwith normal working hours
 - 2.5.5. Mobilisation times
 - 2.6. Communications equipment
 - 2.7. Training for Managers and Other Staff
 - 2.7.1. Details of previous training
 - 2.7.2. Details of proposed training
- 3. Weather Forecasting**
- 3.1. Purpose
 - 3.2. Methodology
 - 3.3. Weather forecasting service
 - 3.3.1. Climatic domains
 - 3.3.2. Weather radar
 - 3.3.3. weather stations and weather forecast sites
 - 3.3.4. Thermal mapping
 - 3.3.5. Location plans
 - 3.4. Computer Systems
- 4. Monitoring Arrangements for Areas Requiring Special Attention**
- 5. Decision Making**
- 5.1. Role of the Winter Service Manager
 - 5.2. Role of the Winter Service Duty Officer
 - 5.2.1. Weather Service patrol mobilisation.
 - 5.2.2. Proposals for precautionary and additional de-icing treatments when low confidence forecasts shall be issued for variable road and weather conditions
 - 5.2.3. Proposals for monitoring the effectiveness of de-icing materials
 - 5.2.4. Road closure and snow gate operational procedures
 - 5.2.5. Activation of snow and ice and hidden message signs
- 6. Liaison**
- 6.1. Liaison with
 - 6.1.1. the Contracting Authority;
 - 6.1.2. the Police;
 - 6.1.3. the Traffic Scotland Service Provider;
 - 6.1.4. adjacent road and highway authorities;
-

- 6.1.5. adjacent North East Management Unit; and
- 6.1.6. Network Rail.

7. Mutual Aid Arrangements

- 7.1. Mutual Aid
- 7.2. A statement explaining what Mutual Aid arrangements are in place, including contact details.

8. Winter Service patrols

- 8.1. Winter Service Plant and Reporting
 - 8.1.1. Winter Service Plant provided by the Company for the Winter Service patrols shall be referred to in Annex WSP 5 to Appendix D.
 - 8.1.2. A Winter Service patrol report shall be provided by the Company.

9. Precautionary Treatment Routes

- 9.1. Precautionary Treatment Routes
 - 9.1.1. The Company shall provide in Annex WSP 2 to Appendix D information therein required including the following information:
 - (i) precautionary treatment routes, including sections shared with Scottish Minister's Trunk Road North East Management Unit and other adjacent road authorities;
 - (ii) contingency plans for alternative access to precautionary treatment routes where normal access shall be prevented due to weather related or other incidents; and
 - (iii) locations of de-icing material loading and mixing points.
 - 9.1.2. The Company shall provide in Annex WSP 2 to Appendix D details of cycling facilities in urban areas.

10. Snow and Ice Clearance

- 10.1. Snow Clearing
 - 10.1.1. Description of arrangements including ploughing plans) and resources for managing snowfall. This plan shall demonstrate that all available ploughing plant shall be fully utilised to ensure that all carriageways are maintained free from snow or ice.
 - 10.1.2. Road closure procedure including use of snow gates
 - 10.1.3. Prolonged snowfall strategy, including use of additional Winter Service Plant and operative resources.
 - 10.1.4. Arrangements for safe clearance of snow and ice from wide single carriageways.
 - 10.1.5. Arrangements for safe clearance of snow or ice adjacent to vertical concrete barriers.

- 10.1.6. Treatment strategy for footways, footpaths and cycle facilities to be detailed including location of salt bins where applicable.
- 10.1.7. Plans showing the location of the footways footbridges and cycle facilities in usage / location categories.

11. De-icing Materials

11.1. Details

- 11.1.1. For each type of de-icing material provide details of:
 - (i) detailed specification of material;
 - (ii) storage conditions, system types and capacities;
 - (iii) details of testing methods, including their type and frequency;
 - (iv) state suppliers, including any secondary suppliers;
 - (v) state any importers used to meet supply demands;
 - (vi) stock levels (total and split by location); and
 - (vii) details of re-stocking, including procurement mechanism and details of stock level monitoring.
- 11.1.2. Details of de-icing materials stocks shall be provided by the Company in Annex WSP 3 to Appendix D and shall take account of the minimum stock levels to be maintained as referred to in Annex WSP 3 of Appendix D.

12. Strategic Salt Stocks

12.1. Details

- 12.2. Identification of suppliers including locations, initial delivery points and haulage arrangements.
- 12.3. Identification of Company storage facilities.
- 12.4. Identification of third parties, liaison arrangement, haulage, delivery and 24 hours access arrangements.

13. Winter Constructional Plant

13.1. Front Line winter Constructional Plant

- 13.1.1. Details of the Company's front line winter Constructional Plant permanently available within the O&M Works Site for the Winter Service for carriageways shall be as referred to in Annex WSP 5 of Appendix D.
- 13.1.2. Details of the Company's front line winter Constructional Plant permanently available within the O&M Works Site for the Winter Service for footways footbridges and cycling facilities shall be as referred to in Annex WSP 5 of Appendix D.

13.2. Reserve Winter Constructional Plant

- 13.2.1. Details of the reserve winter Constructional Plant shall be as referred to in Annex WSP 5 of Appendix D.

13.3. Additional Winter Constructional Plant

Details of the additional winter Constructional Plant shall be as referred to in Annex WSP 5 to Appendix D. Mobilisation arrangements for additional winter Constructional Plant available through contingency arrangements for the Winter Service for carriageways, footways, footbridges and cycling facilities.

13.4. Loading Winter Constructional Plant

13.4.1. Loading winter Constructional Plant available within the O&M Works Site for loading:

- (i) front line;
- (ii) reserve; and
- (iii) additional.

13.4.2. winter Constructional Plant shall be as referred to in Annex WSP 5 of Appendix D.

13.5. Calibration of Winter Constructional Plant

13.5.1. Calibration arrangements and procedures for front line and reserve winter Constructional Plant.

13.5.2. The Winter Service Plan shall describe how the requirements of paragraph 3.13.8 of this Part shall be met and where and how the calibration certificates shall be held.

14. Compounds, Depots and Facilities

14.1. A schedule of compounds, depots and facilities covering the network within the O&M Works Site shall be provided by the Company.

15. Maps Drawings and Graphical Information

15.1. Maps

15.1.1. The Winter Service Plan shall include scale maps showing:

- (i) precautionary treatment routes for carriageways, including on/off slips and depots;
- (ii) precautionary treatment routes for footways footbridges and cycling facilities;
- (iii) reactive treatment routes for footways, footbridges and cycling facilities,
- (iv) Winter Service patrol routes,
- (v) ploughing routes for carriageways, including on/off slips and depots,
- (vi) road sensors including sensor types and where these sites are equipped with weather cameras, (map to differentiate between single and bi-directional cameras),
- (vii) snow gates,
- (viii) snow fences,
- (ix) shelter belts,

- (x) snow poles,
- (xi) snow or ice and hidden message signs,
- (xii) salt bins,
- (xiii) vertical concrete barriers,
- (xiv) other facilities, and
- (xv) where route based forecasting shall be not used, climatic domains and the sensor used to generate domain forecasts.

16. Compiling and Maintaining Records

16.1. Snow poles

- (i) maintenance
- (ii) replacement of damaged or missing snow poles
- (iii) refurbishment and
- (iv) reserve stocks

16.2. Snow gates

- (i) maintenance
- (ii) operation and
- (iii) liaison

17. Variable Message Snow Ice and Hidden Message Signs

17.1. Operating and liaison procedures

18. Salt Bins and Self Help Salt Heaps

18.1. Stock level monitoring and replenishment procedures

19. Salt Measurement Apparatus

19.1. Details of equipment and locations and recording methods

APPENDIX D**WINTER SERVICE PLAN APPENDICES**

[Note to Participants: To be inserted at Appendix C with the substantive Winter Service Plan prior to contract signature.]

Winter Service Plan Appendices Specification

The Company shall include as a minimum, as part of the annual Winter Service Plan, the requirements of the contents specified below in this Appendix D, in conjunction with the requirements in Appendix C. The Winter Service Plan Appendices shall be incorporated into the O&M Works Quality Plan procedures and be deemed to form part of the O&M Manual. Reference shall be made to all points listed below, any items not relevant to the O&M Works or O&M Works Site shall be marked "not applicable" and additional requirements and other relevant information should be added.

WINTER SERVICE PLAN APPENDICES SPECIFICATION**ANNEX WSP 1: NOT USED****ANNEX WSP 2: PRECAUTIONARY SALTING ROUTES**

[A table of salting routes shall be inserted which shall contain the details described in Table 1]

Table 1

(1)	route Number	each route to be given a unique number referenced to the map
(2)	Depot	name of depot
(3)	Description	brief description of route covered
(4)	Depot to route (km)	distance from leaving depot to reaching salting route
(5)	Time to route (mins)	time from depot to route based on an average speed
(6)	De-icing Length (km)	distance salted on road
(7)	Average Speed (km/hr)	average speed when salting
(8)	route Time (mins)	(6) divided by (7) plus dead time for travelling without precautionary salting
(9)	route to Depot (km)	distance from completing route back to depot
(10)	Average width of route (m)	average width of the route to be salted over its whole length
(11)	route Tonnage at Z gm/sq m (tonne)	(6) times (10) times Z gm/sq m divided by 1000=tonnes
(12)	Treatment Type	Whether treatment of route shall be pre-wetted or non pre-wetted

Note – a route for each spread rate shown at (11) shall be produced.

ANNEX WSP 3: SALT STOCKS

Minimum Stock Levels shall be as Table 1 in this Annex WSP 3.

Table 1: Minimum Salt Stock Levels

O&M Works Site	
Minimum stock level between 1 st October and 15 th December (tonnes)	1500
Minimum stock level between 15 th December and 1 st March (tonnes)	2000

Minimum stock level at 1st March (tonnes)	1125
---	------

ANNEX WSP 4: NOT USED**ANNEX WSP 5: WINTER SERVICE CONSTRUCTIONAL PLANT**

Front line winter Constructional Plant permanently available and located in the O&M Works Site for the Winter Service for carriageways shall be as Table 1.

Table 1

Type of winter Constructional Plant and registration number	Depot Location	Vehicle Capacity	Number of Vehicles	Plant Use

Under plant use identify separately plant for:

1. precautionary treatment;
2. snow clearance up to 100 millimetres; and
3. arrangement to comply with Section 3 of this Part of these O&M Works Requirements.

Front line winter Constructional plant permanently available and located in the O&M Works Site for the Winter Service for non motorised user facilities shall be as Table 2.

Table 2

Type of winter Constructional Plant and registration number	Depot Location	Vehicle Capacity	Number of Vehicles	Plant Use

Under plant use, identify separately plant for:

1. precautionary treatment; and
2. snow clearance.

Reserve winter Constructional plant permanently available and located in the O&M Works Site for Winter Service for carriageways, non motorized user facilities and shall be as Table 3.

Table 3

Type of winter Constructional Plant and registration	Depot Location	Vehicle Capacity	Number of Vehicles	Plant Use

number				

Under plant use identify separately plant for:

1. carriageways; and
2. footways, footbridges, and cycle facilities.

Additional winter Constructional Plant shall be as Table 4. For plant provided through contingency arrangements with another party, the detail of the arrangement in respect of mobilisation shall be as Table 4.

Table 4

Type of winter Constructional Plant and registration number	Depot Location and Operator	Vehicle Capacity	Number of Vehicles	Provider name and mobilisation arrangement details where third party provider

Loading winter Constructional plant permanently available and located in the O&M Works Site at each loading point shall be as Table 5.

Table 5

Type of winter Constructional Plant and registration number	Depot Location and Operator	Vehicle Capacity	Number of Vehicles

ANNEX WSP 6: LOCATION OF EXISTING ROAD AND WEATHER STATIONS

[TO BE INSERTED]

APPENDIX E

NON MOTORISED USER FACILITIES]

APPENDIX E: NON MOTORISED USER FACILITIES

Non motorised user facilities that shall receive the Winter Service required in Section 3 of Part 2 of these O&M Works Requirements shall be as shown on the Reference Drawings within Schedule 2 to the Agreement.

APPENDIX F

Technical Approval Procedures for Assessment of Structures in Scotland

Timescale for the Technical Approval

The Company shall submit Approval in Principle (AIP) forms for Structures to the Contracting Authority for acceptance.

The Contracting Authority shall wherever possible not later than 4 weeks after receipt of the Company's submission:

- (i) accept the submission in writing;
- (ii) reject the submission in writing with reasons; or
- (iii) request the Company to supply further information.

If action (ii) shall be taken by the Contracting Authority the period of approval of 4 weeks shall recommence on receipt of the redrafted submission. If action (iii) shall be taken by the Contracting Authority a minimum period of approval of 1 week shall commence on receipt of the additional information.

Where the Contracting Authority shall be unable for any reason to meet this timescale they shall notify the Company in writing. The Company shall not be entitled to any additional reimbursement if the Contracting Authority shall be unable to meet the timescales referred to in this Appendix F.

Technical Approval Procedures for Assessment of Structures in Scotland

Assessor shall agree AIP with the TAA. This shall embrace all relevant documents from the TAS including the DMRB, and may include Departures from standards or aspects not covered by standards.

Assessment and checking shall be carried out and the TAA shall be consulted on those aspects of the assessment which do not comply with the AIP. If further amendments to the AIP are required, either by the assessor or the checker, these shall be approved by the TAA and an addendum to the AIP submitted.

Assessor shall give recommendations on and agree with the TAA any substandard features identified by the assessment which are not to be upgraded. Any interim measures shall also be agreed at this stage.

Assessment report submitted to the TAA with list of all substandard features identifying those which are not to be upgraded and giving recommendations for any special inspection or studies needed prior to the Design of strengthening and/or improvement Operations.

Assessor shall submit assessment and check

DEFINITION

Assessment includes:

1. Load carrying capacity of deck and substructure
2. Parapets
3. Pier impact resistance
4. Road restraint systems
5. Visibility
6. Vertical and horizontal clearances
7. Central reserve, carriageway, footway, and verge provision
8. Scour risk
9. All other aspects relative to the AIP

ABBREVIATIONS

TAA = Technical Approval
Authority

TAS = Technical Approval
Schedule

AIP = Approval in Principle

OD = Overseeing

Technical Approval Procedures for Assessment of Structures in Scotland

Certificates on which shall be recorded all agreed departures from standards.

Department

TAA/OD accepts assessment and check Certificates endorsing all departures from standards or aspects not covered by standards.

END OF ASSESSMENT

NOTE - For strengthening and/or improvement works technical approval procedures shall be as for new Structures.

APPENDIX G

Mobile Lane Closure Risk Assessment Checklist

1 Mobile Lane Closures

- 1.1. When assessing the possible use of a mobile Lane closure, the first consideration should be the possibility of using other methods of executing O&M Works which shall minimise the risks inherent in this type of closure to those involved. In particular, there may be an opportunity to schedule the O&M Works as part of other planned operations involving complete or partial road closure.
- 1.2. The Company shall undertake risk assessments under Regulation 3 of the Management of Health and Safety at Work Regulations 1999 (MHSWR), which cover the principal tasks to be undertaken.
- 1.3. An advantage of mobile Lane closures shall be that they do not require operators to encroach onto the live carriageway for either setting up or dismantling. This avoids exposing them to risk from traffic and the manual handling of cones and signs. It also permits the quick removal of the closure, should circumstances change. Mobile Lane closures should only be carried out on roads which have a good alignment, good visibility and during low traffic flow.
- 1.4. The attached check lists are designed to assist the company in the assessment of risk involved before deciding whether to use the mobile Lane closure appropriate. The check lists highlight the main points to be considered. However, each mobile Lane closure shall be assessed on its own merit.
- 1.5. The assessment should determine whether to:
 - 1.5.1. Proceed with the mobile Lane closure as proposed;
 - 1.5.2. Proceed with the mobile Lane closure but include additional measures;
 - 1.5.3. Proceed with the mobile Lane closure but at a different time or day shall be that proposed; or
 - 1.5.4. Carry out the O&M Works using a static Type A or Type B closure as defined in Chapter 8 of the Traffic signs Manual.
- 1.6. Before proceeding to the checklists the following shall be considered:
 - 1.6.1. Mobile Lane closures are not likely to be appropriate:
 - (i) When traffic flows are expected to be high;
 - (ii) When there shall be poor visibility;
 - (iii) There shall be no hard shoulder and no suitable places on the verge for advance signing within 1km of the O&M Works; or
 - (iv) At night when there shall be no hard shoulder.
 - 1.6.2. Types of continuously mobile O&M Works which may be suited to mobile Lane closures shall include:
 - (i) White lining;
 - (ii) Erecting signs for static closures, especially on the central reserve;
 - (iii) Weed spraying (particularly on central reserve);
 - (iv) Overband joint sealing;
 - (v) Longitudinal work on the hard shoulder or central reserve;
 - (vi) Road lighting maintenance;
 - (vii) Gully emptying;

- (viii) Replacement of inserts in depressible road studs and non-depressible road studs;
- (ix) Deflectograph surveying; and
- (x) Some O&M Works condition surveys, concrete carriageway inspections and work associated with RMMF.

Checklist : Advance Planning for a Mobile Lane Closure

In column P "X" denotes 'do not proceed with mobile Lane closure if answer shall be no'

"G" denotes 'refer to general guidance information before deciding to proceed'

See 'General Guidance Information for Advance Planning Checklist' after the checklist.

Number	Question	Yes	No	Comments	P
1	Are the O&M Works suitable for mobile Lane closure?				X
2	Are traffic flows likely to be below specified levels?				X
3	Can normal (15-20%) heavy goods vehicle flows to be expected?				G
4	Are stopping sight distances adequate?				X
5	Will you be prepared to abort the work during poor visibility?				G
6	Will the O&M Works avoid introducing a nearside Lane closure on a left hand bend?				G
7	Is there a hard shoulder?				G
8	Is the hard shoulder continuous?				G
9	If no hard shoulder, can advance sign vehicles/trailers be located on verge or close to n/s of carriageway without blocking the nearside Lane?				X

Number	Question	Yes	No	Comments	P
10	If no hard shoulder, are suitable places on the verge available to site warning vehicles within 1km before the O&M Works Operation.				X
11	Will the sun be well above the horizon throughout?				X
12	Will the O&M Works be done so as to avoid dawn / dusk?				X
13	Will the mobile Lane closure allow more than one Lane to remain open?				G
14	Will the O&M Works avoid the need for a nearside Lane closure?				G
15	Can the O&M Works avoid being slow moving?				G
16	Will traffic flows be monitored regularly throughout by the team lead / supervisor?				G
17	Are uphill gradients less than 4%?				G

Number	Question	Yes	No	Comments	Number
18	Are downhill gradients less than 4%?				G
19	Is the length of the O&M Works Site free of junctions?				G
20	Are the O&M Works to be carried out over a long distance?				G
21	Can all the O&M Works be done from vehicles?				G
22	Are variable message signs available and able to be used?				G
23	For a 3 Lane carriageway involving a 2 Lane closure can Lanes 2 and 3 be closed to avoid slow moving traffic changing Lanes?				G
24	Will the O&M Works not take place (or be suspended) if there shall be a risk of vehicles skidding?				G
25	Has there been consultation with the police?				G
28	At night if hard shoulder shall be less than 3.3m wide, has this been considered in planning / accepting the O&M Works?				G

Number	Question	Yes	No	Comments	P
29	If verge marker posts have not been provided, has consideration been given to how vehicles will maintain positions?				G
30	Will the O&M Works last less than the time required to set up and dismantle the necessary advance signs and taper required for the static closure(s) that would otherwise be required to complete O&M works?				G
31	Are there any other special conditions applying to these O&M Works?				G

General Guidance Information for Advance Planning Checklist

1. A non-exhaustive list of types of O&M Works suited to mobile Lane closure and others which may be suited are given in the first section of this document.
2. The mobile Lane closure should not be used if the total traffic volume levels are likely to exceed certain values. These traffic volume parameters are given in Chapter 8 of the Traffic Signs Manual. Before, and at 15 minute intervals during the operation of the mobile Lane closure technique, a 3 minute check count of traffic shall be required to ensure the specified flow limits are not exceeded. A standard record sheet which summaries the traffic volume parameters and may be used to record traffic flows should be used.
3. Should the traffic count data indicate heavy goods vehicle levels outside 15%-20% then reductions must be made to the traffic flow limits.
4. Ensure that stopping sight distances are considered. For example, on de-restricted dual carriageways this would be not less than 295 metres.
5. Conditions which reduce visibility or increase the risk of skidding will also increase the risk of accidents. O&M Works employing mobile Lane closures should only be carried out, therefore, in conditions of good visibility when spray from wet roads shall not seriously affect visibility and if the road or weather conditions do not significantly reduce the skidding resistance.
6. Particular care should be taken when operating a nearside Lane closure on a left hand bend. There shall be the possibility that approaching drivers may mistakenly interpret the position of the block vehicle as being on the hard shoulder or verge.

7. One of the most problematic applications of the mobile Lane closures involves O&M Works on roads without hard shoulders or when a carriageway has discontinuous hard shoulders.
8. Special care shall be required where there shall be no hard shoulder. The vehicle – or trailer – mounted advance signs may need to be located on the verge or close to the nearside of the carriageway so as not to block the nearside Lane. Where verges are restricted the use of lay-bys or field entrances may be considered.
9. Care should be taken to avoid operating the mobile Lane closure technique during periods of dusk and dawn when light levels are changing or when the sun shall be low on the horizon. Accident information has indicated that the closure of the nearside Lane using the mobile Lane closure technique can pose a greater risk than offside Lane closures. This may be due to the requirement for slower moving vehicles to change Lane. The Company should consider this in its risk assessment.
10. It shall be vital that indications of increases in flow are detected to allow the mobile Lane closure to be suspended or aborted if traffic levels become excessive. The person carrying the count out must be fully conversant with the implications of changes in the flow and be able to communicate these quickly to people on site. The closure should be taken off if either of the two following situations occur:
 - i) 2 successive counts give results above the levels for the O&M Works
 - ii) the count shows a rising trend with the last one above the limitDifficulties can occur at uphill sections because the manoeuvrability of slow moving vehicles, including heavy goods vehicles, shall be likely to be reduced. Downhill gradients can lead to problems because of the likelihood of vehicles, in particular heavy goods vehicles, travelling at excessive speed.
11. Certain O&M Works at particular junctions and interchanges may not be appropriate for the mobile Lane closure technique.
12. The relative risk of operating mobile against static O&M Works should be considered. The increased risk to operatives associated with the setting out and removal of long stretches of cones and the longer the Lane closure the greater the difficulty and time required to remove the closure should a queue develop should also be considered.
13. Special care shall be required when O&M Works require operatives to be on foot on the carriageway. If the mobile Lane closure technique shall be used in this situation, consideration shall be given to providing an additional block vehicle(s) to protect the working area.
14. Variable message signs, including central reserve matrix signals, may be beneficial in supplementing mobile Lane closure hard shoulder warning signs and their use should be considered. This shall be particularly so during slow moving or stationary operations.
15. To ensure efficient and effective co-ordination of Roadworks all O&M Works must be identified in the weekly Roadworks bulletins.
16. For O&M Works at night where hard shoulders are less than 3.3 metres wide, consideration must be given as to whether safety may be prejudiced by working on a narrow hard shoulder.

17. Where the O&M Works are programmed to occupy the carriageway for several hours and involve stationary or very slow moving vehicles a detailed comparison between the risks involved in utilising one or a series of static closures and those utilising mobile Lane closure's shall be carried out.
18. The Company shall consider if there are any special or unique features relating to the proposed mobile Lane closure.

Checklist : For Use At Time Of Mobile Lane Closure

Number	Question	Yes	No	Comments
1	Are all vehicle operators trained and fully competent in the mobile Lane closure technique?			
2	Will everyone working on the carriageway have high visibility clothing?			
3	Are all advance sign and block vehicles painted yellow and in clean condition?			
4	Are operational vehicles fitted with amber warning beacons?			
5	Are lorry mounted crash cushions fitted to block vehicles?			
6	Is the weight of the block vehicles (including ballast) in the range 7.3 to 17 tonnes?			
7	Are head restraints fitted to the drivers and other occupants seats in advance sign and block vehicles?			
8	If additional equipment/switches have been provided in the block vehicles cab has a safety survey been carried out?			
9	Has a reliable 2 way communications system been provided?			
10	Does the communications system include contractors' vehicles?			
11	Is it possible to use a dedicated radio channel?			
12	Has a contingency plan for failure of communications been made?			
13	Are all signs to appropriate standards?			
14	Will all signs on the carriageway be vehicle or trailer mounted and attended at all times?			
15	Can you confirm that signs will not be manually changed when the vehicle shall be standing in a live traffic Lane?			
16	Do the vehicles rear lights, reflectors and number plates remain clearly visible when the backing board for the sign shall be fitted?			
17	Can you confirm that signs can/will be covered or removed from view when not in use or normal driving of sign vehicle			

Number	Question	Yes	No	Comments
	has been resumed?			
18	Are working and block vehicle drivers aware of the min/max separation distances?			
19	Have additional block vehicles been provided where the O&M Works require them?			Refer to appropriate layout(s)
20	Are variable message signs available and able to be used?			
21	For a 3 Lane carriageway involving a 2 Lane closure can Lanes 2 and 3 be closed to avoid slow moving traffic changing Lanes?			
22	Where the working vehicle/personnel are operating on the hard shoulder, has a block vehicle with a lorry mounted crash cushions been provided and correctly positioned?			NB for this work if the O&M Works vehicle shall be substantial e.g. gully cleaner/ sweeper and shall be fitted with lorry mounted crash cushions, block vehicle may be dispensed with.
23	If no hard shoulder, can advance sign vehicles/trailers be located on verge or close to n/s of carriageway without blocking the n/s Lane?			
24	If no hard shoulder, are suitable places on the verge available to site warning vehicles within 1km before the O&M Works?			
25	For O&M Works on foot, can workers remain within the area on the non-trafficked side between the front of the leading vehicle and 10m in front of the second vehicle?			Refer to appropriate layout(s)
26	For O&M Works on foot on a central reserve to prevent traffic passing between the block vehicle and the central reserve safety fence, shall be an additional block vehicle required?			Refer to appropriate layout(s)
27	Will suitable high visibility clothing be provided and work?			
28	Can all advance sign display and covering for mobile Lane closure be carried out on the hard shoulder (if available)?			NB. The establishment or covering of vehicle mounted signs

Number	Question	Yes	No	Comments
				should never be undertaken on an on-slip or off-slip road.
29	Has a team leader(s) been appointed and made known to all driving including contractors?			
30	If circumstances require has an additional supervisor been provided and responsibilities clearly established?			
31	Has the need for a relief driver fully trained and capable of replacing any other driver been considered and provided if required?			
32	Can you confirm that all personnel have received adequate training?			
33	If heavy goods vehicle levels are 30% have vehicle flow levels been decreased by 10%?			See traffic count
34	For O&M Works at night where there shall be an occasional short discontinuity of the hard shoulder has the maximum traffic flow been reduced by 10%?			

APPENDIX H

Roadworks Information Forms A and B

Roadworks Information Form A

Weekly Programme of Intent and Notification of Carriageway Occupations

VMS YES NO

PROGRAMME PERIOD – WEEK COMMENCING : <i>Date</i>																		
LOCATION			ACTIVITY DETAILS							DAYS			DURATION		CARRIAGEWAY OCCUPATION DETAILS			
ROUTE Junction Number/name DIRECTION			Insert Activity Detail in Order of: LOCATION/DESCRIPTION/REASON DIVERSION												CLOSURE TYPE A,B OR C (SPEED LIMIT)	ESTIMATED DELAY*	CONING BY	MAIN CONTRAC- TOR
route	From	To	M	T	W	T	F	S	Su	Start	End							

* CODING FOR USE IN “ESTIMATED DELAY” DIRECTIONS

COLUMN

The first digit indicates the extent of the delay

- 1 LITTLE OR NO DELAY
- 2 SLIGHT DELAY
- 3 MODERATE DELAY
- 4 SERIOUS DELAYS

The second digit indicates the time the delay shall be expected

- 1 AT ALL TIMES
- 2 PEAK HOURS
- 3 OFF PEAK HOURS

- N/S: NEARSIDE
- O/S: OFFSIDE
- C/L: CENTRE LANE
- RL: ROUNDABOUT
- TL: TURNING LANE
- SL: SLIP LANE
- CF: CONTRAFLOW

- NB: NORTHBOUND
- SB: SOUTHBOUND
- EB: EASTBOUND
- WB: WESTBOUND

COMMENTS: THE ABOVE INFORMATION IS BASED ON PLANNED WORKS WHICH MAY HAVE TO BE CHANGED AT SHORT NOTICE AS CIRCUMSTANCES DICTATE, IT SHOULD NOT THEREFORE BE TAKEN AS NECESSARILY COMPREHENSIVE.
IN CASE OF QUERY CONTACT:
TELEPHONE:

- SCT: SINGLE CARRIAGEWAY TEMP LIGHTS
- SCM: SINGLE CARRIAGEWAY MOBILE LIGHTS

Roadworks Information Form B

Weekly Record Of Actual Carriageway Occupations Occurring In The O&M Works Site

VMS	YES	NO
-----	-----	----

			PROGRAMME PERIOD – W/B : <i>Date</i>															
LOCATION			ACTIVITY DETAILS							DAYS			DURATION		CARRIAGEWAY OCCUPATION DETAILS			
ROUTE			Insert Activity Detail in Order of: LOCATION/DESCRIPTION/REASON DIVERSION												CLOSURE	REPORTED	CONING	MAIN
Junction Number/name DIRECTION															TYPE	DELAY*	BY	CONTRA
route	From	To	M	T	W	T	F	S	Su	Start	End	(SPEED LIMIT)				C-TOR		

* CODING FOR USE IN "REPORTED DELAY" DIRECTIONS

COLUMN

- 1 LITTLE OR NO DELAY
- 2 SLIGHT DELAY
- 3 MODERATE DELAY
- 4 SERIOUS DELAYS

The second digit indicates the time the delay shall be expected

- 2 PEAK HOURS
- 3 OFF PEAK HOURS

- O/S: OFFSIDE
- C/L: CENTRE LANE
- RL: ROUNDABOUT
- TL: TURNING LANE
- SL: SLIP LANE

- NB: NORTHBOUND
- SB: SOUTHBOUND
- EB: EASTBOUND
- WB: WESTBOUND

Signed	NAME
Position	

- SCT: SINGLE CARRIAGEWAY TEMP LIGHTS
- SCM: SINGLE CARRIAGEWAY MOBILE LIGHTS

Appendix I

Traffic Scotland Maintained Equipment Planned Maintenance Guidelines

Traffic Scotland Maintained Equipment

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1 Introduction

- 1.1 This Appendix shall be considered as providing additional detail regarding standard aspects of work included in the planned maintenance guidelines.
- 1.2 The planned maintenance guidelines shall be read in conjunction with paragraphs 1 to 5 of these guidelines.

2 Carrying out the work including warnings and cautions

- 2.1 At Traffic Scotland Maintained Equipment sites, before carrying out any work in accordance with this Agreement, the Company shall:
 - 2.1.1 ensure all personnel involved are familiar with the site type, equipment installed, any modifications/change in configuration of equipment and the layout of mains power i.e. termination/ distribution pillars, mains isolators etc;
 - 2.1.2 confirm that appropriate traffic management measures and any special access has been arranged;
 - 2.1.3 ensure the location of the designated safe parking for the site shall be known;
 - 2.1.4 check for any special equipment or site specific health and safety precautions required including the possession of any required permit to work certificate has been obtained. Special attention should be given to the adequacy of precautions with regard to possible infections arising from the site conditions e.g. Weils disease;
 - 2.1.5 ensure any downtime has been agreed with the Traffic Scotland Manager and an any appropriate third parties;
 - 2.1.6 ensure all necessary personal protection equipment required shall be clean and functional;
 - 2.1.7 confirm that all required tools, access equipment, keys and fully functional test equipment shall be to hand;
 - 2.1.8 confirm that vehicle lighting and beacons are operational and that required coning, signing etc, shall be either included in vehicle or already installed at the site;
 - 2.1.9 ensure all personnel in attendance are fully aware of the consequential effects that could arise from mal-function of any equipment at the site;
 - 2.1.10 confirm all the appropriate Relevant Authority and organisations have been notified;
 - 2.1.11 ensure the personnel are aware of any hazards arising from poor or limited access; and
 - 2.1.12 confirm personnel are aware of the consequences of the failure to conform with all relevant environmental regulations.

3 Emergency Procedures

- 3.1 Where immediate danger exists, warning tape and notices shall be placed at the Traffic Scotland Maintained Equipment site. The Traffic Scotland Manager and the Police shall be informed at the earliest opportunity. These precautions shall remain in place until the site shall be declared safe by an appropriately qualified and competent person.

4 Standard Procedures

- 4.1 In the following, any reference to BS7671:1992 and the associated guidance notes shall be considered as referring to the current version of BS7671 and associated guidance notes.
- 4.2 Routine Electrical Checks
- 4.2.1 Routine electrical checks shall consist of work as detailed in BS 7671:1992 Guidance Note 3, Part 2, paragraph 2.1.4.
- 4.3 Periodic Electrical Inspection and Testing to BS7671:1992
- 4.3.1 To carry out periodic electrical inspection - see the associated notice affixed as required by BS7671:1992 Regulation 514-12-01. For a detailed description of the inspection and testing required reference shall be made to BS7671:1992 Section Guidance Note 3 Part 2:
- (i) Initial Electrical Installation Certificate (Forms F1-4);
 - (ii) any relevant Minor Electrical Installation Works Certificates describing modifications to the installation (Form F5);
 - (iii) chapters 73 and 74;
 - (iv) all associated Notes and Guidance Notes for Recipients in Appendix 6;
 - (v) any relevant Regulations contained in Section 611, Highway Power Supplies and Street Furniture, relating to the installation;
 - (vi) Complete Form F6, F3 and where required Form F4.
- 4.3.2 Note: Where equipment forming part of the installation, being inspected and tested, shall be connected to the mains supply by flexible cable and could be considered as portable or transportable, such equipment shall be tested, in conjunction with the periodic electrical inspection and testing, using the appropriate PAT Test Equipment. These and other parts of the installation to be included / excluded from the BS7671 testing shall be defined by the Company, and agreed with the Transport Scotland Network Operations Manager in the 'Extent and Limitations' section in accordance with BS7671 and Guidance Note 3.
- 4.4 Physical Inspection, assessment and general non-electrical maintenance
- 4.4.1 This shall include inspection, assessment and general maintenance of all locks, external surfaces, doors, hinges, fixings, seals, footing and general enclosure/structural aspects of cabinets, masts, poles, posts, gantries and other enclosure/support structures.
- 4.4.2 The inspection shall include:
- (i) a visual inspection shall be required for any evidence of the breakdown of the protective coating on external surfaces with particular attention to doors and door opening, hinges, locks, welds and corrosion particularly at, near or below ground level. Evidence of such a breakdown shall include discolouration, corrosion, surface flaking, surface blistering, cracking of surface coat, powdering, efflorescence etc. Such damage shall be notified to the Transport Scotland Network Operations Manager in writing within 7 days and remedial work shall be undertaken within 1 month of inspection. Any remedial work required shall be in accordance with this Agreement, the manufacturers' instructions and the O&M Works Quality Plan.

- (ii) a visual inspection shall be required for evidence of any loss of:
 - (a) mechanical or structural integrity including misalignment;
 - (b) mechanical damage or wear;
 - (c) looseness of fittings;
 - (d) deterioration of seals;
 - (e) corrosion;
 - (f) cracking of welds; and
 - (g) security of retaining bolts, glands, door mechanisms and structural support frames.
- (iii) Repairs, adjustments, re-riveting, structural replacement and re-welding shall be in accordance with the manufacturers' instructions. Unless such damage constitutes an immediate hazard or danger to the public or maintenance personnel it shall be notified to the Transport Scotland Network Operations Manager within 7 days and remedial work shall be undertaken within 1 month of inspection. For damage that requires immediate attention, temporary measures shall be implemented until final repairs can be carried out. All remedial work shall conform to the requirements of the O&M Works Quality Plan. Lubrication of hinges, fixings, locks, and other such threaded or moveable items shall be carried out, where appropriate at the time of inspection and otherwise as required.

5 General Notes on Work as Part of Planned Maintenance Guidelines

5.1 Good Working Practice

- 5.1.1 The Company shall at all times follow requirements of Clause 1503SR to Part 5 of these O&M Works Requirements.

5.2 Leaving a Traffic Scotland Maintained Equipment site safe

- 5.2.1 Maintenance procedures shall include detailed instructions with regard to leaving the work site safe in all aspects, which shall include, but shall not be limited to:
 - (i) all internal electrical barriers in place and locked;
 - (ii) all cabinets locked;
 - (iii) electrical supplies in correct and safe condition; and
 - (iv) site clear of trip hazards.
- 5.2.2 Before leaving the site, personnel shall also carry out any required final checks on any emergency systems that shall be left functional and ensure any driver information system shall be left in the correct mode agreed with personnel within the Traffic Scotland Service Provider.
- 5.2.3 The Company shall ensure that all tools and keys are accounted for and removed from the Traffic Scotland Maintained Equipment site and shall inspect the carriageway for debris and any significant road surface irregularities before removing any traffic management measures.

5.3 Maintenance management, completion of records of planned maintenance and asset management

- 5.3.1 The Company shall utilise FMS for recording and management of all maintenance works associated with Traffic Scotland Maintained Equipment.

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- 5.3.2 The Traffic Scotland Manager will provide the initial training to the Company's maintenance team dedicated to maintenance works for Traffic Scotland.
- 5.3.3 The Company shall develop and implement methods of recording the works that cannot be recorded and managed via FMS.
- 5.3.4 The Company shall consult and comply with the Traffic Scotland Manager for the management and maintenance works associated with Traffic Scotland Maintained Equipment.
- 5.3.5 The Company shall operate asset evaluation and management within FMS as follows:
- (i) the condition of the Traffic Scotland Maintained Equipment shall be assessed by trained staff and in accordance with the specific requirements of the system in use;
 - (ii) assessors shall always consider any access difficulties e.g. paving, slabbing / steps and the general conditions relating to the site on which the equipment shall be installed when making an evaluation;
 - (iii) the list of categories, classifications, types, variants etc. shall include all equipment that shall be assessed during the visit. All required equipment checklists shall be at hand prior to visiting the site; and
 - (iv) where bar-coding shall be included as part of the identifier for the equipment, collection onto a lap-top or similar shall be required using a bar-code reader.
- 5.4 Remedial Work
- 5.4.1 It shall be at the discretion of the Company and the Traffic Scotland Service Provider as to which items of remedial work, identified as being required during the planned maintenance visit, can be undertaken during the visit and which require a subsequent visit(s). The basic ground rules for carrying such work shall include:
- (i) the personnel undertaking the planned maintenance shall be fully trained to carry out the work, shall have with them all required tools, material, personal protective equipment, and shall be fully familiar with the procedures, processes and be competent in all aspects of the work which shall be undertaken; and
 - (ii) a written report, using the computer based maintenance management system, detailing all work carried out shall form part of the reporting procedure.

6 The Planned Maintenance GuidelinesEquipment Record Number: **ER1002**

Equipment Type: Equipment cabinet (with electrical equipment) in one of the following arrangements:

Configuration 1 - mains power distribution unit (PDU), heater, thermostat and cable terminations only;

Configuration 2 as Configuration 1 but containing Traffic Scotland Maintained Equipment.

Manufacturer: Various

Responsibilities: There are shared responsibilities with respect to this equipment, as outlined below:

The Company:

- (i) with the exception of any 'specialist equipment' within equipment cabinets, the Company has full responsibility with respect to the equipment cabinets, which includes the integrity of the cabinet itself and all equipment mounting infrastructure, power distribution unit, heaters, thermostat and all internal electrical circuits and electrical cabling to other equipment within the cabinet;
- (ii) responsible for the associated external cabling including cables/local ducting connected to other cabinets;
- (iii) soft and hard landscaping at the equipment site;
- (iv) infrastructure providing access at the equipment site;
- (v) the cabinet foundation and any infrastructure providing support to the cabinet;
- (vi) reporting faults for which the Traffic Scotland Service Provider shall be responsible.

The Traffic Scotland Service Provider:

- (i) responsible only for the electronic equipment contained i.e. 'Specialist Equipment' in those cabinets configured as in Configuration 2 above. All electrical equipment and associated cabling outwith and all cabling/ducting connecting to any other cabinets are the responsibility of the Company together with all Configuration 1 cabinets;
- (ii) reporting all faults for which the Company shall be responsible.

Task Number	Frequency (months)	Description	Responsibility

Task Number	Frequency (months)	Description	Responsibility
1	-	At each visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Company
2	-	At each visit to the equipment, report any fault found, physical or electrical, which could have an adverse effect on the safety of: <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; (iii) the driver information equipment itself or the surrounding infrastructure. 	Company
3	6	Inspect the external labels, including warning signs (DANGER 230V), and clean or replace if not readily operationally visible.	Company
4	6	Carry out the following on the overall enclosure externally and internally up to the final enclosures housing the electronic equipment: <ul style="list-style-type: none"> (i) clean and wash/wipe dirt/dust from equipment - ensure that any special manufacturers instructions relating to cleaning materials etc are followed, especially where plastic surfaces are involved; (ii) examine the operation of all locks and hinges and where required, lubricate. Repair or replace any faulty locks or hinges; (iii) check that bitumen seal in base shall be still intact; (iv) inspect door seals for waterproofing and repair or replace any that are faulty; (v) check the condition of the equipment earthing and bonding connections. Repair any that are faulty/loose; (vi) check cabling for satisfactory anchorage and external condition of insulation. Repair or replace any defective anchorages or lengths of cable; (vii) check structural condition 	Company

Task Number	Frequency (months)	Description	Responsibility
		and surface protective finish of cabinet. Record signs of damage/corrosion.	
5	6	Inspect the internal condition of the cabinet, up to the final enclosures housing the electronic equipment, to ensure that there shall be no obvious water, vegetation or vermin ingress. Also inspect for signs of current or indication of previous internal condensation. Report faults to the Traffic Scotland Service Provider then carry out repair.	Company
6	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment detailed in paragraph 6.1.2 and update the records accordingly as required in these O&M Works Requirements.	Company
7	-	Complete records for all above inspections and testing in the planned maintenance database. This database shall include details of revised asset evaluation and all faults reported including those passed to others.	Company
8	-	At each visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. All faults shall be reported to the Company who shall then carry out all repairs to make good.	Traffic Scotland Service Provider
9	-	At each visit to the equipment, report any fault found, physical or electrical, which could have an adverse effect on the safety of: <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure. 	Traffic Scotland Service Provider
10	6	Inspect the internal labels, including warning signs (DANGER 230V) and clean or replace if not readily operationally visible.	Traffic Scotland Service Provider
11	6	Carry out the following on and within the final enclosures housing the electronic equipment: <ul style="list-style-type: none"> (i) clean and wash/wipe dirt/dust from equipment – ensure that any special manufacturers instructions relating to cleaning materials etc are followed, especially where plastic surfaces are involved; 	Traffic Scotland Service Provider

Task Number	Frequency (months)	Description	Responsibility
		<p>(ii) examine the operation of all locks and hinges and where required lubricate using lithium based grease or similar. Repair or replace any faulty locks or hinges;</p> <p>(iii) inspect external door seals for waterproofing and repair or replace any that are faulty;</p> <p>(iv) check cabling for satisfactory anchorage and external condition of insulation replace any defective anchorages or lengths of cable; and</p> <p>(v) check the condition of the equipment earthing and bonding connections. Repair any that are faulty/loose.</p>	
12	6	Check the operation of cabinet heater and/or cooling equipment and adjust if required. Repair or replace any cabinet heater and/or cooling equipment that shall be not functioning.	Traffic Scotland Service Provider
13	3	Check miniature circuit breakers (MCBs) are labelled and set to correction position – as system requirements for that cabinet.	Traffic Scotland Service Provider
14	3	Carry out RCD test using the RCD integral TEST push button quarterly or as otherwise stated by the associated notice. See BS7671:1992 Regulation 514-12-02. Record the date and result of the test.	Traffic Scotland Service Provider
15	12	Carry out routine checks as BS7671:1992, Guidance Note 3 Table 2.1.4 and interim electrical inspection with no dismantling as Inspection Checklist Form F3 in BS7671:1992. Reference should still be made to BS7671:1992 Chapters 73 and 74 together with the appropriate paragraphs of BS7671:1992, Appendix 6.	Traffic Scotland Service Provider
16	60	Carry out the periodic electrical inspection and testing as per the latest version of the IEE Wiring Regulations.	Traffic Scotland Service Provider
17	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment detailed in paragraph 6.1.9 and update the records accordingly as required in these O&M Works Requirements.	Traffic Scotland Service Provider
18	-	Complete records for all above inspections and testing in the planned maintenance database.	Traffic Scotland Service

Task Number	Frequency (months)	Description	Responsibility
		This database shall include details of revised asset evaluation and all faults reported including those passed to others.	Provider

Equipment Record Number:	ER1007
Equipment Type:	Monitoring Loops
Manufacturer:	Various
Responsibilities:	<p>There are shared responsibilities with respect to this equipment, as outlined below:</p> <p>The Company:</p> <ul style="list-style-type: none">(i) soft and hard landscaping at equipment site;(ii) has full responsibility with respect to loops including loop tail to feeder cable joints and feeder cable/local ducts to termination point. Note: where loops are not connected to traffic detection equipment then no maintenance regime applies;(iii) full responsibility for small chamber (roadside chamber) which houses the loop tail to feeder cable joint;(iv) infrastructure providing access at equipment site;(v) road surface integrity;(vi) reporting any maintenance or resurfacing works to the Traffic Scotland Service Provider, i.e. when damage to the loop may occur; and(vii) reporting faults for which Traffic Scotland Service Provider shall be responsible. <p>The Traffic Scotland Service Provider:</p> <ul style="list-style-type: none">(i) reporting all faults for which the Company shall be responsible.
General Note:	<p>It is the policy of the Scottish Ministers to install monitoring loops at 500 metre centres in new motorway construction or resurfacing works. Where these monitoring loops are not connected to any other Traffic Scotland infrastructure no planned maintenance regime applies.</p>

Task Number	Frequency (months)	Description	Responsibility
1	6	Carry out visual inspection of loops in road surface, noting any loop damage to loop or road surface and report any defects.	Company
2	-	Undertake testing on replacement loops during/after installation in accordance with MCH1540 and the Specification and complete Commissioning Test Results Sheet as Table G5 of SHW.	Company
3	12	Undertake asset evaluation and update the records accordingly as required in these O&M Works Requirements.	Company

Equipment Record Number: **ER1010**

Equipment Type: Camera Mast

Manufacturer: Various

Responsibilities: There are shared responsibilities with respect to this equipment, as outlined below:

The Company:

- (i) soft and hard landscaping at equipment site;
- (ii) infrastructure providing access at equipment site;
- (iii) all foundation and structural aspects of the mast;
- (iv) the winch mechanism;
- (v) the security of the cradle and CCTV equipment mounted on it; and
- (vi) reporting faults for which the Traffic Scotland Service Provider shall be responsible.

The Traffic Scotland Service Provider:

- (i) reporting all faults for which the Company shall be responsible.

General Note: The Company shall ensure that its personnel have satisfactorily completed the “Specialist Training” essential for winch mechanism routine maintenance. The majority of cameras are mounted on camera masts with winch mechanisms and have pan and tilt units. In some instances, cameras are mounted on brackets. In some instances, they do not have pan and tilt units.

Task Number	Frequency (months)	Description	Responsibility
1	-	At each visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Company
2		At every visit to the equipment, report any fault found, physical or electrical, which could have an adverse effect on the safety of: <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding 	Company

Task Number	Frequency (months)	Description	Responsibility
		infrastructure.	
3	12	Visually inspect and base of mast externally for damage, corrosion, vegetation etc. Check identity label and warning 'flash' are in place and secure. Clean or replace if required. Ensure clearance from access paving/concrete shall be sufficient to open access doors. Inspect mast fixings to foundations for corrosion or damage. Repair where required.	Company
4	6	Carry out the following: <ul style="list-style-type: none"> (i) clean and wash/wipe dirt/dust from equipment – ensure that any special manufacturers instructions relating to cleaning materials etc are followed, especially where plastic surfaces are involved; (ii) examine the operation of all locks and hinges and where required lubricate. Repair or replace any faulty locks or hinges; (iii) inspect door seals for waterproofing and repair or replace any that are faulty; (iv) check the condition of the equipment earthing and bonding connections. Repair any that are faulty/loose; and (v) check cabling for satisfactory anchorage and external condition of insulation. Repair or replace any defective anchorages or lengths of cable. 	Company
5	12	Inspect the internal condition of the mast to ensure that there shall be no obvious water, vegetation or vermin ingress. Also inspect for signs of current or indication of previous internal condensation.	Company
6	12	Carry out visual inspection of incoming cables and that the duct ends are sealed with expanded foam. Check base chamber infill. Ensure earth-bonding terminals within mast base compartment are secure and free from corrosion.	Company
7	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment detailed in paragraph 6.1.2 and update the records accordingly as required in these O&M Works	Company

Task Number	Frequency (months)	Description	Responsibility
		Requirements.	
8	-	Complete records for all above inspections and testing in the planned maintenance database. This database shall include details of revised asset evaluation and all faults reported including those passed to others	Company
<u>Type 1: Philips Mast (winch mechanism - Fellows Stringer)</u>			
9	12	Check winch in accordance with maintenance instructions.	Company
10	12	Grease winch mechanism.	Company
11	48	Undertake drop test.	Company
<u>Type 2: Philips Mast (winch mechanism - Install and Elder)</u>			
12	12	Check winch in accordance with maintenance instructions.	Company
13	12	Grease winch mechanism.	Company
14	48	Undertake drop test.	Company
<u>Type 3: Concrete Utilities</u>			
15	12	Check winch in accordance with maintenance instructions.	Company
16	12	Grease winch mechanism.	Company
17	48	Undertake drop test.	Company
<u>Type 4: Hinged Mechanism</u>			
18	12	Check operation of hinged mechanism.	Company
19	12	Lubricate hinge mechanism.	Company
<u>Type 5: Fixed Mechanism</u>			
20	12	Check security of camera mounting.	Company

Equipment Record Number: **ER1011**

Equipment Type: Electrical Distribution Pillar

Manufacturer: Various

Responsibilities: The Company has full responsibility with respect to this equipment.

General Note: Cabinets covered include Lucy, Haldo, JLT, Lounsdale.

Task Number	Frequency (months)	Description	Responsibility
1	-	At each visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Company
2	-	At every visit to the equipment, report any fault found, physical or electrical, which could have an adverse effect on the safety of: <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure. 	Company
3	6	Inspect the external and internal labelling, including warning signs (DANGER 230V), and clean or replace if not readily operationally visible.	Company
4	6	Carry out the following: <ul style="list-style-type: none"> (i) clean and wash/wipe dirt/dust from equipment - ensure that any special manufacturers instructions relating to cleaning materials etc are followed, especially where plastic surfaces are involved; (ii) examine the operation of all locks and hinges and where required lubricate. Repair or replace any faulty locks or hinges; (iii) inspect door seals for waterproofing and repair or replace any that are faulty; (iv) check the condition of the equipment earthing and bonding connections. Repair any that are faulty/loose; 	Company

Task Number	Frequency (months)	Description	Responsibility
		<p>(v) check cabling for satisfactory anchorage and external condition of insulation. Repair or replace any defective anchorages or lengths of cable.</p> <p>(vi) check structural condition and surface protective finish of cabinet and make good where faulty.</p>	
5	6	Inspect the internal condition of the cabinet to ensure that there shall be no obvious water and vermin ingress. Also inspect for signs of current or indication of previous internal condensation. Report faults to the Traffic Scotland Service Provider and repair where required.	Company
6	3	Carry out RCD test using the RCD integral TEST push button quarterly or as otherwise stated by the associated notice. See BS7671:1992 Regulation 514-12-02. Record the date and result of the test.	Company
7	12	Carry out routine check as BS7671:1992, Guidance Note 3 Table 2.1.4 and interim electrical inspection with no dismantling as inspection checklist Form F3 BS7671:1992. Reference should still be made to BS7671:1992 Chapters 73 and 74 together with the appropriate paragraphs in BS7671:1992, Appendix 6.	Company
8	60	Carry out the periodic electrical inspection and testing to the latest version of the IEE Wiring Regulations.	Company
9	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment detailed in paragraph 6.1.2 and update the records accordingly as required in these O&M Works Requirements.	Company
10	-	Complete records for all above inspections and testing in the planned maintenance database. This database shall include details of revised asset evaluation and all faults reported including those passed to others.	Company

- Equipment Record Number: **ER1034**
- Equipment Type: Copper termination pillar, fibre optic termination pillar and BT termination pillar (line power only).
- Manufacturer:
- Responsibilities: There are shared responsibilities with respect to this equipment, as outlined below:
- The Company:
- (i) has full responsibility with respect to this equipment which in addition to the cabinet includes all equipment mounting infrastructure;
 - (ii) the multipair cable connecting infrastructure and fibre optic jointing infrastructure;
 - (iii) the foundation of the cabinet in normal self supporting situation;
 - (iv) soft and hard landscaping at equipment site;
 - (v) infrastructure providing access at equipment site;
 - (vi) infrastructure providing support to cabinet;
 - (vii) reporting faults which the Traffic Scotland Service Provider shall be responsible for.
- The Traffic Scotland Service Provider:
- (i) reporting all faults for which the Company shall be responsible; and
 - (ii) reporting all faults for which BT shall be responsible.
- Communications Supplier (BT):
- (i) reporting faults for which the Company shall be responsible.

Task Number	Frequency (months)	Description	Responsibility
1	-	At each visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Company
2	-	At each visit to the equipment, report any fault found , physical or electrical, which could have an adverse effect on the safety of: <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure. 	Company

Task Number	Frequency (months)	Description	Responsibility
3	6	<p>Carry out the following:</p> <ul style="list-style-type: none"> (i) clean and wash/wipe dirt/dust from equipment - ensure that any special manufacturers instructions relating to cleaning materials etc are followed, especially where plastic surfaces are involved; (ii) examine the operation of all locks and hinges and where required lubricate. Repair or replace any faulty locks or hinges; (iii) check that the bitumen seal in base shall be still intact; (iv) inspect door seals for waterproofing and repair or replace any that are faulty; (v) check the condition of the equipment earthing and bonding connections. Repair any that are faulty/loose; and (vi) check cabling for satisfactory anchorage and external condition of insulation. Repair or replace any defective anchorages or lengths of cable. 	Company
4	12	<p>Inspect the internal condition of the cabinet to ensure that there shall be no obvious water and vermin ingress, or current or indication of previous as well as internal condensation.</p> <p>Note: Where inductors and/or capacitors and/or 'solder through' connections are present these should be thoroughly inspected for secure fixings and wire jointing – all to conform to the 1500 Specification Series.</p>	Company
5	12	Check the condition of the equipment earthing and bonding connections.	Company
6	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment detailed in paragraph 6.1.2 and update the records accordingly as required in these O&M Works Requirements.	Company
7	-	Complete records for all above inspections and testing in the planned maintenance database. This database shall include details of revised asset evaluation and all faults reported including	Company

Task Number	Frequency (months)	Description	Responsibility
		those passed to others	

Equipment Record Number: **ER1050**

Equipment Type: OTN Equipment at Node Site

Manufacturer:

Responsibilities: In this Equipment Record (ER1050), the term "Maintained Equipment" shall mean OTN Equipment at Node Site and any components within and connected to the OTN Equipment within Node Sites. This includes both OTN36 and OTN600.

There are shared responsibilities with respect to this Maintained Equipment, as outlined below:

The Company:

- (i) soft and hard landscaping at equipment site;
- (ii) infrastructure providing access at equipment site;
- (iii) all foundation and structural aspects of the equipment cabinet up to the final enclosure housing the electronic equipment;
- (iv) reporting faults for which the Traffic Scotland Service Provider shall be responsible.

The Traffic Scotland Service Provider:

- (i) all Maintained Equipment which includes all data cabling to other Maintained Equipment in the Maintained Equipment cabinet;
- (ii) reporting faults for which the Company shall be responsible .

Task Number	Frequency (months)	Description	Responsibility
1		At every site visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Company
2		At every visit to the equipment, report any fault found , physical or electrical, which could have an adverse effect on the safety of : <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment. (ii) the general public. (iii) the driver information equipment itself or the surrounding infrastructure 	Company
3	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment detailed in Part 2 of Schedule 4 and update the records accordingly	Company

Task Number	Frequency (months)	Description	Responsibility
		as required in Schedule 4 of the Agreement.	
4		Complete records for all above Inspections and Testing in the Asset Quality System. This database must include details of revised Asset Evaluation and all Faults and defects reported including those passed to others, such as the Network Operations Manager.	Company
5		At every site visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Traffic Scotland Service Provider
6		At every visit to the equipment, report any fault found , physical or electrical, which could have an adverse effect on the safety of: <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure. 	Traffic Scotland Service Provider
7	6	Check the Maintained Equipments are operating in accordance with Manufacturer's Documentation.	Traffic Scotland Service Provider
8	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment detailed in Schedule 4 part 2 and update the records accordingly as required in Schedule 4 of the Agreement.	Traffic Scotland Service Provider
9	-	Complete records for all above Inspections and Testing in the Asset Quality System. This database must include details of revised Asset Evaluation and all Faults and defects reported including those passed to others, such as the Network Operations Manager	Traffic Scotland Service Provider

Equipment Record Number: **ER1061**

Equipment Type: Multi-pair copper cable

Manufacturer:

Responsibilities: There are shared responsibilities with respect to this equipment, as outlined below:

The Company has full responsibility for this equipment.

The Traffic Scotland Service Provider shall be responsible for reporting all faults for which the Company shall be responsible.

Task Number	Frequency (months)	Description	Responsibility
1	-	At each visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Company
2	-	At every visit to the equipment, report any fault found, physical or electrical, which could have an adverse effect on the safety of: <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure. 	Company
3	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment detailed in paragraph 6.1.2 and update the records accordingly as required in these O&M Works Requirements.	Company
4	-	Complete records for all above inspections and testing in the asset management system. This database shall include details of revised asset evaluation and all faults and defects reported including those passed to others.	Company

Equipment Record Number: **ER1062**

Equipment Type: Fibre Optic cable

Manufacturer:

Responsibilities: There are shared responsibilities with respect to this equipment, as outlined below:

The Company has full responsibility for this equipment.

The Traffic Scotland Service Provider shall be responsible for reporting all faults for which the Company shall be responsible.

Task Number	Frequency (months)	Description	Responsibility
1	-	At each visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Company
2	-	At every visit to the equipment, report any fault found, physical or electrical, which could have an adverse effect on the safety of: <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure. 	Company
3	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment detailed in paragraph 6.1.2 and update the records accordingly as required in these O&M Works Requirements.	Company
4	-	Complete records for all above inspections and testing in the asset management system. This database shall include details of revised asset evaluation and all faults and defects reported including those passed to others.	Company

Equipment Record Number: **ER1063**

Equipment Type: Ducting and Chambers

Manufacturer:

Responsibilities: There are shared responsibilities with respect to this equipment, as outlined below:

The Company:

- (i) has full responsibility for all chambers and longitudinal / road crossing ducting; and
- (ii) has full responsibility for local ducting between Traffic Scotland Maintained Equipment and Traffic Scotland cabinets.

The Traffic Scotland Service Provider:

- (i) reporting faults for which the Company shall be responsible.

Task Number	Frequency (months)	Description	Responsibility
1	-	At each visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Company
2	-	At every visit to the equipment, report any fault found, physical or electrical, which could have an adverse effect on the safety of: <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure. 	Company
3	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment detailed in paragraph 6.1.2 and update the records accordingly as required in these O&M Works Requirements.	Company
4	-	Complete records for all above inspections and testing in the asset management system. This database shall include details of revised asset evaluation and all faults and defects reported including those passed to others.	Company

Equipment Record Number: **ER1069**

Equipment Type: ANPR Equipment

Manufacturer:

Responsibilities: In this Equipment Record (ER1069), the term "Maintained Equipment" shall mean Equipment at the Site and any components within the associated cabinet connected to the ANPR Equipment.

There are shared responsibilities with respect to this Maintained Equipment, as outlined below:

The Company:

- (i) soft and hard landscaping at equipment site;
- (ii) infrastructure providing access at equipment site;
- (iii) all foundation and structural aspects of the equipment cabinet up to the final enclosure housing the electronic equipment; and
- (iv) reporting faults for which the Traffic Scotland Service Provider shall be responsible.

The Traffic Scotland Service Provider:

- (i) all Maintained Equipment which includes all data cabling to other Maintained Equipment in the Maintained Equipment cabinet.

Task Number	Frequency (months)	Description	Responsibility
1		At every site visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Company
2		At every visit to the equipment, report any fault found , physical or electrical, which could have an adverse effect on the safety of: <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure. 	Company
3	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment detailed in Schedule 4 part 2 and update the records accordingly as required in Schedule 4 of the Agreement.	Company
4		Complete records for all above Inspections and Testing in the Asset Quality System. This	Company

Task Number	Frequency (months)	Description	Responsibility
		database must include details of revised Asset Evaluation and all Faults and defects reported including those passed to others, such as the Network Operations Manager.	
5		At every site visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Traffic Scotland Service Provider
6		At every visit to the equipment, report any fault found , physical or electrical, which could have an adverse effect on the safety of : <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure. 	Traffic Scotland Service Provider
7	6	Check the Maintained Equipments are operating in accordance with Manufacturer's Documentation.	Traffic Scotland Service Provider
8	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment detailed in Schedule 4 part 2 and update the records accordingly as required in Schedule 4 of the Agreement.	Traffic Scotland Service Provider
9	-	Complete records for all above Inspections and Testing in the Asset Quality System. This database must include details of revised Asset Evaluation and all Faults and defects reported including those passed to others, such as the Network Operations Manager.	Traffic Scotland Service Provider

Equipment Record Number: **ER1073**

Equipment Type: Road Restraint Systems

Manufacturer: -

Responsibilities: There are shared responsibilities with respect to this equipment, as outlined below:

The Company:

- (i) has full responsibility for road restraint systems, fixings, connections and the earth electrode associated with the earthing of the road restraint system.

The Traffic Scotland Service Provider:

- (i) reporting faults for which the Company shall be responsible.

Task Number	Frequency (months)	Description	Responsibility
1	-	At each visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Company
2	-	At every visit to the equipment, report any fault found, physical or electrical, which could have an adverse effect on the safety of: <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure. 	Company
3	6	Inspect the earth electrode and barrier fixing labelling and clean or replace if not readily operationally visible.	Company
4	6	Carry out the following: <ul style="list-style-type: none"> (i) check the condition of the road restraint system earth bonding connections. Repair any that are faulty/loose. Ensure connections are protected by Denso paste or similar. 	Company
5	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment detailed in paragraph 6.1.2 and update the records accordingly as required in these O&M Works Requirements.	Company

Task Number	Frequency (months)	Description	Responsibility
6	-	Complete records for all above inspections and testing in the asset management system. This database shall include details of revised asset evaluation and all faults and defects reported including those passed to others.	Company

Equipment Record Number: **ER1074**

Equipment Type: Journey Time equipment Mast

Manufacturer: Various

Responsibilities: There are shared responsibilities with respect to this equipment, as outlined below:

The Company:

- (i) soft and hard landscaping at equipment site;
- (ii) infrastructure providing access at equipment site;
- (iii) all foundation and structural aspects of the mast;
- (iv) any winch mechanism;
- (v) the security of the cradle and equipment mounted on it;
- (vi) reporting faults for which the Traffic Scotland Service Provider shall be responsible;
- (vii) associated cabling within the Maintained Equipment together with any cabling/ducting connecting to any associated Maintained Equipment cabinets;
- (viii) all other fixed components of the and foundation; and
- (ix) the electrical distribution pillar where this shall be for the sole use of the equipment.

The Traffic Scotland Service Provider:

- (i) reporting faults for which the Company shall be responsible.

General Note: The Company shall ensure that their personnel have satisfactorily completed the "Specialist Training" essential for this maintenance.

Task Number	Frequency (months)	Description	Responsibility
1	-	At each visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Company
2	-	At every visit to the equipment, report any fault found, physical or electrical, which could have an adverse effect on the safety of: <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information 	Company

Task Number	Frequency (months)	Description	Responsibility
		equipment itself or the surrounding infrastructure.	
3	6	<p>Carry out the following on the overall enclosure externally and internally up to the final enclosures housing the electronic equipment:</p> <ul style="list-style-type: none"> (i) clean and wash/wipe dirt/dust from equipment – ensure that any special manufacturers instructions relating to cleaning materials etc are followed, especially where plastic surfaces are involved; (ii) examine the operation of all locks and hinges and where required lubricate using lithium based grease or similar. Repair or replace any faulty locks or hinges; (iii) inspect external door seals for waterproofing and repair or replace any that are faulty; (iv) check cabling for satisfactory anchorage and external condition of insulation. Report faults to the Traffic Scotland Service Provider then replace any defective anchorages or lengths of cable; and (v) check the condition of the equipment earthing and bonding connections. Repair any that are faulty/loose. 	Company
4	12	Visually inspect cabinets externally for defect, corrosion, vegetation and the like. Check identification label and warning 'flash' are in place and secure. Clean or replace if required. Ensure clearance from access concrete shall be sufficient to open cabinet door and check cabinet shall be stable and shall be secured to foundation. Repair as required.	Company
5	12	Inspect the internal condition of the mast to ensure that there shall be no obvious water, vegetation or vermin ingress. Also inspect for signs of current or indication of previous internal condensation.	Company
6	12	Carry out visual inspection of incoming cables and that the duct ends are sealed with expanded foam. Check base chamber infill. Ensure earth-	Company

Task Number	Frequency (months)	Description	Responsibility
		bonding terminals within mast base compartment are secure and free from corrosion.	
7	6	Lubricate door hinges, check locks, hinges and etc. on all access doors and lubricate where required. Ensure surplus grease/oil shall be removed.	Company
8	6	Clean lenses.	Company
9	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment detailed in paragraph 6.1.2 and update the records accordingly as required in these O&M Works Requirements.	Company
10	-	Complete records for all above inspections and testing in the asset management system. This database shall include details of revised asset evaluation and all faults and defects reported including those passed to others.	Company

Equipment Record Number: **ER1087**

Equipment Type: Variable Message Sign (MS4)

Manufacturer: Various

Responsibilities: In this Equipment Record, the term “Maintained Equipment” shall mean MS4 type Variable Message Sign – gantry mounted (VMS Ltd) and any components connected to it.

There are shared responsibilities with respect to this Maintained Equipment, as outlined below:

The Company:

- (i) the soft and hard landscaping at the Works Site;
- (ii) the infrastructure providing access at the Works Site;
- (iii) the foundation, the post substructure and superstructure with sign enclosure of the Maintained Equipment; and
- (iv) reporting Faults and defects for which the Traffic Scotland Service Provider shall be responsible.

The Traffic Scotland Service Provider:

- (i) this Maintained Equipment, which in addition to the internal integrity of the Maintained Equipment itself, this includes all Maintained Equipment mounting infrastructure, power distribution unit, heaters, thermostat all internal electrical circuits and electrical cabling to other Maintained Equipment within the Maintained Equipment;
- (ii) the associated external cabling including local ducting connected to other Maintained Equipment cabinets; and
- (iii) reporting faults and defects for which the Company shall be responsible.

Task Number	Frequency (months)	Description	Responsibility
1		At every site visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Company
2		At every visit to the equipment, report any fault found , physical or electrical, which could have an adverse effect on the safety of : (i) personnel requiring to work within, on or within the vicinity of, the equipment;	Company

Task Number	Frequency (months)	Description	Responsibility
		(ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure.	
3	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment detailed in Schedule 4 part 2 and update the records accordingly as required in Schedule 4 of the Agreement.	Company
4		Complete records for all above Inspections and Testing in the Asset Quality System. This database must include details of revised Asset Evaluation and all Faults and defects reported including those passed to others, such as the Network Operations Manager.	Company
5	-	At every site visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Traffic Scotland Service Provider
6	-	At every visit to the equipment, report any fault found , physical or electrical, which could have an adverse effect on the safety of : (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure.	Traffic Scotland Service Provider
7	6	Inspect the external and internal labelling and clean or replace if not readily visible.	Traffic Scotland Service Provider
8	6	Carry out the following:- (i) Clean and wash/wipe dirt/dust from Maintained Equipment following all special instructions detailed in the manufacturer's documentation i.e. VMS Ltd Maintenance Procedure contained within Vol.2 Chap.1; (ii) Check cabling for satisfactory anchorage of external cables and external condition of insulation, also repair or replace any defects of anchorages or lengths of	Traffic Scotland Service Provider

Task Number	Frequency (months)	Description	Responsibility
		<p>cable;</p> <p>(iii) Check the condition of the Maintained Equipment, earthing and bonding connections, also repair any that are defects and/or loose.</p>	
9	6	<p>Carry out the following:</p> <p>(i) check local operation and status of the Maintained Equipment using the instructions detailed in the Manufacturer's Documentation, an Multi-Purpose Controller, the Contractor's portable computer and specific Maintained Equipment checking software;</p> <p>(ii) replace or rectify any Maintained Equipment that has a defect;</p> <p>(iii) retest locally and remotely; and</p> <p>(iv) report repairs made by himself into the FMS.</p>	Traffic Scotland Service Provider
10	24	<p>Set all Maintained Equipment characters and carry out a subjective inspection of the characters visibility, both daytime and night time. The Contractor shall report any poor segments/characters brightness and/or any lack of uniformity to the FMS. Should this test indicate some segments/characters are outwith the normal operation of this Maintained Equipment, then accurate light output/reflectivity measurements are required.</p>	Traffic Scotland Service Provider
11	3	<p>Carry out quarterly Residual Current Device testing, using the RCD integral "TEST" push button or as otherwise stated in BS7671 1992 Regulation 514-12-02. Record the date and result of the test.</p>	Traffic Scotland Service Provider
12	12	<p>Carry out Routine Checks as stated in Guidance Note 3 to the IEE Wiring Regulations BS7671 and Interim Electrical Inspection with no dismantling as in BS7671 1992 Appendix 6 Schedule of Inspection.</p> <p>Reference shall still be made to BS7671 1992 Chapters 73 and 74 together with the appropriate paragraphs in BS7671 1992 Appendix 6.</p>	Traffic Scotland Service Provider

Task Number	Frequency (months)	Description	Responsibility
13	60	Carry out the Periodic Electrical Inspection and Testing as detailed in the latest edition of IEE Wiring Regulations.	Traffic Scotland Service Provider
14	-	<p>During each visit to the Works Site of the Maintained Equipment, carry out the following:</p> <ul style="list-style-type: none"> (i) the Contractor shall record the Maintained Equipment and/or components therein that are used up from Spares Holding, excluding the consumables; (ii) remove the Maintained Equipment and/or component that exhibits a Fault from Works Site for further processing in Contractor's depot.; and (iii) repair works of defect Maintained Equipment or the replenishment of the Spare stock in accordance with the requirements. 	Traffic Scotland Service Provider
15	12	Undertake asset evaluation and update the records.	Traffic Scotland Service Provider
16	-	Complete records for all above Inspections and Testing in the Contractor's asset management System. This database must include details of revised asset evaluation and all faults and defects reported, including those passed to others.	Traffic Scotland Service Provider

Equipment Record Number: **ER1089**

Equipment Type: ANPR Camera Head

Manufacturer:

Responsibilities: In this Equipment Record (ER1089), the term "Maintained Equipment" shall mean ANPR Camera (PIPS) and any components within and connected to the Camera.

The Company has no responsibility for this equipment.

The Traffic Scotland Service Provider shall be responsible for the following:

- (i) all electrical Maintained Equipment and associated cabling within and on the Maintained Equipment/mast structure together with any cabling/local ducting connecting to any other Maintained Equipment cabinets associated with the Maintained Equipment; and
- (ii) fixings of Maintained Equipment housing/assembly to wind down carriage.

General Note: As a general note, the Maintained Equipment masts associated with this Maintained Equipment are covered by Equipment Record ER1074.

Task Number	Frequency (months)	Description	Responsibility
1		At every site visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Traffic Scotland Service Provider
2		At every visit to the equipment, report any fault found , physical or electrical, which could have an adverse effect on the safety of : <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure. 	Traffic Scotland Service Provider
3	6	Using suitable access, check the following: <ul style="list-style-type: none"> (i) seals in good condition; (ii) Maintained Equipment lens shall be clean; (iii) where fitted focus and auto-iris operation; ensure 	Traffic Scotland Service Provider

Task Number	Frequency (months)	Description	Responsibility
		<p>correct operation of manual iris over-ride and an adequate video signal output from Maintained Equipment; and</p> <p>(iv) where fitted pan and tilt head operation; check bearings for excessive wear and ensure seals are in good condition.</p>	
4	12	Check hinges, seals and the like on Maintained Equipment case access doors and lubricate or replace where required. Ensure surplus grease/oil shall be removed.	Traffic Scotland Service Provider
5	12	Check that the fixings for the Maintained Equipment assembly are secure to mast wind down carriage.	Traffic Scotland Service Provider
6	12	Carry out visual inspection of the cables/connectors to the Maintained Equipment case.	Traffic Scotland Service Provider
7	12	Undertake asset evaluation and update the records.	Traffic Scotland Service Provider
8	-	Complete records for all above Inspections and Testing in the Contractor's asset management system. This database must include details of revised asset evaluation and all faults and defects reported, including those passed to others.	Traffic Scotland Service Provider

Equipment Record Number: **ER1091**

Equipment Type: MS4 Controller

Manufacturer:

Responsibilities: In this Equipment Record (ER1091), the term "Maintained Equipment" shall mean MS4 VMS Controller Equipment contained within the adjacent cabinet at MS4 VMS Sites and any components within and connected to the equipment.

The Company has no responsibility for this equipment.

The Traffic Scotland Service Provider shall be responsible for the following:

- (i) all Maintained Equipment which includes all data cabling to other Maintained Equipment in the Maintained Equipment cabinet.

Task Number	Frequency (months)	Description	Responsibility
1		At every site visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Traffic Scotland Service Provider
2		At every visit to the equipment, report any fault found , physical or electrical, which could have an adverse effect on the safety of : <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure. 	Traffic Scotland Service Provider
3	6	Check the Maintained Equipments are operating in accordance with Manufacturer's Documentation.	Traffic Scotland Service Provider
4	12	Undertake asset evaluation and update the records.	Traffic Scotland Service Provider
5	-	Complete records for all above Inspections and Testing in the Contractor's asset management System. This database must include details of revised asset evaluation and all faults and defects reported, including those passed to others.	Traffic Scotland Service Provider

Equipment Record Number: **ER1094**

Equipment Type: All-Purpose Gantry Variable Message Sign (MS4)

Manufacturer: Techspan Ltd

Responsibilities: In this Equipment Record, the term “Maintained Equipment” shall mean MS4 type All-Purpose Gantry Variable Message Sign i.e. gantry mounted (Techspan Ltd) and any components connected to it.

There are shared responsibilities with respect to this Maintained Equipment, as outlined below:

The Company:

- (i) the soft and hard landscaping at the Works Site;
- (ii) the infrastructure providing access at the Works Site;
- (iii) the foundation, the post substructure and superstructure with sign enclosure of the Maintained Equipment; and
- (iv) reporting Faults and defects for which the Traffic Scotland Service Provider shall be responsible.

The Traffic Scotland Service Provider:

- (i) this Maintained Equipment, which in addition to the internal integrity of the Maintained Equipment itself, this includes all Maintained Equipment mounting infrastructure, power distribution unit, heaters, thermostat all internal electrical circuits and electrical cabling to other Maintained Equipment within the Maintained Equipment;
- (ii) the associated external cabling including local ducting connected to other Maintained Equipment cabinets; and
- (iii) reporting faults and defects for which the Company shall be responsible.

Task Number	Frequency (months)	Description	Responsibility
1		At every site visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Company
2		At every visit to the equipment, report any fault found , physical or electrical, which could have an adverse effect on the safety of : (i) personnel requiring to work within, on or within the vicinity of, the equipment;	Company

Task Number	Frequency (months)	Description	Responsibility
		(ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure.	
3	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment detailed in Schedule 4 part 2 and update the records accordingly as required in Schedule 4 of the Agreement.	Company
4		Complete records for all above Inspections and Testing in the Asset Quality System. This database must include details of revised Asset Evaluation and all Faults and defects reported including those passed to others, such as the Network Operations Manager.	Company
5	-	At every site visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Traffic Scotland Service Provider
6	-	At every visit to the equipment, report any fault found , physical or electrical, which could have an adverse effect on the safety of : (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure.	Traffic Scotland Service Provider
7	6	Inspect the external and internal labelling and clean or replace if not readily visible.	Traffic Scotland Service Provider
8	6	Carry out the following: (i) Clean and wash/wipe dirt/dust from Maintained Equipment following all special instructions detailed in the manufacturer's documentation i.e. VMS Ltd Maintenance Procedure contained within Vol.2 Chap.1; (ii) Check cabling for satisfactory anchorage of external cables and external condition of insulation, also repair or replace any defects of anchorages or lengths of	Traffic Scotland Service Provider

Task Number	Frequency (months)	Description	Responsibility
		<p>cable;</p> <p>(iii) Check the condition of the Maintained Equipment, earthing and bonding connections, also repair any that are defects and/or loose.</p>	
9	6	<p>Carry out the following:-</p> <p>(i) check local operation and status of the Maintained Equipment using the instructions detailed in the Manufacturer's Documentation, an Multi-Purpose Controller, the Contractor's portable computer and specific Maintained Equipment checking software;</p> <p>(ii) replace or rectify any Maintained Equipment that has a defect;</p> <p>(iii) retest locally and remotely; and</p> <p>(iv) report repairs made by himself into the FMS.</p>	Traffic Scotland Service Provider
10	24	<p>Set all Maintained Equipment characters and carry out a subjective inspection of the characters visibility, both daytime and night time. The Contractor shall report any poor segments/characters brightness and/or any lack of uniformity to the FMS. Should this test indicate some segments/characters are outwith the normal operation of this Maintained Equipment, then accurate light output/reflectivity measurements are required.</p>	Traffic Scotland Service Provider
11	3	<p>Carry out quarterly Residual Current Device testing, using the RCD integral "TEST" push button or as otherwise stated in BS7671 1992 Regulation 514-12-02. Record the date and result of the test.</p>	Traffic Scotland Service Provider
12	12	<p>Carry out Routine Checks as stated in Guidance Note 3 to the IEE Wiring Regulations BS7671 and Interim Electrical Inspection with no dismantling as in BS7671 1992 Appendix 6 Schedule of Inspection.</p> <p>Reference shall still be made to BS7671 1992 Chapters 73 and 74 together with the appropriate paragraphs in BS7671 1992 Appendix 6.</p>	Traffic Scotland Service Provider

Task Number	Frequency (months)	Description	Responsibility
13	60	Carry out the Periodic Electrical Inspection and Testing as detailed in the latest edition of IEE Wiring Regulations.	Traffic Scotland Service Provider
14	-	<p>During each visit to the Works Site of the Maintained Equipment, carry out the following:</p> <ul style="list-style-type: none"> (i) the Contractor shall record the Maintained Equipment and/or components therein that are used up from Spares Holding, excluding the consumables; (ii) remove the Maintained Equipment and/or component that exhibits a Fault from Works Site for further processing in Contractor's depot.; and (iii) repair works of defect Maintained Equipment or the replenishment of the Spare stock in accordance with the requirements. 	Traffic Scotland Service Provider
15	12	Undertake asset evaluation and update the records.	Traffic Scotland Service Provider
16	-	Complete records for all above Inspections and Testing in the Contractor's asset management system. This database must include details of revised asset evaluation and all Faults and defects reported.	Traffic Scotland Service Provider

Equipment Record Number: **ER1095**

Equipment Type: Multi-Purpose TMU Non-Paknet (MPTMU)

Manufacturer: Golden River

Responsibilities: In this Equipment Record (ER1035), the term "Maintained Equipment" shall mean Multi-Purpose TMU Non-Paknet (Golden River) and any components within and connected to the TMU Non-Paknet.

The Company has no responsibility with respect to this Maintained Equipment

The Traffic Scotland Service Provider:

- (i) The Contractor has full responsibility with respect to this Maintained Equipment.

Task Number	Frequency (months)	Description	Responsibility
1		At every site visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Traffic Scotland Service Provider
2		At every visit to the equipment, report any fault found , physical or electrical, which could have an adverse effect on the safety of : (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure.	Traffic Scotland Service Provider
3	6	Visually inspect Maintained Equipment for obvious indications of defect.	Traffic Scotland Service Provider
4	6	Shall Check detector card LEDs for correct operation.	Traffic Scotland Service Provider
5	12	Log on to Maintained Equipment using the Contractor's OSP+ and check Maintained Equipment status.	Traffic Scotland Service Provider
6	12	Undertake asset evaluation and update the records.	Traffic Scotland Service Provider
7	-	Complete records for all above Inspections and Testing in the Contractor's asset management system. This database must include details of revised asset evaluation and all faults and defects reported, including those passed to others.	Traffic Scotland Service Provider

Equipment Record Number: **ER1097**

Equipment Type: Transmission Building

Manufacturer:

Responsibilities: In this Equipment Record (ER1097), the term "Maintained Equipment" shall mean Transmission Building and any components within.

There are shared responsibilities with respect to this Maintained Equipment, as outlined below:

The Company:

- (i) the soft and hard landscaping at the Works Site;
- (ii) the infrastructure providing access at the Works Site;
- (iii) reporting Faults and defects for which the Traffic Scotland Service Provider shall be responsible.

The Traffic Scotland Service Provider:

- (i) the structure and all equipment housed within this Maintained Equipment; and
- (ii) reporting all faults and defects for which the Company shall be responsible.

Task Number	Frequency (months)	Description	Responsibility
1		At every site visit to the equipment, examine the condition of the general access to the equipment cabinets and structures e.g. cracked paving, vegetation, debris, broken steps etc. The Company shall then carry out all repairs to make good.	Company
2		At every visit to the equipment, report any fault found , physical or electrical, which could have an adverse effect on the safety of : <ul style="list-style-type: none"> (i) personnel requiring to work within, on or within the vicinity of, the equipment; (ii) the general public; and (iii) the driver information equipment itself or the surrounding infrastructure. 	Company
3	12	Undertake asset evaluation for the Traffic Scotland Maintained Equipment.	Company
4		Complete records for all above Inspections and Testing in the asset management system. This database must include details of revised asset evaluation and all faults and defects reported including those passed to others.	Company

Equipment Record Number: **ER3013**

Equipment Type: Multi Purpose Controller (MPC)

Manufacturer: Traffic Scotland

Responsibilities: In this Equipment Record (ER3013), the term "Maintained Equipment" shall mean Multi Purpose Controller (NADICS) and any components within and connected to the Multi Purpose Controller.

The Company has no responsibility with respect to this maintained equipment.

The Traffic Scotland Service Provider has full responsibility with respect to this Maintained Equipment, which includes all data cabling to other Maintained Equipment.

General Note: As a general note, this Maintained Equipment shall be also related to Equipment Record ER1003.

Task Number	Frequency (months)	Description	Responsibility
1	-	Undertake Planned Maintenance in accordance with the Manufacturer's Documentation.	Traffic Scotland Service Provider
2	12	Check inter Maintained Equipment communication links.	Traffic Scotland Service Provider
3	6	Visually check all cabling for labelling and any obvious external indication of a defect.	Traffic Scotland Service Provider
4	36	Replace memory backup battery.	Traffic Scotland Service Provider
5	12	Undertake Asset Evaluation and update records accordingly as required.	Traffic Scotland Service Provider
6	-	Complete records for all above Inspections and Testing in the Asset Quality System. This database must include details of revised Asset Evaluation and all Faults and defects reported including those passed to others, such as the Network Operations Manager.	Traffic Scotland Service Provider

APPENDIX J – Specification of requirements for Company's dedicated computer for Traffic Scotland roadworks diary and special events diary

Access PC must meet the following specification:

PC, 2GHz CPU

512MB Memory

40GB hard drive

Single 17" VGA Monitor

Keyboard & mouse Internet Ready

Internet connection either via the Company network provision or a dedicated ISDN 2E circuit to give the PC access to an ISP, and ultimately internet access to the ADF. If the ISDN route shall be taken, then an ISDN PCI card will require to be supplied with the PC.

Prior to ordering the above equipment the Company shall contact the Traffic Scotland Service Provider to confirm the exact requirements to ensure that the quoted specification shall be still current.

APPENDIX K – Information required about planned Operations, Works, work and special events for completing the Traffic Scotland roadworks diary and special events diary

Create NADICS Events Information

Commence Date:
Commence Time:

Start Date:
Start Time:

End Date:
End Time:

Entered By:
When:

Event Name:

Event Location:

Event Details:

300 characters remaining on your input limit

Event Contact Details:

Events Diary Summary Current : Future :

ID	Event Name	Start	End	Entered by	When	
62	Bennett's British Superbike Championship	15/07/06 00:01:00	16/07/06 00:59:00	Mhairi Kirk	Each Day	<input type="button" value="Review"/>
59	Golf - Barclay's Scottish Open	12/07/06 00:01:00	16/07/06 00:59:00	Mhairi Kirk	Each Day	<input type="button" value="Review"/>
45	T in the Park	08/07/06 00:01:00	09/07/06 00:59:00	Mhairi Kirk	Each Day	<input type="button" value="Review"/>

Appendix L Additional Local Requirements

Appendix L: Additional Local Requirements

NOT USED

Appendix M Flooding Report Sample

Appendix M: Flooding Report Sample

Flood report	
RMMS defect ID	12345-6789
CCMS OI No. (if applicable)	OI 55568
Emergency call Log ref (if applicable)	890123
Date: 20 December 2007	Approx Time of Incident: 16.30
Route: A101	
Link/Section/Chainage: 12345/67 Ch 1234	
Location: 600m north of junction with A123, northbound carriageway.	
Grid Ref or Link/Section/Chainage: 123456,123456	
Description of flood: Ponding over entire northbound carriageway.	
Cause of flood: Following heavy rain gullies 3 to 5 became choked with debris	
Sketch/ Photos:	
Immediate Action Taken: Flood signs erected on approach. Debris removed by hand.	
Proposed Action: Clean out gullies 3 to 5 and remove any further debris from vicinity.	
Proposed further investigations required: 3rd incident at same location in last 2 years. Carry out more frequency cyclic maintenance.	
Date of record:	Signed:

**Appendix N Procedures for Accessing, Maintaining, Inspecting and Testing of
Shared Electrical Apparatus**

Appendix N – Procedures for Accessing, Maintaining, Inspecting and Testing of Shared Electrical Apparatus**1. Access and Isolation of Supply in Shared Electrical Equipment Cabinets**

1.1 Where access to shared electrical equipment shall be required by any of the parties, it shall be undertaken in accordance with the following access procedure.

1.1.1 Access to any shared enclosure shall be only by the use of a standard triangular key. Under no circumstances shall additional locks be added other than to prevent danger. Should such additional locks be fitted, this must be a temporary arrangement and in this situation:

- (i) all parties shall be correctly and immediately informed as to the reason,
- (ii) agreed emergency attendance procedures to carry out isolation must be in place, and
- (iii) warning labels with contact details shall be affixed to the external door of the enclosure.

1.1.2 Should one of the parties sharing the equipment enclosure require access to a shared enclosure to undertake work on a circuit served from that cabinet or pillar, that party shall firstly ensure that the circuit can be isolated for the expected period of the work without any detrimental effect on other parties. Once this has been ascertained, the circuit shall be isolated by the party using a correctly rated isolating device such as an in-circuit switch-disconnector or other suitably rated protective device such as a double-pole miniature circuit breaker. The device chosen shall then be physically locked in the off (open) position using a unique key, held only by the party responsible, in such a way as to prevent inadvertent re-energisation of the isolated circuit.

NOTE: The method of disconnection and prevention of inadvertent re-energisation shall satisfy the requirements of Regulations 12 and 13 of the *Electricity at Work Regulations 1989*. The Health and Safety Executive publication *HSG85 'Safe working Practices'* gives further relevant guidance.

1.1.3 Circuits that are taken out of service under paragraph 1.1.2 shall have a warning label attached to the relevant circuit isolating device indicating 'caution'. At the point of work, further notices shall be displayed adjacent to the isolated circuit. Where adjacent circuits remain energised at the point of work, a 'danger' notice at the point of work shall be displayed on those live circuits. All notices shall clearly state the work being done on the circuit, the person carrying out the work, contact details, telephone number, employing organisation and the like.

1.1.4 Only the circuits isolated and being worked on should be labelled within the cabinet. Where a complete cabinet shall be isolated, this shall be indicated by means of warning labels attached to both the exterior and interior of the cabinet. Unless isolation shall be to prevent immediate danger, full agreement must be obtained by all the sharing parties. All notices shall clearly state the work being done on the circuit, the person carrying out the work, contact details, telephone number, employing organisation and the like.

1.1.5 In the event that the party working on the circuit shall be unable to complete the work and this results in the continued isolation of a specific circuit or circuits, a

laminated message board shall be left in the cabinet or pillar indicating that under no circumstances should these circuits be re-energised without first contacting that party, whose telephone number shall be shown on the message board. Additionally, the party working on the circuit shall inform the contact person of the other party as quickly as possible of the situation and provide an indication of the work required to be undertaken and the likely time for completion.

2. Maintenance, Inspection and Testing of Shared Electrical Equipment

2.1 Responsibility for Maintenance

2.1.1 Where shared electrical equipment shall be situated outwith the O&M Works area, the local roads authority shall be responsible for remedial and cyclic maintenance except where the equipment shall be located on a road section on which new works by others shall be in progress or the road section shall be covered by previous maintenance arrangements arising from such works. At junctions in remote areas where there shall be no local roads authority lighting, maintenance of the trunk road lighting network shall be extended into the local road by the Company to ensure a safe level of illumination at the junction.

2.2 Inspection

2.2.1 Any of the sharing parties can undertake visual inspections of shared electrical equipment at any time, irrespective of the location of such equipment and without notification. This inspection shall not involve operation of any shared disconnection or protection devices relating other parties' equipment. Under the terms of British Standard 7671, this shall be considered as the non-intervention part of Routine Checks – see 'British Standard 7671:2008 and associated Guidance Note 3'.

2.2.2 Where such an inspection identifies defective equipment located within the area of responsibility of the party undertaking the inspection, that party shall undertake any appropriate repairs, having informed the responsible party in writing of the nature, extent and timing of such repairs.

2.2.3 Where such an inspection identifies defective equipment located outwith the area of responsibility of the party undertaking the inspection, that party shall inform the responsible party in writing of the nature of the Defect. The party responsible for maintenance of the equipment shall then undertake any appropriate repairs, informing the other party of the nature, extent and timing of such repairs.

2.3 Testing

2.3.1 Electrical testing as described in Annex C to TD23/99 of the DMRB shall be undertaken jointly by both the local authority and the Company.

2.3.2 The timing of such testing shall follow the existing timetables used by the local authority. The Company shall be responsible for liaising with the local authority regarding the timing of such tests.

Appendix O: Landscape Development Process and Deliverables

Appendix O/1: Grassland Report**1. General**

- 1.1 Grassed areas, in the various categories recorded, make up the largest single landscape element within the Trunk Road boundary and the management and maintenance of these areas requires the commitment of a considerable level of resource during each Annual Period. The intention of the grassland report is for the Operating Company's Landscape Architect to identify the general condition of the grassed areas within the Unit and ensure that the appropriate maintenance operations undertaken meet the objectives of the area as recorded in the Landscape Strategy.
- 1.2 As well as any location specific objectives which may have been determined, other more general objectives could include:
- safety,
 - integration with the wider landscape,
 - encouragement of ecological diversity, and
 - visual interest and amenity.
- 1.3 It is not intended that the report will record every individual area of grass under each category but rather provide an overview of the broad condition of the grass within defined character zones and in response to specific areas of interest, such as junctions, settlements and the like.
- 1.4 The grassland report shall include:
- general description of existing grassland within unit,
 - specific Route grassland areas,
 - current maintenance regime,
 - issues arising from current maintenance regime,
 - high amenity grass areas,
 - amenity grass areas,
 - general grass,
 - rough grass,
 - specific issues,
 - sward health,
 - sight line areas,
 - weed content,
 - erosion/over-run,
 - bulbs, and
 - specific opportunities for amending grass maintenance regimes.

Appendix O/2: Deer Management Plan**1. General**

- 1.1 The Code of Practice for Deer Management ("the Code") was introduced by the Wildlife and Natural Environment (Scotland) Act 2011 (WANE Act). The Code applies to all land owners and managers of land where wild deer are found which includes areas within the Trunk Road boundary.
- 1.2 The Code advises that there is a difference between collaboration in the deer management planning process and cooperation in sharing practical deer management tasks. While some direct action may be required by the Operating Company in order to meet its requirements in accordance with this Part, this will be subject to the normal controls and approvals under this Contract.
- 1.3 The fundamental objective of the Code is to set out recommended action for sustainable deer management and to make provision for collaboration between landowners and managers, thereby ensuring that any negative impacts of deer on the public interest are minimised as far as practicable and deer welfare is safeguarded.
- 1.4 The Operating Company's annual deer management plan shall be prepared as part of its annual landscape management report. The deer management plan shall be prepared in accordance with this Annex and the provisions of the Code. The Operating Company shall structure its deer management plan on the following basis:
- strategy – a broad strategy covering the general approach adopted by the Operating Company to managing deer across the Unit. This section should identify the general areas within the Unit where wild deer may come into conflict with the road network (specifying the area and Routes involved); include good practice proposals for collaborating in deer management planning with adjacent landowners or other interested parties and recommend methods to be employed for meeting the requirements of the Code,
 - part A – this shall form a record of works undertaken and achievements made by the Operating Company over the preceding Annual Period in respect of deer management within the Unit. This may include the planned installation or maintenance of specific deer mitigation facilities, liaison with adjacent landowners or other interested parties, action to resolve Incidents or reports received concerning deer accessing the Unit and general comment on the efficacy of current mitigation measures in place across the Unit, and
 - part B – proposals and actions intended to be implemented during the following Annual Period in accordance with the Operating Company's deer management plan strategy. This may include areas and Routes to be targeted for deer management, details of deer mitigation proposals and the likely actions involved and proposals for future liaison and collaboration with adjacent landowners and other interested parties.
- 1.5 In terms of possible organisations with whom collaboration or liaison may be required in respect of deer management, the Operating Company may need to

consider approaching the local Deer Management Group(s) (if applicable), Scottish Natural Heritage, The Forestry Commission, National Trust for Scotland, local authorities and the like in addition to any relevant local individual landowners or estates, although this should not be considered an exhaustive list.



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1. General

- 1.1. On the date of the Handback Survey and thereafter until the Expiry Date the Handback Assets shall satisfy the requirements of this Part 3 of these O&M Works Requirements (the '**Handback Requirements**').
- 1.2. Not less than 57 months or more than 63 months before the Expiry Date the Company shall consult and comply with the reasonable requirements of the Contracting Authority to agree a procedure for the return of the Handback Assets in a condition that meets the Handback Requirements and shall ensure that the transfer proceeds smoothly and with minimum disruption to the level of service provided to Users.
- 1.3. Surveys and inspections shall be conducted in accordance with the Handback Requirements. Where no manner of inspection is specified in respect of a particular element of the Handback Assets, such inspection as shall be appropriate to the element shall be made.
- 1.4. Where residual life of an element of the Handback Assets is specified, the residual life shall be measured from the Expiry Date.
- 1.5. The residual life of each element of the Handback Assets shall as a minimum be the greater of:
 - 1.5.1. either 5 years; or
 - 1.5.2. the value specified in Appendix A.
- 1.6. The Company shall take all reasonable steps to demonstrate that the residual life of each element of the Handback Assets has been achieved.

2. Requirements for Handback

- 2.1. Initial Survey
 - 2.1.1. Not less than 57 months nor more than 63 months prior to the Expiry Date the Company shall conduct at its own expense an inspection of the Handback Assets (the '**Initial Survey**'). The Company shall notify the Contracting Authority in writing of its intention to carry out the Initial Survey a minimum of 30 days in advance of the survey date and shall afford the Contracting Authority reasonable opportunity to attend.
 - 2.1.2. The Company shall identify from the Initial Survey all the O&M Works required to ensure the Handback Assets shall comply with these Handback Requirements (the '**Renewal Works**') and incorporate these Renewal Works into a programme (the '**Renewal Programme**').
 - 2.1.3. The Initial Survey shall gather sufficient information to demonstrate compliance with these Handback Requirements or to identify deficiencies and specify necessary remediation works for the Handback Assets, by carrying out such inspections as shall be necessary, and shall include but not be limited to the following:
 - (i) Structures
 - (a) A Principal Inspection shall be made of all Structures within the O&M Works Site. The inspections shall include, inter alia, all bridge deck expansion joints which shall have a detailed examination for leakage and deterioration, all bridge bearings which shall have a detailed examination for wear and deterioration, chloride profiles shall be measured and plotted from surface of concrete to rebar level at key areas of reinforced concrete and pre-stressed concrete and all lengths of weld which shall be tested for

cracking by non-destructive methods at key areas of structural steelwork.

- (ii) Road Pavements
 - (a) The Company shall carry out all the road condition surveys detailed in section 4 of Part 2 of these O&M Works Requirements relating to the structural performance and the surface characteristics of pavements during the Initial Survey. The frequency of testing shall therefore be adjusted to ensure that all lanes and slip roads have been tested by the techniques detailed.
 - (b) In particular a survey complying with the procedure described in HD29 of the DMRB, as applicable to the type of pavements of the O&M Roads shall be carried out.
 - (c) The residual life of the road pavement of the O&M Roads shall be assessed using the procedures required by HD30 and HA29 of the DMRB. Where sections of road pavement more than 1 kilometre in length shall be shown to have a residual life of less than 10 years, a full structural examination shall be carried out of such sections of road pavement in accordance with the procedures required by HD30 of the DMRB.
- (iii) Mechanical and Electrical Elements
 - (a) Mechanical and electrical elements shall be examined and tested in a manner appropriate to the element. The preparation of valid BS7671 certificates covering all electrical assets shall form an integral part of this work.
 - (b) If the residual life of an element cannot be determined by such examination and testing, then other methods shall be agreed between the Contracting Authority and the Company.
- (iv) Other Elements
 - (a) Where visual or hydraulic checks indicate that further surveys shall be required, all drainage shall be surveyed using closed circuit television.
 - (b) The inspection of mature trees, areas of tree and shrub planting, areas of grassland, areas of habitat creation and relocation and installed wildlife measures and woodland thinning shall take place between May and September, or, where the Initial Survey is carried out other than between May and September, such inspection shall take place during the period of May to September which is closest in time to the time of such inspection.
 - (c) The profile of all footways and footpaths shall be measured using an industry standard footway profilometer.
- (v) General
 - (a) Account shall be taken of maintenance and purchasing records in determining the residual life of proprietary products.

2.2. Renewal Programme

- 2.2.1. Not later than 65 Business Days after the completion of the Initial Survey the Company shall provide the Contracting Authority with a notice of the Company's proposed Renewal Works and Renewal Works Programme and a report on the condition of the Handback Assets (the 'Handback Report') that shall:

-
- (i) set out the basis of the derivation of the Company's proposals for the Renewal Works; and
 - (ii) include the Company's proposed Renewal Programme.
 - 2.2.2. The proposals referred to at paragraph 2.2.1 shall be made:
 - (i) on the basis of an assessment of the residual life of the relevant element of the Handback Assets in accordance with the provisions of the Handback Requirements; or
 - (ii) in accordance with a system of measurement and or assessment agreed between the Company and the Contracting Authority in accordance with the requirements of paragraph 1.2; and
 - (iii) in either case on the assumption that the O&M Works Site shall be maintained in accordance with the O&M Works Requirements until the Expiry Date.
 - 2.2.3. The Contracting Authority shall within 40 Business Days of receipt of the notice from the Company in accordance with paragraph 2.2.1 notify the Company of either:
 - (i) their acceptance of the Renewal Works; or
 - (ii) their rejection of the Renewal Works giving details of the grounds for their objection together with the Contracting Authority's alternative proposals for the Renewal Works.
 - 2.2.4. If agreement in respect of the Renewal Works is not reached between the Company and the Contracting Authority within 40 Business Days of receipt of a Contracting Authority's notice referred to in paragraph 2.2.3 (ii) then the Company or the Contracting Authority may refer the matter to the Dispute Resolution Procedure.
 - 2.2.5. Upon agreement or determination in accordance with the Dispute Resolution Procedure of the Renewal Works, the Company shall at its own expense complete the Renewal Works in accordance with the Renewal Programme.
 - 2.2.6. The agreement of the Contracting Authority to the Renewal Works, or participation of the Contracting Authority in any inspection shall not relieve or absolve the Company from:
 - (i) its obligation under paragraph 1.1; or
 - (ii) any obligation to conduct any other inspection or perform any other Operation in accordance with these O&M Works Requirements.
 - 2.3. Final Survey
 - 2.3.1. 30 months prior to the Expiry Date the Contracting Authority may carry out a final survey of the Handback Assets in accordance with Clause 49.1 of the Agreement in which event they shall give notice to the Company in accordance with Clause 49.3 of the Agreement.
 - 2.4. Revised Renewal Programme
 - 2.4.1. The notice to be given by the Contracting Authority pursuant to Clause 49.5.1 of this Agreement shall include:
 - (i) a statement of the Renewal Works which have yet to be completed and any revisions or additions to the Renewal Works required in order to procure that all elements of Handback Assets meet the Handback Requirements; and
 - (ii) an estimate of the cost to complete those Renewal Works that in
-

accordance with the Renewal Programme should have been completed by the Final Survey but have not been completed such cost to be deducted from the Unitary Charge and paid into the Retention Fund Account in accordance with Clause 49.6 of this Agreement.

- 2.4.2. Where the Contracting Authority notifies the Company pursuant to Clause 49.5.1 of this Agreement the Company shall produce a revised Renewal Programme that takes account of the requirements of the notice and shall submit said programme to the Contracting Authority within 20 Business Days of receipt of the notice
- 2.4.3. To the extent that any inspection of mature trees, areas of tree and shrub planting, areas of grassland, areas of habitat creation and relocation and installed wildlife measures and woodland thinning shall be required, as part of the final survey pursuant to Clause 49.1 of the Agreement, it shall take place between May and September, or, where such final survey shall be carried out other than between May and September, such inspection shall take place during the period of May to September which shall be closest in time to the time of the final survey.
- 2.5. Handback Survey
- 2.5.1. Not later than 6 months nor earlier than 12 months prior to the Expiry Date, following receipt by the Contracting Authority of the Handback Certificate, the Company and the Contracting Authority shall conduct a joint survey of the O&M Works Site to assess whether the Renewal Works or all the additional Renewal Works identified by the Contracting Authority pursuant to the final survey have been carried out to the Contracting Authority's reasonable satisfaction (the '**Handback Survey**').
- 2.5.2. To the extent that any inspection of mature trees, areas of tree and shrub planting, areas of grassland, areas of habitat creation and relocation and installed wildlife measures and woodland thinning shall be required as part of the Handback Survey it shall take place between May and September, or, where the Handback Survey shall be carried out other than between May and September, such inspection shall take place during the period of May to September which shall be closest in time (having regard to the Expiry Date) to the time of the Handback Survey.
- 2.5.3. Within 20 Business Days of completion of the Handback Survey, the Contracting Authority shall either:
- (i) notify the Company that it has carried out all of the Remedial Works to the Contracting Authority's reasonable satisfaction; or
 - (ii) notify the Company in writing of its decision not to issue confirmation and set out each respect in which the Renewal Works have not been completed or in which the Handback Assets do not otherwise comply with the Handback Requirements.
- 2.5.4. Where the Contracting Authority have issued a notice under paragraph 2.5.3 (ii) then they shall at their discretion either instruct the Company to complete the Renewal Works or carry out or procure the necessary rectification work and or maintenance work at the Company's expense in accordance with this Agreement.
- 2.6. Records
- 2.6.1. The Company shall maintain records of all Renewal Works.

Appendix A Handback Details

1. Handback Details

Each element of the Handback Assets shall be in a safe and serviceable condition and shall comply with the requirements set out below in respect of each such element.

1.1. Road Pavement

1.1.1. For each 100 metre length of each Lane of the O&M Roads, the residual life (85th percentile) to the onset of investigatory conditions shall be predicted in accordance with the DMRB:

- (i) at least 85% of each Lane of the O&M Roads shall have a residual life of 10 years or more; and
- (ii) for any one kilometre of a Lane:
 - (a) no more than one 100 metre length shall have a residual life of less than 10 years; and
 - (b) no 100 metre length shall have a residual life of less than 0 years.

1.1.2. All sections of each Lane of the O&M Roads shall have a Mean Summer SCRIM Coefficient at least 0.1 greater than the Investigatory Level specified in the DMRB.

1.1.3. All carriageways of the O&M Roads shall be free from defects of a nature that require rectifying within a period of one year.

1.2. Structures

1.2.1. The residual life of structural elements of Structures shall not be less than the values specified in Table 1 below. Where the Initial Survey or final survey of Structures identifies:

- (i) any maintenance works or replacement which should proceed as soon as possible;
- (ii) any special investigation required to determine the nature or scope of works required; and/or
- (iii) any maintenance work or replacement that would normally be carried out concurrently with other works to avoid traffic disruption.

and if these works and any works arising from any special investigations shall be carried out as part of the Renewal Works, then the residual life of each structural element required by Table 1 shall be deemed to be achieved provided also that the Company carries out all necessary and required inspections, testing, repairs and maintenance in accordance with this Agreement.

1.2.2. All Structures shall be free from any defects of a nature that require rectifying within a period of one year.

Table 1: Residual Life of Elements of Structures

Structural Element	Residual Life (years)
Reinforced Concrete	30
Prestressed Concrete	30
Structural Steelwork	30
Weathering Steel	30
Corrugated steel buried Structures	30
Corrosion protection for structural steelwork	5
Deck waterproofing	5
Deck Joints:	
(a) Asphaltic Plug	5
(b) Elastomeric	5
(c) Elastomeric (in metal runners)	5
Vehicle/pedestrian parapets	15
Pedestrian parapets	15
Bearings:	
(a) Elastomeric	15
(b) Mechanical/Roller	15
(c) PTFE Coating	8
Sign/Signal Gantries	15
Reinforced Earth/Anchored Earth Structures	30
Crib walls	30
Soil nails	30
Ground Anchors	30
Catenary lighting systems	8
High mast lighting	8
CCTV poles	8
Traffic signal poles	8

1.3. Mechanical and Electrical Elements

- 1.3.1. All mechanical and electrical elements of the Handback Assets (with the exception of lamps) shall have a residual life of at least 5 years.
- 1.3.2. Each site of electrical installation shall comply with BS 7671: Regulations for Electrical Installations and be covered by a valid BS7671 certificate or certificates.

1.4. Other Elements

- 1.4.1. The residual life of each element of the Handback Assets not covered by paragraphs 1.1 to 1.3 inclusive of this Appendix A shall be measured as the difference in years between the design/serviceable life of the element and the number of years that the element shall have been in situ taking due account of any renewals.
- 1.4.2. Each such element shall have a residual life that shall not be less than the value specified for that element in Table 2 of this Appendix A or where a value and an element are not specified in Table 2, a value which shall be the greater of the value measured in accordance with paragraph 1.4.1 or 5 years.
- 1.4.3. If the element shall have a design life of less than 5 years it shall be deemed to have met these Handback Requirements provided that it shall have been renewed not more than 6 months before the Handback Survey.
- 1.4.4. Where the Initial Survey or final survey of an element identifies:
- (i) any maintenance works or replacements which should proceed as soon as possible;
 - (ii) any special investigation required to determine the nature of scope of works required; or
 - (iii) any maintenance work or replacement that would normally be carried out concurrently with other works to avoid traffic disruption;
- then these works and any works arising from any special investigation shall be carried out as part of the Renewal Programme and the residual life of such elements as required by Table 2 shall be deemed to be achieved by the satisfactory completion of these works.
- 1.4.5. All elements of the Handback Assets falling within the scope of this paragraph 1.4 shall be free from any defects of a nature that require rectifying within a period of one year.
- 1.4.6. All plant material on the O&M Works Site shall be in good health and substantially free from pests, diseases and physical damage.
- 1.4.7. Installed wildlife measures and landscape areas on the O&M Works Site shall have achieved their design function in accordance with the New Works Requirements and these Handback Requirements.
- 1.4.8. All reflecting road studs on the O&M Roads shall be renewed, such work to be carried out not more than 6 months before the Handback Survey, provided that any metal housings of reflecting road studs that shall have a residual life of at least 5 years at the Expiry Date need not to be renewed.
- 1.4.9. All non-LED lamps on the O&M Works Site shall be renewed not more than 6 months before the Expiry Date.

Table 2: Residual Life of Other Elements

Element	Residual Life (years)
Earthwork Slopes	15
Footways and Cycle Tracks	5
Covers, Gratings, Frames and Boxes	15
Kerbs, Edgings and Pre-formed Channels	15
Piped Drainage Systems	15
Culverts	15
Gullies, Catchpits and Interceptors	15
Filter Drains	5
Ducts	5
Headwalls, Aprons and Sluices	30
Tidal Flaps, Penstocks and Valves	10
Housings, Cabinets, Mountings and Posts for Communications Equipment	5
Boundary Fences	10
Walls	10
Environmental Barriers	10
Pedestrian Guard Rails	10
Noise Barriers	10
Vehicle Restraint Systems - Concrete	12
- Steel	5
Road Markings	5
Traffic Signs and Posts	5
Traffic Signals Housings, Mountings and Posts	8
Lighting Columns	8
Corrosion protection for non-structural steelwork	5
Availability Monitoring Equipment	5



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Volume Five

Schedule 4: O&M Works Requirements

Part 4: Design and Construction Criteria

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SCHEDULE 4: O & M WORKS REQUIREMENT
PART 4: DESIGN AND CONSTRUCTION CRITERIA

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1. Site Information**1.1. Land Accommodation Works**

1.1.1. The Company shall be responsible for agreeing any necessary accommodation works which may be required to facilitate any works and for providing the same. Prior to the commencement of any such Works the Company shall provide Consultation Certificates in accordance with the Certification Procedure in respect of this requirement.

2. Specific Requirements

2.1. Where the Company shall execute a Design relating to a Contracting Authority's Change or Designs for O&M works the Design, construction and completion of the New Works shall comply with the overall requirements as stated in section 2 of Schedule 4: Part 1 to this Agreement.

Where required under section 1.2 of Schedule 4: Part 6 the Company shall provide to the Contracting Authority certification to cover such Design or Design Element in accordance with the certification procedure.



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Working in partnership



Aberdeen Western Peripheral Route / Balmedie - Tipperty

Competition for the Design, Build, Finance and Operation of the
Aberdeen Western Peripheral Route / Balmedie - Tipperty

Volume Five

Schedule 4: O&M Works Requirements

Part 5: Specification

709/ACP/600



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SCHEDULE 04: O&M WORKS REQUIREMENTS

PART 5: SPECIFICATION

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- PART 2: ROUTINE MAINTENANCE
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- PART 4: DESIGN AND CONSTRUCTION CRITERIA
- PART 5: SPECIFICATION**
- PART 6: CERTIFICATION
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Preamble to the Specification

1 Preamble to the Specification

- 1.1 The Specification for the O&M Works Requirements shall be the Specification for Highway Works, published by The Stationery Office as Volume 1 of the MCHW current on the Reference Date, as modified and extended by the following:
 - i) Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to the Agreement;
 - ii) Appendix 0/2: Agreement-Specific Minor Alterations to Existing Clauses, Tables and Figures included in the Agreement;
 - iii) The Numbered Appendices listed in Appendix 0/3; and
 - iv) Appendix 0/5: Special national alterations of the Overseeing Organisation of Scotland, Wales or Northern Ireland.
- 1.1 Appendix 0/4 contains a list of the Drawings.
- 1.2 The relevant publication date of each page of the Specification for Highway Works is given in the Schedule of Pages and Relevant Publication Dates, contained in this Preamble to the Specification.
- 1.3 An Additional Clause, as indicated by a suffix 'A' in Appendix 0/5 is an alteration originating from the Overseeing Organisation of Scotland, Wales or Northern Ireland. An Additional Clause as indicated by a suffix 'AR' in Appendix 0/1 is an Agreement-specific alteration.
- 1.4 A Substitute Clause, as indicated by a suffix 'S' in Appendix 0/5 is an alteration originating from the Overseeing Organisation of Scotland, Wales or Northern Ireland. A Substitute Clause as indicated by a suffix 'SR' in Appendix 0/1 is an Agreement-specific alteration.
- 1.5 A Cancelled Clause, as indicated by a suffix 'C' in Appendix 0/5 is an alteration originating from the Overseeing Organisation of Scotland, Wales or Northern Ireland. A Cancelled Clause indicated by a suffix 'CR' in Appendix 0/1 is an Agreement-specific alteration.
- 1.6 Insofar as any of the Numbered Appendices may conflict or be inconsistent with any provision in the Specification for Highway Works the Numbered Appendices shall always prevail. Additionally, Numbered Appendices 0/1 and 0/2 shall take precedence over Numbered Appendix 0/5.
- 1.7 Any reference in these O&M Works Requirements to a Specification Clause number or Appendix shall be deemed to refer to the corresponding Substitute Clause number or Appendix listed in Appendix 0/1, 0/2 or 0/5.
- 1.8 Where a Clause is altered any original Table / Figure referred to in the Clause shall apply unless the Table / Figure is also altered. Where a Table / Figure is altered any reference in a Clause to the original Table / Figure shall apply to the altered Table / Figure.
- 1.9 Where a Clause in the Specification relates to work, goods or materials which are not required for the O&M Works it shall be deemed not to apply.
- 1.10 Any Appendix referred to in the Specification which is not used shall be deemed not to apply.
- 1.11 Where a Clause in the Specification is prefixed by an # this indicates that this particular Clause has a substitute National Alteration for one or more of the Overseeing Organisations of Scotland, Wales or Northern Ireland.
- 1.12 Substitute or additional National Clauses shall be used within countries to which they specifically apply and they are deemed to replace corresponding Clauses in the main text of the Specification as appropriate.

Preamble to the Specification

- 1.13 The substitute National Clauses are located at the end of the relevant Series together with the additional National Clauses of the Overseeing Organisation.
- 1.14 Other than where references to the Overseeing Organisation are made in the context of the Overseeing Organisation granting statutory or type approvals, the roles and functions of the Overseeing Organisation shall be undertaken by the Contracting Authority.
- 1.15 Where the Specification requires the provision of documentation to the Overseeing Organisation for statutory or type approval such documentation shall be provided to the Scottish Ministers with four hard copies and one pdf copy provided to the Contracting Authority for information.
- 1.16 The Specification is used in conjunction with this Agreement and, the delegation of the roles and functions of the Overseeing Organisation as stated in Section 1.12 above shall be amended as follows:
- (a) If any agreement, consent or approval required to be obtained from the Overseeing Organisation impacts on the health and safety of the general public, the environment or any property or equipment not owned or operated by the Company or the O&M Works Contractor, such agreement, consent, or approval shall be obtained from the Contracting Authority; and
 - (b) Where the Specification provides for the Overseeing Organisation to require a test, waive the requirement for a test or alter testing frequency, the party to whom the Overseeing Organisation's roles and functions have been ascribed by Clause 1.14 above shall exercise such decisions in accordance with the O&M Works Requirements stated in this Agreement.
- 1.17 Where a Clause or Sub-Clause in the Specification is annotated by "05/01" or similar, this indicates the relevant publication date that alteration(s) to the Clause or Sub-Clause were made.
- 1.18 The first double digit refers to the month, and the second double digit refers to the year.
- 1.19 The following interpretations shall be applied to words or terms used in documents referred to in this Part 5
- (a) except where the context requires otherwise, "Engineer" shall be deemed to be a reference to the "Designer" where such an interpretation is necessary for the Company to fulfil its obligations in regard to the Design.
 - (b) where a Numbered Appendix is referred to it shall mean a reference to the Numbered Appendix included in this Part 5
 - (c) all references to the "Site" shall be deemed to be references to lands and other places on, under, in, or through which the O&M Works shall be constructed; and
 - (d) any reference to a "British Standard" shall permit the use of an equivalent European standard.

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Preamble to the Specification**Schedule of Pages and Relevant Publication Dates of Specification for Highway Works**

Series/Appendix	Page Number	Publication Date
000	1	March 1998
000	3F	May 2005
000	2	November 2006
100	2	May 2001
100	W1F	May 2005
100	12 to 14, 20F	November 2005
100	1, 3 to 7, N1, N3	May 2006
100	8 to 11, 15 to 19, N2, N4	November 2006
100	N5, N6F	November 2008
200	1, 3F	May 2001
200	2	May 2004
300	1	May 2001
300	4	November 2002
300	2, 3, 5, 6F	May 2008
400	1 to 6, 8, 10 to 13F	November 2007
400	7, 9	November 2008
500	23 to 24, 26	November 2004
500	28F	May 2005
500	3, 22, N1F	May 2006
500	2, 5, 27	November 2006
500	6, 25	November 2007
500	1, 4, 7 to 21	November 2009

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Series/Appendix	Page Number	Publication Date
600	33	November 2003
600	2, 27, 32, 34 to 36, N1	November 2005
600	25 to 26	November 2006
600	42 to 49, 51 to 68F	November 2007
600	37, 50	November 2008
600	1, 3 to 24, 29, 38 to 41, S1 to S3F, N2 to N4F	November 2009
700	2 to 3, 5 to 6, N1, N3 to N5F	November 2006
700	33 to 34F	November 2007
700	4, N2	August 2008
700	1, 7 to 32F	November 2009
800	1 to 25F	November 2009
900	2 to 5, 9 to 22, 24 to 26, 28 to 67F	August 2008
900	1, 6 to 8, S1F	November 2008
900	23, 27	May 2009
1000	3, 5 to 6	November 2005
1000	1 to 2, 4, 7 to 15, 19 to 33F	May 2006
1000	16 to 18	November 2006
1100	1, 4F	November 2004
1100	2, N1F	November 2006
1100	3	August 2008
1200	5	May 2001
1200	2 to 3, W1F	August 2003
1200	1, 14 to 16F	May 2004

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Series/Appendix	Page Number	Publication Date
1200	4, 9 to 11, 13	May 2005
1200	12	November 2006
1200	6 to 7, N1 to N4F	November 2007
1200	8	May 2008
1300	N2F	February 2013
1300	3 to 4	February 2013
1300	1, 5 to 10, 12F	February 2013
1300	2, 11, N1	February 2013
1400	2, N1F	May 2001
1400	1, 3 to 9F	May 2006
1500	7	May 2001
1500	2	February 2003
1500	3 to 4, 8 to 11, 13	November 2004
1500	1, 5 to 6, 12, 14 to 17F	November 2006
1600	1, 4 to 5, 9, 15, 17 to 18, 24 to 26, 29 to 31, 35, 38, 49F	March 1998
1600	2, 6 to 8, 10 to 14, 16, 19, 27 to 28, 32 to 34, 36 to 37, 39 to 42, 44 to 48	November 2003
1600	3, 20 to 23, 43	November 2005
1700	2 to 7, 10 to 15	May 2004
1700	8 to 9	May 2005
1700	1, 16 to 22F	May 2006
1800	1, 4, 6, 8 to 9	May 2004
1800	2 to 3, 5, 7, 10 to 12F	November 2005

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Series/Appendix	Page Number	Publication Date
1900	17	May 2003
1900	1, 5, 8 to 14, 16, 18 to 30F, S1 to S2F	May 2005
1900	6, 7,15	May 2008
1900	2 to 4	November 2008
2000	1, 3 to 4F	May 2001
2000	2	November 2004
2100	1, 4F	March 1998
2100	2	November 2003
2100	3	November 2005
2300	1	March 1998
2300	2 to 3F	May 2001
2400	1, 4, 7F	May 2005
2400	2	May 2006
2400	3, 5 to 6	May 2008
2500	1	May 2001
2500	2, 8, 11F	November 2003
2500	10	November 2004
2500	6 to 7, 9	May 2005
2500	5	May 2006
2500	3 to 4	November 2006
2600	1	March 1998
2600	2 to 4	November 2003
2600	5	November 2004

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Series/Appendix	Page Number	Publication Date
2600	6	May 2005
2600	7F	November 2006
3000	1, 4 to 7, 10, 12 to 17, 19, 22 to 27F	May 2001
3000	20	November 2004
3000	2 to 3	May 2006
3000	8 to 9, 11, 18, 21	May 2008
5000	1, 4 to 19F, S1F	May 2005
5000	2 to 3	November 2008
Appendix A	1 to 32F	May 2008
Appendix B	1	May 2006
Appendix B	2 to 7F	November 2006
Appendix C	1	May 2005
Appendix C	2F	November 2006
# Appendix D	1F	May 2005
Appendix D(NI)	N1F	March 1998
# Appendix E	1F	May 2005
Appendix E(NI)	N1F	May 2005
Appendix F	14	November 2008
Appendix F	1 to 13, 15 to 56F	May 2009
Appendix G	1F	May 2004
Appendix H	1	May 2004

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Preamble to the Specification

Series/Appendix	Page Number	Publication Date
Appendix H	2	November 2005
Appendix H	3	November 2006
Appendix H	4 to 9F	November 2008

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

List of Additional Clauses, Tables and Figures

Clause Number	Title
070AR	Equality Act
170AR	Licenses Servitudes Wayleaves and Rights of Access
171AR	Depots
172AR	Location of Work
173AR	Cleanliness of Unit and Use of Land
174AR	Site Safety
175 AR	Material Stocks
178AR	Other Works on the O&M Works Site
270AR	Tree Felling
271AR	Existing Vegetation
273AR	Sign Posts
370AR	Rabbit, Hare, Deer and Otter Fence Specifications
371AR	Repair to and Removal of Existing Fencing
372 AR	Snow Fences
470AR	Repairs to Safety Barriers
471AR	Repairs to Existing Pedestrian Guardrail
472AR	Re-tensioning of Safety Barriers
473AR	Painting of Pedestrian Guardrails and Handrails
573AR	Renewal of Filter Drains
575AR	High Pressure Water Jetting
576AR	High Pressure Water Jetting and Suction
577AR	Closed Circuit Television Surveys
971AR	Stone Mastic Asphalt Surface Course
973AR	Overband Sealing

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Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title
976AR	Pavement Cores
1171AR	Relaying of Existing Footways
1172AR	Siding Out
1173AR	Artificial Stone Paving or Natural Stone Paving and Precast Concrete Paving Flags and Blocks
1174AR	Laying of Artificial Stone Paving Natural Stone Paving and Precast Concrete Paving Flags
1179AR	Timber Edging to Footways
1270AR	Passively Safe Sign Posts
1272AR	Chart Node and Section Markers
1273AR	Night Visibility
1274AR	Routine Maintenance of Traffic Signs, Hazard Posts, Illuminated Bollards Marker Posts Telephone Hoods Refuge Beacons and ECP Cylinders
1275 AR	Routine Maintenance of Sign Lighting Units
1276AR	Routine Maintenance of Traffic Signals
1277AR	Non Routine Maintenance of Traffic Signals
1370AR	Lamp Disposal
1371AR	Cleaning Methods and Materials
1373AR	Removal of Existing Equipment
1470AR	Temporary Overhead Feed to Lighting Units
1472AR	Non Routine Maintenance
1670AR	Static Load Testing of Piles
1671AR	Pile Integrity Tests
1672AR	Drilling Fluid
1673AR	Ground Investigation
1674AR	Geotechnical Reporting

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title
1675AR	Geotechnical Categorisation
1770AR	Construction Tolerances in Structural Concrete
1771AR	Reinforcement Couplers
1772AR	Concrete Repairs – General Requirements
1773AR	Removal of Concrete in Areas to be Repaired
1774AR	Surface Preparation
1775AR	Concrete Repairs
1776AR	Foamed Concrete Fill to Structures and Backfilling to Drainage Trenches
1777AR	Installation of Resin Anchored Reinforcement
1778AR	Early Thermal Cracking
2070AR	Replacement of Bridge Deck Waterproofing
2071AR	Repairs to Existing Waterproofing
2170AR	Permanent Works Bolts
2171AR	Bearing Replacement
2370AR	Details of Basic Types of Bridge Expansion Joints
2371AR	Replacement of Bridge Deck Expansion Joints and Gap Sealants
2372AR	Asphaltic Plug Joints
2470AR	Repointing of Brickwork Blockwork and Stonework
2471AR	Replacement of Precast Concrete Copings
2472AR	Rebedding Existing Precast Concrete
2473AR	Replacement Tiling
2474AR	Rebuilding of Defective Masonry
2475AR	Lime Putty
2476AR	Hydraulic Lime Mortars
2670AR	Anti-Graffiti Coatings

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title
2671AR	Graffiti Removal
2674AR	Convex Safety Mirrors in Underpasses and Culverts used by Pedestrians and Cyclists
2801AR	Winter Maintenance Operation
2802AR	Basic Facility
2803AR	Salting and De-icing Operations
2804AR	Snow Clearing Operations
2805AR	Company's Vehicles and Construction Plant
2806AR	De-icing Materials
2807AR	Maintenance of Company's Vehicles and other Construction Plant
2808AR	Miscellaneous winter Maintenance Operations
3101AR	Road Cleaning and Clearance
3102AR	Litter and Debris Clearance
3103AR	Removal of Dead Animals
3201AR	Emergency Response Operations
3202AR	Temporary Concrete Road Restraint Systems
3270AR	Emergency Response
3301AR	Site Investigation Rotary Coring in Carriageways
3302AR	Rotary Coring in Structures
3303AR	Structural Investigations
3304AR	Inspection Patches Within Surfacing on Bridge Structures
3305AR	Trial Holes in Paved Areas
3306AR	Falling Weight Deflectometer Tests
3307AR	Dynamic Cone Penetrometer Tests
3308AR	Structural Investigation Tests
6101AR	Maintenance of Road Restraint Systems

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title
6102AR	Maintenance of Gullies, Piped Grips, Catchpits Soakaways and Oil Separators
6103AR	Maintenance of Drainage Grips
6104AR	Maintenance of Piped Linear Drainage Systems
6105AR	Maintenance of Filter Material
6106AR	Maintenance of Drainage Structures
6107AR	Maintenance of Ancillary Drainage Items
6108AR	Litter and Refuse
6109AR	Maintenance of Road Studs
6110AR	Maintenance of Structures – General
6111AR	Maintenance of Expansion Joints
6112AR	Maintenance of Bridge Drainage Systems
6113AR	Maintenance of Parapets and Pedestrian Protection on Structures
6114AR	Maintenance of Bearings and Bearing Shelves
6115AR	Maintenance of Structures Over or Conveying Watercourses
6116AR	Maintenance of Sign or Signal Gantries and High Mast Lighting and Masts
6117AR	Maintenance of Non-Structural Items
6118AR	Maintenance of Underpasses and Culverts Used Pedestrians and Cyclists and Retaining Walls
6119AR	Maintenance of Road Traffic Signs
6120AR	Maintenance of Lit Sign Units
6121AR	Maintenance of Traffic Signals
6122AR	Maintenance of Roadside Electrical Assets, Lighting and Power Supplies
6123AR	Not Used
6124AR	Maintenance of High Mast Lighting
6125AR	Incident Response

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Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title
6126AR	Not Used
6127AR	Removal of Graffiti, Posters and Encrusted Deposits
6128AR	Not Used
6129AR	Not Used
6130AR	Maintenance of Geotechnical Assets
6201AR	Not Used
Appendix F AR	Additional Publications

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement**List of Substitute Clauses, Tables and Figures**

Clause Number, etc	Title
103SR	Communication System
110SR	Temporary Information Boards
113SR	Programme of Operations
117SR	Traffic Safety and Management
202SR	Existing Trees, Bushes and Hedges
1801SR	Structural Steelwork — General
1802SR	Amendments to BS EN 1090-2:2008
1803SR	Amendments to Steel Bridge Group Model Project Specification
2101SR	Bridge Bearings — General

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement**List of Cancelled Clauses, Tables and Figures**

Clause Number, etc.	Title
1501 to 1534 Inclusive	Motorway Communications

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Additional Clauses, Tables and Figures

Clause Number	Title and Written Text
070AR	<p>1 Equality Act</p> <p>1.1 Company shall follow the guidance given in the 'Roads for All: Good Practice Guide for Roads' in all Operations.</p> <p>1.2 Where the guidance given in the 'Roads for All: Good Practice Guide for Roads' conflicts with the MCHW, the "good practice guide" shall take precedence.</p> <p>1.3 Compliance with the 'Roads for All: Good Practice Guide for Roads' shall not absolve the Company from any liability under the Equality Act.</p>
170AR	<p>1 Licences Servitudes Wayleaves and Rights of Access</p> <p>1.4 In general the Company shall allow for gaining access to boundary fences and adjacent areas from the O&M Works Site.</p> <p>1.5 If in the opinion of the Company access from the O&M Works Site shall be impractical then the Company shall notify the Contracting Authority of any licences servitudes wayleaves or rights of access that shall have to be arranged to enable the work to be undertaken.</p> <p>1.6 Under no circumstances shall the Company gain access across private land without the prior written consent by the Contracting Authority, Relevant Authorities and the landowner and occupier/tenant.</p>
171AR	<p>1 Depots</p> <p>1.1 The Company shall establish depots and the like from which to carry out its O&M Works.</p>
172AR	<p>1 Location of Works</p> <p>1.1 Subject to other provisions of the Agreement the Company shall establish a system whereby the location of the O&M Works carried out under the Agreement is identified by the Routine Maintenance Management System.</p>
173AR	<p>1 Cleanliness of O&M Works Site and Use of Land</p> <p>1.1 The Company shall take all necessary steps to avoid creating a dust nuisance.</p> <p>1.2 If in the opinion of the Overseeing Organisation the Company shall not be dealing adequately with the control of dust the Overseeing Organisation may require the Company to carry out such additional measures as the Overseeing Organisation considers shall be necessary at the Company's expense.</p> <p>1.3 The Company shall keep all roads, private entrances, verges, paths, footways, drains and ditches that are affected by the O&M Works or by vehicles of the Company or by any of its sub-contractors or by suppliers of materials or by plant free from mud slurry or other hazardous substance that have been deposited as a consequence of his O&M</p>

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text
	<p>Works and in a safe clean and passable state.</p> <p>1.4 The Company shall promptly remove all waste or superfluous material or any substance deposited by the Company or its sub-contractor.</p> <p>1.5 The Overseeing Organisation shall have the authority to close any crossings and exits if any substance deposited shall not have been promptly removed by the Company.</p> <p>1.6 The Company shall take all necessary precautions to prevent danger nuisance or inconvenience to the owners tenants or occupiers of adjacent properties and to the public generally.</p> <p>1.7 The Company shall make its own arrangements with the owners, tenants and occupiers concerned for the use of any private land for plant and equipment stores working space borrow pits or spoil dumps it requires.</p> <p>1.8 Access to all frontages whether commercial or residential shall be maintained at all times by the Company.</p>
174AR	<p>1 Site Safety</p> <p>1.1 The Company shall comply with the requirements described in Appendix 1/74 with respect to Health and Safety on the O&M Works Site.</p>
175AR	<p>1 Material Stocks</p> <p>1.1 The Company shall establish a minimum stock of material as described in Appendix 1/78 which shall be maintained by the Company from the date of the Full Services Commencement Date until the Expiry Date.</p>
178AR	<p>1 Other Works on the O&M Works Site</p> <p>1.1 The Company shall take into account the presence from time to time of other authorised contractors and other bodies executing work which could have or may have an impact on O&M Works.</p>
270AR	<p>1 Tree Felling</p> <p>1.1 Works shall be carried out in accordance with:</p> <ul style="list-style-type: none"> i) BS 5837: 2005 Trees in Relation to Construction. Recommendations; ii) BS 3998: 1989 <i>Recommendations for Tree Work</i>; and iii) BS 4428: 1989 Code of Practice for General Landscape O&M Works (excluding hard surfaces). <p>1.2 Marking of Trees to be Removed</p> <p>1.2.1 The Company shall set out the O&M Works prior to the commencement of any tree felling operations and shall indicate with paint those trees the removal of which he considers necessary for the construction of the Permanent Works. No trees, bushes or hedges shall be felled or uprooted without approval from the Overseeing Organisation.</p>

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text
1.3	Fencing
1.3.1	Trees, bushes and undergrowth to be preserved shall be fenced off with type CW 120 cleft chestnut pale fencing complying with BS 1722, Part 4 1986, placed in accordance with BS 5837: 2005, and shall be maintained in effective condition until the O&M Works have been fully completed. Fences shall be erected before the O&M Works commence.
1.4	Precautions
1.4.1	Before commencing felling operations warning notices and arrangements shall be made by the Company to prevent public gaining access to the danger zone.
1.4.2	When felling of mature trees takes place among trees and vegetation that shall be preserved, near property boundaries, public roads, buildings or other Structures, trees shall be carefully cut down in sections so as to avoid damage to adjacent features and vegetation. To avoid compaction of ground appropriate geotextiles shall be laid down where vehicles / plant have access to the O&M Works Site.
1.4.3	Where felling takes place close to O&M Roads the Company shall notify the relevant roads authority and the police. The Company shall comply with the Code of Practice for Safety at Street and Road Works in respect of warning signs, direction notices and traffic control.
1.4.4	If there is a likelihood of contact with overhead telephone lines, these lines should be disconnected during the O&M Works by British Telecom.
1.4.5	Where work is to be carried out within 9 metres of electricity lines suspended from wooden poles or 15 metres of lines suspended from steel towers advice from the Scottish and Southern Energy Area Manager shall be sought.
1.4.6	Position and depth of all pipes, cables and underground Structures shall be verified. The method of work shall take into account such items.
1.4.7	Voids left after the removal of stumps and roots shall be filled with suitable material and compacted in compliance with Clause 612 of the Specification.
1.4.8	Damage to trees, tree saplings, shrubs or hedges during felling shall be made good as described in BS 3998: 1989 Tree Work, paragraph 7.
1.4.9	Any bat roosts identified by the Company shall immediately be reported to the Overseeing Organisation and ecological clerk of works and no works shall be carried out on any tree in which bat roosts are located without further written instructions from the Overseeing Organisation.
1.4.10	No trees identified during the ecological surveys as containing confirmed bat roosts or having the potential for bat roosting shall be felled after 31 October unless authorised by the Scottish Government. No trees containing confirmed bat roosts shall be felled without the necessary licences having been obtained from Scottish Natural Heritage (SNH). Any licences required from SNH shall be arranged by the Company once the species of bat and population size has been confirmed by a licensed bat

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Clause Number	Title and Written Text
	worker.
1.4.11	The Company shall notify the Overseeing Organisation and ecological clerk of works not less than 7 days in advance of felling any trees as containing confirmed bat roosts or having the potential for bat roosting.
1.4.12	The Company shall undertake a pre-felling inspection of all trees identified as containing confirmed bat roosts or having the potential for bat roosting under the supervision of a licensed bat worker. Each tree with bat roosts or potential for bat roosting shall be inspected by safest practicable means and searched for signs of bats, using a torch and endoscope where necessary, as directed by the licensed bat worker. Where no signs of bats and no potential access points are identified the tree may be felled subject to the approval of the licensed bat worker.
1.4.13	Where felling of trees containing bat roosts is undertaken under licence and where potential access points for bats are identified, the trees shall be section felled with the feature of interest lowered gently to the ground on a rope in the presence of the licensed bat worker, searched and left on the ground for a period of 24 to 48 hours with the access point exposed to allow any roosting bats to disperse.
1.4.14	Should any bats be found to be present in trees during felling the Company shall cease felling works in the area and immediately contact SNH the licensed bat worker and the Overseeing Organisation and seek their instructions. No further works shall be undertaken on trees containing roosting bats without permission from SNH.
1.5	Weather Conditions for Tree Work
1.5.1	Work shall cease when trees are very wet, covered in ice or snow, or during storms or high winds except in emergencies, where any work shall be the minimum to make the situation safe.
1.6	Grubbing up Stumps and Filling Voids
1.6.1	All stumps and tree roots shall be grubbed up provided this does not damage trees which are being retained. If a stump cannot be removed it shall be cut at least 300 millimetres below ground level, the hole shall be filled with soil, compacted, levelled and seeded. Refer to 270AR(1.10).
1.7	Chipping of Wood and Bark
1.7.1	Small timber, twigs, bark and roots not infected by honey fungus may be chipped and left on the Site to compost at agreed locations and shall be turned over at specified intervals. The Company shall remove surplus timber from the O&M Works Site, unless 270AR(1.10) applies.
1.8	Preliminary Tree Work - BS 3998: 1989
1.8.1	The Company shall give notice of proposed tree work in conservation areas, and shall seek permission from the relevant authority where trees are protected by a Tree Preservation Order.
1.8.2	Pruning works include the removal of dead, diseased or damaged branches, removal of heavy branches, crown lifting, crown thinning,

Part 5: Specification

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Clause Number	Title and Written Text
	<p>pruning damaged tree saplings, bushes and roots and pruning and shaping of overgrown / neglected hedges.</p> <p>1.8.3 When a branch is to be removed the cut surface should be made at a fork or at the main stem and the final cut should be just outside the branch bark collar, where present. When there is not a collar the angle of the cut shall be the mirror image of the branch bark ridge (BS 3998: 1989: Page 4; 13 and Figure 1). The outline of pruned trees shall be fair and symmetrical.</p> <p>1.8.4 Sealing of the cut surface with a proprietary preparation shall be carried out when there is a high risk of fungal or bacterial infection. Table 1 of Appendix C of BS 3998 lists suitable formulations which may be used. Otherwise heartwood exposed by pruning shall be left untreated so that the surface dries out. A bitumastic or latex based paint shall be applied to the outer edge of the cut to prevent drying and dieback of the cambium. Treatment of the whole wound is for cosmetic reasons only; a thin layer of bitumastic or latex based paint or household emulsion can be applied.</p> <p>1.8.5 Heavy limbs shall be taken down in sections and shall be lowered with ropes to avoid damage to the tree and its surroundings. The method of pruning and sealing of cut surfaces shall be as prescribed.</p> <p>1.8.6 In crown lifting lower branches shall be removed to a given height above ground level in a manner described.</p> <p>1.8.7 Crown thinning involves the removal of a proportion of secondary branch growth throughout the crown to produce an open crown. Thinning shall not be too severe as it may induce fresh growth of epicormic shoots.</p> <p>1.8.8 Damaged tree saplings shall be cut back to sound wood just above a bud. Damaged bushes shall be cut to sound wood or the whole plant shall be cut to base to allow fresh growth to take over.</p> <p>1.9 Timber - Stacking</p> <p>1.9.1 Timber shall not be stacked against existing trees and shrubs to be retained. Timber stacks shall not exceed one metre high under any circumstances. Timber stacks shall be constructed in such a way as to prevent the movement or slippage of timber.</p> <p>1.10 Existing Woodland</p> <p>1.10.1 The timber from native species to be felled within or adjacent to, existing woodland shall be left within the woodland for habitat enhancement, to the approval of SNH. Stumps within woodland are not to be ground down or removed.</p>
271AR	<p>1 Existing Vegetation to be Protected</p> <p>1.1 Protection of existing vegetation which is to be retained shall be in accordance with BS 5837: 2005 and as follows:</p> <p>iv) The Company shall ensure that all work is safeguarded against damage due to the carrying out of other O&M Works. Should any damage or loss be caused to any existing or completed works</p>

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Clause Number	Title and Written Text
	<p>then the Company shall reinstate and make good such damage or loss all with the acknowledgement in writing of the Overseeing Organisation.</p> <p>v) No existing mature trees, protected or designated landscape areas or other artefact shall be removed or cleaned without the prior written agreement of the Overseeing Organisation. The proposed extent of Site clearance works shall be submitted to the Contracting Authority prior to the O&M Works starting on the O&M Works Site.</p> <p>vi) No existing trees, shrubs, or other plants shall be removed or cut without specific written instructions from the Designer. Protective fencing in accordance with BS 5837 2005 shall be erected prior to commencement of the O&M Works to protect the areas shown in drawings. No soil, spoil, fuel oil, chemicals, construction materials or rubbish shall be stored or tipped within the spread of existing trees, shrubs or hedges.</p> <p>vii) Should any tree or shrub be mistakenly uprooted, destroyed, or in the opinion of the Overseeing Organisation, be damaged beyond reasonable chance of survival in its original shape due to the Company's negligence, then the Company shall provide and plant suitable replacement trees or shrubs of a similar type and age. If such replacement trees or shrubs are not obtainable, alternative trees or shrubs, acknowledged in writing by the Overseeing Organisation, shall be provided and planted. The Company's liability shall continue until the replacement trees and shrubs have survived the winter following the planting and have completed satisfactorily the following summer's growth.</p>
	<p>2 Existing Vegetation to be Retained</p> <p>2.1 Existing trees within the O&M Works Site that are not removed as part of Site clearance and are to be protected shall be inspected by a qualified tree surgeon and shall have dead, dying or broken branches pruned back to live wood.</p> <p>2.2 Dead trees shall be felled and uprooted as required in order to complete the O&M Works, alternatively timber and tree stumps, occurring in areas to be planted may be left in situ to re-grow or provide wildlife habitat, providing the timber is not diseased and with the acknowledgement in writing of the Overseeing Organisation.</p> <p>2.3 Pruning, shaping, trimming of existing trees shrubs and hedges, and sealing of newly cut surfaces shrubs and hedges shall be carried out in accordance with BS 3998: 1989.</p> <p>2.4 Existing shrubs shall be cut back or pruned as necessary. The outline of pruned shrubs or groups of shrubs shall be natural. Overgrown hedges shall be cut to shape. Exposed roots shall be cut back to clean wood and</p>

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Clause Number	Title and Written Text
	covered by soil.
273AR	<p>1 Sign Posts</p> <p>1.1 Removal of existing sign posts shall include removal of all foundations.</p> <p>1.2 Prior to the removal of sign posts carrying illuminated signs the Company shall arrange to de-energise the electricity supply to the electrical equipment.</p> <p>1.3 Backfilling of hole to ground level and compaction.</p>
370AR	<p>1 Rabbit, Hare, Deer and Otter Fence Specifications</p> <p>1.1 The extent of fencing for protected fauna shall meet the requirements of SNH. The Company shall consult and comply with SNH in this respect.</p> <p>1.2 Rabbits and Hares</p> <p>1.2.1 Fences to protect planting areas from rabbits and hares shall be in accordance with the following specification:</p> <p>viii) Post and mesh fence with a galvanised hexagonal wire mesh 1200 millimetres wide having maximum openings of 31 millimetres and 1.25 millimetres (18 gauge) wire. Mesh to be affixed to two galvanised line wires of minimum 4 millimetres in diameter at 900 millimetres and 150 millimetres above ground level using galvanised fixing rings every 600 millimetres on top wire and 1200 millimetres on bottom wire. Mesh to be buried to 150 millimetres depth and returned outwards from protected area. End and change of direction posts to be 125 millimetres diameter round section, 1.87 metres long and driven 770 millimetres into the ground. Strut to be 65 millimetres round section located in notch on main post and held in the ground by 0.6 metre split rail. Line posts to be 1.6 metres long and 65 millimetres square section driven 500 millimetres into the ground at 4 metre centres. Mesh also to be fixed to line posts by six staples per post.</p> <p>1.3 Deer</p> <p>1.3.1 Fences to protect planting areas from deer shall be in accordance with the following specification:</p> <p>ix) 1.80 metres high timber post and 4 wire deer fence with rectangular wire mesh.</p> <p>x) Fence shall be constructed to the details on HCD Drawing H12 and BS1722 Parts 2 & 3 with the following additions and amendments:-</p> <p>(a) Top rectangular wire mesh to be type C/6/90/30.</p> <p>(b) Bottom rectangular wire mesh to be type C/8/80/15.</p>

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Clause Number	Title and Written Text
	<p>(c) Timber posts and struts are to be for a 1.8 metres high fence selected from either Table 4 or 5 from BS1722 Part 3. Timber straining posts are to be 2.90 metres length, 178 millimetres minimum diameter.</p> <p>(d) Intermediate posts are to be set or driven into the ground to a depth of 0.6 metres. Straining posts shall be set into the ground to a depth of 1.0 metre.</p> <p>(e) Struts are to be anchored in the ground in rammed backfill with a 450 x 102 x 51 millimetres timber thrust plate attached to the end of the strut.</p> <p>(f) 4 line wires complying with the requirements of Clause 2.1 BS1722 Part 2, shall be provided set 50, 850, 1750, 1800 millimetres above ground level. The wire mesh shall be attached to the line wires to the details of Clause 3.3.2.4 BS1722 Part 2.</p> <p>(g) Intermediate posts are to be provided at intervals not exceeding 2.75 metres.</p> <p>(h) Existing ground must be trimmed to maintain the 50 millimetres distance between the ground and the bottom of the fence.</p> <p>1.4 Otters</p> <p>1.4.1 Fences shall be in accordance with the following specification:</p> <p>xi) Post and mesh fences in accordance with British Standard BS 1722: Part 2 Specification for rectangular wire mesh and hexagonal wire netting fences with a wire mesh having maximum openings of 50 millimetres square, wires in accordance with British Standard BS 4102: Specification for steel wire products for fences, galvanised in accordance with British Standard BS 443: 1982 Specification for testing wire coatings on steel wire and for quality requirements with wires of not less than 3 millimetres in diameter, a height above ground level of 1.50 metres (which includes a 300 millimetre 45 degree outward splay at the top of the fence), a depth below ground of 300 millimetres, with a further 300 millimetre lap laid horizontally out from the fence and a single strand of galvanised wire of not less than 4 millimetres in diameter securely fixed to the wire mesh at ground level; (refer to CIRIA C646 – Wildlife Fencing Design Guide 2006); and</p> <p>xii) Bridges and culverts designed to carry water shall incorporate a ledge or platform as specified in Section 21.7 of Part A1.</p>
371AR	<p>1 Repairs to and Removal of Existing Fencing</p> <p>1.7 Repairs to and renewal of existing fences shall comply with the appropriate Clauses in Series 300.</p>

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Clause Number	Title and Written Text
	<p>1.8 If any posts rails or lengths of fencing shall have been removed by the Company to facilitate repairs or renewal of existing fences they shall be reinstated as soon as possible. In the interim the gap in the fencing shall be closed with temporary fencing in accordance with Clause 303 so that no livestock escapes from the adjoining land.</p> <p>1.9 Repairs and renewals of existing fences shall match the existing material and dimensions as far as shall be practicable.</p>
372AR	<p>1 Snow Fences</p> <p>1.1 Snow fences shall be in accordance with the recommendations set out in Transport and Road Research Laboratory Report LR 362 "Snow Fences" by L E Hogbin dated January 1970 and shall comply with the quality management schemes detailed in Appendix A.</p>
470AR	<p>1 Repairs to Road Restraint Systems</p> <p>1.1 Repairs to safety barrier systems shall comply with the requirements of BS 7669-3 and BS EN 1317-1.</p> <p>1.2 Repairs of safety barrier systems shall be carried out in accordance with TD 19/06 and the manufacturers' latest drawings and instructions.</p> <p>1.3 All accident damage repairs shall be carried out using the same type of safety barrier system as currently exists at the location.</p> <p>1.4 The type of post used shall depend on the results from examination of post foundations and, where necessary, loading tests being carried out by the Operating Company in accordance with Annex B of BS 7669-3.</p>
471AR	<p>1 Repairs to Existing Pedestrian Guardrail</p> <p>1.1 Repairs to existing pedestrian guardrail will generally be the taking down of parts or sections of existing guardrail and the erection in their place of new parts or sections following accident damage or long term deterioration of the guardrail.</p> <p>1.2 When existing posts and concrete footings are removed and new posts and concrete footings are installed in the same location, any remaining voids shall be filled with concrete and the surrounding surface reinstated to match the existing. Concrete shall be mix ST1.</p> <p>1.3 All Existing bolts nuts and washers shall not be reused.</p> <p>1.4 Repairs to pedestrian guardrails shall be carried out using panels and posts which match the original installation as closely as possible.</p> <p>1.5 Repaired and renewed pedestrian guardrail shall comply with Clause 411.</p> <p>1.6 The Company shall remove damaged sections of guardrail and close the resulting opening using suitable temporary guardrail.</p> <p>1.7 The Company shall make permanent repairs using panels to match</p>

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	<p>existing.</p> <p>1.8 Permanent repairs shall be carried out in accordance with the requirements of the Agreement and, in any case, no later than 28 days after the removal of the damaged sections.</p>
472AR	<p>1 Re-tensioning of Safety Barriers</p> <p>Tensioned Corrugated Beam Safety Barrier</p> <p>1.1 Tensioned Corrugated Beam Safety Barrier shall be re-tensioned in accordance with BS 7669: Part 3, Section 2</p> <p>1.2 Tensioning between any two limits shall not proceed until each limit is anchored sufficiently securely to resist the load effects due to tensioning.</p> <p>1.3 Tensioning shall be undertaken only when the ambient temperature is between 25°C and -5°C.</p> <p>1.4 Tensioning assemblies should be located not more than 70.5 metres apart and each installation should incorporate at least one adjuster assembly. If the inspection prior to re-tensioning indicates that additional tensioning assemblies are required, these shall be supplied and fitted by the Company as part of the re-tensioning operation.</p> <p>1.5 On completion of tensioning, the centre of each screw securing beams to posts shall not be closer than 25 mm \pm2 mm to the end of the slotted hole in the beam.</p> <p>Wire Rope Safety Barrier</p> <p>1.6 Wire Rope Safety Barrier shall be re-tensioned in accordance with BS 7669: Part 3, Section 2.5.</p> <p>1.7 Tensioning between any two limits shall not proceed until each limit is anchored sufficiently securely to resist the load effects due to tensioning.</p> <p>1.8 Tensioning shall be undertaken only when the ambient temperature is between 30°C and -10°C.</p> <p>1.9 The ambient temperature shall be recorded by the Operating Company.</p> <p>Tensioned Rectangular Hollow Section Beam Safety Barrier</p> <p>1.10 Assembly and tensioning shall be carried out in accordance with BS 7669: Part 3, Section 2.4.</p> <p>1.11 Tensioning between any two limits shall not proceed until each limit is anchored sufficiently securely to resist the load effects due to tensioning.</p> <p>1.12 Tensioning shall be undertaken only when the ambient temperature is between 10°C and 20°C</p> <p>1.13 Tensioning assemblies shall be located not more than 70.5 m apart and each installation shall incorporate at least one tensioning assembly. If the inspection prior to re-tensioning indicates that additional tensioning assemblies are required, these shall be supplied and fitted by the Operating Company as part of the re-tensioning operation.</p>

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473AR	1	<p>Painting of Pedestrian Guardrails and Handrails</p> <p>1.1 Painting of Pedestrian Guardrails and Handrails shall be carried out in accordance with Series 5000 – Maintenance Painting of Steelwork, including Clause 5007SE Paint and Similar Protective Coatings as contained in the Manual of Contract Documents for Highway Works.</p> <p>1.2 All primed surfaces shall be painted with one coat of undercoating of the colour appropriate to the colour of finishing coat</p> <p>1.3 Two finishing coats shall be applied.</p>
476AR	1	<p>Safety Barrier System Stock Requirement</p> <p>1.1 The Company shall maintain a stock of road restraint system components such that at no time does it fall below the minimum level referred to in Part 2 to Schedule 4.</p>
477AR	1	<p>Repairs to and Renewal of Existing Pedestrian Guardrail</p> <p>1.1 Repairs to and renewal of existing pedestrian guardrail shall comply with the appropriate Clauses of Series 400 and the following:</p> <ul style="list-style-type: none"> i) in general work shall comprise the taking down of parts or sections of existing guardrail and the erection in their place of new parts or sections following accident damage or long term deterioration of the guardrail; ii) where existing posts and concrete footings are removed and new posts and concrete footings are installed in the same location any remaining voids shall be filled with concrete; iii) concrete shall be mix ST1; iv) existing bolt nuts and washers shall not be reused; v) repairs to pedestrian guardrails shall be carried out using panels and posts which match the original installation as closely as possible; and vi) all component parts shall comply with Clause 411. <p>1.2 Damaged sections of guardrail shall be removed and the resultant opening temporarily closed off.</p> <p>1.3 The Company shall make permanent repairs using panels to match existing.</p> <p>1.4 Permanent repairs shall be carried out in accordance with these O&M Works Requirements and in any case no later than 28 days after the erection of the temporary units.</p>
478AR	1	<p>Painting of Pedestrian Guardrails and Handrails</p> <p>1.1 General</p> <p>1.1.1 Painting shall be carried out in accordance with the recommendations of</p>

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	1.1.2 1.1.3 1.1.4	<p>British Standard Code of Practice CP6150.</p> <p>All steel fabricated into units before delivery to the location of the O&M Works shall be free of mill scale rust and foreign matter when reviewed by normal vision and primed without delay with calcium plumbate primer to BS 3698:1964 Specification for calcium plumbate priming paints Type A.</p> <p>All other surfaces of iron and steel shall be rendered clean dry and free from grease rust or mill scale prior to priming as described in sub Clause 2 of this Clause 478AR.</p> <p>Galvanised surfaces which have been exposed to atmospheric weathering for a period of 26 weeks or more shall be cleaned down and primed with calcium plumbate primer to BS 3698:1964 Specification for calcium plumbate priming paints Type A or B. Galvanised surfaces which have not been weathered for 26 weeks shall first be treated with an etching compound of the following composition by volume:</p>
573AR	1 1.1 1.2 1.3 1.4 1.5 1.6 1.7	<p>Renewal of Filter Drains</p> <p>Filter drain material shall be renewed by replacing the filter media with Type B material in accordance with Table 5/5 of Clause 505.</p> <p>The depth of the existing material to be removed from within the trench shall be the depth to invert level of the pipe or the depth to the level of the underside of siltation if this is higher than invert level of the pipe. This depth shall be determined in advance of excavation and replacement operations by the excavation of trial pits.</p> <p>The width of the existing material within the trench to be removed shall be that of the existing drain filter material at the invert level of the pipe or at the level of the underside of siltation if this is higher than invert level of the pipe. This width shall be determined in advance of excavation and replacement operations by the excavation of trial pits</p> <p>The trench shall be back-filled up to ground level or where the filter material is to be covered with red chippings to the underside of the red chippings with Type B material in accordance with Table 5/5 of Clause 505.</p> <p>If required, any geotextile membrane present shall be replaced with new material equivalent to that removed the complete drain shall be replaced.</p> <p>Where the filter drain is to be completely renewed, it shall be constructed in accordance with Highway Construction Detail drawing Number F2 with Type B material.</p> <p>Where the existing filter drain material is recycled it shall be tested in accordance with Clause 710.</p>
575AR	1 1.1	<p>High Pressure Water Jetting</p> <p>High pressure water jetting shall be carried out using water which complies with sub-Clause 1702.3 by a jetting pump with a variable output up to 220l/minute at a minimum of 14N/mm². Minimum water storage</p>

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	capacity shall be 4.5 cubic metre. A minimum length of 180 metres of 25 millimetre diameter jetting hose shall be provided.
576AR	<p>1 High Pressure Water Jetting and Suction</p> <p>1.1 In addition to the jetting requirements which shall be as Clause 575AR the suction facility shall be provided by a liquid ring exhauster and shall have an air flow of at least 70 cubic metre per minute and 380 millimetre Hg vacuum through a 200 millimetre boom mounted pipe with a debris tank capacity of at least 5.5 cubic metre.</p>
577AR	<p>1 Closed Circuit Television Surveys</p> <p>1.1 Definition</p> <p>1.1.1 For the purposes of this Clause 'drain' shall be deemed to include sewers drains filter drains ducts piped grips combined drainage and kerb systems and linear drainage channel systems.</p> <p>1.2 Extent of Survey and Method to be Used</p> <p>1.2.1 Wherever instructed or ordered to do so, the drains shall be inspected by closed circuit television, all in accordance with Series 9000, MCHW 5.9, Parts 1-5, so that all cracks, blemishes, encrustations, open joints, silt, debris, collapsed sections, roots, vermin and alignment can be observed.</p> <p>1.2.2 Television cameras shall be drawn by cables and winches self-propelled tractor driven or fixed to rods.</p> <p>1.2.3 Where the survey of a drain length is stopped by a blockage in the drain, the drain shall be surveyed in the opposite direction on the other side of the blockage.</p> <p>1.3 Records</p> <p>1.3.1 The Company shall provide a record on Digital Versatile Disc (DVD) of all drain lengths showing a continuous record of data displayed automatically on the monitor screen containing the following information::</p> <ul style="list-style-type: none"> (i) automatic update of the camera's metreage position in the drain line, (ii) date of survey, (iii) direction of survey, (iv) pipe dimensions, and (v) length/location reference. <p>1.3.2 The DVD recordings shall become the property of the Contracting Authority..</p> <p>1.4 Photographs</p> <p>1.4.1 Photographs shall be taken of Defects and samples of average condition.</p> <p>1.4.2 Where colour in-line photography is used, photographs shall be taken at intervals not exceeding 5 metres</p>

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	<p>1.4.3 Durable half plate prints shall be provided.</p> <p>1.4.4 The photographs shall be identified in relation to the metreage of the place taken and shall show clear definition and accurately reflect what is shown on the monitor.</p> <p>1.4.5 The speed of the camera in the drain shall be limited to: 0.10 m/s for drains of diameter less than 200mm; 0.15 m/s for diameters exceeding 200mm but not exceeding 300mm; and 0.20 m/s for those exceeding 300mm.</p> <p>1.5 Reports</p> <p>1.5.1 The reports shall be presented to the Overseeing Organisation in accordance with the format laid down in the Manual of Sewer Condition Classification – 4th Edition, published by the Water Research Council.</p> <p>1.5.2 Each chamber shall be recorded on a separate sheet except for buried chambers which may be included within a length</p> <p>1.5.3 Photographs shall be mounted and shall follow the relevant page of the report.</p> <p>1.5.4 All dimensions shall be in metric units.</p> <p>1.5.5 The report shall include the depth measured from cover level to invert for every drain in each chamber.</p> <p>1.5.6 One copy of the report shall be provided within 14 days of completion of each survey or if required by the Overseeing Organisation each section of the survey.</p>				
971AR	<p>1 Stone Mastic Asphalt Surface Course</p> <p>1.1 General</p> <p>1.1.1 Stone mastic asphalt shall comply with the general requirements of BS EN 13108 Bituminous mixtures: Material specifications and MCHW Series 700 and 900 and the specific requirements of sub-Clauses 2 to 39 of this Clause.</p> <p>1.1.2 Stone mastic asphalt shall be produced in plants that shall be registered to the BS EN ISO 9001 'Sector Scheme for the Production of Asphalt Mixes', described in Appendix A.</p> <p>1.1.3 The Design for stone mastic asphalt to Clause 970AR shall be to the general requirements of Clause 942 and shall specifically comply with the requirements for wheel tracking and sensitivity to water.</p> <p>1.1.4 The Company shall declare target aggregate gradings and binder contents prior to commencement of the O&M Works.</p> <p>1.1.5 The nominal installation depths shall be classified into three categories as given in the table below:</p> <table border="1"> <tr> <td>Type</td> <td>Type A</td> <td>Type B</td> <td>Type C</td> </tr> </table>	Type	Type A	Type B	Type C
Type	Type A	Type B	Type C		

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Clause Number	Title and Written Text				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Nominal installation depth (millimeter)</td> <td style="width: 12.5%; text-align: center;"><18</td> <td style="width: 12.5%; text-align: center;">18 to 25</td> <td style="width: 12.5%; text-align: center;">>25</td> </tr> </table>	Nominal installation depth (millimeter)	<18	18 to 25	>25
Nominal installation depth (millimeter)	<18	18 to 25	>25		
1.2	Aggregates				
1.2.1	Coarse aggregate shall be crushed rock or crushed slag complying with Clause 901.				
1.2.2	The shape of the coarse aggregate shall comply with a maximum flakiness index of Category F125 as defined in BS EN 13043:2002 Aggregates for Bituminous Mixtures and Surface Treatments for Roads, Airfields and Other Trafficked Areas, clause 4.1.6.				
1.2.3	Fine aggregate shall comply with Clause 901 and shall comprise crushed fine aggregate derived from, rock, slag or gravel, which may be blended with not more than 50% of natural sand.				
1.2.4	The resistance to polishing of the coarse aggregate shall have a minimum declared PSV category specified in Appendix 7/1 in accordance with BS EN 13043:2002 Aggregates for Bituminous Mixtures and Surface Treatments for Roads, Airfields and Other Trafficked Areas, clause 4.2.3.				
1.2.5	The resistance to abrasion of coarse aggregate shall have a maximum AAV specified in Appendix 7/1 in accordance with BS EN 13043:2002 Aggregates for Bituminous Mixtures and Surface Treatments for Roads, Airfields and Other Trafficked Areas, clause 4.2.				
1.3	Filler				
1.3.1	Added filler aggregate shall be hydrated lime, crushed limestone or Portland Cement, in accordance with the requirements of BS EN 13108-4, Bituminous mixtures: Material specifications , Part 4: Hot Rolled Asphalt and shall be not less than 2% by mass of total aggregate.				
1.4	Binder				
1.4.1	Bitumen shall comply with BS EN 12591:2000 Bitumen and Bituminous Binders: Specifications for Paving Grade Bitumens or BS 3690-3:1990 Bitumens for Building and Civil Engineering: Specification for Mixtures of Bitumen with Pitch, Tar and Trinidad Lake Asphalt, and shall be produced in plants that shall be registered to BS EN ISO 9001 'Sector Scheme for the Supply of Paving Grade Binders', described in Appendix A.				
1.4.2	The said binder shall not be harder than penetration reference 50 (paving grade 40/60).				
1.4.3	If the deformation resistance requirement in sub-Clause 18 of this Clause shall not be required, then the binder penetration reference shall be as specified in Appendix 7/1.				
1.5	Binder Modifiers				
1.5.1	Binder modifiers pre-blended with bitumen or binder modifiers, including but not limited to natural or man-made fibres, which shall be added or blended with base bitumen complying with BS EN 12591:2000 Bitumen and Bituminous Binders: Specifications for Paving Grade Bitumens of the				

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	stated penetration range at the mixing plant shall have a British Board of Agrément HAPAS Roads and Bridges Certificate.
1.5.2	In the event that no such certificates have been issued, binder modifiers, pre-blended modified binders or additives shall not be used without the prior written approval of the Overseeing Organisation.
1.5.3	In the event that no British Board of Agrément HAPAS Roads and Bridges Certificates have been issued, the Company shall provide with its Design a data sheet giving details of the properties of the modified binders or additives proposed including those referred to in Appendix 7/1.
1.5.4	The Company shall provide the rheological product identification data for pre-blended modified binders in accordance with Clause 956 and cohesion in accordance with Clause 957
1.6	Mixture
1.6.1	The binder drainage of the loose mixture at the target composition at a temperature of 175°C in accordance with <u>BS 594987:2010</u> shall not be more than 0.3% by total mass of mixture.
1.6.2	The agreed binder content for the mixture shall be the target binder content $\pm 0.6\%$.
1.7	Job Mixture Approval
1.7.1	Details of the proposed mixture Design from each asphalt mixing plant shall be submitted to the Overseeing Organisation.
1.7.2	The information may be obtained from either a job mixture trial or from the use of the mixture on a previous contract carried out in accordance with this Clause, and shall include all the following particulars: <ul style="list-style-type: none"> i) bitumen penetration reference; ii) quantities of binder and aggregate; iii) aggregate source and grading; iv) proprietary name and generic type of binder modifier; v) quantity of any binder modifier, including natural or man-made fibres added at the mixer; and vi) modified binder and mixture data requirements specified in Appendix 7/1.
1.7.3	If a modified binder including but not limited to any proportion of the modifier shall not be fully recovered on analysis for determination of binder content details of alterations to the test method or the correction necessary to the results together with supporting data shall be submitted to the Overseeing organisation with the proposed mixture Design for prior written consent by the Contracting Authority to implement them.
1.7.4	The mixture shall be approved in writing by the Overseeing Organisation as the job standard mixture provided that: <ul style="list-style-type: none"> i) the mixture Design proposed complies with sub-Clauses 1 and 3

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	of this Clause;
	ii) information has been submitted in accordance with sub-Clauses 17 and 18 of this Clause;
	iii) information submitted in accordance with sub-Clause 18 of this Clause has been approved in writing by the Overseeing Organisation.
1.7.5	If the mix Design or constituent materials of a job standard mixture shall be changed by the Company, details of the revised mixture shall be submitted for written approval in accordance with sub-Clause 17 of this Clause.
1.7.6	Job mixture trials may be carried out on or off the O&M Works Site, however material laid for a job mixture trial on the O&M Works Site which complies with this Specification may form part of the binder/regulating course in the permanent works.
1.7.7	If carried out off site, trials may be arranged independently or in conjunction with other works.
1.8	Mixing
1.8.1	Unless otherwise specified by the supplier of the modified binder, stone mastic asphalt shall be mixed at a temperature in accordance with the requirements of BS EN 13108 Bituminous mixtures: Material specifications & PD 6691, for the penetration reference of the bitumen.
1.8.2	This shall be done in such manner that a homogeneous mixture of aggregate, filler, bitumen and additive results.
1.8.3	At the time of mixing, the coarse aggregate shall be in a surface dry condition.
1.9	Transportation
1.9.1	The transportation of stone mastic asphalt shall be in accordance with sub-Clause 901.3.
1.10	Permanent Works
1.10.1	When specified in Appendix 7/1, sampling and testing shall be carried out to establish compliance of material laid in the permanent works.
1.11	Sampling from the Laid Material
1.11.1	Samples of uncompacted material shall be taken from the paver as near to where the cores shall be taken as shall be practicable, in accordance with BS EN 12697 Bituminous mixtures: Test methods for hot mix asphalt, Part 27: Sampling.
1.11.2	Six 200 millimetre diameter cores shall be cut, where practical from the centre of the Lane out of material from each mixing plant: <ul style="list-style-type: none"> i) from material laid specially in a job mixture approval trial; ii) from the first 1 kilometre length of stone mastic asphalt from a mixing plant laid in the permanent works; or

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	<p>iii) within 3 days of laying stone mastic asphalt from a mixing plant in the permanent works, where less than 1 kilometre length has been laid whichever occurs first.</p> <p>1.11.3 The 200 millimetre diameter cores shall be cut within 3 days of laying the material unless they have been cut under the requirements of sub-Clause 35 of this Clause.</p> <p>1.11.4 The cores shall be transported as soon as possible to the laboratory.</p> <p>1.11.5 If the storage period shall be less than 4 days, the storage temperature shall be within the range 0°C to 25°C.</p> <p>1.11.6 For storage beyond 4 days, the temperature shall be within the range 0°C to 5°C. Cores shall be stored on a flat face on a horizontal surface, and shall not be stacked.</p> <p>1.11.7 Site storage of cores where unavoidable and conditions of transportation shall be as close as shall be practicable to the laboratory conditions.</p> <p>1.11.8 The storage temperature and times, including whilst cores are on the O&M Works Site shall be recorded.</p> <p>1.11.9 Three pairs of 150 millimetre diameter cores shall be cut at the same chainages as the 200 millimetre diameter core.</p> <p>1.11.10 One core of each pair shall be taken from the centre of the lane adjacent to the 200 millimetre diameter core and one whose centre shall be between 500 millimetre and 1000 millimetre from the edge of the mat.</p> <p>1.11.11 Cores shall be taken after the stone mastic asphalt has cooled to ambient temperature and not less than 12 hours after laying and before trafficking unless otherwise specified in Appendix 7/1.</p> <p>1.11.12 The walls and base of all holes from which core samples shall have been cut shall be painted with hot bitumen or cold applied polymer modified intermediate or premium grade bitumen emulsion containing normally 60% binder immediately prior to making good.</p> <p>1.11.13 Core holes shall be backfilled with materials compacted to refusal with a circular headed vibrating hammer in layers not exceeding 75 millimetre thick.</p> <p>1.11.14 Hot base material shall be similar to existing pavement.</p> <p>1.11.15 In the permanent works, after the first 6 cores and where the required thickness of the material exceeds 25 millimetre for material from each mixing plant not less than one pair of 200 millimetre m diameter cores shall be cut from the centre of the Lane every 1 Lane kilometre laid a day's production if less than 1 Lane kilometre shall have been laid.</p> <p>1.12 Tests and Calculations</p> <p>1.12.1 For each uncompacted sample the compositional analysis shall be carried out in accordance with BS EN 12697 Bituminous mixtures: Test methods for hot mix asphalt, Part 1: Soluble binder content & Part 2: Determination of particle size distribution corrected by any correction</p>

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	factor approved under sub-Clause 16 of this Clause.
1.12.2	Each six consecutive 200 millimetre diameter cores of material from the same mixing plant shall form a set of cores on a running basis.
1.12.3	For each set the wheeltracking rate and rut depth shall be determined in accordance with the procedure in BS 598-110:1998 Sampling and Examination of Bituminous Mixtures for Roads and Other Paved Areas: Methods of Test For the Determination of Wheel-tracking Rate and Depth, at the test temperature specified in Appendix 7/1.
1.12.4	For each 150 millimetre diameter core the bulk density shall be determined in accordance with the procedure in BS EN 12697 Bituminous mixtures: Test methods for hot mix asphalt, Part 6: Determination of bulk density of bituminous specimens.
1.12.5	The bulk density at a chainage shall be the mean from the two cores taken at a chainage.
1.12.6	Subsequent to determining the bulk density, the maximum density shall be determined from the pair of the cores in accordance with BS EN 12697-5:2002 Bituminous Mixtures: Test Methods for Hot Mix Asphalt: Determination of the Maximum Density.
1.12.7	The air void content of each pair of 150 millimetre diameter cores shall be calculated to $\pm 0.1\%$ as follows: $100\% \times$ $\text{Air voids content} = (1 - p / p_{\text{Max}}) \times 100\%$ where: p shall be the bulk density in accordance with BS EN 12697 Bituminous mixtures: Test methods for hot mix asphalt, Part 6: Determination of bulk density of bituminous specimens (Mg/m ³); and p Max shall be the maximum density in accordance with BS EN 12697-5: Bituminous Mixtures: Test Methods for Hot Mix Asphalt: Determination of the Maximum Density (Mg/m ³).
1.13	Compliance Requirements
1.13.1	When determined in accordance with BS EN 12697 Bituminous mixtures: Test methods for hot mix asphalt, Part 1: Soluble binder content & Part 2: Determination of particle size distribution, the compositional analysis shall demonstrate compliance with following:
1.13.2	The binder content on analysis shall not differ from the target binder content declared by the Company by more than $\pm 0.6\%$; and
1.13.3	the aggregate grading shall not differ from that declared by the Company.
1.13.4	Deformation resistance shall be determined in accordance with the requirements of Clause 929, which refers to PD 6691 & BS 594987 and the deformation values specified in Appendix 7/1.
1.13.5	The air voids content shall be not more than 6% for a pair of cores at a chainage and shall be not more than 4% for the mean of any six consecutive determinations from pairs of cores from material from the same mixing plant.

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	<p>1.13.6 When the stone mastic asphalt shall be being used as a regulating course at thicknesses below 30 millimetre the appropriate limiting void contents shall be 8% and 6% respectively.</p> <p>1.14 Reporting Results</p> <p>1.14.1 Where specified in Appendix 1/5 that the Company shall be responsible for testing the individual determinations including location of samples and results from all tests shall be given to the Contracting Authority in writing within two weeks of the material having been laid.</p> <p>1.15 Surface Preparation</p> <p>1.15.1 Existing surfaces shall be prepared in accordance with the requirements of BS 594987 Asphalt for roads and other paved areas – Specification for transport, laying, compaction and type testing protocols, and Series 700 Clauses.</p> <p>1.15.2 Bond coats shall be in accordance with Clause 920 except that where the thickness of the stone mastic asphalt shall be less than 20 millimetre, only polymer modified bond coats shall be used.</p> <p>1.16 Laying</p> <p>1.16.1 Unless required otherwise in Appendix 7/1, stone mastic asphalt shall be laid and compacted in accordance with the requirements of Clause 901, to the thickness stated in Appendix 7/1.</p> <p>1.17 Weather Conditions</p> <p>1.17.1 The weather conditions specified in Clause 945 shall not apply to stone mastic asphalt laid in accordance with this Clause.</p> <p>1.17.2 The manufacturer's recommendations for the use of modified binders in various weather conditions for laying and compaction temperatures of the modified stone mastic asphalt shall be submitted to the Contracting Authority with details of the modified binder required under sub-Clause 9 of this Clause and shall include information on early trafficking particularly in hot weather.</p> <p>1.18 Temporary Trafficking</p> <p>1.18.1 The Company shall ensure the pavement material has adequately cooled and hardened before it shall be subjected to temporary traffic.</p> <p>1.18.2 Unless otherwise agreed in writing by the Contracting Authority the material shall not be trafficked if its surface temperature exceeds 25°C unless the maximum temperature within the mat has fallen below 35°C.</p>
973AR	<p>1 Overband Sealing</p> <p>1.1 The Company shall use systems holding Highway Authorities Product Approval Scheme certification and the system shall be applied in accordance with Highway Authorities Product Approval Scheme requirements</p> <p>1.2 The minimum skid resistance value of the overband material shall be 60</p>

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	<p>measured by the skid resistance pendulum method.</p> <p>1.3 All material removed from the cracks and joints shall be removed to a licensed waste disposal site.</p> <p>1.4 All loose material shall be removed off the Unit to a licensed waste disposal site or recycling centre.</p>
976 AR	<p>1 Pavement Cores</p> <p>1.1 Nominal 150 millimetre diameter cores, required for sampling and testing at the frequencies stated in Appendix 1/5, shall be taken using a suitable coring machine in accordance with BS 598:Part100.</p> <p>1.2 For each core extracted a Roadside Record Sheet (RRS1) as provided in this Appendix 0/1 shall be completed in order to record the site location, coring conditions and condition of the core.</p> <p>1.3 All cores shall be labelled, protected, transported and stored according to the independent testing organisation's quality procedures.</p> <p>1.4 In the laboratory each core, prior to any testing, shall be examined, photographed and the information recorded on a Core Record Sheet (CRS1) as provided in this Appendix 0/1. The cores shall be photographed on a white background with the project, location and core number clearly shown together with the units of measurement that will be easily identifiable on the size of photograph produced.</p> <p>1.5 The records are to be stored within the Company's quality records and made available to the Overseeing Organisation when required.</p>

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ROADSIDE RECORD SHEET (RRS1)

General

Project Name	
Coring Date	
Core Number	
Chainage	
Road Name	
Road Type (See Note 1)	
Lane Direction (See Note 2)	
Lane Number (See Note 3)	
Weather Conditions	

Pavement Coring Description

Did the core barrel lock / jam whilst cutting pavement?	Yes	No	If Yes, at what depth? Depth (mm):	
Were there difficulties in extracting the core from the barrel?	Yes		No	
Condition of core (Tick as appropriate)	Good	De-bonded	Shattered	Partial recovery
Depth of coring				
Core length				
Any additional information on the core not included above				

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Notes:

1. Insert as appropriate i.e. D2AP, S2 etc.
2. Insert eastbound, westbound, northbound, and southbound as appropriate.
3. Insert appropriate descriptor e.g. lane 1 (nearside), lane 2 (offside), hard shoulder.

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Core Record Sheet (CRS1)

Project Name					Road type (See Note 1)		
Road Name					Lane Direction (See Note 2)		
Coring Date					Lane Number (See Note 3)		
Core Number					Chainage		
Layer	Layers				Aggregate		Comments
Number	Top (mm)	Bottom (mm)	Thickness (mm)	Material	Maximum size (mm)	Type	
<p>Insert picture of core HERE</p> <p><i>(The units of measurement should be clearly seen on the photograph)</i></p>							

Notes:

1. Insert as appropriate i.e. D2AP, S2 etc.
2. Insert eastbound, westbound, northbound, and southbound as appropriate.
3. Insert appropriate descriptor e.g. lane 1 (nearside), lane 2 (offside), hard shoulder.

Part 5: Specification

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Clause Number	Title and Written Text
1171AR	<p>1 Relaying of Existing Footways</p> <p>1.1 Relaying of existing footways shall be carried out with materials compatible with the adjacent areas.</p>
1172AR	<p>1 Siding Out</p> <p>1.1 General</p> <p>1.1.1 Siding out shall normally be carried out at the edge of footways and paved areas but may be extended to more general areas for the breaking up and removal of excessive or hardened dirt or weeds or any other undesirable material on the footway or paved surface.</p> <p>1.1.2 Footways shall be sided out up to and including any existing footway edging or to a specified width of line.</p> <p>1.1.3 Where the sided out edges do not generally exceed a height of 75 millimetre above the existing footway surface they may be trimmed with a vertical face.</p> <p>1.1.4 Where they generally exceed a height of 75 millimetre above the existing footway surface they shall be trimmed to an approximately 45 degree battered face.</p>
1173AR	<p>1 Artificial Stone Paving or Natural Stone Paving and Precast Concrete Paving Flags and Blocks</p> <p>1.1 Before work in any individual existing artificial stone paving natural stone or precast concrete flag/block paved footway commences the Company shall record the dimensions and number of flags to be replaced and take photographic records.</p> <p>1.2 These records shall be maintained and made available to the Contracting Authority at any time when required by other or both.</p> <p>1.3 The Company shall carefully lift the flags/blocks and set aside.</p> <p>1.4 If these flags/blocks shall not be permanently relaid on the same day as they shall be lifted the Company shall stack them in neat piles to a height not exceeding one metre.</p>
1174AR	<p>1 Laying of Artificial Stone Paving Natural Stone Paving and Precast Concrete Paving Flags</p> <p>1.1 Paving of artificial stone, natural stone or precast concrete flags shall be reconstructed to match existing as closely as possible and shall be in accordance with BS 7533 Parts.</p>
1179AR	<p>1 Timber Edging to Footways</p> <p>1.1 Timber shall be as described in Clause 304 and sized to match existing although the minimum dimensions to be used shall be not less than 75</p>

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	<p>millimetre x 32 millimetre.</p> <p>1.2 Timber shall be pressure impregnated with preservative in accordance with Clause 311.</p> <p>1.3 Fixing shall be by means of 50 millimetre x 50 millimetre x 300 millimetre pointed pegs at 600mm centres.</p>
1270AR	<p>1 Passively Safe Sign Posts</p> <p>Passively safe sign posts shall be in accordance with BS EN 12767: 2007 erected in accordance with the manufacturers instructions.</p> <p>xiii)</p>
1272AR	<p>1 Chart Node and Section Markers</p> <p>1.1 Cored thermoplastic road markers shall be installed as chart nodes using the following method:</p> <ul style="list-style-type: none"> i) A 100 millimetre diameter x 20 millimetre deep socket shall be formed using a central pilot bit surrounded by an annular bit. The pilot bit permits drilling of an annulus by the annular bit in a precise location by guiding the annular bit. ii) The base of the pocket after breaking out the surface material shall be left jagged. This jagged base assists in the retention of the stud in the pocket. iii) The pocket shall be filled with hot fluid thermoplastic material to the uppermost edge of the pocket projecting slightly above the road surface. This projection depends on the surface tension of the material. The material is then allowed to cool and set to form a stud. iv) The material shall consist of a plastic resin with the white filler and reflective glass particles to BS 3262. This is the same material as is used for white lining purposes. <p>1.2 Notwithstanding any other requirements of the Agreement, record drawings of the chart node locations at a scale of 1:500 shall be provided to the Contracting Authority within 7 days of the issue of the Taking-Over Certificate for Section B of the O&M Works. The record drawings shall locate the chart nodes as a series of dimensions from carriageway features. The local and national grid co-ordinates of all chart nodes shall be detailed on the record drawings.</p>
1273AR	<p>1 Night Visibility</p> <p>1.1 Immediately after application and throughout the Defects Liability Period thereafter, the retro-reflectivity of the road marking line shall be not less than 150 millicandela/lux/square metre when measured in accordance with the method below:</p> <p>1.2 Apparatus</p> <p>1.2.1 The apparatus for measuring the retro reflectivity (SL value) of material shall</p>

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1.3	<p>consist essentially of a light source and a photo detector with a geometry for observation and illumination of 1.37 degrees and 0.74 degrees respectively.</p> <p>Procedure</p> <p>1.3.1 Calibrate the instrument in accordance with the manufacturer's instructions.</p> <p>1.3.2 Air temperature shall not be below +10 degrees Celsius nor exceed +30 degrees Celsius.</p> <p>1.3.3 The area to be measured shall be 200 millimetres x 100 millimetres.</p> <p>1.3.4 Measurements shall be made at five positions at approximately 200 millimetre intervals along the marking. This procedure shall be repeated at two further locations along the line and within 50 metres of the first set of measurements. The overall average of the fifteen readings shall be reported as the retro-reflectivity value. The road marking will be tested in a dry condition after removal of any loose dirt or foreign particles. If the retro reflectivity value measured is less than the specified value the line shall be thoroughly wetted and cleaned following BS 3262: Part 2 Clause D2 procedure, then dried and re-measured.</p>
1274AR	<p>1 Routine Maintenance of Traffic Signs, Hazard Posts, Illuminated Bollards Marker Posts Telephone Hoods, Refuge Beacons and ECP Cylinders</p> <p>1.1 Traffic signs, hazard posts, illuminated bollards and marker posts shall be maintained in compliance with TD25 of the DMRB and the following sub-clauses.</p> <p>1.2 Traffic signs, hazard posts, illuminated bollards and marker posts shall be maintained in a clean condition.</p> <p>1.3 Stiff-bristled brushes or abrasive tools or cleaners shall not be used for cleaning reflectorised sign faces</p> <p>1.4 A wet non-abrasive detergent cleaner shall be used which has generally neutral acidity/alkalinity in the range pH 6.8 to pH 7.2.</p> <p>1.5 Strong aromatic solvents alcohol steam cleaning or high pressure water jets shall not be used.</p> <p>1.6 Approved proprietary sign cleaning products may be used.</p> <p>1.7 All brushes mops detergents and chemicals shall not damage the surface of the item being cleaned.</p> <p>1.8 As part of the cleaning O&M Works all hazard posts and marker posts shall be straightened and the ground around the base of the post re-compacted.</p> <p>1.9 Sign cleaning shall not be carried out when the ambient temperature shall be 2°C or less and falling or when the O&M Works are likely to result in the formation of ice on the footway or carriageway.</p> <p>1.10 The Company shall ensure that the method used to clean any illuminated unit sign or bollard shall in no way affect the electrical installation to the unit.</p>

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	<p>1.11 Leaning ladders against sign faces shall not be permitted.</p> <p>1.12 Records of cleaning work carried out shall be maintained in accordance with the procedures in the O&M Works Quality Plan and be available for inspection by the Contracting Authority at any time.</p>
1275AR	<p>1 Routine Maintenance of Sign Lighting Units</p> <p>1.1 The Company shall carry out routine maintenance of sign lighting units to ensure their proper and efficient function.</p> <p>1.2 The routine maintenance operation shall include:</p> <ul style="list-style-type: none"> v) A thorough cleaning of all photo electric control units' lantern external and internal surfaces and any other components affecting the optical performance of the lantern. vi) The cleaning methods and materials shall be in accordance with Clause 1371AR. vii) Degreasing lubrication and operation of all toggles wing nuts hinges door locks and lifting gear. viii) The bracket lantern and lantern optical equipment to be correctly aligned in respect of the sign face and to minimise glare to traffic. ix) All grub screws locking devices and the like shall be properly tightened in accordance with the manufacturer's written instructions. x) A report of any damage corrosion or misalignment of posts. xi) vi) A report of any electrical component showing signs of overheating fracture condensation or tracking. xii) The removal of the lamps for lantern cleaning purposes. The lamp to be refitted shall be the existing or new as appropriate. xiii) The replacement of lamps. xiv) All new lamps to be marked with date of installation and this date to be recorded centrally. xv) Spraying of all electrical components with a de-moisturising spray. xvi) Visual checking of sign face fixings. Any Defects shall be recorded xvii) Checking of conduits for any corrosion and other Defects. Any Defects shall be recorded. xviii) Checking of all electrical connections. Any Defects shall be recorded xix) Checking of all earthing connections. Any Defects shall be recorded. xx) Clearing of debris from around the sign post bases for 1 metre radius <p>1.3 The supply shall be isolated at the cut-out for the removal and fitting of</p>

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1.4 1.5	<p>lamps.</p> <p>Any lamp fault shall be disposed off in accordance with Clause 1372AR.</p> <p>Records of maintenance work carried out shall be held in accordance with the procedures in the O&M Works Quality Plan and be available for inspection by the Contracting Authority at any time.</p>
1276AR	<p>1 Routine Maintenance of Traffic Signals</p> <p>1.1 The Company shall carry out routine maintenance of traffic signals as necessary to ensure their proper and efficient function.</p> <p>1.2 The routine maintenance shall include:</p> <ul style="list-style-type: none"> xxi) Compliance with Section 3.1 of TD24 of the DMRB; xxii) Thorough cleaning of all traffic signal lenses internal and external surfaces and any other components affecting the optical performance of the lenses. xxiii) The cleaning methods and materials shall be in accordance with Clause 1371AR. xxiv) Cleaning materials shall not cause harmful effects to the range of materials and surfaces to be cleaned; xxv) All grub screws locking devices and the like shall be properly tightened in accordance with manufacturer's written instructions; xxvi) A report of any damage corrosion or misalignment of posts; xxvii) A report of any electrical component showing signs of overheating fracture condensation or tracking; xxviii) The removal of the lamps for lantern cleaning purposes. xxix) The lamp to be refitted shall be the existing or new as appropriate; xxx) The replacement of lamps; xxxi) Identifying faults on any unit and recording; xxxii) Spraying of all electrical components with a de-moisturising spray; xxxiii) Visual checking of fixings. xxxiv) Any Defects shall be recorded; xxxv) Checking of conduits for any corrosion and other Defects. xxxvi) Any Defects shall be recorded; xxxvii) Checking of all electrical connections. xxxviii) Any Defects shall be recorded; xxxix) Checking of earthing connections. xl) Any Defects shall be recorded; xli) Clearing of debris from around the post bases for 1 metre radius.

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Clause Number	Title and Written Text
	<p>1.3 The supply shall be isolated at the cut-off for the removal and fitting of lamps.</p> <p>1.4 Any faulty lamp shall be disposed of in accordance with Clause 1372AR.</p> <p>1.5 Records of maintenance work carried out shall be in accordance with the procedures in the O&M Works Quality Plan and be available for inspection by the Contracting Authority at any time.</p>
1277AR	<p>1 Non Routine Maintenance of Traffic Signals</p> <p>1.1 The Company shall carry out non routine inspections on or in:</p> <ul style="list-style-type: none"> xlii) Traffic Signals; xliii) Posts; xliv) Underground cable systems; xlv) Control systems; xlvi) Any other related electrical equipment; <p>1.2 The Company shall attend to emergency call-outs and provide a report to the Contracting Authority;</p> <p>1.3 The Company shall repair random failures of traffic signals as follows.</p> <ul style="list-style-type: none"> xlvii) Category 1 repairs - TD24 of the DMRB within 24 hours of the Defect being recorded. xlviii) Category 2 repairs - TD24 of the DMRB within 6 weeks of the Defect being recorded. <p>1.4 The Company shall maintain daily records of works progress and details of labour and constructional plant used.</p>
1370AR	<p>1 Lamp Disposal</p> <p>1.1 The Company shall collect, transport and dispose of waste lamps in accordance with the requirements of the Waste Electrical and Electronic Equipment Regulations.</p> <p>1.2</p>
1371AR	<p>1 Cleaning Method and Materials</p> <p>1.1 The cleaning of all lighting equipment shall be carried out using an antistatic water based alkaline cleaner/degreaser and cloths complying with the following requirements:</p> <ul style="list-style-type: none"> i) An approved detergent cleaning solution shall be used and shall be non-toxic and cause no handling dangers to personnel; ii) the cleaning solution shall cause no harmful effects to the range of materials and surfaces to be cleaned; iii) the cleaning solution shall be highly effective against greasy surface deposits fast acting and suitable for use in cold water and in hard or soft water areas; iv) the cleaning solution shall not give rise to smearing and it shall not

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	<p>be necessary to carry out rising with clean cold water after cleaning;</p> <p>v) the cleaning solution shall not cause persistent foaming in use and shall not promote the formation of static charges on the equipment surfaces;</p> <p>vi) the cleaner/degreaser solution shall be diluted with clean uncontaminated water in accordance with the manufacturer's written instructions and shall be applied by means of soft muslin cloths;</p> <p>1.2 The cleaning cloths shall be continually cleaned or changed to ensure that no scouring or abrasive action damages the surfaces of the optical components.</p> <p>1.3 The cloths shall not be 'wrung out' or cleaned on the working platform of the lift vehicle and quantities of the cleaning solution in open containers shall not be carried on the working platform on the lift vehicle;</p> <p>1.4 The Company shall ensure that during the O&M Works dropping of quantities of water or solution onto vehicles passing below or adjacent to the cleaning vehicle shall not occur.</p> <p>1.5 After the use of the cleaning solution all surfaces treated shall be wiped with a clean dry cloth and left reasonably dry.</p>
1373AR	<p>1 Removal of Existing Equipment</p> <p>1.1 The Company shall carefully excavate around and dismantle any existing equipment to be removed.</p> <p>1.2 Following removal or any excavation, the excavation shall be reinstated including any pavement, surfacing or landscaping.</p> <p>1.3 If the equipment shall not be immediately re-erected the Company shall then transport it to be stored in one of its depots.</p> <p>1.4 It shall remain the property of the Contracting Authority.</p>
1470AR	<p>1 Temporary Overhead Feed to Lighting Units</p> <p>1.1 No temporary overhead cable shall be installed until the lighting columns involved have been assessed as being suitable for the additional mechanical loading placed on them.</p> <p>1.2 Cables used for any temporary overhead feed to lighting units or luminaries shall consist of sheathed or armoured cables supported by a steel catenary wire and shall be installed in accordance with the requirements of BS 7671: 2008. The minimum height above ground of the span shall, according to the location, be as follows</p> <p>(i) 10 metres for Trunk Roads; and</p> <p>(ii) 5.8 metres for all other roads and road crossings.</p>
1472AR	<p>1 Non Routine Maintenance</p>

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Clause Number	Title and Written Text
1.1	<p>The Company shall carry out non routine O&M Works on or in:</p> <ul style="list-style-type: none"> i) luminaries; ii) columns and brackets; iii) underground cable systems; iv) feeder pillars and associated switchgear; v) control systems; and vi) any other related electrical and lighting equipment.
1.2	<p>When undertaking the replacement of luminaries columns and brackets as non-cyclic maintenance O&M Works the Company shall have regard to the aesthetic requirements of Clause 1302 and shall ensure that any replaced items match the existing in both physical appearance and lighting levels.</p>
1.3	<p>For the purpose of energy efficiency electronic control gear or low loss control gear shall be used in all replacement luminaries.</p>
1.4	<p>The Company shall attend to Emergency call-outs and prepare a report in a format as Appendix 14/73 as consented to in writing by the Contracting Authority.</p>
1.5	<p>The report shall be stored and made available to the Contracting Authority at any time.</p>
1.6	<p>Isolation Energising of Power Supplies and Making Safe Electricity Cables</p> <ul style="list-style-type: none"> i) All work shall be carried out in accordance with Electricity Council Engineering Recommendation G39. ii) Any person isolating or energising power supplies shall be "competent" in accordance with G39. iii) The Company shall inform the Traffic Scotland Networks Operations Manager prior to isolating or energising power supplies to any equipment its uses or for which it shall be responsible.
2	Private Cable Supplies
2.1	<p>In the event of an Emergency no authorisation shall be required to isolate any cable but the Contracting Authority shall be notified as soon as possible.</p>
2.2	<p>If a communication system supply shall be isolated the Police and the Traffic Scotland Networks Operations Manager shall be informed initially by telephone followed immediately thereafter by a written confirmation.</p>
2.3	<p>The isolation or energising of power cable shall be recorded by the Company who shall ensure only one activity shall be being carried out on any cable at this time.</p>
2.4	<p>Whenever routine maintenance O&M Works are being undertaken only the minimum number of feeder pillars shall be de-energised at any one time.</p>
2.5	<p>Control circuits shall be returned to normal operation on completion of the O&M Works.</p>
2.6	<p>All cable shall be isolated at the main isolator or switched fuse.</p>

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2.7	The isolation of individual circuits shall be carried out using the mini circuit breaker or fuses within a distribution board.
3	Electricity Company Supplies
3.1	Where electricity companies supplies are required to be isolated above the cut out only competent persons in accordance with G39 and qualified to 'Electrician' status (see Appendix 14/71) may remove the fuse.
3.2	Where electricity company's supplies are required to be isolated below the cut out the Company shall then liaise with the electricity authority before O&M Works commence (see Appendix 14/75).
4	Special Tools
4.1	Duplicate sets of special tools keys and handling devices essential for the correct running operation and maintenance of electrical equipment shall be handed to the Contracting Authority at the Expiry Date.
5	Fixings for Attachment to Structures
5.1	Fixings for attachment to Structures shall use a resin fixed replaceable bolt system.
1670AR	<p>1 Static Load Testing of Piles</p> <p>1.1 Further to Clause 1609:</p> <ul style="list-style-type: none"> <li>i) The Company shall undertake a pile load testing programme that <li>ii) is consistent with section 7.5 of BS EN 1997-1:2004 <li>iii) is consistent with the recommendations given in section C15 of the Guidance Notes in Part C of the ICE Specification for Piling and Embedded Walls 2nd Edition <li>iv) takes due account of the range of ground conditions encountered at the foundation locations <li>v) As a minimum this shall include a maintained load test on at least one full size instrumented preliminary trial pile of the largest diameter proposed to at least the calculated ultimate resistance to validate the design method adopted. The preliminary trial pile(s) shall be constructed using the same equipment and techniques that are adopted for the works piles. <p>1.2 Trial piles shall be instrumented with strain gauges and extensometers with an appropriate degree of redundancy such that the load distribution down the pile during the test can be determined.</p> <p>1.3 Static load testing using the bi-directional method is permitted. If the Company proposes to adopt the bi-directional method full details of the design and construction of the preliminary trial pile(s) and associated instrumentation shall be given in Appendix 16/9. This shall include:</p> <ul style="list-style-type: none"> <li>i) the test procedure and load increments to be adopted; <li>ii) the measurements that will be made during the test; and

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Clause Number	Title and Written Text
1.4 1.5 1.6 1.7	<p>iii) the method to be used to interpret the results of the test.</p> <p>Preliminary trial piles shall be constructed and tested sufficiently in advance of the main works for the results to be evaluated and the design modified if necessary.</p> <p>A report on the preliminary pile tests shall be submitted which shall include all the information required in sub Clauses 36 and 37 of Clause 1609 together with an interpretation of the results and any implications for the pile design.</p> <p>Preliminary trial piles are not permitted to be incorporated into the Permanent Works.</p> <p>The Company shall complete Appendix 16/9 to include:-</p> <p>i) the overall pile testing strategy in relation to verification of the pile design and partial resistance factors and model factors to be adopted;</p> <p>ii) the numbers and types of static load tests to be carried out;</p> <p>iii) the proposed locations of preliminary trial piles;</p> <p>iv) whether additional location specific ground investigation is required;</p> <p>v) the programme for installation and testing; and</p> <p>vi) details of the instrumentation to be installed.</p>
1671AR 1 1.1 1.1.1	<p>Pile Integrity Tests</p> <p>Pile Integrity Tests</p> <p>Further to Clause 1608:</p> <p>(a) The Company shall carry out a programme of integrity testing of piles. This shall include:</p> <p>i) Cross hole sonic logging in all bored cast in situ piles over the full length of the shaft. The number of logging tubes shall be not less than 2.5 times the pile diameter in metres with a minimum of four.</p> <p>ii) Coring of the lower part of the concrete shaft and contact between the pile base and rock in rock socket piles where end bearing resistance is considered in the design. The coring shall be used to demonstrate the cleanliness of the contact (concrete to rock) and that the rock is undisturbed. Core recovery shall be 100%. Core dimensions shall be at least 0.5 metres of concrete, 1.5 metres of rock both with a diameter of at least 100 millimetres. The resulting bore shall be backfilled with cement grout. This requirement is in addition to that in Clause 1673 AR below.</p> <p>iii) The Company shall complete Appendix 16/8 with detailed scope of integrity testing.</p> <p>Dynamic Pile Testing</p> <p>Further to Clause 1608:</p>

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Clause Number	Title and Written Text
	<p>(a) If dynamic pile testing is proposed on driven piles it shall be calibrated against static load tests carried out on comparable piles (i.e. of the same type and similar size constructed in similar ground conditions at the same site using the same installation criteria). Restrike tests shall be carried out unless it has been demonstrated that relaxation following the end of driving is not significant.</p> <p>(b) The limitations of dynamic pile testing set out in section C14 of the Guidance Notes in Part C of the ICE Specification for Piling and Embedded Walls 2nd Edition shall be taken into account.</p> <p>1.3 Quasi Static (Rapid Loading) Pile Testing</p> <p>1.3.1 If quasi static testing is proposed to be used it shall be calibrated against static load tests carried out on comparable piles (i.e. of the same type and similar size constructed in the same ground conditions at the same site using the same installation criteria).</p> <p>1.3.2 The limitations of quasi static pile testing set out in section C14 of the Guidance Notes in Part C of the ICE Specification for Piling and Embedded Walls 2nd Edition shall be taken into account.</p>
1672AR	<p>1 Drilling Fluid</p> <p>1.1 If drilling fluid other than water is proposed for bored piles constructed the Company shall include in Appendix 16/18 details of the methods to be adopted to avoid contamination of the ground. The use of drilling fluid other than water shall only be permitted where the Company has obtained prior approval from the Scottish Environment Protection Agency ("SEPA").</p>
1673AR	<p>1 Ground Investigation</p> <p>1.1 If rock socket piles are required to mobilise base resistance under reversible or irreversible serviceability limit state ("SLS") load combinations a borehole shall be made at each pile position prior to pile construction to verify the rock quality at the proposed founding level. Continuous cores shall be recovered from two pile diameters above pile toe level to two pile diameters below pile toe level and appropriate in situ and / or laboratory testing carried out. Core diameter shall be at least 100 millimetres. The resulting bore shall be backfilled with cement grout.</p>
1674AR	<p>1 Geotechnical Reporting</p> <p>1.1 The Company shall update the Ground Investigation Report(s) to take account of any additional ground investigations or other relevant additional information providing justification for any changes made when compared to their original stage Ground Investigation Report(s).</p> <p>1.2 The Company shall update the Geotechnical Design Reports to "for construction" status to take account of any relevant additional information providing justification for any changes made when compared to their original Geotechnical Design Report(s) with contents as per Clause 2.8 of BS EN 1997-1:2004 along with the following additional requirements:</p>

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1.3	<p>(a) The following is added to Clause 2.8(3) of BS EN 1997-1:2004 after "...including actions":</p> <ul style="list-style-type: none"> i) characteristic values of pile resistances, including justification, as appropriate; ii) design values of pile resistances, including justification, as appropriate; and iii) characteristic value of soil and rock properties, including justification, as appropriate. <p>(b) The modified Clause 2.8(3) of BS EN 1997-1:2004 shall be considered to be a principle in the context of the Eurocodes, i.e. 2.8(3)P.</p> <p>Following completion of construction the Company shall provide a full close-out report of the as-built Structures. The contents of the close-out report shall include, but not be limited to, the following:</p> <ul style="list-style-type: none"> (a) As-built location and geometry of all completed O&M Works including any Temporary Works left, with permission of the Contracting Authority, in-situ; (b) Construction records for all Structures; (c) All integrity test results; (d) All strength measurement test results on materials (concrete cylinder / cube etc) for Permanent Works and, with permission of the Contracting Authority, Temporary Works left in-situ; and (e) All non-conformance report and completed close out documentation. <p>1.4 The close out report shall be accompanied by extracts from the geotechnical design reports as per requirements in BS EN 1997- 1:2004 Clause 2.8(6)P.</p>
1675AR	<p>1 Geotechnical Categorisation</p> <p>1.1 The Company shall provide a list of Geotechnical Categories (BS EN 1997-1: 2004, Clause 2.1) for all geotechnical related Structures (cuttings, embankments, retaining walls, foundations) in the project. The default Category shall be taken to be 3 unless justification for a lower category is provided.</p>
1770AR	<p>1 Construction Tolerances in Structural Concrete</p> <p>1.1 General</p> <p>1.1.1 Notwithstanding any tolerances stated in the DMRB, British and European Standards the following tolerances shall be adopted in the design, execution and completion of the O&M Works.</p> <p>1.1.2 In-Situ Concrete</p> <p>1.1.2.1 The maximum deviation of hardened concrete surfaces prior to the removal of formwork shall not be greater than three millimetres in three metres (which</p>

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	tolerance shall not be cumulative) nor greater than two millimetres in one metre. Of the foregoing deviations, not more than two millimetres shall occur at a formwork joint. The overall standard of workmanship to be achieved shall be such that the lines of the finished surfaces shall be smoothly continuous.																																								
1.1.2.2	Where concrete surfaces are not permanently exposed, the maximum deviation of the finished concrete surfaces shall not be greater than six millimetres in three metres (which tolerance shall not be cumulative).																																								
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1.1.3.1	For members other than pre-stressed pre-tensioned members, the length, cross-section dimensions, straightness, squareness, twist and flatness of precast concrete shall be measured at 28 ± 2 days after casting. Unless otherwise stated, the allowable dimensional variations shall not exceed the following:																																								
	<table border="0"> <tr> <td style="padding-left: 20px;">xlix) Length</td> <td style="text-align: right;">Variation</td> </tr> <tr> <td style="padding-left: 40px;">Up to 3 metres</td> <td style="text-align: right;">± 6 millimetres</td> </tr> <tr> <td style="padding-left: 40px;">3 to 4.5 metres</td> <td style="text-align: right;">± 9 millimetres</td> </tr> <tr> <td style="padding-left: 40px;">4.5 to 6 metres</td> <td style="text-align: right;">± 12 millimetres</td> </tr> <tr> <td style="padding-left: 40px;">Additional for every subsequent 6 metres</td> <td style="text-align: right;">± 6 millimetres</td> </tr> <tr> <td style="padding-left: 20px;">i) Cross section (each direction)</td> <td></td> </tr> <tr> <td style="padding-left: 40px;">Up to 500 millimetres</td> <td style="text-align: right;">± 6 millimetres</td> </tr> <tr> <td style="padding-left: 40px;">500 to 750 millimetres</td> <td style="text-align: right;">± 9 millimetres</td> </tr> <tr> <td style="padding-left: 40px;">Additional for every subsequent 250 millimetres</td> <td style="text-align: right;">± 3 millimetres</td> </tr> <tr> <td style="padding-left: 20px;">ii) Straightness or bow (deviation from intended line)</td> <td></td> </tr> <tr> <td style="padding-left: 40px;">Up to three metres</td> <td style="text-align: right;">± 6 millimetres</td> </tr> <tr> <td style="padding-left: 40px;">3 to 6 metres</td> <td style="text-align: right;">± 9 millimetres</td> </tr> <tr> <td style="padding-left: 40px;">6 to 12 metres</td> <td style="text-align: right;">± 12 millimetres</td> </tr> <tr> <td style="padding-left: 40px;">Additional for every subsequent 6 metres</td> <td style="text-align: right;">± 6 millimetres</td> </tr> <tr> <td style="padding-left: 20px;">iii) Squareness. When considering the squareness of a corner, the longer of the two adjacent sides being checked shall be taken as the base line. The shorter side shall not vary in its distance from a perpendicular so that the difference between the greatest and shortest dimensions exceeds the following:</td> <td></td> </tr> <tr> <td style="padding-left: 40px;">i) Length of shorter sides:</td> <td></td> </tr> <tr> <td style="padding-left: 60px;">Up to and including 1.2 metres</td> <td style="text-align: right;">6 millimetres</td> </tr> <tr> <td style="padding-left: 60px;">Over 1.2 metres but less than 1.8 metres</td> <td style="text-align: right;">9 millimetres</td> </tr> <tr> <td style="padding-left: 60px;">1.8 metres and over</td> <td style="text-align: right;">12 millimetres</td> </tr> <tr> <td style="padding-left: 40px;">When considering squareness, any error due to lack of</td> <td></td> </tr> </table>	xlix) Length	Variation	Up to 3 metres	± 6 millimetres	3 to 4.5 metres	± 9 millimetres	4.5 to 6 metres	± 12 millimetres	Additional for every subsequent 6 metres	± 6 millimetres	i) Cross section (each direction)		Up to 500 millimetres	± 6 millimetres	500 to 750 millimetres	± 9 millimetres	Additional for every subsequent 250 millimetres	± 3 millimetres	ii) Straightness or bow (deviation from intended line)		Up to three metres	± 6 millimetres	3 to 6 metres	± 9 millimetres	6 to 12 metres	± 12 millimetres	Additional for every subsequent 6 metres	± 6 millimetres	iii) Squareness. When considering the squareness of a corner, the longer of the two adjacent sides being checked shall be taken as the base line. The shorter side shall not vary in its distance from a perpendicular so that the difference between the greatest and shortest dimensions exceeds the following:		i) Length of shorter sides:		Up to and including 1.2 metres	6 millimetres	Over 1.2 metres but less than 1.8 metres	9 millimetres	1.8 metres and over	12 millimetres	When considering squareness, any error due to lack of	
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	<p>straightness shall be ignored; squareness shall be measured with respect to the straight lines that are closest to parallel with the features being checked.</p> <p>When the nominal angle is other than 90°, the included angle between check lines shall be varied accordingly.</p> <p>ii) Twist. Any corner shall not be more than the deviation stated from the plane containing the other three corners:</p> <p>Up to 60 millimetres wide and up to 6 metres in length: 6 millimetres</p> <p>Over 600 millimetres wide and for any length: 12 millimetres</p> <p>iii) Flatness. The maximum deviation from a 1.5 metre straight edge placed in any position on a nominally plane surface shall not exceed 6 millimetres.</p> <p>In addition, for members where accuracy is important, for example those which form bridge deck copes, the allowable dimensional variations and deviations shall not exceed half the values listed above.</p> <p>1.2 Assembly and Erection of Precast Concrete Members other than Prestressed Pretensioned Members</p> <p>1.2.1 The vertical alignment of the member shall not depart from the design level along the line by more than ± five millimetres nor more than three millimetres in a distance of three metres, nor greater than two millimetres in one metre.</p> <p>1.2.2 The horizontal alignment of the new member shall not depart from the design alignment along the line where accuracy is important by more than ± five millimetres nor more than three millimetres in a distance of three metres, nor greater than two millimetres in one metre.</p> <p>1.2.3 At the joints between adjacent members, the difference in level at the point where accuracy is important shall not exceed two millimetres.</p> <p>1.2.4 At the joints between adjacent members, the difference in horizontal alignment at the point where accuracy is important shall not exceed two millimetres.</p> <p>1.2.5 The width of gaps between adjacent members shall be as uniform as possible.</p> <p>1.2.6 The erection procedure shall incorporate means of accurately locating members in their final position. The procedure shall also incorporate means of making fine adjustments to the level and alignment of the units after installation.</p>
1771AR	<p>1 Couplers</p> <p>1.1 The use of threaded mechanical couplers is acceptable subject to:</p> <p>liii) The Company shall submit the source and suppliers to the Overseeing</p>

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	<p>Organisation for agreement;</p> <p>liv) Manufacturer's and suppliers shall hold a relevant valid CARES certificate of approval unless otherwise agreed by the Overseeing Organisation;</p> <p>lv) All couplers shall be covered by a relevant CARES Technical Approval or other relevant product approval from an appropriate UKAS accredited product certification body; and</p> <p>lvi) Concrete cover shall be maintained.</p>
1.2	Tensile Capacity
1.2.1	The tensile strength of the coupled bar should exceed 540 newtons per square millimetre for BS4449:2005 grade B500B or Grade B500C hot rolled reinforcement steel.
1.3	Slip (permanent elongation test)
1.3.1	When a test is made of a representative gauge length assembly comprising reinforcement size, grade and profile to be used and a coupler of the precise type to be used, the permanent elongation after loading to 0.6f, shall not exceed 0.1 millimetres.
1.4	Fatigue
1.4.1	The Company shall obtain from the coupler manufacturer the fatigue design S-N curve established as defined below, which he shall furnish to the Designer, Checker and Overseeing Organisation with the Design Documentation. Existing fatigue design S-N data may be taken as an acceptable alternative.
1.5	Performance testing
1.5.1	The material to be used for the performance tests shall be in all respects similar to those which the Company proposes to use in the O&M Works.
1.5.2	Mechanical connections shall be qualified for use in the construction on the basis of the following performance tests:
1.6	Static tensile strength tests
1.6.1	A minimum number of six static tensile strength tests shall be conducted considering the range of all variables. All test samples shall meet the requirements of sub Clause 1.2 above.
1.7	Slip testing
1.7.1	A minimum number of two slip tests shall be conducted considering the range of variables. All test samples shall meet the requirements of sub-Clause 1.3 above.
1.8	Fatigue testing
1.8.1	Sampling
1.8.1.1	Couplers shall be formed into batches of 20 bars of a single type and size, manufactured at the same time. All couplers of the same diameter should

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	<p>preferably be from the same melt. If not, the melt of each test specimen should be known and there should be a representative number of couplers from each melt.</p> <p>1.8.1.2 Each test specimen shall be selected at random from the batches and shall be representative of the production run.</p> <p>1.8.2 Testing</p> <p>1.8.2.1 The fatigue properties for each coupler size shall be established by a competent testing laboratory.</p> <p>1.8.2.2 Test specimens shall be tested in air under axial tensile loading using tapered grips and a suitable gripping medium.</p> <p>1.8.2.3 Testing shall be carried out under load control and stress shall be calculated using nominal cross-sectional area.</p> <p>1.8.2.4 Tests shall be performed for couplers for reinforcing bar diameters 25 millimetres, 32 millimetres, 40 millimetres on BS4449:2005 grade B500B or grade B500C.</p> <p>1.8.2.5 The number of load cycles per test shall be performed until failure.</p> <p>1.8.2.6 The frequency of testing shall be in the range 5 to 10 hertz.</p> <p>1.8.2.7 The samples of all diameters shall be tested at the following stress ranges (all newtons per square millimetre):</p> <table border="1"> <thead> <tr> <th>Stress Range</th> <th>Max Stress</th> <th>Min Stress</th> <th>Mean Stress</th> </tr> </thead> <tbody> <tr> <td>400</td> <td>450</td> <td>50</td> <td>250</td> </tr> <tr> <td>300</td> <td>400</td> <td>100</td> <td>250</td> </tr> <tr> <td>200</td> <td>350</td> <td>150</td> <td>250</td> </tr> <tr> <td>160</td> <td>360</td> <td>200</td> <td>280</td> </tr> </tbody> </table> <p>1.8.2.8 The S-N curves shall be presented as straight lines, using a log-log scale of stress versus number of cycles to failure. They shall be based upon standard statistical regression analysis methods and give the 97.5 per cent confidence of survival.</p> <p>1.8.3 Frequency of testing</p> <p>1.8.3.1 3 samples shall be tested for each bar / coupler size and stress range; giving a total number of 12 sets of tests per bar / coupler size.</p>	Stress Range	Max Stress	Min Stress	Mean Stress	400	450	50	250	300	400	100	250	200	350	150	250	160	360	200	280
Stress Range	Max Stress	Min Stress	Mean Stress																		
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1772AR	<p>1 Concrete Repairs – General Requirements</p> <p>1.1 Storage of Materials</p> <p>1.1.1 All proprietary materials shall be stored in a dry weatherproof lock up store free from extremes of cold or heat in accordance with the manufacturer's written instructions. The materials shall not be removed from the store for use until immediately prior to mixing.</p> <p>1.2 Records</p>																				

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Clause Number	Title and Written Text
1.1.2 1.3 1.1.3	<p>1.1.2 As repair work proceeds the Company shall keep records including date stamped photographs. Records shall be held in accordance with the procedures in the O&M Works Quality Plan and be available for inspection by the Contracting Authority.</p> <p>1.3 High Pressure Water Jetting</p> <p>1.1.3 High pressure water jetting shall use clean and fresh potable water which complies with the requirements of BS EN 1008. The Company shall not add antifreeze agents or any other chemicals.</p>
1773AR	<p>1 Removal of Concrete in Areas to be Repaired</p> <p>1.1 Requirements for the Removal of Concrete</p> <p>1.1.1 The Company shall cut out and remove concrete from areas specifically identified following inspection and testing.</p> <p>1.1.2 Concrete shall be removed from the area until sound concrete is reached. Where reinforcement becomes exposed concrete shall be removed for a minimum distance of 25 millimetres beyond the rear face of the reinforcement. Where corroded reinforcement is identified the area of concrete removed shall be extended to expose 100 millimetres of uncorroded reinforcement in all directions.</p> <p>1.1.3 Before cutting out the Company shall determine the position and depth of the reinforcement. The perimeter of the concrete to be removed shall be saw cut perpendicularly to the face of the concrete to a depth of not less than 15 millimetres or to within 10 millimetres of the reinforcement, whichever shall be the lesser.</p> <p>1.1.4 At the upper limits of repairs to be made using repair concrete, sloping cuts may be used to avoid the entrapment of air when the concrete is poured.</p> <p>1.1.5 The saw cut edges shall be abraded by grit blasting or equivalent methods.</p> <p>1.1.6 The concrete shall be removed by the use of suitable hand or mechanical tools or high pressure water jetting. Removal of concrete by water jetting shall be carried out by firms who are registered members of the Association of High Pressure Water Jetting Companies.</p> <p>1.1.7 Where concrete is removed by high pressure water jetting, final trimming of the area may be broken out using other processes.</p> <p>1.1.8 Overbreak of concrete shall be made good using a concrete repair system selected from Clause 1775AR.</p> <p>1.1.9 Reinforcement damaged during concrete removal shall be made good. Existing reinforcement which has corroded or is otherwise damaged shall be removed and additional steel reinforcement shall be lapped or welded onto the existing reinforcement. All such welding shall be in accordance with Clause 1717. All loose reinforcement shall be securely tied with stainless steel tying wire.</p> <p>1.1.10 The Site shall be kept free of debris or standing water arising from the high pressure water jetting activities.</p>

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text
	1.1.11 On completion of removal of concrete all concrete surfaces and exposed reinforcement which shall be in contact with repair materials shall be prepared in accordance with Clause 1774AR.
1774AR	<p>1 Surface Preparation</p> <p>1.1 General Requirements</p> <p>1.1.1 Blast cleaning - The Company shall ensure that the grade and particle shape of abrasives is adequate to achieve the appropriate standard of cleanliness. Non-metallic abrasives shall not be recycled</p> <p>1.1.2 Water for cleaning - Only clean cold water which complies with the requirements of BS EN 1008 shall be used for cleaning and rinsing.</p> <p>1.1.3 Preparation of Surfaces of Reinforcement</p> <p>lvii) Standard - Bright steel: Removal of all detrimental contamination and corrosion products to produce a generally bright appearance overall. The surfaces shall be free of embedded abrasive particles and corrosion products when viewed through a X10 illuminated magnifying glass.</p> <p>1.2 Method</p> <p>1.2.1 Blast cleaning using dry air / abrasive system, or</p> <p>1.2.2 Wet blast cleaning using a low pressure air / water / abrasive system. The equipment shall not allow the air / water pressure to exceed 14 bar and shall incorporate a metering device to allow the abrasive quantity introduced to be adjusted from 0 to 14 bar.</p> <p>1.2.3 Within an hour of cleaning the treated reinforcement shall be pressure washed with clean water.</p> <p>1.3 Preparation of Surfaces of Concrete</p> <p>1.3.1 Standard - Concrete surfaces shall be clean and dry and free of cement laitance contaminants and loose friable material. The surface shall be wetted one hour before repair concrete is applied. There shall be no standing water. The surface shall be such that repair concrete shall flow freely into all voids and be in intimate contact with the existing concrete.</p> <p>1.4 Method</p> <p>1.4.1 High Pressure Water Jet</p> <p>1.4.1.1 The surface profile after cutting out shall be irregular with aggregate particles projecting above the surrounding concrete matrix.</p> <p>1.4.2 Hand or Mechanical Tools</p> <p>1.4.2.1 All concrete surfaces to receive repair materials exposed by percussive methods using hand or mechanical tools shall be prepared by grit blasting or high pressure water jetting to remove all fractured or "bruised" concrete surfaces to expose sound aggregate particles.</p> <p>1.5 Procedure Trials</p>

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Clause Number	Title and Written Text
	<p>1.5.1 The Company shall remove, cut back and prepare the surface of an area of one square metre of concrete to be repaired as a trial of the methods proposed for carrying out the work and obtain a photographic record for inspection by the Contracting Authority.</p>
1775AR	<p>1 Concrete Repairs</p> <p>1.1 General</p> <p>1.1.1 Concrete repairs shall be carried out using either normal flow concrete, proprietary repair mortar, high-flow repair concrete, proprietary sprayed concrete, or a proprietary repair system proposed by the Company and subject to consent in writing by the Contracting Authority.</p> <p>1.1.1.1 Crack repairs carried out by a resin injection system shall be proposed by the Company and subject to consent in writing by the Contracting Authority.</p> <p>1.1.2 Proprietary repair materials and systems shall have an Agrément Board Roads and Bridges Certificate registered with the Department for Transport / Highways Agency.</p> <p>1.1.3 Proprietary repair mortars shall be used for repair areas less than or equal to 1 metre squared or repair depths less than or equal to 30 millimetres deep. Normal flow concrete or high flow concrete or sprayed concrete shall be used for repair areas greater than 1 metre squared or greater than 30 millimetres deep or as otherwise proposed by the Company and subject to consent in writing by the Contracting Authority.</p> <p>1.2 Repairs Using Normal Flow Concrete</p> <p>1.2.1 Repair concrete shall be a designed mix for special structural concrete as defined in Clauses 1701 and 1705 of the Specification.</p> <p>1.2.2 Cement content shall be not less than 400 kilograms per cubic metre or more than 550 kilograms per cubic metre.</p> <p>1.2.3 Maximum aggregate size shall be 10 millimetres.</p> <p>1.2.4 The free water / cement ratio shall not be greater than 0.4.</p> <p>1.2.5 The minimum 28 day compressive strength shall be 40 newtons per square millimetre.</p> <p>1.2.6 Alkali – silica reaction shall be controlled as specified in Clause 1704.5.</p> <p>1.3 Repairs Using Proprietary Repair Mortar</p> <p>1.3.1 Prebatched polymer modified cementitious mortars incorporating a shrinkage reduction agent shall be used.</p> <p>1.3.2 Mortars for hand screeding of surfaces to be waterproofed shall be sand/cement mortar containing styrene acrylate or styrene butadiene polymer bonding mixture.</p> <p>1.3.3 The free water / cement ratio shall be not greater than 0.4.</p> <p>1.3.4 The maximum aggregate grain size in the mortar shall be suitable for the depths of repair required.</p>

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Clause Number	Title and Written Text
1.3.5	Water required to mix repair mortars shall comply with the requirements of BS EN 1008.
1.3.6	The cement content shall be not less than 400 kilograms per cubic metre or more than 550 kilograms per cubic metre.
1.3.7	The total chloride ion content of the materials for repairs to prestressed or heat cured concrete shall not exceed 0.1 per cent of the weight of cement. Calcium chloride or admixtures containing chloride salts shall not be used.
1.3.8	The minimum 28 day strength of the mortar shall be 40 newtons per square millimetre. Alkali-silica reaction shall be controlled as specified in Clause 1704.5 of the Specification.
1.4	Delivery and Storage of Material
1.4.1	The Company shall supply with each batch of the material delivered to the O&M Works Site certificates furnished by the supplier stating:
	lviii) the polymer used;
	i) evidence that the chloride contents are less than specified in sub-Clause 1.3.7 above;
	ii) the content of sodium oxide equivalent in the mortar;
	iii) Maximum shelf life; and
	iv) Handling arrangements.
1.4.2	The material shall be stored in a dry environment free from extremes of cold and heat and any specific storage requirements of the manufacturers; and
1.4.3	The materials shall not be removed from the store for use until immediately prior to mixing
1.5	Placing Repair Mortar
1.5.1	The repair shall be built up in layers in accordance with the repair mortar manufacturer's written instructions. The surface of each layer except the final layer shall be scored to provide a key for the next layer.
1.5.2	The repair mortar shall be suitable for the purpose intended i.e. for soffits or vertical surfaces as appropriate.
1.5.3	Repair mortar shall not be applied when the temperature of the surface to be repaired falls below five degrees Celsius.
1.5.4	The material shall be incorporated within one hour of mixing or such lesser period as stated in writing by the manufacturer.
1.5.5	Repair mortar shall be cured in accordance with sub-Clause 1710.5 and the manufacturer's written instructions. During the curing period the temperatures of the repair mortar shall be maintained at or above five degrees Celsius by artificial means if necessary.
1.6	Surface Finish to Repair Mortar
1.6.1	Repair mortar shall be float finished to produce a dense smooth uniform

Part 5: Specification

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Clause Number	Title and Written Text										
	surface free from float marks to the specified line and level.										
1.7	Repairs Using High-Flow Repair Concrete										
1.7.1	Materials										
1.7.1.1	Cement shall comply with Clause 1702.										
1.7.1.2	Cement content shall be not less than 400 kilograms per cubic metre or more than 550 kilograms per cubic metre.										
1.7.1.3	Alkali-silica reaction shall be controlled as specified in Clause 1704.										
1.7.1.4	The total chloride ion content of the materials shall not exceed 0.1% of the weight of cement. Any chloride or admixtures containing chloride salts shall not be used.										
1.7.1.5	Aggregate shall be well graded with the maximum size not exceeding eight millimetres except when pumping is to be employed when the maximum size shall not exceed 6 millimetres and shall comply with sub-Clause 1702.2.										
1.7.1.6	Proprietary material shall be of such composition and grading that when mixed with water a flowable concrete is produced which shall flow freely into the confined spaces to be filled and shall not be prone to segregation bleeding or cracking in either the plastic or hardened state.										
1.7.1.7	Combinations and additions may comprise pulverised fuel ash ground granulated blast furnace slag microsilica plasticisers aggregate suspension agents and shrinkage reduction agents. Calcium chloride or admixtures containing chloride salts shall not be used.										
1.7.1.8	Microsilica content shall not exceed five per cent of the mass of the cement. Microsilica shall comply with Table 17/70.										
	TABLE 17/70 MICROSILICA CONTENT										
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Item</th> <th style="width: 40%;">Limit (by mass)</th> </tr> </thead> <tbody> <tr> <td>Silica content (SiO₂)</td> <td>minimum 85%</td> </tr> <tr> <td>Alkali content (Na₂O)</td> <td>maximum 2%</td> </tr> <tr> <td>Carbon</td> <td>maximum 2%</td> </tr> <tr> <td>Proportion passing 50 micron sieve</td> <td>minimum 99%</td> </tr> </tbody> </table>	Item	Limit (by mass)	Silica content (SiO ₂)	minimum 85%	Alkali content (Na ₂ O)	maximum 2%	Carbon	maximum 2%	Proportion passing 50 micron sieve	minimum 99%
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Silica content (SiO ₂)	minimum 85%										
Alkali content (Na ₂ O)	maximum 2%										
Carbon	maximum 2%										
Proportion passing 50 micron sieve	minimum 99%										
1.7.1.9	Water shall comply with the requirements of BS EN 1008.										
1.7.1.10	The specified minimum 28 day strength of the concrete shall be not less than 40 newtons per square millimetre. The maximum free water / cement ratio shall not exceed 0.4.										
1.7.2	Delivery and Storage of Material										
1.7.2.1	Records shall be kept of each batch of material delivered to the site of the O&M Works in accordance with the procedures in the O&M Works Quality										

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Clause Number	Title and Written Text
	<p>Plan and shall include:</p> <ul style="list-style-type: none"> lix) formulator's name and address; lx) formulator's agent's name and address where applicable; lxi) material identification; lxii) batch reference number size of batch and number of containers in the delivery; lxiii) date of manufacture; lxiv) evidence that the chloride contents are less than specified in sub-Clause 7(iv) above; lxv) details of the significant rock components contained in the aggregates; lxvi) cement content; lxvii) combinations and additions used; and lxviii) The equivalent sodium oxide content.
1.7.2.2	Containers shall be damp proof and readily emptied of their contents
1.7.2.3	<p>Containers shall be marked with the following information:</p> <ul style="list-style-type: none"> lxix) material identification; lxx) batch reference number; lxxi) formulator's name; lxxii) net weight; and lxxiii) Any warnings or precautions concerning the contents.
1.7.2.4	The material shall be stored in a dry environment free from extremes of cold and heat.
1.7.2.5	Material shall not be older than three months or a lesser period specified by the formulator when used in the O&M Works.
1.7.2.6	The materials shall not be removed from the store for use in the O&M Works until immediately prior to mixing.
1.7.3	Formwork Site Mixing Placing and Curing
1.7.3.1	Formwork shall be Class F3 to sub-Clause 1708.4 with the perimeter of the repair well sealed to prevent grout loss. Release agents shall be compatible with proposed surface treatments.
1.7.3.2	<p>Mixing in a forced action paddle mixer and placing shall be carried out strictly in accordance with the formulator's written instructions together with the following additional conditions:</p> <ul style="list-style-type: none"> lxxiv) The free water cement ratio shall not exceed 0.4. The water content shall be determined during approval tests and maintained for batch tests works tests and in the O&M Works within ± 2 per cent of the

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Clause Number	Title and Written Text
	<p>agreed content.</p> <p>lxxv) No extra water shall be added after the original mixing.</p> <p>lxxvi) The material shall be incorporated in the O&M Works within 20 minutes of completion of mixing or such lesser period as stated by the formulator. The concrete shall be continuously agitated after the mixing and before placing.</p> <p>lxxvii) The material shall not be mixed or placed in the O&M Works at ambient temperatures lower than five degrees Celsius or where the surface temperature of the concrete in the repair void is less than five degrees Celsius.</p> <p>lxxviii) The concrete when placed shall have a temperature of not less than five degrees Celsius and not more than 20 degrees Celsius.</p> <p>lxxix) The surface temperature of the concrete shall be maintained at not less than five degrees Celsius until the concrete reaches a strength of 10 newtons per square millimetre as determined by tests on cubes cured under similar conditions to the structural concrete. Heat shall not be applied direct to any concrete.</p> <p>lxxx) Repair concrete shall not be placed against other concrete which has been in position for more than 30 minutes unless a construction joint is formed in accordance with Clause 1710. In addition the joint surface shall be saturated for a minimum of 2 hours before concrete is placed against it. When repair concrete has been in place for four hours no further concrete shall be placed against it for a further 20 hours.</p> <p>lxxxi) Vibration shall not be used. The side shutters shall be tapped lightly with a hammer to expel surface air voids.</p>
1.7.3.3	Immediately after placing and for 14 days thereafter concrete shall be protected against harmful effects of weather including rain, rapid temperature changes and frost and from drying out. Impregnation may be carried out in accordance with the manufacturer's written instructions and not before 14 days as described in Clause 1709. Curing membranes shall not be used.
1.7.3.4	When the mix proportions have been determined no variations shall be made in the manufacture supply mix proportions or method of mixing of the material.
1.7.4	Approval Tests
1.7.4.1	Before O&M Works commence all properties of the proposed high-flow repair concrete shall be demonstrated by the Company and the formulator's representative by carrying out the tests specified below in an UKAS accredited laboratory. Records shall be maintained of all tests in accordance with the procedures in the O&M Works Quality Plan.
1.7.4.2	The composition of the high flow concrete including the source of water the mix proportions and the method of mixing shall be the same as that proposed for use in the O&M Works. The composition shall not be varied throughout the course of the tests and the material shall be obtained from the

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Clause Number	Title and Written Text
	<p>same batch.</p> <p>1.7.4.3 The tests fall into two categories: flowability and compressive strength.</p> <p>1.7.4.4 The flowability tests shall demonstrate:</p> <p>lxxxii) flow characteristics in a trough at five degrees Celsius and 20 degrees Celsius as specified in Note 1 below; and</p> <p>lxxxiii) flow characteristics in a simulated soffit repair at five degrees Celsius and 20 degrees Celsius as specified in Note 2 below.</p> <p>Note 1: The flow characteristics of the concrete in a trough shall be assessed. For each test the concrete and trough shall be at the specified temperature. The funnel of the apparatus shall be fitted with a rubber bung and charged with 6 litres of concrete. On release of the bung the concrete shall flow along the trough and the length of the flow along the trough shall be measured. A test shall consist of three readings the flow requirements shall be deemed to be satisfied if none of the readings is below 750 millimetres in 30 seconds without signs of segregation or bleeding.</p> <p>Note 2: The flow characteristics of the concrete in a simulated soffit repair shall be tested in accordance with BD27. For each test the concrete and apparatus shall be at the specified temperature. The concrete shall be poured in one operation into the supply tube until the level of the concrete has reached 100 millimetres above the underside of the top plate. After the concrete has set the specimen shall be removed from the apparatus and sawn into two parts and the sawn concrete surfaces shall be examined. The concrete shall be homogeneous free from excessive air holes voids segregation and other defects and shall completely fill the simulated repair.</p>
1.7.5	Compressive Strength Tests
1.7.5.1	Compressive strength tests shall be carried out to determine the compressive strength of the concrete at five degrees Celsius and 20 degrees Celsius. These shall conform to the requirements in BS 8500-2:2006.
1.7.5.2	Test cubes shall be made in 100 millimetres metal moulds to BS EN 12390-1:2000. The moulds shall be carefully filled by pouring concrete through a funnel to produce void free specimens. There shall be no compaction. The cubes shall be cured and tested in accordance with BS EN 12390-2:2000.
1.7.5.3	The minimum compressive strength shall be established using a set of three cubes. The requirement shall be satisfied if none of the compressive strengths obtained is lower than the specified value and the difference between the highest and lowest values is not more than 20% of the average. Identity testing where required shall be carried out in accordance with Clause 1707.
1.7.6	Batch Acceptance Test
1.7.6.1	Each batch of material delivered to the Sites shall be tested as follows:
	lxxxiv) the material shall be taken at random from one or more containers from the same batch;
	lxxxv) flow trough tests shall be carried out as specified in Note 1 of sub-

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	<p>Clause 1.7.4.4 above at 20 degrees Celsius; and</p> <p>lxxvi) Compressive strength tests shall be carried out as specified in sub-Clause 1.7.5 above at 20 degrees Celsius.</p>
1.7.7	Site Tests
1.7.7.1	Site tests shall be carried out to monitor:
	lxxvii) flowability; and
	lxxviii) compressive strength.
1.7.7.2	The flowability of a sample of fresh concrete shall be determined in a trough as specified in sub-Clause 1.7.4.4 Note 1.
1.7.7.3	The gain in strength of the repair concrete shall be monitored by testing cubes cured alongside the repaired areas at ambient temperature.
1.7.7.4	For each days production of repair concrete six 100 millimetres cubes shall be made in accordance with sub-Clause 1.7.5 above. The cubes shall be cured for 24 hours in the moulds with the top surfaces covered by polythene sheets. After 24 hours the cubes shall be stripped and placed in polythene bags which shall be sealed. The cubes shall continue to be stored alongside the repaired areas throughout the curing period until required for testing. The cubes shall be crushed at times determined by the Company but at least two cubes shall be retained to be tested at 28 days.
1.8	Repairs Using Proprietary Sprayed Concrete
1.8.1	Materials
1.8.1.1	The proprietary material shall be pre-weighed and pre-mixed at a location off the site of the O&M Works.
1.8.1.2	Cement shall comply with Clause 1702.
1.8.1.3	Alkali-silica reaction shall be controlled as specified in Clause 1704.
1.8.1.4	The total chloride ion content of the materials shall not exceed 0.1% of the weight of cement. Any chloride or admixtures containing chloride salts as defined by sub-Clause 1702.2 shall not be used.
1.8.1.5	Aggregate shall be well graded with the maximum size not exceeding 3 millimetres and shall comply with sub-Clause 1702.2.
1.8.1.6	Combinations and additions may comprise pulverised fuel ash ground granulated blast furnace slag microsilica and plasticisers. Calcium chloride or admixtures containing chloride salts and expansion agents shall not be used.
1.8.1.7	The maximum sulphate content shall comply with sub-Clause 1704.6.
1.8.1.8	Material shall be capable of being applied to a thickness of 100 millimetres without the requirement for additional mesh reinforcement or fibres. Once placed it shall be capable of being profiled and trowel finished (to the equivalent of formed Class F3) without detrimental effects.
1.8.2	Performance Characteristics
1.8.2.1	The proprietary material shall have performance characteristics as detailed in

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Clause Number	Title and Written Text																
	<p>Table 17/71 which are to be verified by an independent testing authority.</p> <p>TABLE 17/71: Performance Characteristics</p> <table border="1"> <thead> <tr> <th>TEST</th> <th>PERFORMANCE</th> </tr> </thead> <tbody> <tr> <td>Adhesion to concrete substrate</td> <td>greater than 2.0 newtons per square millimetre</td> </tr> <tr> <td>Characteristic strength of cores (28 days)</td> <td>40 newtons per square millimetre</td> </tr> <tr> <td>Tensile splitting strength (28 days)</td> <td>greater than 2.4 newtons per square millimetre</td> </tr> <tr> <td>Static Modulus of elasticity</td> <td>27000 ± 3000 newtons per square millimetre</td> </tr> <tr> <td>Shrinkage</td> <td>less than 0.002 per cent</td> </tr> <tr> <td>Coefficient of Thermal Expansion</td> <td>8 to 12 x 10⁻⁶/ degrees Celsius</td> </tr> <tr> <td>Coefficient of Chloride Ion Diffusion</td> <td>less than 700 x 10⁻¹⁵ square metres per second</td> </tr> </tbody> </table>	TEST	PERFORMANCE	Adhesion to concrete substrate	greater than 2.0 newtons per square millimetre	Characteristic strength of cores (28 days)	40 newtons per square millimetre	Tensile splitting strength (28 days)	greater than 2.4 newtons per square millimetre	Static Modulus of elasticity	27000 ± 3000 newtons per square millimetre	Shrinkage	less than 0.002 per cent	Coefficient of Thermal Expansion	8 to 12 x 10 ⁻⁶ / degrees Celsius	Coefficient of Chloride Ion Diffusion	less than 700 x 10 ⁻¹⁵ square metres per second
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1.8.3	Delivery and Storage of Material																
1.8.3.1	<p>Records shall be kept of each batch of material delivered to the Site and shall include:</p> <ul style="list-style-type: none"> lxxxix) formulator's name and address; xc) formulator's agent's name and address where applicable; xcii) batch reference number size of batch and number of containers in the delivery; xciii) date of manufacture; xciv) evidence that the chloride contents are less than specified in sub-Clause 1.8.1.4 above; xcv) details of the significant rock components contained in the aggregates; xci) cement content; xcvi) additives used; and xcvii) the sodium oxide equivalent content. 																
1.8.3.2	Containers shall be damp proof and readily emptied of their contents.																
1.8.3.3	<p>Containers shall be marked with the following information:</p> <ul style="list-style-type: none"> xcviii) material identification; xcix) batch reference number; c) formulator's name; 																

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Clause Number	Title and Written Text
	<ul style="list-style-type: none"> ci) net weight; and cii) any warnings or precautions concerning the contents.
1.8.3.4	The material shall be stored in a dry environment free from extremes of cold and heat.
1.8.3.5	Material shall not be older than three months or lesser period specified by the formulator when incorporated in the O&M Works.
1.8.3.6	The materials shall not be removed from the store for use in the O&M Works until immediately prior to mixing.
1.8.4	Trial Mixes
1.8.4.1	Practical tests shall be carried out on the Site by constructing test panels to confirm the suitability of the mix for the O&M Works. In these tests the type of Constructional Plant used for mixing and placing and the finished face to the panel shall be similar in all respects to those intended for use in the O&M Works.
1.8.5	Procedure Trials
1.8.5.1	Before work commences on the site of the O&M Works procedure trials shall be carried out to pre-qualify the nozzlemen proposed for use on the O&M Works. Nozzlemen who have not been pre-qualified shall not be used.
1.8.5.2	Each nozzleman shall carry out procedure trial panels. The procedure trial panels shall have minimum dimensions of 750 millimetres x 750 millimetres x 100 millimetres deep and shall be made of plywood with 45 degrees sloped edge to permit rebound to escape.
1.8.5.3	One half of each procedure trial panel shall contain reinforcement representative of the size and spacing of the work. The second half of the procedure trial panel shall contain no reinforcement (with the exception of fibre reinforcement) to allow for the extraction of cores for testing in accordance with sub Clause 1.17.2 of this Clause.
1.8.5.4	One procedure trial panel shall be O&M Works Operations using each proposed mixture proportion at each proposed orientation i.e. horizontal overhead and the like.
1.8.5.5	A minimum of three 100 millimetre diameter cores shall be extracted from the location of intersecting reinforcing steel to check the adequacy of consolidation of the sprayed concrete around the reinforcement.
1.8.5.6	No sprayed concrete shall be carried out on the O&M Works until the procedure trial testing requirements have been met.
1.9	Surface Preparation for Sprayed Concrete
1.9.1	Sound surfaces which are to receive sprayed concrete shall be thoroughly cleaned and roughened by grit blasting or high pressure water jetting.
1.9.2	Grit blasted areas shall have sprayed concrete applied within 48 hours or shall be reblasted.
1.9.3	Immediately prior to spray concreting all the surfaces to be sprayed shall be

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	thoroughly cleaned and wetted with a strong blast of oil-free air and water to comply with the requirements of BS EN 1008.
1.10	Outline Definition
1.10.1	The outline of the finished sprayed concrete shall be defined by screed boards guide wires or other means proposed by the Company and consented to in writing by the Contracting Authority.
1.10.2	Guide wires shall be installed tight and true to line and in such a manner that they may be easily tightened.
1.11	Mixing Sprayed Concrete
1.11.1	Sprayed concrete shall be mixed in a batch type mixer complying with the requirements of BS1305 except that the water shall be delivered direct to the nozzle. The delivery equipment shall be capable of delivering a continuous even stream of uniformly mixed material to the nozzle. Water supply at the nozzle shall be maintained at a uniform pressure sufficient to ensure adequate hydration at all times. The delivery equipment and nozzle shall be thoroughly cleaned and inspected at the end of each day and parts replaced as required.
1.11.2	The temperature of water and cement when added to the mix shall not exceed 60 degrees Celsius and 65 degrees Celsius respectively.
1.11.3	Water used in sprayed concrete shall comply with the requirements of BS EN 1008.
1.12	Reinforcement
1.12.1	Welded wire mesh fabric reinforcement shall be fixed to prepared surfaces and shall be carefully bent to follow the shape of the members and held in position by anchors spaced at not less than two per square metre. The fabric shall be spaced at not less than 25 millimetres from the finished surface of the concrete.
1.13	Transport and Placing Sprayed Concrete
1.13.1	No concrete shall be sprayed in air temperatures less than five degrees Celsius or onto a surface temperature less than five degrees Celsius. Surfaces shall be free from standing water.
1.13.2	Sprayed concrete shall emerge from the nozzle in a steady uninterrupted flow and an uninterrupted supply of compressed air shall be provided to maintain adequate nozzle velocity. Should the flow become intermittent the nozzle shall be directed away from the work until the flow again becomes uniform.
1.13.3	Sprayed concrete shall be applied under sufficient pressure so as to give a dense and homogeneous covering to the surface in one or more layers of a thickness compatible with the mix Design constituents position of reinforcement and plane of application to ensure the placed concrete does not slump or sag.
1.13.4	Adequate precautions shall be taken to ensure that sprayed concrete rebound is not incorporated in the finished work and that any previously

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	deposited hardened rebound which may prevent a proper bond or encasement is removed from reinforcement.
1.13.5	Adequate protection shall be given to the nozzle and application surface during high winds.
1.13.6	The final coat shall be hand screeded to a Class U3 finish in accordance with sub-Clause 1708.4
1.14	Fibre Reinforced Sprayed Concrete
1.14.1	The weight of steel and / or composite fibres shall not exceed five per cent by weight of the combined weight of cement and aggregate. Fibres shall be added to the mix in such a manner that the fibres are evenly distributed and not bent. Procedure trials shall be undertaken to demonstrate that the proposed methods can achieve the requirements of this sub-Clause.
1.14.2	Unless otherwise stated elsewhere in this Agreement a final 15 millimetres thick coat of unreinforced sprayed concrete shall be applied over the whole exposed surface to cover exposed fibres.
1.14.3	The gun and nozzle shall be electrically earthed.
1.15	Construction Joints
1.15.1	Construction joints in sprayed concrete shall be tapered at approximately 30 degrees or cut back square to the reinforcement and then tapered at 30 degrees. The construction joint shall be thoroughly cleaned and all laitance and loose material removed and the surface wetted using a strong blast of air and water prior to the placement of adjacent sprayed concrete.
1.16	Curing of Sprayed Concrete
1.16.1	Freshly sprayed concrete shall be protected from rain or water until the surface is sufficiently hard to resist damage.
1.16.2	Immediately after placing and for 14 days thereafter sprayed concrete shall be protected against harmful effects of weather including rain rapid temperature changes and frost and from drying out. Curing membranes shall not be used.
1.16.3	Impregnation in accordance with Clause 1709 may be carried out after 14 days.
1.17	Production Testing of Sprayed Concrete
1.17.1	One production test panel shall be carried out for each nozzle orientation for each day of sprayed concrete production or every five cubic metres of sprayed concrete whichever is the lesser.
1.17.2	Sprayed concrete production test panels shall be made with dimensions 450 millimetres x 450 millimetres x 100 millimetres thick with 45 degrees sloped edge forms to permit escape of rebound. Production test panels shall contain no reinforcement (other than fibre reinforcement). The production test panels shall be marked cured and tested in compression in accordance with the appropriate parts of BS1881 and BS EN 12390. They shall be tested in a UKAS accredited laboratory. Records shall be maintained

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	of all tests and stored at a suitable location.
1.17.3	Routine tests shall be carried out by the Company on the finished sprayed concrete. These shall consist of taking 25 millimetres or 100 millimetres dia. cores from the finished sprayed concrete and testing them in the same manner as cores taken from the test panels or by carrying out non-destructive tests by means of a 'Schmid' hammer or 'Windsor Probe' to determine compressive strength and testing for bond by the use of a hand hammer.
1.18	Resin Injection Repairs
1.18.1	Preparation of Surfaces Around Cracks
1.18.1.1	The concrete surface at least 50 millimetres either side of the crack shall be dry blast cleaned to a sound surface free from dirt moss salt staining and loose concrete. The full extent of the crack shall be found and the cleaned area shall extend 50 millimetres beyond the end of the crack or until the crack becomes too narrow to warrant resin injection.
1.18.1.2	Where algae or other bacterial growth emanates from the crack it shall be removed by scrubbing with bactericide and rinsing with clean water. Health and safety precautions appropriate to the bactericide cleaning agent used shall be adopted including those recommended in writing by the manufacturers. Measures shall be taken to ensure that any adjacent water course is not contaminated and that run-off is collected and disposed of in a safe manner.
1.18.2	Moisture in Cracks
1.18.2.1	Where the moisture level in the crack to be resin injected is unacceptably high the crack shall be blown through with dry hot air starting at the top of the crack. A temporary crack sealant shall be applied immediately after blowing through and the resin shall be injected into the crack immediately the necessary preparations are complete.
1.18.2.2	If for whatever reason the crack becomes damp before it is resin injected no further work shall be permitted until the temporary crack sealant is removed and the crack blown through again with dry hot air
1.18.2.3	The temperature of the hot air shall be sufficient to dry the full depth of the crack and shall not exceed the maximum temperature specified by the equipment manufacturer.
1.18.3	Resin Injection
1.18.3.1	The resin to be used shall be either polyester or epoxy based and shall be mixed and injected in accordance with the manufacturer's written specification. Resin shall not be injected when the air temperature or the surface temperature concrete to be repaired is less than five degrees Celsius.
1.18.3.2	The spacing of the nozzle positions shall be equal to the depth of the crack and shall not in any case be less than 250 millimetres.
1.18.3.3	Injecting shall start at the bottom of the crack and work shall proceed

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	<p>upwards in a continuous operation throughout. Resin shall be seen extruding from the crack at the next nozzle position before the current nozzle location is locked off.</p> <p>1.18.3.4 The injected crack shall be left undisturbed for a period of at least 24 hours to allow the resin to harden.</p> <p>1.18.3.5 When the resins are sufficiently cured the cracks and any resin spillages shall be cleaned from the face of the concrete.</p> <p>1.18.4 Proving Tests</p> <p>1.18.4.1 When the resin has set, two 20 millimetres diameter proving cores shall be taken to the full depth of the crack. These shall be filled with either the resin used for injecting or with a suitable filler of a compatible thixotropic resin.</p> <p>1.19 Sealing of Cracks in Concrete Bridge Decks</p> <p>1.19.1 The preparation of surfaces around cracks and the measures to deal with algae or other growth in cracks shall be as described in sub-Clause 1.18 above.</p> <p>1.19.2 Application of Sealer</p> <p>1.19.2.1 The sealing resin shall be a low viscosity polyester epoxy or acrylic polymer which shall be compatible with any proposed waterproofing system.</p> <p>1.19.2.2 The material shall be applied by pouring through a fine nozzle directly into the crack or into pre-formed dams.</p> <p>1.19.2.3 The injected crack shall be left undisturbed for a period of at least 24 hours to allow the resin to harden.</p> <p>1.19.2.4 When the resins are sufficiently cured the cracks and resin spillages shall be cleaned to the face of the concrete.</p>
1776AR	<p>1 Foamed Concrete Fill to Structures and Backfilling to Drainage Trenches</p> <p>1.1 Foamed concrete fill to arches or bridge decks shall be of density 1400 – 1600 kilograms per cubic metre. Minimum cement content shall be 350 kilograms per cubic metre. The maximum free water cement ratio shall be 0.4. The minimum compressive strength shall be eight newtons per square millimetre.</p> <p>1.2 Foamed concrete fill to drainage trenches shall comply with sub-Clause 1 above.</p>
1777AR	<p>1 Installation of Resin Anchored Reinforcement</p> <p>1.1 General</p> <p>1.1.1 Installation of resin anchored reinforcement into existing reinforced concrete shall utilise proprietary products, materials and methods suitable for highway works and for the conditions set out below.</p> <p>1.1.2 The Company shall consult and comply with the requirements of Transport</p>

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	Scotland (Contact: Douglas Laird, Telephone: 0141 272 7942) with regard to all resin anchor systems. The Company shall provide the Contracting Authority with completed Consultation Certificates in accordance with Part 5 of the O&M Works Requirements in respect of this requirement.
1.1.3	The resin anchor system proposed shall be checked against the anchorage design to ensure that it is capable of resisting the design loads by means of testing. For the purposes of testing the test loading shall be the load calculated allowing for a 30 per cent increase above ULS design load and adjusted to allow group effects to be ignored.
1.1.4	Site testing to verify the above loads is required and is specified in sub-Clause 1.2 below.
1.1.5	Materials
1.1.5.1	Resin adhesive grout for anchoring reinforcement shall be polyester or epoxy based and non-expansive. Grout shall be stable over the temperature range of -20 degrees Celsius to +40 degrees Celsius and be resistant to mechanical and chemical degradation under normal service conditions.
1.1.6	Workmanship
1.1.6.1	Installation shall strictly follow the methods and working procedures specified by the proprietary product manufacturer. Adequate preparations shall be made to work involving resin grouting to avoid inconsistent results.
1.1.6.2	Locations for the drilling of holes shall be determined by the design of the O&M Works. The design of the O&M Works shall ensure that locations can be adjusted within tolerances specified in the design of the O&M Works to avoid existing reinforcement. It shall be ensured that holes do not clash with existing buried reinforcement by using non-destructive test methods (e.g. cover meter) prior to commencement of drilling.
1.1.6.3	Before and after drilling holes it shall be ensured that the existing concrete is sound, and that any significant defects such as loose fractures and voids are repaired. Any defective holes shall be repaired and not used. Alternative holes shall be re-drilled in new locations without affecting the design of the O&M Works.
1.1.6.4	Holes shall be formed using rotary percussion drilling. The diameter and minimum depth shall be as required by the design of the O&M Works.
1.1.6.5	After drilling, holes shall be free of all contaminants including dust and water before injecting grout. It shall be ensured that grout fills the hole entirely without air voids following insertion of the reinforcement, and that the reinforcement is fully coated by the grout. Excess grout shall be removed immediately.
1.1.6.6	Reinforcement shall not be inserted or grout used after the gel time, and the completed installation shall not be disturbed until the grout is fully cured. Gel times and curing times as stated by the product manufacturer will depend on concrete temperature, therefore temperature shall be recorded during installation.

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1.2	Testing of Resin Anchored Reinforcement
1.2.1	The adequacy of resin fixed reinforcement shall be verified by site testing. For each combination of bar size and embedment depth, 1 No. test shall be carried out for every 20 bars, subject to a minimum of 3 No. tests.
1.2.2	A test rig equivalent to that shown in BS 5080 Part 1: 1993, Figure 3 shall be used. The test rig shall be capable of testing the anchor bars in situ.
1.2.3	If, due to the shape code or spacings of the bars to be resin grouted into the deck, it is not possible to apply the test rig to a bar, the following procedure should be followed: A straight bar of the same type, diameter and embedment depth shall be tested as close to the scheduled test bar as is practical.
1.2.4	The bars shall be capable of resisting the test loads given in sub-Clause 1.1.3 above.
1.2.5	A force sufficient to take up any slack in the apparatus, attachment and seating should be initially applied in accordance with BS 5080 Part 1: 1993. Readings taken at this stage will constitute the base from which subsequent relative movement shall be measured.
1.2.6	Each tested anchor shall be loaded incrementally in tension in accordance with BS 5080 Part 1: 1993 up to the test load.
1.2.7	Incremental loads shall be held for not less than half a minute and the test load for not less than five minutes.
1.2.8	Readings shall be taken immediately after applying load and at the ends of the time intervals stated above.
1.2.9	There should be no movement of the anchorage during the test and total movement should be no greater than the load / extension characteristics of the reinforcement bar being tested and the testing apparatus being used.
1.2.10	Any evidence of slip during loading up to the test load, as demonstrated by a significant change in the slope of the load / extension curve, shall constitute a failure.
1.2.11	Testing records shall be retained at the end of each testing day.
1778AR	<p>1 Early Thermal cracking</p> <p>1.1 The Company shall develop suitable concrete mix designs and safe curing methods to ensure that any cracking due to early thermal effects does not exceed appropriate permissible crack widths in BS EN 1992-2 and to ensure compliance with the following criteria.</p> <ul style="list-style-type: none"> <li>ciii) Peak temperature: 65 degrees Celsius <li>civ) Maximum temperature differential within a single pour: in accordance with Table 7.1 of CIRIA C660 for internal restraint, $R = 0.42$, for the appropriate coarse aggregate type. If limestone coarse aggregate is to be used, the assumed value for coefficient of linear thermal expansion shall be demonstrated by measurements on concrete

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	<p>specimens.</p> <p>cv) The demonstration shall include the results of early thermal cracking trial pours, as scheduled in Appendix 1/5 of the specification. The temperature rise recorded in the trial pours may be used to establish the temperature rise for the concrete and to enable more reliable predictions of temperature rise using CIRIA C660.</p> <p>cvi) The relationship established from the trial pours between temperature and strain change may be used to determine the coefficient of thermal expansion and contraction as the temperature in the block rises and falls. This performance data can then be used to demonstrate compliance with the Agreement requirements to restrict early thermal cracking.</p> <p>2 Early Thermal Cracking Trial Pours</p> <p>2.1 Early thermal cracking trial pours shall be performed in advance of construction for each proposed concrete mix subject to these considerations. Further testing shall be performed in advance of any changes to materials or mix composition that might have a significant effect on these properties including, but not limited to, changes in type, source or content of cement, ground granulated blast furnace cement or fly ash.</p> <p>2.2 Insulated 'hot-blocks' (one cubic metre) shall be used to simulate the temperature conditions in large sections. The base, sides and top should be contained in 18 millimetre plywood with 50 millimetres of polystyrene insulation. The temperature in the block should be measured using thermocouples (at the centre and at the surface). 100 millimetres cores shall be taken at 28 days for testing compressive strength and checking for internal cracks.</p> <p>2.3 The test blocks should be instrumented using thermocouples and Vibrating Wire strain gauges (VWG) to provide a measure of the temperature rise and the associated strain.</p> <p>2.4 The following test data shall be recorded on the test certificate:</p> <p>cvii) Name and address of the test laboratory;</p> <p>cviii) Date and identification number of the test report;</p> <p>cix) Name and address of the organisation responsible for the testing;</p> <p>cx) Name and address of the concrete supplier;</p> <p>cxii) Date of arrival of the concrete;</p> <p>cxiii) Composition of the concrete tested, including sources of materials;</p> <p>cxiv) Purpose of the test;</p> <p>cxv) Test method;</p> <p>cxvi) Any deviation from the test method;</p> <p>cxvii) Name of the person who performed the test;</p>

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	<p>cxvii) Date of the test;</p> <p>cxviii) Test results, including:</p> <ul style="list-style-type: none"> i) Compressive strength of cores taken and tested in accordance with BS EN 12504-1 and BS EN 13791 at an age of 28 days; ii) The temperature rise; and <p>cxix) Date and signature.</p>
2070AR	<p>1 Replacement of Bridge Deck Waterproofing</p> <p>1.1 Removal of Existing Waterproofing</p> <p>1.1.1 The existing surfacing shall generally be removed by cold-milling (planing) in accordance with Clause 709.</p> <p>1.1.2 Small areas may be removed using other suitable methods.</p> <p>1.1.3 The existing bridge deck waterproofing or protective layer comprising the last 30 millimetre above the concrete substrate shall be carefully removed to avoid damage to the concrete.</p> <p>1.1.4 In exceptional cases for particularly difficult materials method statements shall be submitted for written consent of the Contracting Authority before these techniques shall be used.</p> <p>1.1.5 The final removal of the remaining waterproofing or primer to expose the concrete substrate shall be by recoverable abrasive blast cleaning systems.</p> <p>1.1.6 'Open' blast cleaning shall not be permitted except on vertical surfaces or intricate details.</p> <p>1.2 Inspection and Testing</p> <p>1.2.1 Prior to application of the new waterproofing the deck concrete shall be examined by the Company to determine the following:</p> <ul style="list-style-type: none"> i) if any testing is required (in accordance with the requirements of Series 3300); ii) if additional deck preparation is required; and iii) if structural concrete repairs are required (in accordance with the requirements of Series 1700). <p>1.3 Additional Preparation of Bridge Deck</p> <p>1.3.1 Additional work required in the preparation of the bridge deck prior to the application of the new waterproofing shall include but shall not be limited to the following:</p> <ul style="list-style-type: none"> i) removal of surface Defects such as screed marks and footprints; ii) removal of formwork/falsework anchors from the original construction which have inadequate cover; iii) sealing of cracks greater than 0.25 millimetre; iv) repairs to or forming of fillets and chases to facilitate waterproofing;

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	<p style="text-align: center;">and</p> <p style="padding-left: 40px;">v) additional preparation of the surface of concrete deck to an acceptable standard for the application of the waterproofing membrane.</p> <p>1.3.2 Any work required in addition to the items listed above such as removal of chloride contaminated concrete or delaminated concrete and concrete repairs considered necessary by the Company shall be deemed to be structural concrete repairs and shall be undertaken in accordance with Series 1700.</p> <p>1.4 Replacement of Bridge Deck Waterproofing</p> <p>1.4.1 The replacement waterproofing system shall be in accordance with Clauses 2001 to 2003 and be installed in accordance with Clause 2005.</p>
2071AR	<p>1 Repairs to Existing Waterproofing</p> <p>1.1 Repairs shall be carried out to the existing waterproofing only where the existing system has a current British Board of Accreditation -Roads and Bridges Agrément certificate showing compliance with the requirements of BD47 of the DMRB 'Waterproofing and Surfacing of Concrete Bridge Decks' or for other spray applied waterproofing with the written consent of the Contracting Authority.</p> <p>1.2 Repairs shall be carried out using systems compliant with BD47 of the DMRB and compatible with the system to be repaired.</p> <p>1.3 The waterproofing shall be applied in accordance with the method statement included with the Agrément certificate for the particular system.</p> <p>1.4 All waterproofing repairs shall be carried out in accordance with Clause 2070AR.</p> <p>1.5 Where the existing waterproofing shall be a spray applied system for repair areas of less than 2m² at any one location a hand-applied system equivalent to and compatible with the existing may be used subject to the written consent of the Contracting Authority.</p> <p>1.6 The repair areas within the carriageway width shall have a protective layer incorporated into the waterproofing system in accordance with sub-Clause 2003.4.</p> <p>1.7 Details of current forms of waterproofing systems in use on the trunk road network shall be provided in Appendix B of the SMS User Manual (Table 46, 47 and 48).</p> <p>1.8 Manufacturer's details for deck waterproofing shall be held for individual Structures within the SMS where records shall be known.</p>
2170AR	<p>1 Permanent Works Bolts</p> <p>1.1 All Permanent Works bolts shall be vibration resistant.</p>
2171AR	<p>1 Bearing Replacement</p>

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1	Bearing Replacement
1.1	Bearings to new structures
1.1.1	Bridges supported on bearings shall be designed to allow the inspection, maintenance, removal and replacement of such bearings without the need to close the bridge to normal traffic. Under such circumstances, only traffic loads due to Load Model 1 and Load Model 2 shall be considered. Other traffic loads shall not apply, i.e., Load Model 3 (Special Vehicles) and Fatigue Load Models need not be considered.
1.1.2	Replacement of bearings by jacking shall allow for the effect of the deck being raised by 10 millimetres, or other specified value appropriate to the particular bearing in accordance with the manufacturer's requirements, to facilitate removal and replacement of bearings.
1.1.3	Jacking points shall be designed to accommodate the jacking loads including any fixed / sliding articulation requirements to ensure the overall stability of the structure during bearing replacement operations.
1.1.4	The effects due to jacking of a Structure for bearing replacement shall be considered in combination with permanent and variable actions as follows: <ul style="list-style-type: none"> a. ultimate limit state: application of Equation 6.10 of BS EN 1990; and; b. serviceability limit state: as a frequent load combination as defined in Clause 6.5 of BS EN 1990.
1.1.5	The location of temporary jacking points and any restrictions on the positioning of jacks, e.g. in relation to jacking stiffeners in steel web plates, and safe working loads assumed in the design of the temporary jacking system shall be clearly identified on the drawings.
1.2	Bearings to existing structures
1.2.1	The design of replacement bearings shall allow the inspection, maintenance, removal and replacement of such replacement bearings without the need to close the bridge to normal traffic.
1.2.2	Replacement of bearings to be undertaken by jacking shall allow for the effect of the deck being raised by 10 millimetres, or other value appropriate to the particular existing and replacement bearings in accordance with the manufacturer's requirements, to facilitate removal and replacement of the bearings.
1.2.3	The deck shall be jacked from suitable jacking points which shall accommodate the jacking loads including any fixed / sliding articulation requirements to ensure the overall stability of the structure during bearing replacement operations. Where necessary, the existing deck shall be modified and/or strengthened to accommodate the jacking points to be used in the replacement of the bearings.
1.2.4	Replacement bearings shall be designed for the load effects due to Load Models LM1, LM2 and LM3 (Special Vehicles).
1.2.5	The location of temporary jacking points and any restrictions on the positioning of jacks, e.g. in relation to jacking stiffeners in steel web plates,

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	and safe working loads assumed in the design of the temporary jacking system shall be clearly identified on the drawings.
2371AR	<p>1 Replacement of Bridge Deck Expansion Joints and Gap Sealants</p> <p>1.1 Replacement repair and alterations to expansion joints shall be subject to consent in writing by the Contracting Authority.</p> <p>1.2 Such work shall comply with the requirements of Clauses 2301 to 2304 and BD33 and BA26 of the DMRB.</p> <p>1.3 It may comprise replacement of a complete joint or essential maintenance of a joint where complete or partial replacement is not considered necessary.</p> <p>1.4 Joints shall be installed in accordance with the manufacturer's written instructions.</p> <p>1.5 Existing joints (including transition strips) shall be carefully broken out or unbolted and removed.</p> <p>1.6 The adjacent carriageway hardshoulder hardened verges and central reservations shall be saw cut to provide neat vertical edges.</p> <p>1.7 The location of any existing services or ducts shall be determined prior to breaking out or saw cutting and measures shall be taken to protect them.</p> <p>1.8 Existing flashings and sealants shall be removed.</p> <p>1.9 Where appropriate, existing intact waterbars may be retained.</p> <p>1.10 Existing galvanised plates in buried joints shall be set aside for possible re-use.</p> <p>1.11 The existing surfacing and additional protective layer adjacent to the expansion joint shall be removed to expose the waterproofing membrane.</p> <p>1.12 The waterproofing shall be carefully cut back to expose the concrete surface which shall be prepared to receive the expansion joint system.</p> <p>1.13 Continuity of the waterproofing membrane shall be provided by bond or lap between the waterproof membrane and the expansion joint.</p> <p>1.14 Existing holding down bolts and fixings shall be protected if required for installation of the proposed replacement joint.</p> <p>1.15 If they shall not be required they shall be removed or ground flush with the surface of the deck concrete.</p> <p>1.16 The concrete substrate shall be examined by the Company for Defects.</p> <p>1.17 Where required testing shall be carried out and concrete repairs undertaken in accordance with Series 1700 and this Appendix 0/1.</p> <p>1.18 If the joint shall not be completely replaced material and components shall form the same system as the existing joint where possible.</p> <p>1.19 Where considered necessary by the Company and subject to approval of the Contracting Authority vertical drain holes shall be installed adjacent to expansion joints.</p>

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	<p>1.20 The drain holes shall comprise a down pipe fixed into holes cored through the superstructure of minimum internal diameter 40 millimetre and a conical entry funnel with cap to allow water to enter the funnel but prevent blocking of the waterway by the surfacing.</p> <p>1.21 The cap and funnel shall be covered with a sheet of permeable membrane prior to surfacing.</p> <p>1.22 Where gap sealant shall be replaced the existing sealant and deteriorated joint filler shall be raked out to leave clean surfaces.</p> <p>1.23 Where possible, new joint filler, replacing that removed, shall be installed prior to re-sealing the gap.</p> <p>1.24 Where it shall not be possible to replace joint filler the joint shall still be sealed.</p> <p>1.25 All debris arising from O&M Works shall be removed off the Site.</p>
2372AR	<p>1 Asphaltic Plug Joints</p> <p>1.1 Installation</p> <p>1.1.1 All joints shall have a valid Approval/Registration in accordance with Appendix E of this Specification.</p> <p>1.1.2 The joints shall be installed in accordance with the manufacturer's written instructions which shall comply with the terms of the certification.</p> <p>1.1.3 All batches of materials delivered to the Site shall have a certificate of compliance stating:</p> <ul style="list-style-type: none"> i) The binder compound and its properties including Penetration Value Softening Point (Ring and Ball) and Flow Resistance; ii) The specific type and density of aggregate/stone used in the asphaltic plug matrix; iii) The quantities and weights of binder and aggregate used at each joint location.
2470AR	<p>1 Repointing of Brickwork Blockwork and Stonework</p> <p>1.1 Masonry joints in brickwork and blockwork to be repointed shall be ground out to a depth of 25 millimetre to give adequate key. For natural stone masonry and historic structures power tools shall not be used.</p> <p>1.2 All unsound mortar at a greater depth than this shall be removed until sound mortar shall be encountered.</p> <p>1.3 Apparatus used for grinding out shall be fitted with a depth gauge to allow control of rake out depth.</p> <p>1.4 All detritus shall be removed by low pressure water jetting.</p> <p>1.5 Repointing shall be carried out by trowel or purpose made repointing keys or by using injection techniques.</p> <p>1.6 Cement mortar designation shall be selected based on Clause 2404 and</p>

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Clause Number	Title and Written Text
	<p>2417 and Table 24/5.</p> <p>1.7 Lime mortar designation shall be selected based on Clause 2476AR Table 24/7, Table 24/8 and Table 24/9.</p> <p>1.8 Water for mortars shall be clean and free from impurities.</p> <p>1.9 The specification of mortars used in the repair of masonry construction shall be prepared with reference to the existing mortar in the remaining construction and appropriate adjustment shall be made to take account of existing Site conditions and availability of materials.</p> <p>1.10 For historic brick Structures and all stone masonry Structures, the mortar specification shall be prepared by the Company in conjunction with specialist advice based on mortar analysis and evaluation carried out on the mortar samples from the existing construction.</p> <p>1.11 Lime mortar is extensively used in the construction of masonry road Structures.</p> <p>1.12 Mortars used for repairs and repointing shall match the appearance and characteristics of existing materials as closely as possible.</p> <p>1.13 The choice of lime mortar to be used shall generally be influenced by the nature of stone the nature of any surviving lime based materials and the environmental conditions or exposure of the Site.</p> <p>1.14 Samples of mortar pointing at locations shall be provided for reference and comparison for the duration of the work.</p> <p>1.15 Mortar for pointing shall be required to match the standards and details of the samples.</p> <p>1.16 Adequate protection of repair works and pointing from sun wind rain and frost shall be provided until cured.</p> <p>1.17 For historic Structures, power tools shall not be used to remove mortars. Damage to stone work shall be avoided.</p> <p>1.18 If any significant voids are present the Company shall where necessary wedge and pin up loose stones.</p> <p>1.19 In deep cavities, work shall be carried out in layers of not more than 35 millimetre allowing the material to dry before placing the next layer and allow 24 hours between layers.</p> <p>1.20 Deep voids shall be filled to within 35 millimetre or twice the width of the joint back from the finished wall face to allow sufficient depth for pointing.</p>
2471AR	<p>1 Replacement of Precast Concrete Copings</p> <p>1.1 Broken precast concrete copings shall be removed together with the old mortar bed and any loose and friable mortar in the joints of the brickwork below the coping.</p> <p>1.2 All debris shall be removed off the O&M Works Site.</p> <p>1.3 New precast concrete copings shall be laid on a mortar designation (i) (see</p>

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text
	Clause 2404) bed to a line and level to match existing copings.
2472AR	<p>1 Rebedding Existing Precast Concrete or Stone Masonry Copings</p> <p>1.1 Precast concrete or stone masonry copings shall be removed and stored for re-use.</p> <p>1.2 The existing mortar bed shall be completely removed together with any loose and friable mortar in brickwork joints below the coping.</p> <p>1.3 All debris shall be removed off the O&M Works Site.</p> <p>1.4 Copings shall be relaid on a mortar designation (i) (see Clause 2404) or where wall construction contains lime mortar to Clause 2476AR.</p> <p>1.5 Rebedding or existing precast concrete or stone masonry copings shall match existing line and level.</p>
2473AR	<p>1 Replacement Tiling</p> <p>1.1 All damaged or defective tiles adhesive mortar loose concrete grout and the like shall be broken out and removed off the O&M Works Site.</p> <p>1.2 Replacement tiles shall be in accordance with BS5385 Part 1 1995 Wall and Floor Tiling: Code of Practice for the Design and Installation of Internal Ceramic and Natural Stone Wall Tiling and Mosaics in Normal Conditions, Wall and Floor Tiling.</p> <p>1.3 Any areas of the underlying concrete surface which have been damaged shall be made good as detailed in Series 1700 of the Specification.</p> <p>1.4 Repair materials shall be compatible with the tile adhesive to be used.</p> <p>1.5 The edges of retained existing tiles shall be clean and free of any grout.</p> <p>1.6 Replacement tiles shall be glazed ceramic of a colour size and pattern to match existing tiles.</p> <p>1.7 They shall be installed to a line and level to match existing tiling with the joints grouted to match the existing grout colour and pattern.</p> <p>1.8 New tiling shall be cleaned of excess grout when the grout to the joints has hardened.</p> <p>1.9 Where a mural or other new tile pattern is to replace an existing, the Operating Company shall produce drawings for approval by the Overseeing Organisation prior to construction.</p>
2474AR	<p>1 Rebuilding of Defective Masonry</p> <p>1.1 Bricks concrete blocks and stones designated for reuse in the repairs or reconstruction of existing masonry including bridge road restraint systems shall be taken down and set aside for reuse or removed for storage.</p> <p>1.2 Where road restraint systems have been damaged the Company shall include for retrieval of displaced bricks, blocks and stones from their position after displacement.</p>

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Clause Number	Title and Written Text
1.3	This may include recovery from watercourses and rail tracks.
1.4	The Company shall include for consultation with the appropriate bodies to obtain agreement on access and method of working for rebuilding.
1.5	For scheduled ancient monument Structures consultation and appropriate approvals shall be obtained from Historic Scotland.
1.6	For repairs to listed Structures consultation and appropriate approvals shall be obtained from the local planning department.
1.7	The Company shall set up lines of communication and processes to enable timescales for rebuilding to be achieved.
1.8	The Company shall include in its procedure for approval by Historic Scotland the following steps to ensure early consent:
	(i) Inform Historic Scotland - Ancient Monument Division of damage to a scheduled ancient monument Structure and apply for Scheduled Monument Consent for repair works with cost estimates using new stone and sketch drawings of proposed repairs;
	(ii) Record photos of damaged areas shall be submitted at this point;
	(ii) Carry out assessment of retrieval of stones from river beds and otherwise and notify Historic Scotland of outcome;
	(iii) Send stone samples to British Geological Survey's for best matching replacement stones. Copy report to Historic Scotland;
	(iv) Meet Historic Scotland on site with draft proposals for repair;
	(v) Agree final repair scheme and submit all information to Historic Scotland for final comment; and
	(vi) Historic Scotland issue Scheduled Monument Consent.
1.9	The Company shall include in its procedures for the liaison and approval by local planning departments any proposals for repairs and any repair works or alterations required due to damage to listed historic Structures other than scheduled ancient monuments which shall be covered by sub-Clause 1.5 of this Clause.
1.10	All mortar from the faces of the bricks concrete blocks or stone shall be removed before incorporating into the works.
1.11	Recovered bricks, blocks and stones from watercourses and other situations where the surfaces have been discoloured or contaminated shall be cleaned and allowed to dry before incorporating into the reconstruction works.
1.12	Where new replacement parapet stones are required for listed/ancient monument Structures they shall be of matching stone based on British Geological Survey's analysis of stone samples from the structure.
1.13	New materials to be incorporated into existing brick concrete block or stone masonry construction shall match the remaining construction with regard to appearance and physical characteristics subject to the current O&M Works Site conditions and availability of materials.

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Clause Number	Title and Written Text																																																																																																
2475AR	<p>1 Lime Putty</p> <p>1.1 Lime putty shall be traditional non-hydraulic slaked lime putty to comply with BS 890:1972 Specification for Building Limes, with a density of not less than 1.35kg/ltr.</p> <p>1.2 Portland or other modern cements shall not be used. Water from mortars shall be clean and free from impurities which would adversely affect the mortar.</p> <p>1.3 The Company shall ensure that personnel responsible for the supervision of the production of mortars and the like shall be suitably experienced in the techniques of preparing and using traditional lime mortars. Where ready made mortars are being purchased the Company shall obtain evidence that the supplier shall be suitably experienced in the techniques of production of traditional lime mortars. The Company shall comply with BS8000:2001 Part 3 Workmanship on Building Sites: Code of Practice for Masonry, in terms of standards of workmanship and Site practice.</p>																																																																																																
2476AR	<p>1 Hydraulic Lime Mortars</p> <p>1.1 Hydraulic lime for preparation of lime mortars to be used for building, rebuilding, grouting, mechanical pointing and hand pointing shall be Natural Hydraulic Lime NHL5 (eminently hydraulic), or Natural Hydraulic Lime NHL 3.5 (moderately hydraulic) or Natural Hydraulic Lime NHL2 (feebly hydraulic) and shall conform to BS EN 459-1:2001 Building Lime: Definitions, Specifications and Conformity Criteria.</p> <p>1.2 Non-hydraulic lime shall conform to BS EN 459-1:2001 Building Lime: Definitions, Specifications and Conformity Criteria.</p> <p>1.3 Proportions of hydraulic lime to sand shall be based on Table 24/7 according to the required mortar durability designation defined in BS 5628 'Code of Practice for Use of Masonry' and as specified in Appendix 24/1.</p> <p>TABLE 24/7 Typical Hydraulic Lime Mortar /Durability Designation</p> <table border="1"> <thead> <tr> <th rowspan="2">Constituents</th> <th colspan="12">Mix Reference/Durability Designation</th> </tr> <tr> <th>M1</th> <th>M2</th> <th>M3</th> <th>M4</th> <th>M5</th> <th>M6</th> <th>M7</th> <th>M8</th> <th>M9</th> <th>G1</th> <th>G2</th> </tr> </thead> <tbody> <tr> <td></td> <td>10</td> <td>9</td> <td>8</td> <td>7</td> <td>6</td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>5-6</td> <td>2-4</td> </tr> <tr> <td>NHL5 Eminently Hydraulic</td> <td>1</td> <td>1</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>3</td> <td>2</td> </tr> <tr> <td>NHL3.5 Moderately Hydraulic</td> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>NHL2 Feebly Hydraulic</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td>1</td> <td></td> <td></td> </tr> <tr> <td>Lime Putty</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> </tr> <tr> <td>Brick (Reactive)/ Pozzolanic additive</td> <td></td> <td>1/2</td> <td></td> <td>1/2</td> <td></td> <td>1/2</td> <td>1/2</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Constituents	Mix Reference/Durability Designation												M1	M2	M3	M4	M5	M6	M7	M8	M9	G1	G2		10	9	8	7	6	5	4	3	2	5-6	2-4	NHL5 Eminently Hydraulic	1	1	1							3	2	NHL3.5 Moderately Hydraulic				1	1	1						NHL2 Feebly Hydraulic							1	1	1			Lime Putty										1	1	Brick (Reactive)/ Pozzolanic additive		1/2		1/2		1/2	1/2				
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Clause Number	Title and Written Text											
	Well Graded Sharp Sand	1 1/2	1 1/2	2	1 1/2	2	2 1/2	1 1/2	2	2	10	9
	Soft Sand	1/2	1/2	1/2	1/2	1	1	1/2		1/2		
	Porous Limestone or Brick aggregate		1/2	1/2	1/2		1/2	1/2	1	1 1/2		
	Lime Mortar Mix Proportions by Volume	1:2	1:2 1/2	1:3	1:2 1/2	1:3	1:4	1:2 1/2	1:3	1:4	3:1: 20	2:1: 9
1.4	Hydraulic lime mortar shall be mixed as described below unless otherwise described in Appendix 24/1.											
1.5	Mortar shall be mixed thoroughly by hand or mechanical until its colour and consistency are uniform.											
1.6	The constituent materials shall be accurately measured.											
1.7	Mortar shall be made in small quantities only as and when required											
1.8	Mortar which has begun to set or has been mixed for a period of more than 2 hours shall be discarded.											
1.9	Hydraulic lime shall be delivered to the O&M Works Site in sealed paper bags stored in dry conditions and used within 24 weekend of manufacture.											
1.10	Brick powder in fine particles (<100 microns) reacts with free lime to form a pozzolan which improves frost resistance. Care is needed as if used at too high a proportion it can increase porosity and reduce flexibility.											
1.11	Introducing porous limestone or brick to the lime mortar mix will assist carbonation and frost resistance. Grading shall be similar to that for sharp sand. Pre-soaking prior to mixing will also help act as a retarder.											
1.12	Hydraulic Lime : Sand Mortar											
1.13	Hydraulic lime mortars may be provided as pre mixed dry lime/sand mixes - either bagged or, for larger projects, silo mixes may be appropriate - or they may be Site mixed from bagged hydraulic lime and sand.											
1.14	Hydraulic lime mortars have good working qualities but develop strength more slowly than cement mortars.											
1.15	They can develop appropriate strength and durability and have a higher flexural strength in proportion to compressive strength than do cement mortars.											
1.16	They shall be eminently suitable for the construction of masonry arch bridges which require a degree of flexibility to function structurally as arches.											
1.17	Hydraulic lime mortars shall always be used for repair of masonry arch bridges that were constructed using hydraulic lime mortars (i.e. all historic masonry arch bridges).											
1.18	All hydraulic lime mortars shall be mixed in accordance with the supplier's written instructions.											

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Clause Number	Title and Written Text																				
	<p>1.19 Hydraulic lime mortar should be specified in accordance with the durability classification required. (refer to Table 24/8).</p> <p>TABLE 24/8 Durability Class Requirements for Straight Hydraulic Lime Mortars</p> <table border="1"> <thead> <tr> <th colspan="4">Mortar durability designation (with approximate compressive strengths) for general use building mortar and general use mechanical or hand pointing mortar</th> </tr> <tr> <th>Masonry Type</th> <th>Parapet and copings masonry facing roadsides subject to spray and de-icing salts</th> <th>Other parapets, abutments and spandrel walls above flood levels</th> <th>Soffit to arch barrel above flood level</th> </tr> </thead> <tbody> <tr> <td>Dense impermeable masonry. Squared or random. Brick, Basalt, Granite etc. (No Suction)</td> <td>9-10 2.2 N.mm²</td> <td>7-8 1.8 N / mm²</td> <td>5-6 1.5 N/mm²</td> </tr> <tr> <td>Medium permeability masonry. Squared or random. Brick, Blockwork, Reconstructed stone, Sandstone, Limestone and mixed quality field stone masonry. (Moderate Suction)</td> <td>7-8 1.8 N / mm²</td> <td>5-6 1.5 N/mm²</td> <td>3-4 1.34 N/mm²</td> </tr> <tr> <td>High permeability masonry. Squared or random Brick, Blockwork, Reconstructed stone, Sandstone, Limestone and mixed quality field stone masonry. (High Suction)</td> <td>5-6 1.5 N/mm²</td> <td>3-4 1.34 N/mm²</td> <td>2-4 1.34 N/mm²</td> </tr> </tbody> </table> <p>When work is planned to continue beyond the autumn raise the durability class by at least 1 where the background masonry permits. Where the background</p>	Mortar durability designation (with approximate compressive strengths) for general use building mortar and general use mechanical or hand pointing mortar				Masonry Type	Parapet and copings masonry facing roadsides subject to spray and de-icing salts	Other parapets, abutments and spandrel walls above flood levels	Soffit to arch barrel above flood level	Dense impermeable masonry. Squared or random. Brick, Basalt, Granite etc. (No Suction)	9-10 2.2 N.mm ²	7-8 1.8 N / mm ²	5-6 1.5 N/mm ²	Medium permeability masonry. Squared or random. Brick, Blockwork, Reconstructed stone, Sandstone, Limestone and mixed quality field stone masonry. (Moderate Suction)	7-8 1.8 N / mm ²	5-6 1.5 N/mm ²	3-4 1.34 N/mm ²	High permeability masonry. Squared or random Brick, Blockwork, Reconstructed stone, Sandstone, Limestone and mixed quality field stone masonry. (High Suction)	5-6 1.5 N/mm ²	3-4 1.34 N/mm ²	2-4 1.34 N/mm ²
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Clause Number	Title and Written Text
	<div style="border: 1px solid black; padding: 5px;"> masonry does not permit, plan to commence in the early spring and be complete before the end of summer. </div>
1.20	Lime mortars suitable for use below flood level, depending on time required, are mortar designation 9-10, which shall be suitable for immersion within 24 hours or mortar designation 7-8 if a coffer dam shall be provided to allow 72 hours for d) setting.
1.21	Site mixed hydraulic lime mortars are sufficiently workable for laying and building stone masonry units but shall be generally not initially workable for laying bricks in a modern context without being banked up for several hours and reworked.
1.22	Site mixed hydraulic lime mortars shall be generally not suitable for pumping without the use of air entraining additives.
1.23	Where required for site mixed mortars, an air entrainer can be used to increase workability and minimise water requirement.
1.24	Air entrainers shall be used in accordance with the manufacturer's written instructions.
1.25	Pre-mixed dry bagged or silo mixes generally have a higher entrained air content than Site mixed mortars and shall be suitable for building, pumping and pointing without the need for additional air entrainers.
1.26	The use of air entraining additives provides mortars of the same durability class which shall generally have superior performance characteristics in respect of earlier resistance to freeze/thaw action, faster rate of carbonation, better vapour permeability, and lower capillarity, due to their higher air content and reduced water demand.
2	<p>Gauged Hydraulic Lime : Sand Mortars (i.e. mortars containing hydraulic lime, non-hydraulic lime putty or hydrate and sand)</p>
2.1	Gauged hydraulic lime mortars shall generally only be specified where this shall be necessary to match existing mortars in repointing work.
2.2	There shall normally be no requirement for significant structural strength in re-pointing work.
2.3	Gauged Hydraulic lime mortar should be specified in accordance with the durability classification required. (refer to Table 24/9).
	<p>TABLE 24/9 Durability Class Requirements for Gauged Hydraulic Lime Mortars</p>
	<div style="border: 1px solid black; padding: 5px;"> Mortar durability designation (with approximate compressive strengths) for general use building mortar and general use mechanical or hand pointing mortar </div>

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Clause Number	Title and Written Text			
	Masonry Type	Parapet and copings masonry facing roadsides subject to spray and de-icing salts	Other parapets, abutments and spandrel walls above flood levels	Soffit to arch barrel above flood level
	Dense impermeable masonry. Squared or random. Brick, Basalt, Granite etc. (No Suction)	N/A	N/A	5-6 1.5 N/mm ²
	Medium permeability masonry. Squared or random. Brick, Blockwork, Reconstructed stone, Sandstone, Limestone and mixed quality field stone masonry. (Moderate Suction)	N/A 1.8 N / mm ²	5-6 1.5 N/mm ²	2-4
	High permeability masonry. Squared or random. Brick, Blockwork, Reconstructed stone, Sandstone, Limestone and mixed quality field stone masonry. (High Suction)	5-6 1.5 N/mm ²	3-4 1.34 N/mm ²	1.34 N/mm ²
<p>When work is planned to continue beyond the autumn raise the durability class by at least 1 where the background masonry permits. Where the background masonry does not permit, plan to commence in the early spring and be complete before the end of summer.</p> <p>2.4 Gauged hydraulic lime mortars exhibit slower rates of carbonation and higher capillarity than straight hydraulic lime mortars and shall not be used in close proximity to wet areas or in areas subject to road spray.</p> <p>2.5 Gauged hydraulic lime mortars do not require the addition of air entrainers as 2. Good workability is ensured by the inclusion of lime putty.</p>				
2670AR	<p>1 Anti-Graffiti Coatings</p> <p>1.3 Anti-graffiti coatings shall be of the sacrificial type and shall be capable of being cleaned at least twice before re-coating is necessary</p> <p>1.4 The coating system shall be applied strictly in accordance with the manufacturer's written instructions.</p> <p>1.5 The application of the coating system shall not change the appearance of the substrate.</p>			

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Clause Number	Title and Written Text
	<p>1.6 Prior to application the surface shall be cleaned of all loose material oil grease dirt and existing graffiti. The surface shall be clean and dry before lightly abrading. All loose and flaking paintwork shall be feathered back to a sound edge. A suitable sealer / primer shall be applied to bare areas and areas of graffiti which resist cleaning and may present a problem by showing through the coating system unless sealed.</p> <p>1.7 The cleaning of the coating / removal of graffiti shall not have any detrimental effect on the substrate. Grit-blasting water jetting or the use of chemical cleaning agents likely to have long term effects on the substrate shall not be acceptable.</p> <p>1.8 Where an existing anti-graffiti coating system is of the type that requires grit-blasting water jetting or the use of chemical cleaning agents likely to affect the substrate then the Company shall consult and comply with the requirements of Transport Scotland (Contact: [REDACTED], Telephone: [REDACTED]) with regard to the methods proposed. The Company shall provide the Contracting Authority with completed Consultation Certificates in accordance with Part 6 of these O&M Works Requirements in respect of this requirement.</p>
2671AR	<p>1 Graffiti Removal</p> <p>1.1 Graffiti posters and encrusted deposits shall be removed by hand high pressure water jetting chemical washing light grit blasting or over-painting of painted surfaces provided the substrate is not damaged.</p> <p>1.2 Encrusted deposits may be removed by a light grit blast in accordance with Clause 1772AR provided the substrate is not damaged.</p> <p>1.3 The Company shall ensure that all electrical equipment and any other fixtures and fittings are fully protected during graffiti removal.</p> <p>1.4 Over-painting shall be in a colour and material to match the existing where necessary and shall be subject to consent in writing by the Contracting Authority.</p>
2674AR	<p>1 Convex Safety Mirrors in Underpasses and Culverts Used by Pedestrians and Cyclists</p> <p>1.1 Convex safety mirrors in underpasses and culverts used by pedestrians and cyclists shall be polycarbonate external type. They shall be fixed in accordance with the manufacturer's written instructions.</p> <p>1.2 Cleaning of polycarbonate safety mirrors shall be carried out using a non hazardous de-greaser/cleaning agent.</p> <p>1.3 Repetitive use of the de-greaser/cleaning agent shall not have a detrimental effect on the safety mirrors.</p>
2801AR	<p>1 Winter Maintenance Operations</p> <p>1.1 General</p> <p>1.1.1 Subject to the other provisions of the Agreement the Company shall provide</p>

Part 5: Specification

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Clause Number	Title and Written Text
	<p>all resources including but not limited to depots materials labour and Constructional Plant required to fulfil its obligations under the Agreement. Such resources shall include the provision of all labour Constructional Plant and the like to ensure all necessary measures are taken to keep all roads open to road Users and free from ice and snow at all times.</p> <p>1.1.2 For the avoidance of doubt the resources identified in Tables 1 to 4 inclusive of Appendix 28/2 shall be deemed to be the minimum provision and shall not be construed as being all resources required by the Company to fulfil its obligations for winter maintenance O&M Works. All necessary measures shall include the provision of labour and hiring leasing and the like of Constructional Plant.</p> <p>1.1.3 Salt shall be stored in accordance with current planning and environmental regulations at the locations and in the quantities as stated in Appendix 28/1 Table 1. All salt storage locations shall be designated as loading points.</p> <p>1.1.4 The Company shall provide adequate and sufficient salt loading facilities at each salt storage location to load vehicles.</p> <p>1.1.5 With 24 hours of completing each precautionary salting operation or other snow or ice removal or other O&M Works a report shall be completed by the Company held electronically in accordance with the procedures in the Quality System and O&M Works Quality Plan and be available for inspection by the Contracting Authority at any time. The report shall state the times of commencement and completion of each route the rate of spread and the quantity and size of salt used on each route.</p> <p>1.1.6 A log of hours for each operative spent on "call out" or "standby" shall be kept in accordance with the procedures in the O&M Works Quality Plan.</p>
2802AR	<p>1 Basic Facility</p> <p>1.1 Drivers of all winter maintenance vehicles shall hold appropriate skill qualifications and experience.</p> <p>1.2 The Company shall ensure that at least one month prior to the commencement of the operational winter maintenance period sufficient drivers and operatives shall be available to provide the Winter Service O&M Works.</p> <p>1.3 The Company shall ensure that throughout the entire operational winter maintenance period there shall be available at least 3 trained drivers for each operational vehicle and other items of Construction Plant. Additionally every driver based at a vehicle loading point shall have a basic knowledge of every salting route emanating from that point and be capable of undertaking that route if necessary.</p> <p>1.4 A two-way radio or hands free mobile phone shall be fitted in each vehicle used for Winter Service.</p> <p>1.5 The Company shall be responsible for all arrangements necessary to ensure the availability of operatives to meet the response time detailed in sub-Clause 3 of this Clause. Prior to 1 October each year the Company shall prepare rosters detailing the availability of supervisors, salting vehicle drivers, and</p>

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	<p>loading machine drivers for the operational Winter Service period. This roster shall also include names, addresses, and telephone numbers of the personnel listed.</p> <p>1.6 The Company shall satisfy itself that arrangements for handling and loading salt at the vehicle loading points shall be adequate to achieve the specified response times.</p> <p>1.7 When on continuous night shift the Company's personnel shall be stationed at the appropriate vehicle loading point to provide immediate response. When on continuous day shift the Company's personnel shall be either:</p> <p>1.8 stationed at all or some of the vehicle loading points to provide an immediate response; or</p> <p>1.9 engaged elsewhere on the O&M Works Site but be capable of providing a one hour response.</p> <p>1.10 Prior to 1 October each year the Company shall carry out a 'dry' run of each route and fit and remove the plough to every vehicle so equipped. Records, including details of time taken to traverse the route, fit the plough, and any problems encountered shall be held in accordance with the procedures in the O&M Works Quality Plan and be available for inspection by the Contracting Authority at any time.</p>
2803AR	<p>1 Salting and De-icing Operations</p> <p>1.1 Salting and de-icing O&M Works shall commence at the time and be carried out at the spread rates instructed by the Winter Service Duty Officer.</p> <p>1.2 Salt spreading shall be carried out in such a manner as to avoid damage to other vehicles and pedestrians or other Users of the road network. Spreading width shall be adjusted to suit the carriageway width.</p> <p>1.3 No vehicle shall be driven above the legal speed limit at any time and at a speed greater than 40mph whilst salting on de-restricted dual carriageways. Unless otherwise consented to in writing by the Contracting Authority precautionary salting shall be carried out from the left hand lane of 2 lane dual carriageways from the centre lane of 3 lane dual carriageways and from the left hand centre lane of 4 lane dual carriageways. Spread patterns shall be adjusted to suit the travel lane and carriageway width.</p> <p>1.4 On single carriageway roads salt shall be spread across the full width of the road in a single pass with the spreading vehicle travelling at a speed no greater than 30mph.</p> <p>1.5 O&M Works on Project Roads requiring temporary traffic management involving contra-flow running may occasion an amendment to a route. Salt spreading shall be carried out from the offside lane of the contra-flow and the spread pattern adjusted to ensure that salt shall be spread behind and to the nearside and shall not be thrown into the path of oncoming traffic. Particular care shall be taken to ensure that all open lanes at contra-flow crossovers shall be adequately treated.</p> <p>1.6 In the event of a breakdown of one of more of the Company's spreading</p>

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1.7	<p>vehicles details shall be recorded. The Company shall make immediate arrangements for a reserve vehicle to be made available in order to comply with the requirements of the Agreement.</p> <p>The Company shall clear ice from footways footbridges and cycle facilities in accordance with the requirements of Section 3 to Part 2 of these O&M Works Requirements.</p>
2804AR	<p>1 Snow Clearing Operations</p> <p>1.1 Ploughing</p> <p>1.1.1 The Company shall ensure sufficient resources are mobilised to prevent snow or ice from remaining on the trunk roads. The Company shall put in place specific arrangements to ensure that these resources shall be mobilised to keep the trunk roads free of snow and ice subject to Appendix 0/1 Series 2800 of this Specification and Section 3 of Part 2 of these O&M Works Requirements.</p> <p>1.1.2 All vehicles engaged in snow clearing O&M Works shall be manned taking cognisance of the Company's obligations under health and safety legislation.</p> <p>1.1.3 Subject to the other provisions of the Agreement spreading of salt during ploughing shall be at the rate of spread instructed by the Winter Service Duty Officer. During prolonged periods of snow ploughing shall be continuous from the onset of snow to prevent a build-up of snow and compaction by traffic. Ploughing shall continue until the roads shall be clear of ice and snow.</p> <p>1.1.4 The plough blade shall be set as close to the road surface as shall be consistent with removal of the maximum amount of snow whilst avoiding damage to the road surface, other equipment in the road surface, and the plough blade.</p> <p>1.2 Single Carriageway Roads</p> <p>1.2.1 When clearing single carriageway roads, particularly those having more than two lanes, snow clearance O&M Works shall avoid the build up of snow in the centre of the road.</p> <p>1.3 Dual Carriageway Roads</p> <p>1.3.1 Subject to the other provisions of the Agreement the clearance procedure and lane priority shall be chosen to suit the number of lanes on each carriageway, local weather and snow conditions and traffic densities. When conditions are appropriate the Winter Service Duty Officer may instruct echelon ploughing (2 or more vehicles moving in the same direction one behind the other on different lanes).</p> <p>1.3.2 When ploughing to the nearside other vehicles (unless stationary or on the hardshoulder) shall not be overtaken, snow shall not be thrown over bridge parapets onto the road beneath and when ploughing to the central reservation the speed shall be such as to not throw snow into the path of traffic on the opposing carriageway.</p>

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	<p>1.4 Machine Snow Clearance other than by Salting Vehicles</p> <p>1.4.1 In the event of significant snow falls where snow ploughing being carried out by the salting vehicles shall not be sufficient the Company's Winter Service Duty Officer shall deploy additional equipment for snow clearance to ensure delays caused by the weather conditions shall be kept to a minimum.</p> <p>1.5 Hand Snow Clearance</p> <p>1.5.1 When machine snow clearance shall not be suitable, including clearance around carriageway obstructions, hand snow clearance and salting shall be carried out.</p> <p>1.5.2 Snow clearance shall take place on the footways footbridges and cycle facilities specified in accordance with the requirements of Section 3 to Part 2 of these O&M Works Requirements and de-icing material spread to restore the original surface free from ice and snow.</p>
2805AR	<p>1 Company's Vehicles and Constructional Plant</p> <p>1.1 The Company shall ensure that the winter Constructional Plant listed in Appendix 28/2 of this Part and Annex WSP5 to Appendix D to Part 2 of these O&M Works Requirements shall be available as necessary for the Winter Service.</p> <p>1.2 The Company's winter Constructional Plant shall as a minimum meet the specification set out in this Clause 2805AR.</p> <p>1.3 The Company shall state where required in Annex WSP5 to Appendix D to Part 2 of these O&M Works Requirements details of the winter Constructional Plant to be used in connection with the Winter Service. Such details shall be incorporated into this Agreement.</p> <p>1.4 When used on the trunk road for operator training and maintenance runs, the spinner disc at the rear of the Company's winter Constructional Plant shall be covered in such a way that damage by sharp edges in the event of an accident shall be reduced to a minimum.</p> <p>1.5 Front line and reserve winter Constructional Plant shall be fitted with onboard electronic data loggers which shall provide an accurate record of:</p> <ul style="list-style-type: none"> i) driver time; ii) distance travelled; iii) times when de-icing materials shall have been spread; iv) rate of spread; and v) width of spread. <p>1.6 In the event of an on-board electronic data logger malfunction the Company shall within 12 hours prepare a similar written record.</p> <p>1.7 The Company shall provide apparatus to measure and record the quantity of de-icing material spread on each occasion on each precautionary treatment route. Such apparatus can be fitted to winter Constructional Plant or can be</p>

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	located at depots. Such apparatus shall be additional to the data loggers.
1.8	The Company shall provide and operate a global positioning system (GPS) for all carriageway de-icing vehicles that shall record an accurate real time location for all front line and reserve winter Constructional Plant. The GPS system shall be capable of downloading to personal computer to allow the displaying of real time information.
1.9	As a minimum requirement, in September and January of each year the Company shall calibrate all de-icing material spreading equipment. In September and January the calibration for de-icing material spreading equipment shall comply with the requirements of BS1622:1989 Specification for Spreaders for Winter Maintenance. September testing shall comply with the requirements of tests 'A' and 'B' and January testing the requirements of test 'B' of BS1622:1989 Specification for Spreaders for Winter Maintenance. All calibrations shall be independently carried out and certificated. Re-calibration and testing shall be carried out after repairs to the spreading equipment and at other times when necessary to ensure the accuracy of de-icing material spreading. Calibration certificates shall be held in accordance with the requirements of the Winter Service Plan and the Company's Quality System and O&M Works Quality Plan and shall be available for inspection by the Contracting Authority at any time.
2	General
2.1	The winter Construction Plant which shall be used for spreading rock salt on the Project Roads shall consist of a truck chassis/cab upon which shall be mounted a salt spreading machine of sufficient capacity to enable the Company to fulfil its obligations for Winter Service O&M Works.
2.2	Where alternative de-icing materials shall be specified the Company shall provide Winter Constructional Plant to spread these in accordance with the manufacturer's written recommendations.
2.3	Winter Constructional Plant Specification for Plant used for Spreading Rock Salt
2.4	<p>The chassis/cab shall:</p> <ul style="list-style-type: none"> i) be of robust construction and shall comply fully with the requirements of the Motor Vehicle Construction and Use Regulations; ii) have a suitable wheelbase to accommodate the appropriate salt spreader body without excessive overhang behind the rear spring suspension brackets; and iii) be fitted with a diesel engine which develops sufficient horsepower to cater for snow clearing and Winter Service.
2.5	Operations
2.5.1	<p>The salt spreading equipment shall:</p> <ul style="list-style-type: none"> i) be of proven design and comply fully with the requirements of BS.1622:1989 Specification for Spreaders for Winter Maintenance; ii) be capable of spreading dry salt to BS 3247:1991 Specification for Salt

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	<p>for Spreading on Highways for Winter Maintenance;</p> <ul style="list-style-type: none"> iii) be capable of symmetrical and asymmetrical spreading in accordance with the Class A1 requirements of BS 1622:1989 Specification for Spreaders for Winter Maintenance; iv) be fitted with a hopper that itself shall be fitted with removable salt screens; v) be fitted with a spreading mechanism at the rear of the machine designed to minimise damage to passing vehicles when the machine shall be operating. The level of the spreader shall be not greater than 350 millimetre above the road surface. The spreader shall be capable of even distribution of salt over the full width of spread at rates between 10g/sq. m and 40g/sq. m and the trajectory of the salt leaving the spreader shall at no time be higher than 150 millimetre above the point of distribution; vi) be fitted with a salt discharge indicator connected to the salt spreading machine so as to inform the operator that spreading has ceased; vii) be fitted with an electronic data logger in accordance with Clause 2805AR.5; and viii) be fitted with an on board global positioning system. <p>2.5.2 The Company shall provide a range of snowploughs which shall be capable of clearing all snow conditions in the O&M Works Site.</p> <p>2.5.3 Snow blowers utilised shall:</p> <ul style="list-style-type: none"> i) be capable of blowing up to 600 tonnes of snow per hour; ii) have a width of cutter head to be at least 1.8 metres; and iii) be capable of operating in up to 4 metres depth of snow. <p>2.5.4 All winter Constructional Plant used for de-icing and snow and ice clearance O&M Works shall:</p> <ul style="list-style-type: none"> i) be painted golden yellow to BS 4800:1989 Schedule of Paint Colours for Building Purposes; ii) have 2 additional headlamps shall be fitted to permit forward visibility when the snow plough shall be fitted; iii) have 3 rotating amber beacons shall be fitted to the vehicle 2 on the roof of the cab and 1 beacon at the rear of the salt hopper; iv) be fitted with a sign board reading "SPREADING" fitted to the back of the salt hopper. The lettering shall be 160 millimetre 'x' height in black capitals from the 'transport heavy alphabet' described in the Traffic Signs Regulations and General Directions on a yellow Class 1 reflective background in accordance with BS 381C:1996 Specification for colours for identification, coding and special purposes lemon yellow No 355; and v) The vehicle shall be fitted with a passenger seat.

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<p>2807AR</p>	<p>1 Maintenance of Company's Vehicles and other Constructional Plant</p> <p>1.1 The Company shall be responsible for ensuring that its vehicles and other Constructional Plant shall be mechanically maintained to a standard in order to comply with the other provisions of the Agreement.</p> <p>1.2 The Company shall arrange for sufficient qualified motor fitters to be on standby at all times during the operational winter maintenance period. In the event of mechanical breakdown or other mechanical failure with the Company's vehicles and other Constructional Plant the Company shall arrange for the necessary repairs to be carried out without delays so that the response and treatment times can be met.</p>
<p>2808AR</p>	<p>1 Miscellaneous Winter Maintenance Operations</p> <p>1.1 Patrolling</p> <p>1.1.1 Patrolling of the sections of the O&M Works Site shall take place between 10 p.m. and 6 a.m. when the air temperature shall be forecast to be 4 °c or below. Priority shall be given to main carriageways. Slip roads shall be patrolled only where the Company considers that they are abnormally prone to icing and where the condition of such slip roads cannot be assessed from the main carriageway.</p> <p>1.1.2 Patrols shall be so arranged to ensure that an individual section of route within the O&M Works Site shall be patrolled at intervals of not more than 3 hours.</p>
<p>3101AR</p>	<p>1 Road Cleaning and Clearance</p> <p>1.1 Sweeping</p> <p>1.1.1 Subject to the other provisions of the Agreement the Company shall provide all the necessary labour, Constructional Plant, materials and equipment required to maintain to the standards of cleanliness set out in the Environmental Protection Act 1990 Code of Practice on Litter and Refuse (Category 6 Zone) for the carriageways, channels, hardshoulders, central reserves, footways, cycle facilities and footbridges on the O&M Works Site.</p> <p>1.1.2 Sweeping of channels shall be to such a standard that on completion of the work there shall be an unimpeded passage for storm water into the drainage system. Channels shall be swept at least once annually in the spring. Vehicles engaged in sweeping shall only travel in the same direction of flow as the adjacent road traffic.</p> <p>1.1.3 Sweeping shall also take place when required to remove material which constitutes an immediate or imminent hazard (Category 1 Defect) to road Users.</p> <p>1.1.4 Sweeping shall also be required on all paved areas and all roads within the O&M Works Site to ensure that detritus and vegetation do not obscure any carriageway markings or otherwise cause a road safety hazard (such as loose material in hatched areas).</p> <p>1.1.5 The Company shall identify all mechanical sweeping equipment to be</p>

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	<p>provided for use in the O&M Works Site in its O&M Works Quality Plan. Records of cleansing work carried out shall be maintained within its Quality System and be available for inspection by the Contracting Authority at any time.</p>
<p>3102AR</p>	<p>1 Litter and Debris Clearance</p> <p>1.1 Subject to the other provisions of the Agreement the Company shall maintain all road verges and central reservations to meet the standards for motorways and strategic routes set out in the Environmental Protection Act 1990 Code of Practice on Litter and Refuse (Category 6 Zone).</p> <p>1.2 The term "verges" includes all grassed and planted areas between the road boundary fences which are not surfaced with bituminous materials or classified as central reservations.</p> <p>1.3 Central reservations shall be both grassed and paved areas and no distinctions shall be made between either type.</p> <p>1.4 The Company shall carry out safety inspections and safety patrols on the Roads to the standards identified in Part 2 of these O&M Works Requirements. The inspectors and patrollers shall collect from the carriageway, hardshoulder, central reserve and verges all objects of any material size or form weighting less than 25kg which might be a hazard of distraction to road Users.</p> <p>1.5 Records of litter and debris clearance shall be held in accordance with the procedures in the O&M Works Quality Plan and be available for inspection by the Contracting Authority at any time.</p>
<p>3103AR</p>	<p>1 Removal of Dead Animals</p> <p>1.1 The carcass of a dead animal found on the O&M Works Site that needs to be removed for safety or environmental reasons shall be collected and disposed of in accordance with the requirements of the Local Authority Environmental Health Officer.</p>
<p>3201AR</p>	<p>1 Emergency Response Operations</p> <p>1.1 General</p> <p>1.1.1 Notwithstanding the provisions of Section 17 of Part 1 of these O&M Works Requirements this clause specifies the requirements for emergency response Operations.</p> <p>1.2 Emergency Operations</p> <p>1.2.1 The Company shall provide emergency standby/response Operations as described in Appendix 32/1.</p> <p>1.2.2 At all times the Company shall have available competent and trained operatives and suitably equipped vehicles and to be on the site of the emergency within the time period stated in Appendix 32/1.</p> <p>1.2.3 Eight weeks prior to the commencement of the Agreement and at least two weeks prior to 1 April and 1 October in each Annual Period thereafter the</p>

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		<p>Company shall prepare rosters detailing the availability of supervisors and emergency crews for each 6 month period of each year commencing 1 April. The roster shall include names and addresses and telephone and message pager numbers of the personnel listed. The roster shall be updated at such times when the personnel identified on the roster cease to be available or changes are proposed to the personnel by the Company.</p> <p>1.2.4 The Company's arrangements for training and supervision shall ensure that all operatives are familiar with the types of incident that can be expected, including any special procedures necessary during the hours of darkness.</p> <p>1.2.5 Section 25 of Part 1 of these O&M Works Requirements specifies the customer contact system to be provided by the Company to which emergency calls shall be transmitted. It also describes the role of the emergency liaison officer.</p> <p>1.2.6 During the hours of 07.00 to 19.00 Monday to Friday the Company may use the personnel identified to respond to emergency requests for assistance on other Operations in connection with the Agreement. They shall however be able to attend at the site of any emergency on any part of the O&M Works Site within the response time stated in Appendix 32/1. The Company's stock of material as specified in Appendix 1/78 shall include all materials necessary to respond without delay to an emergency on the O&M Works Site.</p> <p>1.2.7 For the avoidance of doubt the resources identified in Table 1 of Appendix 32/1 shall be deemed to be the minimum provision and shall not be construed as being all resources required by the Company to fulfil its obligations for emergency response Operations.</p>
3202AR	1	<p>Temporary Concrete Road Restraint Systems</p> <p>1.1 General</p> <p>1.1.1 When necessary, to ensure the safety of the Users of the O&M Works Site and Company operatives, the installation of temporary vertical concrete road restraint systems shall be carried out in accordance with Series 400. The Company shall have immediate access to at least 90 metres of temporary vertical concrete road restraint system and shall ensure that the necessary Constructional Plant and personnel shall be available to commence erection of the road restraint system as soon as practicable but within 24 hours. Records of such use shall be held within the Company's Quality System and shall be available for inspection by the Contracting Authority at any time.</p>
3270AR	1	<p>Emergency Response</p> <p>1.1 Response Time</p> <p>1.1.1 The response time for attendance of the Company's initial and secondary emergency response resources at the scene of an emergency shall be as stated in Table 1 of Appendix 32/1.</p> <p>1.1.2 During the hours of 07.00 to 19.00 Monday to Friday the Company may use the personnel identified to respond to emergency requests for assistance on other operations or parts of the O&M Works in connection with this</p>

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	<p>Agreement.</p> <p>1.1.3 The emergency response personnel shall however be able to attend at the site of any emergency on any part of the O&M Works Site within the response time stated in Appendix 32/1.</p> <p>1.2 Resources for emergency response operations</p> <p>1.2.1 Details of the types of resources that shall be made available by the Company to respond to emergencies shall be as specified in Table 2 of Appendix 32/1.</p>
3301AR	<p>1 Rotary Coring in carriageways</p> <p>1.1 Rotary coring in carriageways shall be carried out in accordance with this Clause.</p> <p>1.2 Cores shall be 100 millimetre or 150 millimetre nominal diameter and taken in the positions and to the depths proposed by the Company and consented to in writing by the Contracting Authority.</p> <p>1.3 Cores shall be cut in accordance with BS 598 using a coring machine, which complies with BS 4019.</p> <p>1.4 The walls and base of all holes from which core samples have been cut shall be thoroughly dried and painted with hot bituminous binder immediately prior to reinstatement.</p> <p>1.5 The holes shall be filled to within 50 millimetre to 75 millimetre inclusive from the road surface with wet lean concrete and topped off with well compacted bituminous repair material which on completion shall be at the same level as the adjacent surface.</p> <p>1.6 The cores shall be handled carefully to prevent damage and wrapped in polythene to prevent moisture loss.</p> <p>1.7 They shall be indelibly marked to indicate the location and date of coring.</p> <p>1.8 Cores shall be packaged to avoid damage, clearly labelled and delivered to the Company's store.</p> <p>1.9 At the Company's store, cores shall be handled carefully and stored on purpose built racks or shelves.</p> <p>1.10 Cores shall be stored for periods determined by the Company to enable the necessary recording, testing and data to be obtained or inspected by the Contracting Authority.</p> <p>1.11 The Company shall establish if the Contracting Authority wish to inspect the cores prior to disposal.</p> <p>1.12 Core sampling operations testing, referencing, information obtained from data analysis and interpretation shall be recorded by the Company and a copy of data and reports supplied to the Contracting Authority.</p> <p>1.13 The Company shall submit evidence in writing to the Contracting Authority for written consent that the persons, including any subcontractor proposed to carry out coring, testing, and reporting Operations, have the expertise and</p>

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	<p>resources to carry out any such work.</p> <p>1.14 All coring, testing and reporting Operations shall be carried out by a specialist testing firm or laboratory holding accreditation granted in respect of such coring and testing by the United Kingdom Accreditation Service (UKAS) or by the European Co-operation for Accreditation of Laboratories (EAL).</p>
3302AR	<p>1 Rotary Coring in Structures</p> <p>1.1. Rotary coring in Structures shall be carried out in accordance with this Clause.</p> <p>1.2. Cores shall be 50 millimetre, 75 millimetre or 100 millimetre nominal diameter and taken in the positions and to the depths proposed by the Company and consented to in writing by the Contracting Authority.</p> <p>1.3. The cores shall be cut in accordance with BS 598 using a coring machine which complies with BS 4019.</p> <p>1.4. Cores shall generally be cut through structural concrete with measures taken to avoid encountering reinforcement.</p> <p>1.5. The holes from which core samples have been cut shall be reinstated using repair mortar in accordance with Clause 1773AR.</p> <p>1.6. The cores shall be handled carefully to prevent damage and wrapped in polythene to prevent moisture loss. They shall be indelibly marked to indicate the location and date of coring.</p> <p>1.7. Cores shall be packaged to avoid damage, clearly labelled and delivered to the Company's store.</p> <p>1.8. At the Company's store cores shall be handled carefully and stored on purpose built racks or shelves.</p> <p>1.9. Cores shall be stored for periods determined by the Company to enable the necessary recording testing and data to be obtained or inspection by the Contracting Authority.</p> <p>1.10. The Company shall establish if the Contracting Authority wish to inspect the cores prior to disposal.</p> <p>1.11. Core sampling operations, testing, referencing information obtained from data analysis and interpretation shall be recorded by the Company and copies of data and reports supplied to the Contracting Authority.</p> <p>1.12. The Company shall submit evidence in writing to the Contracting Authority for written consent that the persons, including sub-contractors proposed to carry out coring, testing and reporting Operations, have the expertise and resources to carry out the work.</p> <p>1.13. All coring, testing and reporting Operations shall be carried out by a specialist testing firm or laboratory holding accreditation granted in respect of such coring and testing by the United Kingdom Accreditation Service (UKAS) or by the European Co-operation for Accreditation of Laboratories (EAL).</p>

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3303AR	<p>1 Structural Investigations</p> <p>1.1 Separate reports upon the findings, testing and the like, together with photographic evidence shall be supplied for each Structure as detailed in Appendix 33/1.</p> <p>1.2 The Company shall determine in accordance with the other requirements of this Agreement the need for the reports to contain a section giving an expert interpretation of the results of the investigation. Where considered necessary the reports shall contain such a section.</p> <p>1.3 The number of copies for each report shall be described in Appendix 33/1.</p> <p>1.4 The Company shall submit evidence to the Contracting Authority that the persons, including sub-contractors, proposed to carry out investigation, testing and reporting Operations have the expertise and resources to carry out the work.</p> <p>1.5 All sampling and testing Operations shall be carried out by a specialist testing firm or laboratory holding accreditation Service (UKAS) or by the European Co-operation for Accreditation of Laboratories (EAL).</p>
304AR	<p>1 Inspection Patches Within Surfacing on Bridge Structures</p> <p>1.1 The general requirements for excavation and reinstatement of inspection patches within surfacing on bridges shall be as referred to in the appropriate Clauses of Series 700, 900 and 1100.</p> <p>1.2 Details of patch size and location within footways and carriageways shall be agreed in advance by the Contracting Authority.</p> <p>1.3 Such inspection patches shall be excavated through any flexible surfacing, asphaltic sand carpet and waterproofing system which may be present.</p> <p>1.4 Following excavation all residual deposits of surfacing and waterproofing shall be disposed of off the O&M Works Site and the deck cleaned.</p> <p>1.5 Excavation patches shall remain open for testing and inspection and shall only be reinstated after having received the written consent of the Contracting Authority.</p>
3305AR	<p>1 Trial Holes in Paved Areas</p> <p>1.1 The Company shall excavate trial holes by hand or machine to permit inspection or sampling of unbound or bitumen bound materials.</p> <p>1.2 The size and location of the trial holes shall be determined by the Company in accordance with the other provisions of this Agreement.</p> <p>1.3 Trial holes shall be excavated and reinstated in accordance with Clause 706., except that trial holes shall remain open for testing and inspection and shall only be reinstated after having received the written consent of the Contracting Authority.</p>
3306AR	<p>1 Falling Weight Deflectometer Tests</p> <p>1.1 The Operating Company shall undertake falling weight deflectometer tests to</p>

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	<p>assess the structural condition of bituminous and cementitious road pavements.</p> <p>1.2 The location, length to be tested and number of tests to be carried out shall be determined by the Company in accordance with the other provisions of this Agreement.</p> <p>1.3 The testing and reporting shall be carried out in accordance with the guidance given in HD 29 of the DMRB.</p>
3307AR	<p>1 Dynamic Cone Penetrometer Tests</p> <p>1.1 The Company shall undertake dynamic cone penetrometer tests to assess the structural condition of bituminous and cementitious road pavements.</p> <p>1.2 The testing shall be carried out in accordance with the Manufacturer's written instructions.</p> <p>1.3 The calculations and reporting shall be carried out in accordance with the guidance given in <i>Transport and Road Research Laboratory Overseas Road Note 8 – A Users Manual for a Program to Analyse Dynamic Cone Penetrometer Data..</i></p>
3308AR	<p>1 Structural Investigations Tests</p> <p>1.1 Structural investigations tests shall be as described in Appendix 33/1</p>
6101AR	<p>1 Maintenance of Road Restraint Systems</p> <p>1.1 Safety barriers shall be re-tensioned in accordance with the requirements of Clause 473AR within the periods specified in Part 2 of Schedule 4.</p> <p>1.2 Re-tensioning required outwith the maintenance cycle shall only be undertaken when instructed by the Contracting Authority.</p>
6102AR	<p>1 Maintenance of Gullies, Piped Grips, Catchpits Soakaways and Oil Separators</p> <p>1.1 Cleaning of gullies, catchpits, soakaways and oil separators shall be carried out in accordance with Clauses 520, 521 and the following:</p> <p>1.2 The outlet pipe shall be jetted with clean water to ensure that it is flowing freely. The location of any restrictions in flow and obstruction that cannot be removed shall be recorded. Polluted water shall not be used to jet, surcharge or refill gullies.</p> <p>1.3 Before putting a gully grating or cover back on after cleaning, a spot of paint shall be sprayed onto the underside. The colour of the paint shall differ for each cycle of cleaning.</p> <p>1.4 Details of the Operations including the road and number of gullies and chambers emptied and any Defects found in respect to blockages or damages to the drainage system or components together with the location of those Defects shall be recorded.</p>

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6103AR	<p>1 Maintenance of Drainage Grips</p> <p>1.1 Drainage grips shall be maintained by cutting and cleaning such that free flow of water shall not be impeded and water does not stand on the carriageway adjacent to the grip.</p>
6104AR	<p>1 Maintenance of Linear Drainage Systems</p> <p>1.1 Linear drainage systems shall be maintained by cleaning in accordance with Clauses 520, and 521.</p> <p>1.2 Cleaning may be carried out by drawing through a mandrel with a diameter 20 millimetre less than the nominal diameter of the pipe or nominal minimum area of the "waterway area" of the block.</p> <p>1.3 Where necessary a root cutter attachment shall be used with a high pressure water jetter.</p> <p>1.4 Piped grips shall be cleaned as necessary such that all silt and loose obstructions shall be removed from the pipe so that the free flow of water shall not be impeded and water does not stand on the carriageway adjacent to the piped grip.</p> <p>1.5 Each end of the piped grip shall be maintained free from vegetation or other obstructions, including any material expelled from the pipe.</p> <p>1.6 Where the invert of the outlet is below the invert of the ditch the invert of the ditch shall be excavated until the invert of the pipe is exposed.</p>
6105AR	<p>1 Maintenance of Filter Material</p> <p>1.1 The filter material shall be loosened by harrowing to a depth of 200mm over the full width of the drain including contiguous filter material so as to minimise retention of water within this depth.</p> <p>1.2 All weed growth in filter material shall be treated in accordance with clause 3002.</p> <p>1.3 The location of any obstruction that cannot be removed shall be recorded.</p> <p>1.4 Any build up of detritus between the edge of the carriageway and the filter drain shall be removed at the same time.</p>
6106AR	<p>1 Maintenance of Drainage Structures</p> <p>1.1 Drainage structures shall be maintained by cleaning in accordance with Clauses 520 and Clause 521.</p> <p>1.2 Each end of the drainage structure, including any ancillary drainage items shall be kept free of vegetation and other obstructions, including any material disturbed during cleaning.</p> <p>1.3 Where the invert of any drainage structure at intake and outfall points is below the invert of an adjacent watercourse, the watercourse invert shall be excavated to the invert level of the drainage structure to facilitate flow from the drainage structure.</p>

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text
	<p>1.4 The Company shall maintain a record of any defects found during maintenance Operations and shall report any hazards immediately to the Contracting Authority.</p>
<p>6107AR</p>	<p>1 Maintenance of Ancillary Drainage Items</p> <p>1.1 Ancillary drainage shall be maintained by cleaning all vegetation and debris and cleaning to remove all silt loose obstructions and other detritus.</p> <p>1.2 Sluices, tidal flaps, penstocks, valves, pumps and other specialist equipment shall be maintained by checking that all mechanisms shall be functioning as required and lubricating any moving parts in accordance with any manufacturers' instructions.</p> <p>1.3 The Company shall maintain a record of any defects found during maintenance operations and shall report any hazards immediately to the Contracting Authority.</p>
<p>6108AR</p>	<p>1 Litter and Refuse</p> <p>1.1 Subject to the other provisions of this Agreement the Company shall ensure that all roads and other land within the O&M Works Site shall be maintained to the standards of a Category 6 Zone as set out in the Environmental Protection Act 1990 Code of Practice on Litter and Refuse issued under section 89 of the Environmental Protection Act 1990 document no. SE/2006/164 by the Scottish Executive Environment Group in October 2006.</p> <p>1.2 Road cleaning and clearance of channels shall be to such a standard that on completion of the Operation there shall be an unimpeded passage for storm water into the drainage system.</p> <p>1.3 Vehicles engaged in sweeping shall only travel in the same direction of flow as the adjacent road traffic.</p> <p>1.4 Any growth of grass or other vegetation which shall be likely to obstruct the flow of water in the channel shall be controlled in accordance with Clause 3002.</p> <p>1.5 The term "grassed areas" as referred to in the Code of Practice shall include all areas that shall be either grassed, planted granular or the like between the road boundary fences which shall not be hard surfaced.</p> <p>1.6 Central reservations may be grassed or hard surfaced areas.</p>
<p>6109AR</p>	<p>1 Maintenance of Road Studs</p> <p>1.1 Any road stud which has become displaced from its socket or is loose or broken shall be removed from the carriageway immediately and the resulting socket shall be filled with bituminous instant repair material.</p>
<p>6110AR</p>	<p>1 Maintenance of Structures - General</p> <p>1.1 Vegetation on or adjacent to the Structure shall be removed using hand tools or appropriate mechanical means which preserve the integrity of and do not damage the Structure.</p>

Part 5: Specification

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text	
	1.2 1.3 1.4 1.5 1.6 1.7 1.8	<p>Injurious weeds such as Japanese Knotweed and Giant Hogweed shall be removed in accordance with Clause 3002 and reported to the Contracting Authority.</p> <p>Debris from any part of the Structure shall be removed by methods which do not damage the Structure.</p> <p>Bird droppings shall be removed by methods which do not damage the structure.</p> <p>Bolts shall be checked and tightened to the appropriate torque.</p> <p>Missing bolts shall be replaced and tightened to the appropriate torque.</p> <p>Local damage to protective systems shall be made good.</p> <p>Cleaning shall not be carried out when the ambient temperature is 2°C or less and falling or when the Operations are likely to result in the formation of ice.</p>
6111AR	1 1.1 1.2 1.3 1.4 1.5 1.6 1.7	<p>Maintenance of Expansion Joints</p> <p>Debris and vegetation shall be cleaned out from the expansion joint.</p> <p>Bolts securing the expansion joint, cover plates and nosing joints shall be checked and tightened to the appropriate torque.</p> <p>Missing bolts shall be replaced and tightened to the appropriate torque.</p> <p>Securing compounds shall be checked and repaired as necessary.</p> <p>Neoprene or elastomeric material shall be checked for splitting or detachment from the supporting frame by a visual inspection and the use of appropriate hand tools.</p> <p>Cover plates and nosing joints shall be checked by visual inspection and the use of appropriate tools.</p> <p>Debris and sediment from associated drainage below the joint shall be cleared.</p>
6112AR	1 1.1 1.2 1.3 1.4 1.5	<p>Maintenance of Bridge Drainage Systems</p> <p>Cleaning of bridge drainage systems shall be carried out in accordance with Clauses 520, 6102AR, 6104AR and 6104AR.</p> <p>Drainage holes in structural components, obstructions, outlet pipes, outlet manholes, weep pipes, silt and debris deposits shall be cleaned using appropriate hand tools drainage rods and mechanical means, including jetting.</p> <p>Flap valves shall be checked for operation by hand or using appropriate lifting devices.</p> <p>Hinges and fixings shall be greased using a corrosion inhibiting lubricant that will not flow below 70°C.</p> <p>Vegetation and weeds blocking pipes shall be removed.</p>

Part 5: Specification

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text
6113AR	<p>1 Maintenance of Parapets and Pedestrian Protection on Structures</p> <p>1.1 Hollow section drain holes shall be cleaned.</p> <p>1.2 Bolts shall be checked and tightened to the appropriate torque.</p> <p>1.3 Missing bolts shall be replaced and tightened to the appropriate torque.</p> <p>1.4 Local damage to protective systems shall be made good.</p> <p>1.5 Parapet expansion joints shall be checked for freedom.</p> <p>1.6 Connections with adjoining vehicle restraint barriers shall be checked..</p>
6114AR	<p>1 Maintenance of Bearings and Bearing Shelves</p> <p>1.1 Maintenance shall be in accordance with the manufacturers' requirements.</p> <p>1.2 Local damage to protective systems shall be made good.</p> <p>1.3 Bearings shall be checked for freedom of movement and any signs of misalignment, binding, distortion or excessive freedom shall be reported to the Contracting Authority.</p>
6115AR	<p>1 Maintenance of Structures Over or Conveying Watercourses</p> <p>1.1 Structures over or conveying watercourses shall be maintained, including clearing of vegetation, debris and encrustations, greasing and lubrication where appropriate.</p> <p>1.2 Maintenance shall be in accordance with manufacturer's requirements or information in the maintenance manual or as-built records.</p>
6116AR	<p>1 Maintenance of Sign or Signal Gantries and High Mast Lighting Masts</p> <p>1.1 Holding down assemblies and fixings, including to cladding, shall be checked and tightened employing calibrated hand or mechanical wrenches to achieve the torque.</p> <p>1.2 Missing bolts in the holding down assemblies and fixings shall be replaced and tightened to the appropriate torque.</p> <p>1.3 Holding down assemblies shall be cleaned and re-greased and where available in accordance with the manufacturer's written specifications.</p> <p>1.4 Cladding shall be cleaned using detergents that shall not discolour/degrade cladding finishes.</p> <p>1.5 Seals to box type gantries shall be visually inspected for leaks using torches and tools suitable for use in confined spaces.</p> <p>1.6 Any box type gantries that shall not be wind and waterproof shall be reported to the Contracting Authority.</p> <p>1.7 High mast winch and head frame assemblies shall be inspected and maintained in accordance with the manufacturers requirements.</p> <p>1.8 Local damage to protective systems shall be made good.</p>

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Clause Number	Title and Written Text
6117AR	<p>1 Maintenance of Non-Structural Items</p> <p>1.1 Moveable parts shall be cleaned and greased and where available in accordance with the manufacturer's requirements.</p> <p>1.2 Holding down assemblies and fixings including to cladding shall be checked and tightened to the appropriate torque.</p> <p>1.3 Missing bolts in the holding down assemblies and fixings shall be replaced and tightened to the appropriate.</p> <p>1.4 Holding down assemblies shall be cleaned and re-greased and where available in accordance with the manufacturer's written specifications.</p> <p>1.5 Vegetation shall be removed in accordance with Clause 6110AR.</p>
6118AR	<p>1 Maintenance of Underpasses and Culverts Used by Pedestrians and Cyclists and Retaining Walls</p> <p>1.1 All surfaces, painted finishes and protective systems within culverts and underpasses, including ceilings, soffits and handrails, shall be cleaned without any detrimental effect to the surface finishes or protective systems.</p> <p>1.2 Cleaning of polycarbonate mirrors shall be by hand using the appropriate methods as specified in writing by the manufacturer, where available.</p>
6119AR	<p>1 Maintenance of Road Traffic Signs</p> <p>1.1 Road traffic signs shall be maintained by cleaning using methods which do not damage the signs.</p> <p>1.2 Hazard posts and marker posts shall be straightened and the ground around the base of the post re-compacted.</p> <p>1.3 Cleaning shall not be carried out when the ambient temperature is 2°C or less and falling or when the Operations are likely to result in the formation of ice on the footway or carriageway.</p> <p>1.4 Ladders shall not be leant against sign faces.</p>
6120AR	<p>1 Maintenance of Lit Sign Units</p> <p>1.1 Lit Sign Units Shall be maintained by:</p> <ul style="list-style-type: none"> (i) cleaning of all photo electric control units, luminaire external and internal surfaces and any other components affecting the optical performance of the luminaire using methods which do not damage them; (ii) degreasing, lubricating and checking the operation of all toggles, wing nuts, hinges, door locks and lifting gear; (iii) aligning bracket luminaire and luminaire optical equipment in respect of the sign face and to minimise glare to traffic; (iv) checking and tightening screws and locking devices in accordance with the manufacturer's instructions;

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Clause Number	Title and Written Text
1.2 1.3	<ul style="list-style-type: none"> (v) identifying recording damage, corrosion or misalignment of posts; (vi) identifying and recording electrical component showing signs of overheating fracture condensation or tracking; (vii) refitting lamps removed for cleaning purposes or, if no longer serviceable, replacing with a new lamp of an equivalent specification; (viii) replacing lamps; (ix) marking new lamps with the date of installation and recording this date; (x) identifying and recording faults on any electrical unit; (xi) visually checking fixings and recording any defects; (xii) identifying and recording damage, corrosion or other defects of conduits; (xiii) checking all electrical connections and recording any defects; (xiv) checking all earthing connections and recording any defects; and (xv) clearing debris from around sign post bases for 1 metre radius. <p>1.2 The supply shall be isolated at the cut-out for the removal and fitting of lamps.</p> <p>1.3 Any faulty lamp shall be disposed of in accordance with Clause 1370AR.</p>
6121AR	<p>1 Maintenance of Traffic Signals</p> <p>1.1 Traffic signals shall be maintained by:</p> <ul style="list-style-type: none"> (i) cleaning lenses internal and external surfaces and any other components affecting the optical performance of the lenses in accordance with manufacturer's recommendations; (ii) checking and tightening all grub screws and locking devices in accordance with the manufacturer's instructions; (iii) identifying and recording damage, corrosion or misalignment of posts; (iv) identifying and recording electrical component showing signs of overheating fracture condensation or tracking; (v) refitting lamps removed for cleaning purposes shall be or, if no longer serviceable, replacing with a new lamp of an equivalent specification; (vi) identifying and recording faults on any electrical unit; (vii) visually checking fixings and recording any defects; (viii) identifying and recording damage, corrosion or other defects of conduits; (ix) checking all electrical connections and recording any defects; (x) checking of all earthing connections and recording any defects; and (xi) clearing debris from around post bases for 1 metre radius.

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Clause Number	Title and Written Text
	<p>1.2 The supply shall be isolated at the cut-out for the removal and fitting of lamps.</p> <p>1.3 Any faulty lamp shall be disposed of in accordance with Clause 1370AR.</p>
6122AR	<p>1 Maintenance of Roadside Electrical Assets, Lighting and Power Supplies</p> <p>1.1 Special requirements for equipment identified in the risk assessment shall be in place prior to electrical maintenance work commencing.</p> <p>1.2 The Company shall obtain the prior agreement of the appropriate third party before carrying out work which will result in loss of service of third party roadside electrical apparatus.</p> <p>1.3 Replacement components shall be either the same as that being replaced or an equivalent.</p> <p>1.4 The Company shall store all faulty columns and lanterns removed from the Unit for four weeks to allow inspection by the Contracting Authority.</p> <p>1.5 The Company shall carry out maintenance Operations of luminaires, columns and brackets, underground cable systems, feeder pillars and associated switchgear, control systems, and any other roadside electrical apparatus and lighting.</p> <p>1.6 When replacing luminaires, columns, brackets and other electrical apparatus as maintenance Operations, the Company shall comply with the aesthetic requirements of Clause 1302 and shall ensure that any replaced items match the existing in physical appearance, lighting levels and operational capability.</p> <p>1.7 Unless otherwise agreed with the Contracting Authority, all replacement lamp control gear shall comply with the following specifications:</p> <ul style="list-style-type: none"> (i) be of electronic type; (ii) be Digital Addressed Lighting Interface (DALI) compatible, enabled and accredited; (iii) be capable of being controlled via a lighting central management system approved by the Overseeing Organisation; (iv) be capable of implementing set dimming/trimming control regimes autonomously; and (v) be ELEXON approved. <p>1.8 The Company shall inform the Traffic Scotland Service Provider prior to isolating or energising power supplies to any equipment that Traffic Scotland operates.</p> <p>1.9 All works carried out by the Company, with the exception of inspections and testing on electrical apparatus, shall be recorded by:</p> <ul style="list-style-type: none"> (vi) a works report; (vii) a call out report; or

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text
	(viii) another method approved by the Contracting Authority.
1.10	The Company when submitting Call Out Reports and Works Reports shall use the format of the model forms below. These reports shall be forwarded to the Overseeing Organisation in accordance with the reporting requirements of Schedule 5.
1.11	The Company shall comply with <i>Transport Scotland guidance document LDS8020 A.3 – Guidance on the preparation of statement of intents relating to proposed works on Roadside Electrical Assets and Lighting</i> when submitting Bids for Works relating to electrical assets.
1.12	The Company shall comply with of the recommendations made in Transport Scotland guidance document <i>LDS8018 A.1 – Guidance on Sustainability in relation to Roadside Electrical Assets and Lighting</i> .
1.13	The Company shall ensure that new items of energy consuming equipment supplied for use on the O&M Works Site are provided with an appropriate charge code (ELEXON code) for incorporation into the electrical apparatus inventory in accordance with Transport Scotland guidance document <i>LDS8012 A.2 MPANS – Guidance Note on MPANS and using ELEXON Consumption Codes for Roadside Electrical Assets and Lighting</i> .
1.14	The Company shall comply with Transport Scotland' guidance document <i>LDS8016_A.2_ScotMCHW – Scottish MCHW Series 1200, 1300 & 1400 and Sample Appendices</i> .
1.15	The Company shall comply with Transport Scotland guidance document <i>LDS8007_A.1_Refs – Roadside Electrical Assets and Lighting Recommended Reference Documents Listing</i> .
1.16	The Company shall comply with Transport Scotland guidance document <i>LDS8021_A.2_Festive – Festive Decorations on the Trunk Road Network</i> .
1.17	The Company shall comply with Transport Scotland guidance document <i>LDS8024_A.7_WStns – Weather Stations (Road Sensor) Equipment on Scottish Trunk Roads</i> .
1.18	The Company shall, where applicable make use of the Transport Scotland guidance document <i>LDS8025_A.1_Drws – Typical Drawings relating to Roadside Electrical Assets and Lighting</i> . These are provided for information.
1.19	Where modules relating to Transport Scotland's Intellegent Lighting Control System, for the control of roadside electrical assets, lighting and power supplies, are fitted, such items will become part of the maintained equipment. Typically these modules will consist of sealed, readily replaceable subassemblies mounted directly on the asset being controlled, such as a luminaire and similar enclosed roadside equipment. The Company shall replace such modules when necessary as part of their inspection and maintenance of the roadside electrical assets.

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Call Out Report Form	
DATE	WEATHER CONDITIONS
TIME CALLED OUT	CALLED OUT BY
TRUNK ROAD	LOCATION
DESCRIPTION OF WORK	
To include: equipment damaged	
nature of emergency	
registration of any vehicle involved	
colour and type of vehicle involved	
name and number of Police Officer at scene	
photographs glued to reverse side of report	
details of any liaison with electricity company	
police station reference.	
MATERIALS USED	
To include stores issue number.	
TIME ON SITE	
TIME OF LEAVING SITE	
ADDITIONAL TEAM TYPES AND DURATION	
DESCRIPTION OF PLANT USED AND DURATION	
NAME OF APPROVED ELECTRICIAN	
SIGNATURE OF APPROVED ELECTRICIAN	
NAME OF SUPERVISOR	
SIGNATURE OF SUPERVISOR	

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Works Report Form	
ORDER NUMBER	DATE OF ISSUE
TODAY'S DATE	
WEATHER CONDITIONS	
LOCATION	TIME OF ARRIVAL ON SITE
DESCRIPTION OF WORK	
To include accurate details of all Operations undertaken in order of the Operations carried out:	
results of tests or protective measures taken by the operatives	
any difficulties and further action required	
details as Clause 1402 times of isolation and energising of power supplies	
details of any liaison with electricity companies.	
MATERIALS USED	
TIME OF LEAVING SITE	
TYPE OF CLOSURE USED	
DURATION OF CLOSURE	
OUTSTANDING WORK	
DESCRIPTION OF TEAM TYPES USED AND DURATION	
NAME OF SUPERVISOR	
SIGNATURE OF SUPERVISOR	

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Substitute Clauses, Tables and Figures

Clause Number	Title and Written Text
6123 AR	Not Used
6124 AR	<p>1 Maintenance of High Mast Lighting</p> <p>1.3 Maintenance of high mast lighting units shall be in accordance with Clause 6122AR and Technical Report No. 7 High Masts for Lighting and CCTV (2000 Edition), published by The Institution of Lighting Engineers.</p>
6125 AR	1.4 Not Used
6126AR	1.5 Not Used
6127 AR	<p>1 Removal of Graffiti, Posters and Encrusted Deposits</p> <p>1.6 Graffiti, posters and encrusted deposits shall be removed by suitable methods which do not damage the substrate.</p>
6128AR	1.7 Not Used
6129AR	Not Used
6130AR	<p>1 Maintenance of Geotechnical Assets</p> <p>1.8 The removal of stones, rocks and other debris from behind and in contact with the geotechnical assets shall be carried out within or associated with the O&M Works Site at sufficient frequency to ensure that damage does not occur to the asset.</p>
6201AR	1.9 NOT USED
103SR	<p>1 Communication System</p> <p>1.10 The Company shall provide, operate and maintain a communication system as specified in Appendix 1/70.</p> <p>1.11 The communication system shall ensure that communications links between the various parts of the Company within the O&M Works Site can be maintained throughout the period of the Agreement such that the Company shall be able to comply with its other obligations contained elsewhere in the Agreement.</p> <p>1.12 Where the communication system or any part thereof shall be inoperative for any reason whatsoever that does not permit the Company to comply with the other provisions of this Clause 103SR the Company shall take all reasonable measures to effect a repair or a replacement to the said system or a part of the system within 24 hours of such in operation.</p>
110SR	<p>1 Temporary Information Boards</p> <p>1.13 The Company shall clean and maintain the advertising signs set out in Appendix 1/21 and all temporary information boards required by Scottish Office Industry Department Circular 1/1994. It shall also clean and</p>

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Clause Number	Title and Written Text
	<p>maintain any information boards provided by it for its own use and shall dismantle and remove them on completion of the Operations. Company advertising boards other than those set out in Appendix 1/21 shall not be allowed on or adjacent to the O&M Works Site. It shall, however, be allowed at the entrance to compounds, subject to the restrictions specified in these O&M Works Requirements.</p>
113SR	<p>1 Programme of Operations</p> <p>1.14 The Company shall establish and maintain a high level of co-operation with the Traffic Scotland Networks Operations Manager, Police, adjacent operating companies and Relevant Authorities to ensure that road Users shall be provided with the best possible service and that disruptions to traffic flows are kept to a minimum.</p>
117SR	<p>1 Traffic Safety and Management</p> <p>1.15 Traffic management measures shall be determined by the Company and may comprise lane closures, Lane Occupations, mobile and short duration static lane closures and diversions all as detailed in Appendix 1/17 or other such measures as may be necessary for the Operations. The duration and scope of the traffic management measures shall vary according to the nature and extent of the operations being carried out by other contractors and outside bodies.</p> <p>1.16 The Company shall ensure that to minimise disruption to traffic optimum use shall always be made of traffic management provided as part of the O&M Works.</p> <p>1.17 The Company shall provide erect maintain reposition cover and uncover and finally remove traffic signs as required. In so doing such other measures shall be taken by the Company as may be necessitated by the O&M Works in accordance with any special requirements in Appendix 1/17 recommendations in Chapter 8 of the Traffic Signs Manual or any amendments thereto or other requirements of the Contracting Authority as detailed in Appendix 1/17.</p> <p>1.18 Traffic signs shall comply with the appropriate Clauses in Series 1200 of the Specification. The Company shall keep traffic signs clean secure and legible. It shall ensure that all signs required to be lit by external or internal lighting are illuminated during periods when road vehicles are required to display lights.</p> <p>1.19 All traffic safety and management measures necessitated by the Operations shall be fully operational before the Company commences any O&M Works which affect the road network.</p> <p>1.20 Any area of the road network which had previously been closed because of the O&M Works shall not be opened to traffic until it had been swept and cleared of all personnel items of constructional plant material and debris and until any appropriate traffic safety and management measures have been completed and the road is in a suitable condition for public use.</p>

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Clause Number	Title and Written Text
	<p>1.21 When O&M Works shall be carried out on or adjacent to a road open to vehicles the Company shall ensure vehicles and mobile Constructional Plant under its control operating on or adjacent to such road in the execution of the O&M Works shall be painted in a conspicuous colour.</p> <p>1.22 All vehicles used in mobile lane closures as defined in Section 8 and 10 to Chapter 8 Part 2 of the Traffic Signs Manual shall be non-reflectorised yellow (Colour No. 355 to BS 381C:1996 Specification for Colours for Identification, Coding and Special Purpose).</p> <p>1.23 All other vehicles under the Company's control shall be generally light in colour, preferably, but not necessarily, non-reflectorised yellow and/or provide over the full width and height of the vehicle which is exposed to approaching vehicles conspicuous marking and signs to clearly define that the vehicle is a roadworks vehicle.</p> <p>1.24 Vehicles shall have a sign board reading 'Motorway Maintenance' or 'Road Maintenance' (to Diagram 7404 of Schedule 12 Part V of The Traffic Signs Regulations and General Directions) fixed at the rear. The lettering shall be the largest 'x height' that can be accommodated out of the following heights 37.5 millimetre, 50 millimetre, 62.5 millimetre or 100 millimetre. The lettering shall be black capital letters from the alphabet described in The Traffic Signs Regulations and General Directions: Schedule 13: Part II on a yellow non-reflectorised background in accordance with BS 381C:1996 Specification for Colours for Identification, Coding and Special Purpose, colour number.355. In addition the Company's all purpose vehicles and Constructional Plant shall each be provided with either roof mounted light bars or at least two amber flashing beacons and the Company's light vans and cars shall each be provided with a roof mounted amber flashing distinctive lamp.</p> <p>1.25 The lamps shall be switched on:</p> <ul style="list-style-type: none"> i) when the vehicle or Constructional Plant is manoeuvring into or out of the O&M Works Site or operating at low speed on a carriageway or hardshoulder open to vehicles; and ii) when the vehicle or Constructional Plant is standing on a carriageway or hardshoulder open to vehicles. <p>1.26 Temporary lighting shall be provided in accordance with Clause 1405 where it shall be required in the execution of the O&M Works.</p> <p>1.27 Unless otherwise stated in Appendix 1/17 the Company shall provide and suitably sign points of entry and exit from the O&M Works for vehicles and Constructional Plant engaged on the O&M Works. The Company shall ensure that when any vehicle or item of Constructional Plant shall be reversing within the O&M Works Site on or adjacent to a road open to vehicles it does so only under the supervision of a person designated for the purpose of regulating traffic within the O&M Works Site who shall be readily distinguishable from the remainder of the work force.</p> <p>1.28 Where O&M Works are carried out on or adjacent to a road open to vehicles the Company shall ensure that the work force and supervisory</p>

Part 5: Specification

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Clause Number	Title and Written Text
	<p>staff at all times wear jackets complying with Class A in BS 6629:1985 Specification for Optical Performance of High-visibility Garments and Accessories for Use on the Highway, incorporating the recommendations of Appendix G of BS 6629:1985 Specification for Optical Performance of High-visibility Garments and Accessories for Use on the Highway, except that where protected by a safety zone they may wear jackets complying with either Class A or Class B in BS 6629:1985 Specification for Optical Performance of High-visibility Garments and Accessories for Use on the Highway.</p> <p>1.29 All vehicles and Constructional Plant operating within the O&M Works Site between sunset and sunrise and during periods of poor visibility and fog shall have mandatory lights illuminated and shall travel in the same direction of flow as the adjacent traffic. Vehicles travelling within the O&M Works Site against the adjacent traffic flow shall not have headlights on or be similarly illuminated and shall keep as far away as possible from the lanes open to vehicles.</p> <p>1.30 The Company shall be restricted to entering and leaving the site of the O&M Works and erecting and removing traffic management measures during the time periods quoted in Appendix 1/17.</p> <p>1.31 If an accident or breakdown occurs on a carriageway or hardshoulder open to vehicles within or in the vicinity of the O&M Works, the Company and operators of recovery vehicles provided in accordance with Clause 120 shall act as requested by the Police.</p> <p>1.32 The Company shall produce for each and every site of the O&M Works a safety plan which amongst other safety issues shall identify the traffic management measures to be utilised and the surveillance and maintenance standards.</p> <p>1.33 Traffic management measures shall be monitored and modified by the Company to ensure traffic delays are minimised. When traffic signals are in use, queue lengths shall be monitored to ensure that the phase settings result in equal queue lengths and are adjusted appropriately to accommodate the varying flows throughout the whole day.</p> <p>1.34 The Company shall make good any damage or disturbance to temporary signs or other traffic management measures which shall be reported to it within 30 days.</p>
202SR	<p>1 Existing Trees, Bushes and Hedges</p> <p>1.35 Existing trees, bushes, hedges and shrubs shall be retained and protected wherever possible.</p> <p>1.36 When removal shall be unavoidable they shall be cut down in accordance with the requirements of Specification Series 3000.</p>
1801SR	<p>1 Structural Steelwork General</p> <p>1.37 1.1 All steelwork shall be in accordance with BS EN 1090-2:2008 and the Steel Bridge Group Model Project Specification (SCI Publication</p>

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Clause Number	Title and Written Text
	P382:2009), all as amended by Clauses 1802SR and 1803SR.
1802SR	<p>1 Amendments to BS EN 1090-2:2008</p> <p>1.38 Delete section 5.6.10. Hot rivets are not permitted.</p> <p>1.39 Delete sections 10.1 and 10.2 and Annex F. Surface treatment to be in accordance with SHW Series 1900.</p>
1803SR	<p>1 Amendments to Steel Bridge Group Model Project Specification</p> <p>1.40 Insert in Section 4.101 “BS EN 1090-2 Execution of steel Structures and aluminium Structures Company to add further standards to Appendix 18/1”</p> <p>1.41 Replace Clause 4.201 with “A quality plan for the execution of the works, in accordance with NHSS 20, shall be provided and maintained.”</p> <p>1.42 Delete Clause 6.602. Hot rivets are not permitted.</p> <p>1.43 Insert in section 7.402 “Pre-production welding tests shall be carried out on complex weld configurations and highly fatigue sensitive details. These shall include but are not restricted to the trough to deck weld and the trough to transverse comb weld.”</p> <p>1.44 Replace Clause 7.505 with “Permanent backing material may only be used where the Designer has taken it into account including the joint classification for the backing material in the fatigue design and indicated it on the drawings for construction.”</p> <p>1.45 Replace Clause 8.203 with “The Structure shall not be designed to utilise the shear resistance of the unthreaded shank of bolts.”</p> <p>1.46 Delete Clause 8.701 and 8.702. Hot rivets are not permitted on this project.</p> <p>1.47 Delete Clauses 10.1, 10.2, 10.5, 10.6, 10.8 and 10.9. Surface treatment to be in accordance with SHW Series 1900.</p> <p>1.48 Replace 11.302 with, “In addition to the requirements in D.2, the following functional tolerances apply: i) Trough to deck plate weld:</p>

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text
	<div> </div> <p>The overall depth of a box section shall be within +/-5 millimetres of that shown on the drawings and within +/-3 millimetres of that of the adjacent section to which it will be joined.</p> <p>The overall width of a longitudinal girder box section shall be within +/-10 millimetres of that shown on the drawings and within +/-5 millimetres of that of the adjacent section to which it will be joined.</p> <p>1.49 Replace Clause 12.701 with,</p> <p>"Trial assembly</p> <p>i) Prior to the approval of fabricated steelwork sections trial assembly shall verify correct geometry once erected. Prior to commencement of the trial assembly the Company shall submit a plan describing the methods and procedures for measuring, recording, and controlling the geometry of the bridge deck. The procedure shall include methods for combining the survey results of each individual trial assembly to calculate and check the cumulative geometry of the complete bridge deck as trial assembly proceeds. Procedures for trial assembly shall be included in the Test plan for this part of the O&M Works.</p> <p>Trial assembly of bridge deck erection sections</p> <p>i) Each complete bridge deck erection section shall be trial assembled with its adjacent completed erection sections. The trial assembly may be a running trial assembly, in which at least two adjacent erection sections are aligned and temporarily held together, new erection sections being successively built on to one end of the assembly and complete welded-up erection sections removed from the other end. The assembly of a new erection section can be started before two adjacent completed erection sections are temporary held together.</p> <p>ii) Each erection section shall be assembled by tack welding the</p>

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text
	<p>components together while temporarily held to the adjacent erection section. When tack welding two components within one erection section the temperature difference between the two components shall not exceed two degrees Celsius. The components shall be adjusted until, with the erection sections in correct alignment, a correct fit-up is obtained at the longitudinal butt welds within the section and at the peripheral erection weld with the adjacent erection section. Accurate alignment of the stiffeners around the erection welds shall also be obtained.</p> <p>iii) Trial assembly shall only take place during temperature conditions where the temperature difference between the deck and bottom panels is less than +/-2 degrees Celsius. Correlation to the reference temperature shall be made if the temperature during trial assembly deviates from the reference temperature. Precautions shall be taken to overcome the effects of differential temperature during assembly, so that the required tolerances are satisfied.</p> <p>iv) During trial assembly the support conditions of the erection sections shall resemble the support conditions for the erection sections during erection. Thereby the deformed shape of the erection sections will resemble each other in the two situations. Hence a match between adjacent erection sections is established during trial assembly that later can be re-established on the bridge site. The centre of gravity shall be determined for all deck erection sections and the support reactions shall be measured for all deck erection sections. The Company shall survey and record the geometry of each trial assembly and thereby determine deviations in geometry on single sections and accumulated deviations. The survey shall be carried out using the same survey points. The survey results of each individual trial assembly shall be combined to calculate and check the cumulative geometry of the completed bridge deck assembly relative to the design vertical alignment as trial assembly proceeds.</p> <p>v) The level and profile of deck plates, which form the roadway deck, shall be checked and adjusted if necessary to bring them within tolerances.</p> <p>vi) Before completed erection sections are separated, all necessary temporary connections shall be carefully positioned and welded to each section in order to ensure accurate alignment after erection. These connections shall be designed to withstand all forces which are liable to occur during erection.</p> <p>1.50 Delete Clause 12.706.</p> <p>1.51 Delete Annex F. Corrosion protection to be in accordance with SHW Series 1900.</p>

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text
	<p>1.52 The Company shall complete the following Clauses by providing details in Appendix 18/1:</p> <ul style="list-style-type: none"> i) 5.101, 5.307, 5.606, 6.501, 5.901, 6.604, 6.606, 6.1001, 7.501, 7.506, 7.508, 7.510, 7.602, 7.603, 8.204, 8.901, 8.902, 9.301, 9.302, 9.303, 9.304, 9.401, 12.201, 12.401, 12.504, 12.704, 12.707
2101SR	<p>1 Bridge Bearings – General</p> <p>1.53 Unless otherwise described in Appendix 21/1, bearings shall be supplied and installed in compliance with BS EN 1337 "Structural bearings" consisting of the following parts:</p> <ul style="list-style-type: none"> (a) Part 1 - General design rules (b) Part 2 - Sliding elements (c) Part 3 - Elastomeric bearings (d) Part 4 - Roller bearings (e) Part 5 - Pot bearings (f) Part 6 - Rocker bearings (g) Part 7 - Spherical and cylindrical PTFE bearings (h) Part 8 – Guided and restrained bearings (i) Part 9 - Protection (j) Part 10 - Inspection and maintenance (k) Part 11 - Transport, storage and installation <p>excluding subsections relating to corrosion protection which is covered under Series 1900.</p>

Appendix 0/1: Additional, Substitute and Cancelled Clauses, Tables and Figures Specific to This Agreement

PART B: VOLUME 2 NOTES FOR GUIDANCE ON THE SPECIFICATION FOR HIGHWAY WORKS

List of SUBSTITUTE Clauses, Tables and Figures

Clause Number	Title	
None		

List of CANCELLED Clauses, Tables and Figures

Clause Number	Title
Series NG 1800	Structural Steelwork
Series NG 2100	Bridge Bearings
Series NG 2200	Parapets

Appendix 0/2: Minor Alterations to Existing Clauses, Tables and Figures Specific to This Agreement

Minor Alterations to Existing Clauses

Clause Number	Title and Written Text
104	Standards, Quality Assurance, Agrément Certificates and Other Approvals
121	Tidal, Flowing and Standing Water
201	Clearing
306	Fencing and Environmental Barriers
920	Bond Coats, Tack Coats and other Bituminous Sprays
942	Thin Wearing Course Systems
1404	Change of Lighting Arrangements
1416	Cut Outs, Fuse Holders, Fuses and Miniature Circuit Breakers
1601	General requirements for Piling and Embedded Retaining Walls
1702.2	Concrete – Constituent Materials
1711	Concrete – Grouting and Duct Systems for Post-tensioned Tendons
1714	Reinforcement – Fixing
Table 19/1	BD 35 Quality Assurance Scheme for Paints and Similar Protective Coatings Annex A Manual of Paints for Structural Steelwork Current Paint Item Numbers
Table 19/2A	Requirements for Bridges, Parapets and Other Highway Structures Except Bearings, CCTV Masts, Cantilever Masts and Steel Lighting Columns and Bracket Arms Surface Preparation and Protective Systems.
Table 19/2B	Requirements for Bridges, Parapets and Other Highway Structures Except Bearings, CCTV Masts, Cantilever Masts and Steel Lighting Columns and Bracket Arms Protective Systems
Table 19/3B	Requirements for Steel in Bridge Bearings (and Metal Coated Fasteners) Protective System Type V

Appendix 0/2: Minor Alterations to Existing Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text
2001	General
2006	Workmanship for Waterproofing Below Ground Concrete Surfaces
2007	Integrity Testing of Concrete Bridge Deck Waterproofing
2606	Cored Thermoplastic Node Markers
3009	Establishment Maintenance for Planting

Clause Number	Title and Written Text
104	<p>1 Standards, Quality Assurance, Agrément Certificates and Other Approvals</p> <p>1.1. Sub-Clause 2, line 3 Delete "BS EN ISO 9002" and insert "BS EN ISO 9001 or BS EN ISO 9002 where appropriate and BS EN ISO 14001:1996 (Environmental Management Systems)".</p> <p>1.2 Sub-Clause 7, line 3 Delete "BS EN ISO 9002" and insert "BS EN ISO 9001 or BS EN ISO 9002 where appropriate and BS EN ISO 14001:1996 (Environmental Management Systems)".</p>
121	<p>1 Tidal, Flowing and Standing Water</p> <p>1.1 Add at end of Clause: Notwithstanding any other provisions of this Agreement, the Company shall take adequate precautions to prevent the damage and pollution of streams, waterways and water courses and shall indemnify the Contracting Authority against all claims arising from any such pollution caused by virtue of the operation during the currency of this Agreement. The Company shall make good any unnecessary damage to streams, waterways and watercourse at his own expense.</p>
201	<p>1 Clearing</p> <p>1.1 Delete Sub-Clause 3 and insert new Sub-Clause 3: Disused chambers located under the road pavement, verge or central reserve shall be demolished to a depth of 0.5 metres below formation, properly cleaned out, and filled or capped to meet the requirements of the relevant roads authority. To permit free drainage holes of 76 millimetre diameter (minimum) shall be made at 500 millimetre centres over the</p>

Part 5: Specification

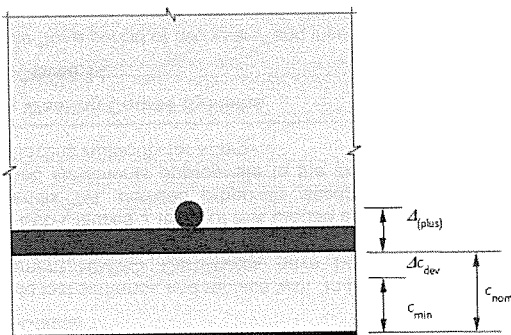
Appendix 0/2: Minor Alterations to Existing Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text
	whole areas or over 10 per cent of the whole area (whichever is more onerous), of slabs basements etc., which are not removed and which are liable to hold water.
306	<p>1 Fencing and Environmental Barriers</p> <p>1.1 Sub-Clause 2, second line: Delete "four" and replace it with "five".</p>
920	<p>1 Bond Coats, Tack Coats and other Bituminous Sprays</p> <p>1.1 Sub-Clause 1: Delete last sentence and replace with "In the event that no British Board of Agrément HAPAS Certificates have been issued in respect of any proprietary bond coats, tack coats, or other bituminous sprays that comply with Sub-Clauses 2 to 12 of this Clause and the requirements specified in Appendix 7/4, detailed proposals accompanied by Quality Plans and method statements appropriate to the project shall be submitted to the Contracting Authority for approval."</p>
942	<p>1 Thin Wearing Course Systems</p> <p>1.1 Sub-Clause 14: Delete "for a period of two years" and insert "for a period of five years".</p>
1404	<p>1 Change of Lighting Arrangements</p> <p>1.1 Insert "written" between "prior" and "approval".</p>
1416	<p>1 Cut Outs, Fuse Holders, Fuses and Miniature Circuit Breakers</p> <p>1.1 At end of the Clause and following the additions to the Clause in Appendix 0/5 add the following:</p> <p>(16) Design, execution and completion of the O&M Works shall ensure that in normal use the unit shall function in a reliable manner and cause no danger to persons or surroundings. Construction shall be such that the unit shall resist mechanical damage when used under specified service conditions.</p> <p>The unit shall be impact resistant and shall be constructed such that it cannot readily be deformed allowing contact with live parts.</p> <p>The unit shall provide ease of access to allow electrical termination works to be carried out and also provide a positive location arrangement between separable parts.</p> <p>Any separable parts which allow access to live terminations shall be held together by slot headed bolts or screws, with lock washer.</p> <p>A removable insulating shroud shall be installed with the unit, covering all line conductors.</p> <p>(17) Creepage distances and Clearances: Shall be not less than the</p>

Appendix 0/2: Minor Alterations to Existing Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text
	values given in Table 1, Clause 9, Section 2 of BS 5733.
1601	<p>1 General Requirements for Piling and Embedded Retaining Walls</p> <p>1.1 Add to end of item 27.</p> <p>In addition to the records required by Table 16/1 in Series 1600 of the MCHW an ultrasonic survey (1 reading per 5 centimetres) shall be carried out of rock socket excavations to record the socket diameter and verticality in 2 orthogonal directions.</p>
1702.2	<p>1 Concrete – Constituent Materials</p> <p>1.1 Add at the end of Clause</p> <p>The minimum testing frequency for drying shrinkage testing, as required by 4.3 of BS8500-2: 2006 shall be in accordance with table 3 of BS812: Part 120: 1989.</p>
1711	<p>1 Concrete – Grouting and Duct Systems for Post-tensioned Tendons</p> <p>1.1 Add at end of Section 9</p> <p>The tests indicated in BS EN 446:2007 and TR447:2007 for Inspection Class 3 may be carried in place of those described in TR 47. However a sedimentation test shall be provided for initial type testing of grout.</p> <p>1.2 Add at end of Section 10</p> <p>11. Post tensioning systems</p> <p>In addition to the requirements above, the recommendations according to ETAG 013 must be adopted.</p>

Appendix 0/2: Minor Alterations to Existing Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text								
1714	<p>1 Reinforcement – Fixing</p> <p>1.1 At the end of sub-Clause 1 add the following: The cover survey shall be carried out by the use of an electronic covermeter with a facility for downloading to a computer. The results shall be included in the bridge maintenance manual.</p> <p>1.2 Delete the first paragraph of Sub-Clause 1714.1 and replace with the following: Reinforcement shall be secured against displacement. Unless specified otherwise, the actual concrete achieved cover shall be not less than the required minimum cover derived from the exposure class Tables in BS 8500-1, and including any allowance for longer durability required under Clause A5 of BS 8500-1. The maximum achieved cover shall not be more than the nominal cover as defined in BS 8500-1, including the stated fixing tolerance Δc plus an additional tolerance away from the concrete surface Δ(plus) the value of which shall be as described below:</p>  <p>Notes</p> <ul style="list-style-type: none"> c_{min} = Minimum cover Δc_{dev} = Allowance made in design for deviation (towards face of concrete) c_{nom} = $c_{min} + \Delta c_{dev}$ = nominal cover $\Delta(+plus)$ = Permitted deviation (away from face of concrete) – see below h = Height of cross-section <table border="1"> <thead> <tr> <th>Cross-section dimensions</th> <th>$\Delta(+plus)$ (mm)</th> </tr> </thead> <tbody> <tr> <td>$h \leq 150$</td> <td>10</td> </tr> <tr> <td>$150 < h < 2500$</td> <td>15</td> </tr> <tr> <td>$h \geq 2500$</td> <td>20</td> </tr> </tbody> </table>	Cross-section dimensions	$\Delta(+plus)$ (mm)	$h \leq 150$	10	$150 < h < 2500$	15	$h \geq 2500$	20
Cross-section dimensions	$\Delta(+plus)$ (mm)								
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Appendix 0/2: Minor Alterations to Existing Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text																																																
Table 19/1	<p>1 BD 35 Quality Assurance Scheme for Paints and Similar Protective Coatings Annex A Manual of Paints for Structural Steelwork Current Paint Item Numbers</p>																																																
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	<table border="1"> <thead> <tr> <th>Item</th> <th>Description</th> <th>Coating Type</th> <th>Build</th> <th>Applied By</th> </tr> </thead> <tbody> <tr> <td>09</td> <td>Zinc-rich epoxy</td> <td>Blast Primer</td> <td>NB</td> <td>B or AS (B to small areas only)</td> </tr> </tbody> </table>	Item	Description	Coating Type	Build	Applied By	09	Zinc-rich epoxy	Blast Primer	NB	B or AS (B to small areas only)																																						
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Table 19/2A	<p>1 Requirements for Bridges, Parapets and Other Highway Structures Except Bearings, CCTV Masts, Cantilever Masts and Steel Lighting Columns and Bracket Arms Surface Preparation and Protective Systems</p> <p>1.1 Remove references to "I for Ready Access" and replace "II for difficult access" with "IIa or IIb for difficult access".</p> <p>1.2 Replace aluminium metal spray protective system required for Area C with Item 109 or 110.</p>																																																
Table 19/2B	<p>1 Requirements for Bridges, Parapets and Other Highway Structures Except Bearings, CCTV Masts, Cantilever Masts and Steel Lighting Columns and Bracket Arms Protective Systems</p> <p>1.1 Replace the standard Type II system with:</p> <table border="1"> <thead> <tr> <th>Type</th> <th></th> <th>Metal Coating</th> <th>1st Coat</th> <th>2nd Coat</th> <th>3rd Coat</th> <th>4th Coat</th> <th>5th Coat</th> <th>Minimum total dry film thickness of the paint system (microns)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">IIa</td> <td>Item No</td> <td></td> <td>109</td> <td>112 or 162</td> <td>112 or 162</td> <td>169</td> <td>169 or 164*</td> <td rowspan="2">400 or 390</td> </tr> <tr> <td>Minimum dry film thickness (µm)</td> <td></td> <td>50</td> <td>125</td> <td>125</td> <td>50</td> <td>50 or 40</td> </tr> <tr> <td rowspan="2">IIb</td> <td>Item No</td> <td></td> <td>110</td> <td>123</td> <td>169 or 164</td> <td>169 or 164*</td> <td></td> <td rowspan="2">525 or 515</td> </tr> <tr> <td>Minimum dry film thickness (µm)</td> <td></td> <td></td> <td></td> <td>50 or 40</td> <td>50 or 40</td> <td></td> </tr> </tbody> </table> <p>* On all externally exposed surfaces on the steel bridge deck the final finish coat of 50 (item number 169) or 40 (item number 164) microns shall be applied on site to ensure colour continuity. The final finish coat shall be applied using a minimum number of paint manufacturing batches applied in a controlled pattern.</p> <p>** Applicable only for Area E and painted areas damaged during erection.</p>								Type		Metal Coating	1st Coat	2nd Coat	3rd Coat	4th Coat	5th Coat	Minimum total dry film thickness of the paint system (microns)	IIa	Item No		109	112 or 162	112 or 162	169	169 or 164*	400 or 390	Minimum dry film thickness (µm)		50	125	125	50	50 or 40	IIb	Item No		110	123	169 or 164	169 or 164*		525 or 515	Minimum dry film thickness (µm)				50 or 40	50 or 40	
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Appendix 0/2: Minor Alterations to Existing Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text																																								
Table 19/3B	<p>1 Requirements for Steel in Bridge Bearings (and Metal Coated Fasteners) Protective System Type V</p> <p>1.1 Replace Areas A, B, C and D with:</p> <table border="1"> <thead> <tr> <th>Applied over</th> <th></th> <th>Metal Coating</th> <th>1st Coat</th> <th>2nd Coat</th> <th>3rd Coat</th> <th>4th Coat</th> <th>Minimum total dry film thickness of the paint system (microns)</th> </tr> </thead> <tbody> <tr> <td>Area A and D</td> <td>Item No</td> <td></td> <td>109</td> <td>112</td> <td>112</td> <td>168</td> <td>350</td> </tr> <tr> <td></td> <td>Minimum dry film thickness (µm)</td> <td></td> <td>50</td> <td>125</td> <td>125</td> <td>50</td> <td></td> </tr> <tr> <td>Area C</td> <td>Item No</td> <td></td> <td>109</td> <td>112</td> <td>112</td> <td>168</td> <td>350</td> </tr> <tr> <td></td> <td>Minimum dry film thickness (µm)</td> <td></td> <td>50</td> <td>125</td> <td>125</td> <td>50</td> <td></td> </tr> </tbody> </table>	Applied over		Metal Coating	1st Coat	2nd Coat	3rd Coat	4th Coat	Minimum total dry film thickness of the paint system (microns)	Area A and D	Item No		109	112	112	168	350		Minimum dry film thickness (µm)		50	125	125	50		Area C	Item No		109	112	112	168	350		Minimum dry film thickness (µm)		50	125	125	50	
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2001	<p>1 General</p> <p>1.1 At end of Sub-Clause 1 add the following:</p> <p>Surfaces to receive bridge deck waterproofing shall be prepared as recommended in writing by the particular manufacturer and, in addition, shall be given a light grit blast to produce an open texture surface free from laitance and other deleterious materials.</p>																																								
2006	<p>1 Workmanship for Waterproofing Below Ground Concrete Surfaces</p> <p>1.1 At end of Sub-Clause 3 add the following:</p> <p>The waterproofing shall be applied strictly in accordance with the manufacturer's written instructions at the recommended rate of application.</p> <p>1.2 At end of Sub-Clause 4 add the following:</p> <p>Details of the proprietary system shall be submitted for the approval of the Contracting Authority prior to the inclusion in the O&M Works.</p>																																								
2007	<p>1 Integrity Testing of Concrete Bridge Deck Waterproofing</p> <p>1.1 Testing of Waterproofing Membrane</p> <p>At end of Sub-Clause 1 add the following:</p> <p>The Company shall provide with all batches of material delivered to the Site a Certificate of Compliance with the Specification and Annex A.</p> <p>The Company shall provide 2 No free film samples, sprayed on to open moulds (at least 200 millimetres x 200 millimetres in area and minimum thickness two millimetres), for tensile strength, elongation at break to BS ISO 37:2011 and tear strength to BS ISO 34 Part 1:2012 Method C. The Company shall supply the Contracting Authority with copies of the test</p>																																								

Appendix 0/2: Minor Alterations to Existing Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text
	<p>results with the samples.</p> <p>A membrane can be applied to the surface of concrete slabs between 14 to 17 days after casting provided no water was added to the surface of the concrete during cure.</p> <p>The Company shall continuously monitor the coverage rate of the material applied to the deck and shall provide the Contracting Authority with sheets on a daily basis showing the start / finish weights and area covered for each period of spray operation.</p> <p>The Company shall continuously monitor the wet film thickness using a gauge pin or a standard comb type thickness gauge. The Company shall provide the Contracting Authority with sheets on a daily basis indicating the wet film thickness measured and location.</p> <p>The Company shall measure the adhesion of the fully cured membrane to the deck using Elcometer Adhesion Tester Model 106 or similar. Three tests shall be required per 500 square metres of sprayed membrane. The Company shall provide the Contracting Authority with the test values and location of test before these areas are covered. The Company shall reinstate the test areas including primer if necessary. Test values below 0.7 newton / square millimetre shall require spraying operations to be suspended while further investigation is undertaken. The Company shall at his own expense remove and respray areas that do not meet this figure.</p> <p>The finished waterproof membrane surface shall be 'Holiday Tested' or tested by an equivalent method approved in writing by the Overseeing Organisation and any imperfections detected shall be rectified by the Company at his own expense. The Company shall make allowance in his programme of Works for such testing.</p> <p>High Voltage Pinhole / Holiday Detection for Bridge Deck Membranes Equipment</p> <p>Pinhole detection shall be carried out using suitable equipment and the results made available to the Contracting Authority. The equipment shall have the following facilities:</p> <ol style="list-style-type: none"> a. variable DC test voltage (1 - 20 kilovolts DC); b. audible and visual alarm signals; c. sensitivity adjustment; d. phosphor bronze or silicon rubber electrode; e. earth lead connection with clip; and f. test voltage. <p>The output voltage of the pinhole detector shall be adjusted in accordance with the following table.</p>

Appendix 0/2: Minor Alterations to Existing Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text
	<p style="text-align: center;">COATING THICKNESS TEST VOLTAGE</p> <p>2 millimetres to 2.5 millimetres 12.5 kilovolts</p> <p>2.5 millimetres to 3 millimetres 13.5 kilovolts</p> <p>The coating thickness is the maximum expected not the average.</p> <p>Procedure</p> <p>(a) Identify a site on the bridge deck to which the earth lead connection from the pinhole detector can be fixed, i.e. a metal object imbedded in the bridge deck.</p> <p>(b) Connect the leads from the pinhole detector in accordance with the manufacturer's written instructions.</p> <p>(c) Fix the earth lead from the pinhole detector to the substrate and ensure that a good electrical contact is made.</p> <p>(d) Adjust the pinhole detector to the required test voltage in accordance with Sub-Clause (a) above.</p> <p>(e) With the pinhole detector turned OFF, connect any extension rods that may be required to the test probe handle. Connect the electrode to the end of the extension rods if fitted. A damaged electrode that does not make 100 per cent contact along its length shall not be used.</p> <p>(f) To check the pinhole detector is working correctly, touch the electrode onto the exposed substrate. The pinhole detectors alarm signal should be activated. If not, check the lead connections to the equipment and the earth lead to the substrate, also it may be necessary to adjust the sensitivity control on the equipment.</p> <p>(g) Pass the electrode over the coated surface at a maximum rate of 100 millimetres / second, paying particular attention to edges, holes and visible irregularities in the coating. The test voltage will have to be reduced if testing edges as the coating will be thin.</p> <p>(h) When a fault has been identified by the detector, the electrode shall be moved sideways in order to identify its precise location. Subsequently the fault should be ringed with a suitable marker. Such markings shall be made sufficiently distant from the coating defect to allow the repair procedure to be carried out without detriment to the adhesion of the repair material.</p> <p>(i) Continue testing and marking defects until all the coating has been tested, changing the electrode size as necessary.</p> <p>All repaired areas shall be re-tested.</p>
2606	<p>1 Cored Thermoplastic Node Markers</p> <p>1.1 Sub-Clause 2(i), Line 1: Delete "10 millimetres ±5 millimetres" and replace with "20 millimetres"</p>

Appendix 0/2: Minor Alterations to Existing Clauses, Tables and Figures Specific to This Agreement

Clause Number	Title and Written Text
3009	<p>1 Establishment Maintenance for Planting</p> <p>1.1 Delete Sub-Clause 9 and insert:</p> <p>9. Plant circles shall be defined as the area within 250 millimetre radius of an individual tree or shrub, within which weed control operations are carried out.</p>

Appendix 0/2: Minor Alterations to Existing Clauses, Tables and Figures Specific to This Agreement

PART B: VOLUME 2 NOTES FOR GUIDANCE ON THE SPECIFICATION FOR HIGHWAY WORKS

LIST OF MINOR ALTERATIONS TO EXISTING CLAUSES

Clause Number	Alteration to be made	Written on Page Number
None		

MINOR ALTERATIONS TO EXISTING CLAUSES

Clause Number	Alteration to be made
None	

Appendix 0/3: List of Numbered Appendices Referred to in the Specification and included in this Agreement

1 Appendix 0/3

- 1.1 Appendix 0/3 is comprised of two lists, A and B, of numbered Appendices as follows:
- 1.2 List A is a complete list of the numbered Appendices referred to in the Specification with those not adopted marked "Not Used".
- 1.3 The responsibility for compiling/completing the numbered Appendices is indicated by the following symbols:
- E The Contracting Authority compiles
 - E/C The Contracting Authority partially compiles and the Company completes and returns to the Contracting Authority.
 - C The Company compiles, completes and returns to the Contracting Authority.
 - I For Company's information only
 - (P) This indicates the Appendix is a national proforma and the format shall not be altered.
 - T The Participant compiles, completes and returns with Tender.
- 1.4 The Company shall compile/complete the numbered Appendices in accordance with the Notes for Guidance on the Specification for Highway Works (Volume 2 of the MCHW), and provide as a minimum the information described in the sample appendices.

List A

Compiled/ Completed by	Appendix Number	Title
Introduction		
E	0/1	Additional, Substitute and Cancelled Clauses, Tables and Figures specific to this Agreement
E	0/2	Minor Alterations to Existing Clauses, Tables and Figures specific to this Agreement
E	0/3	List of Numbered Appendices Referred to in the Specification and Included in this Agreement
E	0/4	List of Drawings Included in this Agreement
E	0/5	Special National Alterations of the Overseeing Organisation of Scotland, Wales or Northern Ireland.
Preliminaries		
Not Used	1/1	Temporary Accommodation and Equipment for the Contracting Authority
Not Used	1/2	Vehicles for the Contracting Authority
Not Used	1/3	Communication System for the Contracting Authority
C	1/4	Working and Fabrication Drawings
E/C	1/5	Testing to be Carried out by the Company

Appendix 0/3: List of Numbered Appendices Referred to in the Specification and included in this Agreement

Compiled/ Completed by	Appendix Number	Title
Preliminaries continued		
Not Used	1/6	Supply and Delivery of Samples to the Contracting Authority
E	1/7	O&M Site Extent and Limitations on Use
Not Used	1/8	Operatives for the Contracting Authority
E	1/9	Control of Noise and Vibration
Not Used	1/10	Structures to be Designed by the Company
Not Used	1/11	Structural Elements and Other Features to be Designed by the Company
C	1/12	Setting Out and Existing Ground Levels
C	1/13	Programme of Works
Not Used	1/14	Monthly Statements
C	1/15	Accommodation Works
C	1/16	Privately and Publicly Owned Services and Supplies
E/C	1/17	Traffic Safety and Management
E	1/18	Temporary Diversion for Traffic
E	1/19	Routeing of Vehicles
E	1/20	Recovery Vehicles for Breakdowns
E/C	1/21	Information Boards
C	1/22	Progress Photographs
E/C	1/23	Substances Hazardous to Health
E/C	1/24	Quality System
C	1/25	Temporary Closed Circuit Television (CCTV) System for the Monitoring of Traffic
C	1/26	Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Road Works (TASCAR)
C	1/27	Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Road Works (TASCAR) – Particular Requirements
Site Clearance		
C	2/1	List of Buildings, etc. to be Demolished
C	2/2	Filling of Trenches and Pipes
C	2/3	Retention of Material Arising from Site Clearance

Appendix 0/3: List of Numbered Appendices Referred to in the Specification and included in this Agreement

Site Clearances continued		
C	2/4	Explosives and Blasting
C	2/5	Hazardous Materials
Fencing and Environmental Barriers		
C	3/1	Fencing, Gates and Stiles
Road Restraint Systems (Vehicle and Pedestrian)		
C	4/1	Road Restraint Systems (Vehicle and Pedestrian)
E/C	4/2	Information Required to Demonstrate Compliance of Road Restraint Systems to BS EN 1317-1, BS EN 1317-3 and DD ENV 1317-4: 2002
Drainage and Service Ducts		
C	5/1	Drainage Requirements
C	5/2	Service Duct Requirements
C	5/3	Surface Water Channels and Drainage Channel Blocks
C	5/4	Fin Drains and Narrow Filter Drains
C	5/5	Combined Drainage and Kerb Systems
C	5/6	Linear Drainage Channel Systems
C	5/7	Thermoplastics Structural Wall Pipes and Fittings
Earthworks		
C	6/1	Requirements for Acceptability and Testing etc. of Earthworks Materials
C	6/2	Requirements for Dealing with Class U1B and Class U2 Unacceptable Material
C	6/3	Requirements for Excavation, Deposition, Compaction (Other than Dynamic Compaction)
C	6/4	Requirements for Class 3 Material
C	6/5	Geotextiles Used to Separate Earthworks Materials
C	6/6	Fill to Structures and Fill Above Structural Foundations
C	6/7	Sub-formation and Capping and Preparation and Surface Treatment of Formation
C	6/8	Topsoiling
C	6/9	Earthworks Environmental Bunds, Landscape Areas, Strengthened Embankments

Appendix 0/3: List of Numbered Appendices Referred to in the Specification and included in this Agreement

Earthworks continued		
E/C	6/10	Ground Anchorages, Crib Walling and Gabions
E/C	6/11	Swallow Holes and Other Naturally Occurring Cavities and Disused Mine Workings
E/C	6/12	Instrumentation and Monitoring
C	6/13	Ground Improvement
C	6/14	Limiting Values for Pollution of Controlled Waters
C	6/15	Limiting Values for Harm to Human Health and the Environment
Road Pavements - General		
T/C	7/1	Permitted Pavement Options
C	7/2	Excavation, Trimming and Reinstatement of Existing Surfaces
C	7/3	Surface Dressing – Performance Specification
C	7/4	Bond Coats, Tack Coats and Other Bituminous Sprays
C	7/5	In Situ Recycling: The Remix and Repave Processes
C	7/6	Breaking Up or Perforation of Existing Pavement
C	7/7	Slurry Surfacing Incorporating Microsurfacing
Not Used	7/8	Not Used
C	7/9	Cold Milling (Planing) of Bituminous or Bound Flexible Pavement
C	7/10	Worksheet Pro Forma for Results of Testing for Constituent Materials in Recycled Coarse Aggregate and Recycled Concrete Aggregate
C	7/11	Overbanding and Inlaid Crack Sealing Systems
C	7/12	Arrester Beds
C	7/13	Saw-Cut and Seal Bituminous Overlays on Existing Jointed Concrete Pavements
C	7/14	Preparation of Jointed Concrete Pavements Prior to Overlaying and Saw-Cut and Seal of the Bituminous Overlay
C	7/15	Not Used
C	7/16	Cracking and Sealing of Existing Jointed Unreinforced Concrete Pavements and CBM Bases
C	7/17	Cracking Plant and Equipment Progress Record
C	7/18	Site Specific Details and Requirements for Cold Recycled Bitumen Bound Material

Appendix 0/3: List of Numbered Appendices Referred to in the Specification and included in this Agreement

Road Pavements General continued		
C	7/19	Site Specific Details and Requirements for Recycled Cement Bound Material
C	7/20	Site Specific Details and Requirements for Inducing Cracks
C	7/21	Surface Dressing – Recipe Specification
C	7/22	Repair to Potholes
Road Pavements – Concrete and Cement Bound Materials		
C	10/1	Plant and Equipment for the Construction of Exposed Aggregate Concrete Surface
Kerbs, Footways and Paved Areas		
C	11/1	Kerbs, Footways and Paved Areas
C	11/2	Access Steps
Traffic Signs		
E/C	12/1	Traffic Signs: General
E/C	12/2	Traffic Signs: Marker Posts
E/C	12/3	Traffic Signs: Road Markings and Studs
C	12/4	Traffic Signs: Cones, Cylinders, FTDs and Other Traffic Delineators
E/C	12/5	Traffic Signs: Traffic Signals
C	12/6	Traffic Signs: Special Sign Requirements on Gantries
Road Lighting Columns and Brackets		
C	13/1	Typical Lighting Column and Bracket Datasheet 1
C	13/2	Typical Lighting Column and Bracket Datasheet 2
C	13/3	Instructions for Completion of Column and Bracket Data Sheets
C	13/4	Information to be Provided When Specifying CCTV Masts
C	13/5	(Specification for Highway Works) Typical CCTV Mast Data Sheet
C	13/6	Instructions for Completion of CCTV Mast Sheets
C	13/7	Information to be Provided When Specifying Cantilever Masts
C	13/8	(Specification for Highway Works) Typical Cantilever Masts Data Sheets 1 and 2
C	13/9	Instructions for Completion of Cantilever Masts Data Sheets

Appendix 0/3: List of Numbered Appendices Referred to in the Specification and included in this Agreement

Electrical Work for Road Lighting and Traffic Signs		
C	14/1	Site Records
C	14/2	Location of Lighting Units & Feeder Pillars
C	14/3	Temporary Lighting
C	14/4	Electrical Equipment for Road Lighting
C	14/5	Electrical Equipment for Traffic Signs
Motorway Communications		
C	15/1	Motorway Communications
C	15/2	Cable Duct Requirements
Piling and Embedded Retaining Walls		
C	16/1	General Requirements for Piling and Embedded Retaining Walls
C	16/2	Precast Reinforced and Pre-stressed Concrete Piles and Precast Reinforced Concrete Segmental Piles
C	16/3	Bored Cast in Place Piles
C	16/4	Bored Piles Constructed Using Continuous Flight Augers and Concrete or Grout Injection Through Hollow Auger Stems
C	16/5	Driven Cast-in-Place Piles
C	16/6	Steel Bearing Piles
C	16/7	Reduction of Friction on Piles
C	16/8	Non-Destructive Methods for Testing Piles
C	16/9	Static Load Testing of Piles
C	16/10	Diaphragm Walls
C	16/11	Hard/Hard Secant Pile Walls
C	16/12	Hard/Soft Secant Pile Walls
C	16/13	Contiguous Bored Pile Walls
C	16/14	King Post Walls
C	16/15	Steel Sheet Piles
C	16/16	Integrity Testing of Wall Elements
C	16/17	Instrumentation for Piles and Embedded Walls
C	16/18	Support Fluid

Appendix 0/3: List of Numbered Appendices Referred to in the Specification and included in this Agreement

Structural Concrete		
C	17/1	Concrete - Classification of Mixes
C	17/2	Concrete - Impregnation Schedule
C	17/3	Concrete - Surface Finishes
C	17/4	Concrete - General
C	17/5	Buried Concrete
C	17/6	Grouting and Duct Systems for Post-Tensioned Tendons
Structural Steelwork		
C	18/1	Requirements for Structural Steelwork
Protection of Steelwork Against Corrosion		
C	19/1	(Specification for Highway Works) Form HAP1 Paint System Sheet
C	19/2	(Specification for Highway Works) Requirements for Other Works
C	19/3	(Specification for Highway Works) Form HAP2 Paint Data Sheet
C	19/4	(Specification for Highway Works) Form SEDD/P3 Paint Sample Despatch List, Sheets 1 and 2
C	19/5	General Requirements
Waterproofing for Structures		
C	20/1	Waterproofing for Concrete Structures
Bridge Bearings		
C	21/1	Bridge Bearing Schedule
Bridge Expansion Joints and Sealing of Gaps		
C	23/1	Bridge Deck Expansion Joint Schedule
C	23/2	Sealing of Gaps Schedule (Other than in Bridge Deck Expansion Joints)
Brickwork, Blockwork and Stonework		
C	24/1	Brickwork, Blockwork and Stonework

Part 5: Specification

Appendix 0/3: List of Numbered Appendices Referred to in the Specification and included in this Agreement

Special Structures		
C	25/1	Requirements for Corrugated Steel Buried Structures
C	25/2	Requirements for Reinforced Soil and Anchored Earth Structures
C	25/3	Requirements for Pocket-Type and Grouted-Cavity Reinforced Brickwork Retaining Wall Structures
C	25/4	Environmental Barriers
C	25/5	Requirements for Buried Rigid Pipes for Drainage Structures
Miscellaneous		
C	26/1	Ancillary Concrete
C	26/2	Bedding Mortar
C	26/3	Cored Thermoplastic Node Markers
Landscape and Ecology		
E/C	30/1	General
E	30/2	Weed Control
E	30/3	Control of Rabbits and Deer
E	30/4	Ground Preparation
E	30/5	Grass Seeding, Wildflower Seeding and Turfing
E	30/6	Planting Sheets 1 and 2
E/C	30/7	Grass, Bulbs and Wildflower Maintenance
E	30/8	Watering
E	30/9	Establishment Maintenance for Planting
E	30/10	Maintenance of Established Trees and Shrubs
E	30/11	Management of Waterbodies
E	30/12	Special Ecological Measures
Maintenance Painting of Steelwork		
C		(Specification for Highway Works) Form (HA/P1 (Maintenance) Paint System Sheet
C		Requirements for Other Work
C		(Specification for Highway Works) Form HA/P2 Paint Data Sheet
C		Form SEDD/P3 Paint Sample Despatch List
C		General Requirements

Appendix 0/3: List of Numbered Appendices Referred to in the Specification and included in this Agreement

Amendment to the Specification for Highway Works

List "B" List of numbered Appendices Devised for this Agreement		
Compiled/ Completed by	Appendix Number	Title
Preliminaries		
E/C	1/70	Communication Systems for the Company
E/C	1/74	Safety of Operatives
E/C	1/78	Material Stocks
Road Restraint Systems (Vehicle and Pedestrian)		
E/C	4/71	Re-Tensioning of Safety Barriers
Road Lighting Columns and Brackets, CCTV Masts and Cantilever Masts		
E/C	13/70	Maintenance of High Mast and Other Lighting Incorporating Hoists Winches and Ropes
Electrical Work for Road Lighting and Traffic Signs		
E/C	14/70	Purchase Delivery Handling and Storage of Materials
E/C	14/71	Labour Requirements
E/C	14/73	Call out Report
E/C	14/74	Report
E/C	14/75	Competent Person's Authorisation Certificate
E/C	14/76	Liaison with Electricity Companies
Winter Maintenance Operations		
E/C	28/1	Supplies and Spreading Rates
E/C	28/2	Company's Vehicles and Plant
Emergency Response		
E/C	32/1	Emergency Response
Site Investigation		
E/C	33/1	Structural Investigations Test Requirements

Part 5: Specification

Appendix 0/4: List of Drawings for the O&M Works

Drawing Number	Title
Land Made Available Drawings	
B1033200/CD/O&MLMA/KP1 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Key Plan
B1033200/CD/O&MLMA/001 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 1 of 71
B1033200/CD/O&MLMA/002 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 2 of 71
B1033200/CD/O&MLMA/003 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 3 of 71
B1033200/CD/O&MLMA/004 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 4 of 71
B1033200/CD/O&MLMA/005 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 5 of 71
B1033200/CD/O&MLMA/006 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 6 of 71
B1033200/CD/O&MLMA/007 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 7 of 71
B1033200/CD/O&MLMA/008 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 8 of 71
B1033200/CD/O&MLMA/009 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 9 of 71
B1033200/CD/O&MLMA/010 Rev 2	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 10 of 71
B1033200/CD/O&MLMA/011 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 11 of 71
B1033200/CD/O&MLMA/012 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 12 of 71
B1033200/CD/O&MLMA/013 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 13 of 71
B1033200/CD/O&MLMA/014 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 14 of 71
B1033200/CD/O&MLMA/015 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 15 of 71
B1033200/CD/O&MLMA/016 Rev 1	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 16 of 71
B1033200/CD/O&MLMA/017 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 17 of 71
B1033200/CD/O&MLMA/018 Rev 1	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 18 of 71
B1033200/CD/O&MLMA/019 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 19 of 71
B1033200/CD/O&MLMA/020 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the

Part 5: Specification

Appendix 0/4: List of Drawings for the O&M Works

	Scottish Ministers Sheet 20 of 71
B1033200/CD/O&MLMA/021 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 21 of 71
B1033200/CD/O&MLMA/022 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 22 of 71
B1033200/CD/O&MLMA/023 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 23 of 71
B1033200/CD/O&MLMA/024 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 24 of 71
B1033200/CD/O&MLMA/025 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 25 of 71
B1033200/CD/O&MLMA/026 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 26 of 71
B1033200/CD/O&MLMA/027 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 27 of 71
B1033200/CD/O&MLMA/028 Rev 1	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 28 of 71
B1033200/CD/O&MLMA/029 Rev 1	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 29 of 71
B1033200/CD/O&MLMA/030 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 30 of 71
B1033200/CD/O&MLMA/031 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 31 of 71
B1033200/CD/O&MLMA/032 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 32 of 71
B1033200/CD/O&MLMA/033 Rev 1	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 33 of 71
B1033200/CD/O&MLMA/034 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 34 of 71
B1033200/CD/O&MLMA/035 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 35 of 71
B1033200/CD/O&MLMA/036 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 36 of 71
B1033200/CD/O&MLMA/037 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 37 of 71
B1033200/CD/O&MLMA/038 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 38 of 71
B1033200/CD/O&MLMA/039 Rev 1	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 39 of 71
B1033200/CD/O&MLMA/040 Rev 1	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 40 of 71
B1033200/CD/O&MLMA/041 Rev 1	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 41 of 71
B1033200/CD/O&MLMA/042 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 42 of 71

Part 5: Specification

Appendix 0/4: List of Drawings for the O&M Works

B1033200/CD/O&MLMA/043 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 43 of 71
B1033200/CD/O&MLMA/044 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 44 of 71
B1033200/CD/O&MLMA/045 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 45 of 71
B1033200/CD/O&MLMA/046 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 46 of 71
B1033200/CD/O&MLMA/047 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 47 of 71
B1033200/CD/O&MLMA/048 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 48 of 71
B1033200/CD/O&MLMA/049 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 49 of 71
B1033200/CD/O&MLMA/050 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 50 of 71
B1033200/CD/O&MLMA/051 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 51 of 71
B1033200/CD/O&MLMA/052 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 52 of 71
B1033200/CD/O&MLMA/053 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 53 of 71
B1033200/CD/O&MLMA/053A Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 53A of 71
B1033200/CD/O&MLMA/053B Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 53B of 71
B1033200/CD/O&MLMA/054 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 54 of 71
B1033200/CD/O&MLMA/055 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 55 of 71
B1033200/CD/O&MLMA/056 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 56 of 71
B1033200/CD/O&MLMA/057 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 57 of 71
B1033200/CD/O&MLMA/058 Rev 1	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 58 of 71
B1033200/CD/O&MLMA/059 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 59 of 71
B1033200/CD/O&MLMA/060 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 60 of 71
B1033200/CD/O&MLMA/061 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 61 of 71
B1033200/CD/O&MLMA/062 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 62 of 71
B1033200/CD/O&MLMA/063 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 63 of 71

Part 5: Specification

Appendix 0/4: List of Drawings for the O&M Works

B1033200/CD/O&MLMA/064 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 64 of 71
B1033200/CD/O&MLMA/065 Rev 1	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 65 of 71
B1033200/CD/O&MLMA/066 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 66 of 71
B1033200/CD/O&MLMA/067 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 67 of 71
B1033200/CD/O&MLMA/068 Rev 1	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 68 of 71
B1033200/CD/O&MLMA/069 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 69 of 71
B1033200/CD/O&MLMA/070 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 70 of 71
B1033200/CD/O&MLMA/071 Rev 0	Aberdeen Western Peripheral Route Land Made Available by the Scottish Ministers Sheet 71 of 71
P246600/GENE/2/0043 Rev B	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 1 OF 24
P246600/GENE/2/0044 Rev C	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 2 OF 24
P246600/GENE/2/0045 Rev 0	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 3 OF 24
P246600/GENE/2/0046 Rev B	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 4 OF 24
P246600/GENE/2/0047 Rev 0	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 5 OF 24
P246600/GENE/2/0048 Rev 0	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 6 OF 24
P246600/GENE/2/0049 Rev C	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 7 OF 24
P246600/GENE/2/0050 Rev D	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 8 OF 24
P246600/GENE/2/0051 Rev B	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 9 OF 24
P246600/GENE/2/0052 Rev 0	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 10 OF 24
P246600/GENE/2/0053 Rev 0	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 11 OF 24
P246600/GENE/2/0054 Rev 0	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 12 OF 24
P246600/GENE/2/0055 Rev 0	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 13 OF 24
P246600/GENE/2/0056 Rev B	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 14 OF 24
P246600/GENE/2/0057 Rev B	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 15 OF 24

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Appendix 0/4: List of Drawings for the O&M Works

P246600/GENE/2/0058 Rev B	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 16 OF 24
P246600/GENE/2/0059 Rev B	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 17 OF 24
P246600/GENE/2/0060 Rev B	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 18 OF 24
P246600/GENE/2/0061 Rev B	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 19 OF 24
P246600/GENE/2/0062 Rev 0	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 20 OF 24
P246600/GENE/2/0063 Rev 0	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 21 OF 24
P246600/GENE/2/0064 Rev 0	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 22 OF 24
P246600/GENE/2/0065 Rev 0	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 23 OF 24
P246600/GENE/2/0066 Rev 0	A90 Balmedie to Tippetry LMA FOR THE O & M WORKS SHEET 24 OF 24

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Appendix 0/4: List of Drawings for the O&M Works**Standard Drawings**

Drawing Number	Sheet Number	Rev.	Title
NDX1001-01ga	1	C	Typical Overall Type 1 Cantilever MK3 VMS Site Infrastructure
NDX1001-01ga	2	C	Typical Site Layout for Type 1 Cantilever MK3 Variable Message Sign
NDX1001-01ly	3	B	Typical Overall CEC Gantry/VMS Site Layout
NDX1001-01ly	4	B	Typical Layout of CEC Gantry/VMS Site
NDX1001-01dt	5	C	Installation Drawing for Typical Safety Fence & Earth Bonding at Type 1 Cantilever MK3 VMS Sites
NDX1001-02ga	3	B	Typical Cantilever Variable Message Signs Ladder Access
NDX1002-00ga	1	D	Typical HA Type 600 Cabinet Installation - Plinths
NDX1002-00dt	2	E	Typical HA Type 600 Cabinet Foundations
NDX1002-00dt	4	C	Typical HA Type 600 Cabinet Door Security Strap
NDX1002-00dt	5	D	Typical HA Type 600 Cabinet Thermostat & Heater Type 1020
NDX1002-01ga	1	C	Typical HA 600 Cabinet Modified Internal Frame
NDX1002-06dt	1	B	Typical Electrically Energised Communications Cabinet Labels
NDX1002-06no	2	B	Typical Electrically Energised Communications Cabinet Labels
NDX1002-07ga	1	B	Typical CEC Cabinet Installation – Hard-Standing, Plinths and Foundations
NDX1002-07dt	2	A	Typical CEC Site Layout Including Vehicle Hard-Standing
NDX1002-07dt	3	A	Typical CEC Cabinet Labels
NDX1002-08ga	1	1	Typical Scottish Type 600(S) Cabinet – General arrangement
NDX1002-08dt	2	1	Typical Scottish Type 600(S) Cabinet – Foundations/Plinth
NDX1002-08dt	3	1	Typical Type 610 Frame for Scottish Type 600(S) Cabinet
NDX1002-08dt	4	1	Typical Type 610 Skirt for Scottish Type 600(S) Cabinet
NDX1002-09dt	1	1	Typical CECR Cabinet – Foundations/Plinth
NDX1002-09sp	2	0	For Future Use
Drawing Number	Sheet Number	Rev.	Title
NDX1002-10dt	1	1	Typical CECR+1 Cabinet – Foundations/Plinths
NDX1002-10dt	2	1	Typical CECR+1 Cabinet Site Layout including Vehicle hard standing

Appendix 0/4: List of Drawings for the O&M Works

NDX1007-01cl	2	D	Typical Detector Loop Site
NDX1010-00cl	4	B	Typical 10 & 15 Metre CCTV Mast, Cabinet Base & Paved Area
NDX1011-01ga	1	E	Typical Electrical Supply & Distribution Cabinets Installation Detail
NDX1011-01dt	7	E	Typical Labels For Electrical Supply, Distribution & Other Electrical Supply Equipment Cabinets
NDX1011-06ga	1	A	Typical Layout of Termination Pillar (TP)
NDX1011-06il	2	A	Typical Item List for Layout Termination Pillar (TP)
NDX1011-06no	3	A	Typical Notes for Termination Pillar (TP)
NDX1011-06cd	4	A	Typical Circuit Diagram of Termination Pillar (TP)
NDX1011-07ga	1	A	Typical Layout of Termination Pillar/Traffic Equipment Termination Pillar (TP/TEDP)
NDX1011-07il	2	A	Typical Item List for Typical Termination Pillar /Traffic Equipment Termination Pillar (TP/TEDP)
NDX1011-07no	3	A	Typical Notes for Termination Pillar/Traffic Equipment Termination Pillar (TP/TEDP)
NDX1011-07cd	4	A	Typical Circuit Diagram of Termination Pillar/Traffic Equipment Termination Pillar (TP/TEDP)
NDX1011-08ga	1	A	Typical Layout of Traffic Equipment Termination Pillar (TEDP)
NDX1011-08il	2	A	Typical Item List for Typical Traffic Equipment Termination Pillar (TEDP)
NDX1011-08no	3	A	Typical Notes for Traffic Equipment Termination Pillar (TEDP)
NDX1011-08cd	4	A	Typical Circuit Diagram of Traffic Equipment Termination Pillar (TEDP)
Drawing Number	Sheet Number	Rev.	Title
NDX1029-03ga	1	A	Typical Installation and Support Detail for Motorway Access Controller (MAC)
NDX1061-00dt	2	A	Typical Method of Sealing Unused Cable Ends
NDX1061-00dt	3	A	Typical Cable Identification Labels
Drawing Number	Sheet Number	Rev.	Title
NDX1063-00dt	1	D	Typical Ducts
NDX1063-00dt	2	B	Typical Installation of Deep Transverse Ducts
NDX1063-00dt	3	D	Typical Duct Installation - Longitudinal

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Appendix 0/4: List of Drawings for the O&M Works

NDX1063-00dt	4	C	Typical Duct Installation - Local Ducts
NDX1063-00dt	5	C	Typical Duct Installation -Transverse Ducts
NDX1063-00dt	6	C	Typical Duct Installation – Spacers, Strapping and Longitudinal Duct Cable Allocation
NDX1063-00dt	7	D	Typical Duct Installation - Mechanical Duct Plugs
NDX1063-00cl	9	G	Typical Plan View of General Ducted System Layout- Both Verges
NDX1063-00cl	10	H	Typical Plan View of General Ducted System Layout-Single Verge
NDX1063-01ga	1	C	Typical Type A Chamber Construction Detail
NDX1063-02ga	1	C	Typical Type B Chamber Construction Detail
NDX1063-03ga	1	C	Typical Type C Chamber Construction Detail
NDX1063-04ga	1	D	Typical Type D Chamber Construction Detail Detector Loop Sites
NDX1063-04wd	2	C	Typical Loop Wiring In Roadside Chamber At Detector Loop Sites (PTC Joint)
NDX1070-01ga	1	B	Typical Site Access Steps
NDX1070-02ga	1	B	Typical Site Access Safety Handrail Detail
NDX1072-00cl	1	E	Typical Traffic Scotland Site Maintenance Hard-Standing.
NDX1097-01ga	1	B	Typical 6-lane : 2x3.5 Class 1 Piezo-loop-Piezo WiM General Site Layout - loops
NDX1097-01ga	2	B	Typical 6-lane : 2x3.5 Class 1 Piezo-loop-Piezo WiM General Site Layout - cabinets
NDX1097-01dt	3	A	Typical WiM BL Sensor Installation
NDX1097-01dt	4	A	Typical WiM Induction Loop Installation

1. **List of Drawings Brought into the Agreement by Reference**
- 1.1. Highway Construction Details (HCD) published by The Stationery Office (formerly HMSO) as Volume 3 of the Manual of Contract Documents for Highway Works contains the following drawings brought into the Contract by reference. Unless otherwise stated below the whole drawing is brought into the Contract.

Appendix 0/4: List of Drawings for the O&M Works**List of Drawings Brought into the Contract by Reference**

Drawing Number	Title	Date	Aspect/Alternative(s) if Not Whole Drawing
MCHW Volume 3, Section 3	MCX Series of Drawings*	Various	Deleted
Various	All drawings notwithstanding the requirements of other parts of the Agreement		

* Where an MCX standard drawing has not been replaced by an NDX standard drawing or other specific drawing with the written consent of the Traffic Scotland Manager

1.2. List of Specifications Brought into the Agreement by Reference

1.2.1. "Traffic Scotland NDS" series of documents including inter alia:-

Document Number	Title
NDS 1551	Requirements for Electricity Supply to Traffic Scotland and Associated Equipment Sites
NDS 1624	Standards and Procedures for the Preparation of Traffic Scotland Drawings
NDS 9001	Traffic Scotland Health and Safety File Requirements and Model Forms
NDS 9551	Requirements for Electricity Supply to Traffic Scotland and Associated Equipment Sites
NDS 9565	Guidance on the Use of standard Traffic Scotland Termination Pillars (TP) and Traffic Equipment Distribution Pillars (TEDP).
MCS601	Traffic Scotland Equipment Manual
MCS602	Traffic Scotland Maintenance and Service Manual

Appendix 0/4: List of Drawings for the O&M Works

1.2.2 Relevant Highways Agency MCG, MCH and TR specifications, and other specifications as required, including but not limited to:

Document Number	Title/Reference
TR 2130	Environmental Tests for Motorway Equipment
MCG 1022	Testing for Newly Installed Communication and Power Cable (to be read in conjunction with NDS 9593)
MCG 1055	Testing for Newly Installed Motorway Optical Fibre Communication Cable (Single mode)
MCH 1540	Installation of Loop Detectors on Motorways and All Purpose Trunk Roads
MCH 1589B	Guide to the Siting of Inductive Loop Detectors on Motorways
TR 2161	Armoured Energy Cable
TR 1100 & Associated Appendix A	(Equivalent Standards Applicable are as per TR 1100C Section 3) Modified Section for Scotland
WOEM 4421	(Transport Wales) Armoured Fibre Optic Cable
-	Disability Discrimination Act: Good Practice for Roads (Transport Scotland Publication)
British Telecom CW1128/1198 - xx	xx denotes the number of pairs – 0.9mm conductor in petroleum jelly
TRG 600	Self Certification Procedures for Statutory Approval for Traffic Control Equipment

Appendix 0/5: Specialist National Alternations of the Overseeing Organisation of Scotland, Wales or Northern Ireland

The following additions, substitutions, cancellations and minor alterations shall be made:

List of Substitute Clauses, Tables and Figures

Clause Number	Title
850SE	Crushed Gravel Sub-base Material Type 1
1202TS	General Requirements for Permanent Traffic Signs
1204TS	Posts for Permanent Traffic Signs
1218TS	Detector Loops
1301TS	General
1302TS	Design of Lighting Columns, Brackets, CCTV Masts, Cantilever Masts, Foundations, Anchorages and Attachment Systems
1303TS	Data Sheets
1304TS	Identification and Location Markings
1308TS	Handling, Transport and Erection
1401TS	General
1402TS	Site Records
1403TS	Location of Lighting Units and Feeder Pillars
1407TS	Luminaires
1409TS	Photo-electric Control Units
1412TS	Ballasts
1416TS	Cut-outs, Fuse Holders, Fuses and Miniature Circuit Breakers (MCBs)
1417TS	Base Compartment Fixing Arrangements
1418TS	Feeder Pillars
1419TS	Wiring
1420TS	Earthing
1421TS	Underground and Ducted Cable
1422TS	Cable Joints

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Clause Number	Title
1423TS	Armoured Cable Terminations
1424TS	Inspection and Testing to be Carried Out by the Company
1501A	Introduction
1502A	General Requirements
1503A	Materials, Equipment and Workmanship
1504A	Site Records
1505A	Provision of Cabinets, Cables and Ancillary Items
1506A	Cables
1507A	Cable Installation
1508A	Installation of Cabinets
1509A	Gantries for Overhead Equipment
1510A	Emergency Roadside Telephones
1511A	Marker Tape
1512A	Provision of and Installation of Ancillary Items
1513A	Jointing and Termination of Multi-pair Communications and Feeder Cables
1514A	Cable Connectors
1515A	Jointing and Termination of Fibre Optic Communications Cables
1516A	Termination and Jointing of Power Supply Cables for Communications
1517A	Earthing and Bonding
1518A	Cable Testing
1519A	Labelling and Numbering
1520A	Loading
1521A	Removal and Re-siting of Existing Equipment
1522A	Works Impacting on Operational Traffic Scotland Systems

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Clause Number	Title
1523A	Loop Detectors
1524A	Trial Pits
1525A	Not Used
1526A	The Inspection and Testing of Electrical Installations and Electrical Equipment
1527A	Cable Installations at Transmission Stations
1528A	Modifications of Existing Cabinets
1529A	Temporary Roadside Emergency Telephones
1530A	Cable Ducts
1531A	Installation of Ducts
1532A	Chambers for Traffic Scotland Cables
1533A	Proving and Testing of Ducts
1534A	Closed Circuit Television
1535A	Variable Message Signs
1536A	Traffic Monitoring Units
1537A	NDS Detectors and NDS Equipment
1538A	Lane Control Signalling Equipment
1539A	Paved Areas, Access Paths, Access Steps and Hard Standings
1540A	Required Documentation
1541A	Journey Time Equipment
1542A	Communications Equipment
1543A	Specific Equipment Commissioning, Testing, Integration and Certification
1544A	Power Supplies for Traffic Scotland Equipment
1545A	Spares
1546A	Meteorological Equipment
1547A	Ramp Metering

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Clause Number	Title
1548A	Enforcement Systems
1549A	Weigh In Motion Equipment
1550A	Damage Repair Procedures
1911SE	Paint and Similar Protective Coatings
1912SE	Testing of Paints
1920SE	Additional Requirements for the Protection of Steel in Bridge Bearings

List of Minor Alterations Clauses, Tables and Figures

Clause Number	Title
1702.2	Concrete – Ordinary Structural – Constituent Materials
N / A	Appendix A

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Substitute Clauses, Tables and Figures

Clause Number	Title														
850SE	<p>1 Crushed Gravel Sub-base Material Type 1</p> <p>Material Properties</p> <p>1.2 For the purpose of this Clause gravel is defined as aggregate derived from a natural, unconsolidated, coarse-grained sedimentary deposit consisting of water-worn rock fragments.</p> <p>1.3 Crushed gravel granular sub-base material Type 1 shall be derived from natural cobble-sized material (60 millimetres – 200 millimetres), or larger, crushed and screened to be well-graded and lie within the grading envelope of Table 8/50SE below.</p> <p>TABLE 8/50SE: Sub-base Type 1 Range of Grading</p> <table> <thead> <tr> <th>BS sieve size</th> <th>Percentage by mass passing</th> </tr> </thead> <tbody> <tr> <td>75 millimetres</td> <td>100</td> </tr> <tr> <td>37.5 millimetres</td> <td>85 – 100</td> </tr> <tr> <td>10 millimetres</td> <td>40 – 70</td> </tr> <tr> <td>5 millimetres</td> <td>25 – 50</td> </tr> <tr> <td>600 microns</td> <td>8 – 22</td> </tr> <tr> <td>75 microns</td> <td>0 – 10</td> </tr> </tbody> </table> <p>1.4 The particle size shall be determined by the washing and sieving method of BS EN 933-1</p> <p>1.5 The material passing the 425 microns BS sieve shall be non-plastic as defined in BS 1377: Part 2 and tested in compliance therewith.</p> <p>ii) The degree of crushing of individual particles in the mixed material shall meet the following requirements:</p> <p>iii) not less than 90 per cent by mass of the particles passing BS 50 millimetres and retained on BS 6.3 millimetre sieve shall exhibit at least three freshly broken faces; and</p> <p>iv) not less than 80 per cent by mass of the particles in each BS EN 13043 specified size fraction within the size range stated at (i) above shall exhibit at least three freshly broken faces.</p> <p>v) The material shall satisfy the minimum CBR requirement of Appendix 7/1 when tested in accordance with Clause 7 of BS 1377 : Part 4. The material shall be tested at the density and moisture content likely to develop in equilibrium field conditions which shall be taken as being the density relating to the uniform air voids content of 5 per cent and the optimum moisture content determined in compliance with BS 5835. The specimens shall be tested in a soaked condition.</p> <p>vi) The material shall have a ten per cent fines value of 50 kilonewtons or more when tested in compliance with BS 812 :</p>	BS sieve size	Percentage by mass passing	75 millimetres	100	37.5 millimetres	85 – 100	10 millimetres	40 – 70	5 millimetres	25 – 50	600 microns	8 – 22	75 microns	0 – 10
BS sieve size	Percentage by mass passing														
75 millimetres	100														
37.5 millimetres	85 – 100														
10 millimetres	40 – 70														
5 millimetres	25 – 50														
600 microns	8 – 22														
75 microns	0 – 10														

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Clause Number	Title
	<p>Part 111 except that the samples shall be tested in a saturated and surface-dried condition. Prior to testing, the selected test portions shall be soaked in water at room temperature for 24 hours without previously having been oven-dried.</p> <p>1.6 The aggregate will be considered suitable if:</p> <p>vii) aggregate from the source, when tested in accordance with BS 812 : Part 121, has a soundness value greater than 65; or</p> <p>viii) evidence can be provided to the Contracting Authority of satisfactory use of aggregate from the source as Type 1 sub-base material.</p> <p>1.6.1 The water absorption of the coarse aggregate from the source determined in accordance with BS 812 : Part 2 shall also be declared.</p> <p>1.7 Transportation and Compaction</p> <p>1.7.1 The material shall be transported, laid and compacted to the requirements of Clause 801 at a moisture content within the range one per cent above to two per cent below the optimum moisture content determined in compliance with BS 5835 and without drying out or segregation.</p> <p>1.8 Trafficking Trial</p> <p>1.8.1 When required by Appendix 7/1, the Company shall construct a trial area incorporating the crushed gravel sub-base material proposed for use in the Works. The trial area shall be constructed, trafficked and assessed in accordance with the procedure described in Appendix 7/1. The mean vertical deformation after 1000 standard axles shall be less than 30 millimetres when measured in accordance with the stated procedure.</p> <p>1.9 Performance of Crushed gravel Sub-base</p> <p>1.9.1 A brief performance report on the behaviour of the crushed gravel sub-base is required.</p>
1202TS	<p>1 General Requirements for Permanent Traffic Signs</p> <p>1.1 Sub-Clause 1: Delete "described in Appendix 12/1" and insert "of the Agreement"</p> <p>1.2 Sub-Clause 2: Delete "BS 873 : Part 1" and insert "BS EN 12899-1:2001 And insert at the end of the paragraph "Additionally, unless protected by existing safety barriers signs shall be, by preference, designated as Passively Safe and shall therefore conform to testing as BSEN12767:2007, TD89/08 and be installed in compliance with TD19/06."</p> <p>1.3 Sub-Clause 3:</p>

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Clause Number	Title
	<p>Delete whole sub-Clause text and insert “Sign panels of internally illuminated signs, transilluminated signs and luminaire face panels shall, comply with impact BS EN 12889-1:2001.”</p> <p>1.4 Sub-Clause 4: Delete “BS 873 : Part 5 unless otherwise described in Appendix 12/1” and insert “BS EN 12889-1:2001.”</p> <p>1.5 Sub-Clause 5: Delete “,unless otherwise described in Appendix 12/1,” And Delete “Contractor” and insert “Company”</p> <p>1.6 Sub-Clause 6: Delete whole sub-Clause and insert “A traffic sign housing shall be provided with vandal and weather resistant locks. Keys shall be provided to the Overseeing Organisation, in the quantities stated in Appendix 12/1. Types of lock shall be kept to a minimum and shall be as described in Appendix 12/1.”</p> <p>1.7 Sub-Clause 7: Insert at the end of the paragraph “illuminated traffic signs shall also be labelled in accordance with Transport Scotland (TS) Guidance Note LDS8001 ‘Roadside Electrical Apparatus and Lighting Identification System’. The identifying code shall be provided by the Company. Contact details are provided in Appendix 12/1.”</p> <p>1.8 Sub-Clause 8: Delete whole sub-Clause and insert “Traffic signs and poles shall at all times be handled, transported and stored in accordance with the manufacturers recommendations and be at all times adequately protected to prevent damage.”</p>
1204TS	<p>1 Posts for Permanent Traffic Signs</p> <p>1.1 Sub-Clause 1: Delete whole sub-Clause and insert “Posts for permanent traffic signs shall be as described in Appendix 12/1 and shall comply with BS EN 12899-1:2001. The surface protection requirements shall similarly comply with BS EN 12899-1:2001. Sign posts shall also conform to testing as BSEN12767:2007 and be installed in compliance with TD19/06and the following:”</p> <p>1.2 Sub-Clause 1(ii): Insert at the end of the paragraph</p>

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Clause Number	Title
	<p>“, lattice or other construction as agreed with the Overseeing Organisation. Such posts shall not include joints except at the sign head fixing”</p> <p>1.3 Sub-Clause 1(iii): Delete whole sub-Clause and insert “Concrete posts only to be used for special and specific applications. Such use shall be agreed with the Overseeing Organisation on a site by site basis.”</p> <p>1.4 Sub-Clause 2: Delete “a minimum” and insert “no greater than 50mm. Posts shall be fitted with suitable permanently affixed weatherproof cap of a type capable of providing watertight protection for a minimum of 20 years.</p> <p>1.5 Sub-Clause 3: Delete “BS 873 : Part 7” and insert “BS EN 12899-1:2001</p>
1218TS	<p>1 Detector Loops</p> <p>1.1 Sub-Clause 1: Insert after “with” the following “the Series 1500 National Alterations of the Overseeing Organisation of Scotland and the”</p> <p>1.2 Insert the following sub-Clauses: “2. The positioning and layout of such loops shall, where applicable, be in accordance with MCH 1589 unless otherwise described in Appendix 12/1.” “3. Loops for use with Traffic Signals shall be installed in accordance with the requirements for such installations.”</p>
1301TS	<p>1 General</p> <p>1.1 Sub-Clause 1 (i): Delete “steel,” Delete “and concrete”</p> <p>1.2 Sub-Clause 1(i) (a): Delete whole Sub-Clause 1(i)(a) text and replace with “aluminium columns shall not exceed 15 metres nominal eight,”</p> <p>1.3 Sub-Clause 1(i) (b): Delete whole whole Sub-Clause 1(i)(b) text and replace with “columns shall be tapered with an integral bracket. The maximum</p>

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Clause Number	Title
	<p>bracket outreach shall be no greater than 0.5 metres".</p>
1.4	<p>Sub-Clause 1(i) (c):</p>
	<p>Delete whole Sub-Clause 1(i)(c) text.</p>
1.5	<p>Sub-Clause 1(ii):</p>
	<p>Delete all of Sub-Clause 1(ii) text and replace with</p>
	<p>"For steel columns</p>
	<p>(a) post top columns not exceeding 20 metres nominal height, these columns shall be of continuously tapered folded steel construction;</p>
	<p>(b) columns with brackets not exceeding 18 metres nominal will have a maximum bracket outreach of 0.5 metres</p>
	<p>NOTE: Only where individual columns are being replaced within an existing lighting scheme will outreaches greater than 0.5 metres be accepted. Generally only to maintain consistency in such installations can columns other than tapered folded sheet steel be used. In these situations columns of a similar design to those in the existing lighting scheme can be used. "</p>
1.6	<p>Sub-Clause 1(iii):</p>
	<p>Delete whole Sub-Clause 1(iii) text and replace with</p>
	<p>"For glass fibre reinforced plastic lighting columns:</p>
	<p>(a) Unless specifically specified columns not exceeding 10 metres nominal height;</p>
	<p>(b) Bracket projections shall not exceed 0.5 metres."</p>
1.7	<p>Sub-Clause 1(iv):</p>
	<p>Delete whole Sub-Clause text and replace with:</p>
	<p>"For steel CCTV masts:</p>
	<p>(a) Post top masts not exceeding 25 metres nominal height."</p>
1.8	<p>Sub-Clause 1:</p>
	<p>Add (v):</p>
	<p>"For steel cantilever masts:</p>
	<p>(a) Nominal height not exceeding 8.5 metres;</p>
	<p>(b) Cantilever projection not exceeding 8.5 metres;</p>
	<p>(c) Bracket projections for cantilever masts not exceeding 0.25 x nominal height or 3 metres whichever is the lesser.</p>
1.9	<p>The nominal height of a flange column or mast is taken as the distance between the underside of the flange plate and the highest point of the mast. See Fig. 1. Of BD88 (DMRB 2.2.13)".Sub-Clause 2</p>

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Clause Number	Title
	<p>Delete whole of Sub-Clause 2 and replace with:</p> <p>"The Company shall provide verification from the manufacturer that the lighting columns and brackets, CCTV masts and cantilever masts comply with the relevant quality management scheme and all other certification as described in BSEN40 and BSEN12767:2007. Additionally, unless protected by an existing vehicle restraint system ("VRS"), columns shall be, designated passively safe or otherwise located so as to require no protection in accordance with TD19/06. Where passively safe columns are used they shall conform to testing as BSEN12767:2007. Installation shall always be in compliance with TD19/06."</p>
1.10	<p>Sub-Clause 3</p> <p>Insert before BS EN 40-1: "guidance document PD6547 and the requirement of".</p>
1.11	<p>Sub-Clause 6</p> <p>Delete the Sub-Clause text and replace with:</p> <p>"Where lighting columns, CCTV masts and cantilever masts are installed in the vicinity of overhead power lines the Company shall ensure that the appropriate Electricity Authorities are notified. The Company shall notify and obtain written agreement on the specific clearances required and that warning notices as described in Appendices 13/1, 13/4 and 13/7 are permanently fixed to these columns prior to erection. All to conform to GS6 'Avoidance of danger from overhead electric power lines' published by the Health and Safety Executive, the ILE / HSE document 'Safety during the installation and removal of lighting columns and similar street furniture in proximity to high voltage overhead lines' and the Overseeing Organisation guidance document LDS8001_09 'Trunk Road Lighting and Associated Electrical Apparatus Identification System'</p>
1.12	<p>Add Sub-Clause 8:</p> <p>Non-hygroscopic base compartment back-board not less than 15mm thick and of a sufficient size to accept the selected cut-out and control apparatus shall be positioned internally opposite the access door. The baseboard shall be securely fixed to the inside of the column. All screws and fixings used for the attachment of apparatus and components to this wooden back-board shall be of stainless steel.</p>
1.13	<p>Add Sub-Clause 9:</p> <p>In compliance with the operational requirements of the Transport Scotland IRIS inventory and management system standards Transport Scotland shall make access available to the Company. The Company shall provide all information generally in accordance with the Transport Scotland attributes as required to correctly populate and operate all required functions of the Scottish Lighting Management System. Direct</p>

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	<p>on-line access to the Transport Scotland Lighting Management System is available to the Company. The Company shall provide their collected information in a format agreed with Transport Scotland's requirements.</p>
1.14	<p>Add Sub-Clause 10:</p> <p>Aluminium lighting columns shall be manufactured with a flush mounted access door correctly positioned relative to with the integral bracket. This position to ensure that access through the door can only take place when facing the oncoming traffic.</p>
1.15	<p>Add Sub-Clause 11:</p> <p>The column cable entry slot, which shall be positioned on the face to the right of the column access door opening, shall have minimum dimensions of 150mm x 75mm with the lower edge of the slot 600mm below ground level. The cable entry slot shall be free from irregularities and burrs.</p>
1.16	<p>Add Sub-Clause 12:</p> <p>Each column shall be fitted with an 8 mm (minimum) diameter earth terminal complete with two plain washers and one full nut and one locking nut. These items shall be corrosion resistant and compatible with the column material. Earth terminals shall be readily accessible through the door opening and located such as to minimise the risk of injury to persons accessing them while undertaking installation and maintenance.</p>
1.17	<p>Add Sub-Clause 13:</p> <p>All electrical and similar joints made onto the column structural aluminium and column access door shall be such as to eliminate or protect against corrosion resulting from contact between dissimilar metals. The Company is required to adhere to such aspects of the guidance provided in PD6484 as it relates to dissimilar metals in contact with aluminium. The selection of electrical earthing components shall also comply in this and other respects with the requirements of BS 7430.</p>
1.18	<p>Add Sub-Clause 14:</p> <p>The flush fitting weatherproof single access door shall provide protection no less than IP33 and shall be free from any irregularities, burrs or sharp edges likely to cause injury. Unless specifically required by the Agreement each column access door shall have two locks using a triangular type key The number of column door keys shall be supplied shall be 10% of the number of columns erected subject to a minimum of three keys. All column access door keys shall be manufactured from metal and be of an adequately size.</p>
1.19	<p>Add Sub-Clause 15:</p> <p>On completion of the installation, all door locking components shall be coated with an application of suitable corrosion inhibitor grease</p>

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	providing lubrication and protection from seizure and general deterioration.
1.20	<p>Add Sub-Clause 16:</p> <p>Lighting column access doors shall be retained by stainless steel chain or braided stainless steel wire. Such retaining chain or wire shall be compatible with the column material and be held captive by fixings similarly manufactured from compatible material. Chains shall be a minimum gauge of 4mm and be long enough to allow the column access door to be rested completely on the ground whilst removed. All removable access doors shall be interchangeable with access doors of similar columns without the need for adjustment. All access doors shall be fitted with a bonding earth conductor marginally longer than the retaining chain or wire. Termination of the bonding earth conductor shall use components manufactured from compatible material.</p>
1.21	<p>Add Sub-Clause 17:</p> <p>Where columns are mounted on structures and behind parapets, the access doors shall be positioned such that the access opening is fully accessible above the upper height of the protective parapet and facing the maintenance personnel.</p>
1.22	<p>Add Sub-Clause 18:</p> <p>Flange plate columns shall be set vertical on the foundation bases prepared for them. To ensure the column is set vertical compatible metal shims shall be used. The nuts and exposed bolts shall be made suitably tight and then coated with protective paste and tape. All fixings shall be compatible with the column material.</p>
1.23	<p>Add Sub-Clause 19:</p> <p>Where the column flange is not in accordance with BS EN 40-2 the Company shall liaise with the relevant road authority responsible and agree details of the flange sizes and fixing centres. The Company shall implement a design based upon the agreed flange fixing and provide the design to the column manufacturer.</p>
1.24	<p>Add Sub-Clause 20:</p> <p>Where separate bracket arms are used such bracket arms shall be of compatible material to the column and fixed in accordance with the manufacturer's written instructions to prevent rotation using an anti-rotational device.</p>
1.25	<p>Add Sub-Clause 21:</p> <p>Road lighting columns and brackets shall be manufactured, located and erected in compliance with this Series, the 1400 Series and all relevant requirements.</p>
1.26	<p>Add Sub-Clause 22:</p> <p>Where wall brackets and associated service boxes are installed they shall, where applicable, match existing items</p>

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1302TS	<p>1 Design of Lighting Columns, Brackets, CCTV Masts, Cantilever Masts, Foundations, Anchorages and Attachment Systems</p> <p>1.1 Sub-Clause 1</p> <p>Delete whole Sub-Clause text and replace with:</p> <p>"For all new installations it is a requirement of Transport Scotland that lighting columns shall be continuous taper, be manufactured from aluminium, the column root to be protected by an inner and outer polymer thermally bonded sheath to a height of 250mm from the bottom of the column, the columns to have an integral 0.5m outreach and flush access doors. Sign support posts shall be of tubular aluminium or aluminium lattice construction.</p> <p>(i) 1 Lighting columns, brackets, CCTV masts, cantilever masts, the foundations of both planted columns and columns and masts with flange plates, and the anchorages and attachment systems for columns and masts with flange plates shall be designed to comply with the requirements of Standards BD 26 (DMRB 2.2.1), BD 83 (DMRB 2.2.11), BD 88 (DMRB 2.2.13) and the technical approval scheme adopted by the Overseeing Organisation. The Company shall similarly comply with PD6547 and the referenced standards within it. The Company shall use the soil type information as described in Appendices 13/1 and 13/7. The Company shall design foundations for all columns and masts detailed in the Contract and drawings.</p> <p>ii) The Company shall be responsible for the design of all:</p> <p>(a) anchorages and attachment systems for columns and masts with flange plates to foundation or bridge deck; and</p> <p>(b) foundations for columns and masts with flange plates;</p> <p>All as described in Appendices 13/1, 13/4 and 13/7.</p> <p>iii) The Company shall submit to the Overseeing Organisation a copy of all design calculations, variations, certification and supporting information at least two weeks prior to delivery and shall include with such records confirmation that such records have been checked by a competent person to ensure compliance with the required standards and check certificates issued for lighting columns, brackets, CCTV masts, cantilever masts and foundations. The design of the foundations shall be appropriate to the soil types encountered on site, as identified in Appendices 13/1, 13/4 and 13/7.</p> <p>iv) The Company shall establish the soil types on site and submit, to the Overseeing Organisation for its acceptance, lighting column foundation details appropriate to the conditions found and in accordance with the requirements of BS EN 40.</p> <p>v) The excavation to accommodate planted root columns shall not</p>

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	<p>exceed a diameter greater than twice the diameter of the column root. Where a separate bracket is used for compatibility with existing columns the column shall be erected without the bracket in place and placed centrally in the excavation. Where separate brackets are used these shall not be erected on the column until such a time as the foundations have cured.</p> <p>vi) Alternative foundations can be used with the prior written agreement of the Overseeing Organisation.”</p> <p>1.2 Sub-Clause 2</p> <p>Delete whole Sub-Clause text and replace with:</p> <p>“The aesthetic design of lighting columns, including those with bracket arms, shall be submitted by the Company to the Overseeing Organisation for consideration and approval. The design of lighting columns and luminaires including those with bracket arms shall comply with the general advice given in BS5489-1 relating to the appearance of lighting installations both by day and by night from the viewpoint of both the road and the surrounding neighbourhood. Where required to be incorporated into an existing scheme the lighting column silhouette must use the same or near similar bracket angle and generally be compatible with existing equipment.</p>
1303TS	<p>1 Data Sheets</p> <p>1.1 Sub-Clause 1: Delete “Contractor” and insert “Company”</p> <p>1.2 Sub-Clause 2: Delete “Contractor” and insert “Company”</p> <p>1.3 Add Sub-Clause 3: “The Company shall within one month of the commencement of the work and prior to placement of any orders for materials, submit to the Overseeing Organisation for approval, triplicate copies of completed Appendix 13/2 Data sheets for each type lighting column.”</p>
1304TS	<p>1 Identification and Location Markings</p> <p>1.1 Sub-Clause 1. Insert at the end of the paragraph: “All such masts, columns and brackets shall be correctly labelled with the CE mark confirming conformance with the appropriate directive(s).”</p> <p>1.2 Sub-Clause 2 Delete whole Sub-Clause text and replace with: “The column and mast identification marks shall be permanent and</p>

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	<p>legible and be made clearly visible in one of the following ways:</p> <ul style="list-style-type: none"> i) on a permanent fixed label; or ii) hard stamped; or iii) formed into the material of the column / mast external face only. <p>For hard stamped identifiers, the mark shall be located immediately above the access door and for label identification this shall be placed immediately inside the base compartment: it shall not be located on the door.</p> <p>All hard stamping shall be carried out in a manner that will not induce any stresses into the material of the column / mast"</p> <p>1.3 Sub-Clause 3</p> <p>Delete whole Sub-Clause text and replace with:</p> <p>"Where separate brackets are approved for use by the Overseeing Organisation the bracket identification mark shall also be permanent and legible and be either:</p> <ul style="list-style-type: none"> i) hard stamped; or ii) formed into the material of the bracket arm and on either the luminaire spigot or the underside of the bracket arm adjacent to the column shaft or the wall or pole mounting plate. The mark will be on an external face only." <p>1.4 Sub-Clause 4</p> <p>Delete existing Sub-Clause 4.</p> <p>1.4 Sub-Clause 5</p> <p>Delete whole Sub-Clause text and replace with:</p> <p>"In addition, location / identification labels for compliance with DMRB requirements and electrical regulatory inspection and maintenance purposes shall be applied to each lighting column as described in Transport Scotland's guidance document LDS8001_09 'Trunk Road Lighting and Associated Electrical Apparatus Identification System'. The identifying code for use on the labels shall be provided by the Company and agreed with Transport Scotland. To enable Transport Scotland to agree the ID codes the Company shall provide Transport Scotland with the site design layout drawings and electrical schematics. All records relating to the lighting columns shall include this identifying code."</p>
1308TS	<p>1 Handling, Transport and Erection</p> <p>1.1 Sub-Clause 1:</p> <p>Delete "way as to avoid" and insert "manner that avoids".</p>

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	<p>1.2 Sub-Clause 4:</p> <p> Delete whole Sub-Clause text and replace with:</p> <p> "Columns and masts shall be installed in accordance with the manufacturer's instructions and all requirements of the specification."</p> <p>1.3 Add Sub-Clause 6:</p> <p> "All verge located lighting columns shall be installed such that the door is facing away from the oncoming traffic allowing maintenance personnel to access the door while facing the traffic. The use of other access door orientation shall be agreed with the relevant road authority. Where agreement for such alternative orientations is to be sought this must form part of the initially proposed project design."</p> <p>1.4 Add Sub-Clause 7</p> <p> "All proprietary materials shall be stored in accordance with the manufacturer's written instructions."</p>
1401TS	<p>1 General</p> <p>1.1 Sub-Clause 1</p> <p> Delete whole Sub-Clause text and insert:</p> <p> "The lighting installation shall not be operationally energised until the Company has complied with the Electricity at Work Regulations 1989 and provided to the Overseeing Organisation all completed BS7671 Inspection and Testing Certificates. In addition to the provision of the BS7671 Inspection and Testing Certificates the Company shall provide a written record to the Overseeing Organisation stating that these Certificates have been audited for correct and full completion by a resource competent to undertake such audits.</p> <p> Materials equipment and workmanship required under the Contract shall comply with BS 7671 Regulations for Electrical Installations (the IEE Wiring Regulations) and the applicable regulations of the Distribution Network Operator (DNO) providing the supply. The installation and maintenance of electrical apparatus and cabling for road lighting and illuminated traffic signs shall comply with the quality management scheme detailed in Appendix A Volume 1 of the MCHW.</p> <p> The Company shall ensure that only competent persons as defined in the guidance note LDS8014 A.1 Competency – Competency requirements relating to work on Transport Scotland's Roadside Electrical Assets and Lighting shall be employed on Works that fall within the scope of this series. All competent persons shall be registered with the Highway Electrical Registration Scheme (HERS). In addition Authorised Persons shall be registered as specified in the 'Handbook for the Highway Electrical Industry Scheme for the Registration of Authorised Persons, Highway Electrical, Highway</p>

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1.2	<p>Electronic & Associated Highway Works'.</p> <p>The Company shall incorporate into work procedures the contents of Engineering Recommendation G39/1 'Model Code of Practice covering Electrical Safety in the Planning, Installation, Commissioning and Maintenance of Public Lighting and Other Street Furniture'.</p> <p>The Company shall employ only competent personnel each of whom holds a 'Competent Persons Authorisation Certificate' in accordance with the model form in Appendix B of the above document G39/1. For this purpose G39/1 shall be modified as specified below. The modified document shall be duly completed by the Company and authorised by a designated responsible person in the authority or company as defined in Clause 2 of G.39/1, all in accordance with Clause 10 of G.39/1. The form of certificate as specified above shall be modified on page B2 of G.39/1 by insertion of the following after the space for 'Name and Address of Contracting Authority':</p> <p>"Name of authority or company"</p> <p>In addition to the requirements of Sub-Clauses 10.2 and 10.3 of G.39/1, each Competent Person as defined in G.39/1, Clause 2, shall be provided by the Company with not less than one copy of the above certificate, duly completed and signed as approved. Such certificate(s) shall be retained and be available at all times for inspection on request by the Overseeing Organisation. A formal work allocation record shall be kept by the Company to enable work carried out by individual operatives and the responsible supervisor to be identified. All operatives and supervisors shall hold a valid Electrotechnical Certification Scheme (ECS) identity card. Notification of the details of all such cards shall be submitted to the Overseeing Organisation 14 days prior to commencement of the Works.</p> <p>The Company and Designer are required to pay particular attention to those sections, detailed within this National Alteration, where the Transport Scotland requirements differ from those of the standard Manual of Contract Documents for Highway Works (MCHW) and other Highways Agency documents.</p> <p>The Company and Designer shall comply with the statutory regulations of the Electricity at Work Regulations 1989."</p> <p>Sub-Clause 2:</p> <p>Delete whole Sub-Clause text and replace with:</p> <p>"(i) A Road Lighting Unit shall consist of the following; column, bracket, wall mounting, internal wiring and the electrical apparatus as defined in (iv) below."</p> <p>(ii) An illuminated (lit) Sign Unit shall consist of a traffic sign requiring an electricity supply and electrical apparatus and wiring as in (i) above for its illumination.</p> <p>(iii) The term Road Lighting Unit applies inter alia to lighting</p>

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1.3	<p>assemblies on road lighting columns and wall brackets, bollards, illuminated signs, underpass lighting, bulkhead lighting and lighting at/in bus shelterse, service/administration buildings and all similar equipment provided for the illumination of roadside assets, road surface and other publicly accessible assets.</p> <p>(iv) Electrical apparatus for Road Lighting Units shall include but not be limited to the following or as otherwise described in the applicable contract: luminaires, photo-electric control units (PECUs), shorting plugs, lamps, time switches, magnetic and electronic ballasts, ignitors, starters, capacitors, cut-outs, fuses, fuse holders, miniature circuit breakers (MCBs), luminaire mounted modules, sub-assemblies and other roadside equipment forming part of a Central Management System (CMS) and Light Emitting Diode (LED) drivers.</p> <p>(v) The Network is the electrical distribution network installed by the Company from the DNO cut-out to the Lighting Units. This will include inter alia feeder pillars, cabinets, housings and similar enclosures that form part of the installed electrical distribution network.</p> <p>(vi) Roadside Electrical Assets (REA) are those items included and forming part of the Scottish Road Network electrical equipment inventory held in the IRIS.</p> <p>(vii) The Transport Scotland Lighting Central Management System (CMS) shall be considered as the combined total of all systems installed on the Scottish Trunk Road network to allow for the some form of remote control and monitoring of the Transport Scotland Road Lighting and lit assets. The CMS controlled installations can be either centrally or remote autonomously controlled. “</p> <p>Sub-Clause 3</p> <p>Delete whole Sub-Clause text and insert</p> <p>“Each network shall operate on a nominal single phase 230 volt AC, -6% to +10% or three phase 400V -6% to +10% at a frequency of 50Hz ±1%. It will be the Company’s responsibility to ensure that the apparatus supplied will operate correctly at the voltage and frequency available at the point of use and ensure that the voltage at the point of use is within the requirements of the BS 7671 Regulations. The Company shall obtain a declaration from the DNO, provided in accordance with the Electricity Safety, Quality and Continuity Regulations in which the nominal voltage and frequency of the supply shall be specified along with the permitted tolerances. Further guidance on requesting electricity supplies is contained within LDS8006 A.1 Supply – Electricity Supplies to Roadside Electrical Assets and Lighting.</p> <p>Following on from this the following should be noted:</p> <p>(i) TN-C distribution shall not be used for any part of any new road</p>

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	<p>lighting electrical distribution network;</p> <p>(ii) Only where a 3-phase supply is used to energise high mast lighting and similar loads shall a 3-phase supply be distributed within the lighting installation as a 3-phase;</p> <p>(iii) Where a 3-phase supply has been provided by the DNO for circuits other than high mast lighting and similar the 3-phase supply shall, unless otherwise agreed with the Overseeing Organisation, not be distributed as a 3-phase supply but only as three separate single phase supplies; and</p> <p>(iv) The single phase supplies derived from a 3-phase electricity supply shall not under any circumstances be defined as being an 'individual' or 'separate' single phase supply. They shall not be used to supply apparatus other than road lighting related circuits.</p> <p>(v) Road lighting circuit electricity consumption shall be considered as including maintenance sockets and similar items housed within lighting pillars; and</p> <p>(vi) Unless specifically agreed with the Overseeing Organisation anti-condensation heaters shall not be fitted within pillars and distribution cabinets."</p> <p>1.4 Sub-Clause 4 Delete whole Sub-Clause text and replace with: "The Company shall provide sufficient access and area within electrical equipment to allow the electricity supplier to install their service connection and associated cut-out. This shall be considered as the origin of the installation as defined in BS 7671. "</p> <p>1.5 Sub-Clause 5 Delete whole Sub-Clause text and replace with: "This dedicated feeder pillar shall be provided for the Overseeing Organisation's lighting Network. Distribution feeder pillars shall be also provided as required. Unless otherwise approved by the Overseeing Organisation supplies provided to electrical equipment for third parties, internal and external to the Overseeing Organisation, shall not be connected to the Overseeing Organisation's Network. Any such supplies so provided shall conform to the Overseeing Organisation's specific instructions as specified in the Overseeing Organisation guidance document LDS8006 A.1 Supply - 'Electricity Supplies to Roadside Electrical Assets and Lighting'. Before making any form of electrical connection into any part of the Overseeing Organisation's lighting network approval shall be obtained from the Overseeing Organisation 21 days prior to the connection being made. Temporary lighting may be required at any site where Operations shall be being undertaken. All temporary lighting shall provide no less illuminance than existing lighting over the area of the carriageway. Mounting heights for this lighting shall be the same as the existing</p>

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	<p>lighting. The installation of temporary lighting shall comply with the relevant Acts and Regulations (for example Electricity at Work Regulations and BS 7671:2008). It shall not form a hazard to motorists. No existing street lighting shall be disconnected until it has been replaced by either the new permanent lighting or a temporary lighting system to the written consent by the Overseeing Organisation. The temporary lighting shall remain operative until the new permanent lighting is brought into use. Temporary lighting arrangements shall have written consent by the Overseeing Organisation before the commencement of any affected work."</p> <p>1.6 Add Sub-Clause 6:</p> <p>"The Company shall fit ID labels and conspicuity bands in accordance with Transport Scotland's guidance document LDS8001_09 "Trunk Road Lighting and Associated Electrical Apparatus Identification System"</p> <p>1.7 Add Sub-Clause 7:</p> <p>"This document shall be read in conjunction the DMRB Technical Directives TD 19/06 (Road Restraint Systems), BS EN12767 Use of Passively Safe Signposts, Lighting Columns and Traffic Signal Posts), TD 23/99 (Inspection & Maintenance of Road Lighting) and TD 25/01 (Inspection of Traffic Signs)."</p> <p>1.8 Add Sub-Clause 8:</p> <p>"Other relevant documents include:</p> <ul style="list-style-type: none"> (i) Electricity at Work Regulations 1989. (ii) The Electricity Safety, Quality and Continuity Regulations 2002 (amended 2006,2009) (iii) Waste Electronic and Electrical Equipment (amendment) Regulations 2006. (iv) Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2008 (the "RoHS Regulations"). (v) British Standard (BS) 7671:2008 Requirements for electrical installations, Seventeenth edition. (vi) BS 7430: Code of practice for earthing. (vii) BS EN 50110 Part 1 & 2: Operation of Electrical Installations. (viii)HSE Publication HSR25: Memorandum of Guidance on the Electricity at Work Regulations 1989. (ix) HSE Publication GS6: Avoidance of Danger from Overhead Electric Lines.

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	<ul style="list-style-type: none"> (x) HSE Publication HSG85: Electricity at Work – Safe Working Practices. (xi) HSE Publication HSG47: Avoiding danger from underground services (xii) Institution of Lighting Engineers (ILE) Code of Practice for Electrical Safety in Highway Electrical Operations (xiii) Energy Networks Association (ENA) Engineering Recommendation G39/1: Model Code of Practice, covering electrical safety in the planning, installation, commissioning and maintenance of public lighting and other street furniture. (xiv) ENA Technical Specification 43-8: Overhead Line Clearances. (xv) County Surveyors' Society (CSS) Publication: Guidance Notes on Electrical Safety on the Highway to Achieve Compliance with the Electricity at Work Regulations, 1995. (xvi) CSS Publication: Code of Practice for the Installation and Operation of Seasonal Decorations on or above the Public Highway, 1995. (xvii) National Joint Utilities Group (NJUG) Publication 1: Recommendations on the avoidance of danger from underground electricity cables. (xviii) NJUG Publication 3: Cable Locating Devices (xix) Well Lit Highways. Code of Practice for Highway Lighting Management.
1402TS	<p>1 As-built and operational Records</p> <p>1.1 Sub-Clause 1:</p> <p>Delete whole Sub-Clause text and replace with:</p> <p>"In accordance with the requirements of the Electricity at Work Regulations the Company shall, on the completion of the electrical work, provide a set of as-installed drawings or transparencies showing as a minimum the position and identification mark (including luminaire type, modification status, lamp setting, lamp type and serial numbers) of apparatus requiring electrical connections, ducts, underground cables and joints and the type and depth of cables. The Company shall also supply test certificates and Operation and Maintenance manuals. The general requirement for information to be included within the lighting section of the health and safety file is contained within LDS8004_A.1_H&SFiles – Roadside Electrical Assets and Lighting Health & Safety File Requirements with Model Forms.</p> <p>The Company shall amend record drawings whenever any part of the installation shall be amended or extended. Test certificates pertaining to the part of the installation that has been modified shall be completed and passed to the Overseeing Organisation for approval. Locations of Constructional Plant and apparatus shall be referenced in accordance</p>

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	<p>with the Trunk Road Network Referencing System.”</p> <p>1.9 Sub-Clause 2:</p> <p>Delete whole Sub-Clause text and replace with:</p> <p>“As built drawings shall be produced by the Company for the (private) Network and all lighting units in accordance with this Clause. The Company shall complete the as-built drawings in AutoCAD™ format and provide them to the Contracting Authority in accordance with the as-built requirements.”</p> <p>1.2 Sub-Clause 3</p> <p>Delete whole Sub-Clause text and replace with:</p> <p>“As-built drawings shall include both geographical and schematic drawings:</p> <ul style="list-style-type: none"> (i) a schematic distribution layout drawing indicating the distribution arrangement of each private cable network; (ii) a schedule of abandoned cables including location; (iii) duct and cable location offsets taken at 20 metre intervals where cables maintain a steady line, and at 5 metre intervals where the line of the cable varies. Cable records shall be determined from kerb lines or fence lines; and (iv) the geographical and schematic drawing shall detail the ID label attached to pillars and lighting units. The geographical drawing shall detail the accurate location of all lighting units, duct location (including size and number), cable runs (including cable size), pillars, all chambers and the electricity supply location. The DNO ‘supply point ID No.’ must be obtained from the electricity supplier and included on the drawing. Every lighting unit shall be marked in a manner such that it can be determined what the column height, material lantern type, lamp wattage, illuminated sign TRGD ref. No., type and wattage of sign lighting unit.” <p>1.3 Sub-Clause 4</p> <p>Delete whole Sub-Clause text and replace with:</p> <p>“Operational Records shall include:</p> <ul style="list-style-type: none"> (i) maintenance or operating manuals for installed equipment; (ii) inspection and test certificates in accordance with BS 7671; and (iii) Data required for inventory purposes in the format stipulated in the Contracting Authority.”

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1403TS	<p>1 Location of Lighting Units and Feeder Pillars</p> <p>1.1 Delete Sub-Clause 1 and 2.</p> <p>Insert the following:</p> <ol style="list-style-type: none"> 1) Unless otherwise described in Appendix 14/2, electrical isolation pillars shall, where required, be provided on the network at the maintenance boundary fence. Final positioning of such pillars shall be with the prior agreement of the Overseeing Organisation. 2) In cases where the location of an item, already determined, is subsequently changed due to underground obstruction or similar difficulties, then any excavation already made shall be back-filled and reinstated to its original condition. 3) The location of feeder pillars shall be in accordance with the Company's submitted design. The Company's design shall fully consider all relevant requirements including inter alia such arrangements as to ensure safe maintenance access to the pillar. The exact location will be agreed on site before commencement of any related ground works. The Company shall be responsible for recording and documenting all aspects of the final site layout and the as-installed equipment. 4) The location of cabinets or pillars provided to house the electricity supplier's equipment shall be agreed with the Overseeing Organisation prior to its installation.
1407TS	<p>1 Luminaires</p> <p>1.1 Delete Sub-Clause 1, 2 and 3.</p> <p>Insert the following:</p> <ol style="list-style-type: none"> 1) Luminaires fitted with integral control gear shall be fitted with a fuse holder, incorporating direct touch protection, adjacent to the luminaire terminal block with a cartridge fuse protecting each set of control gear. 2) Luminaires for road lighting shall comply with BS EN 60598-2-3, and be as described as or better than specified in this Clause; <ol style="list-style-type: none"> (i) the mounting arrangement shall provide for a close fitting between the luminaire and the column, making use of a two or more bolt, fixing arrangement; (ii) tilt angle adjustment shall be integral to the luminaire and shall apply to both top and side fixing arrangements. The adjustment shall allow for a minimum of three tilt angles including 0, +5 and +10 degrees; (iii) The internal arrangement of the luminaire shall consist of separate control gear and lamp compartments. These compartments shall be arranged to provide for the separate

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	<p>sealing of the optical system (lamp housing) and control gear compartment. Both compartments shall have a degree of external sealing and sealing between each other no less than IP66;</p> <p>(iv) luminaire to be used for group control shall be fitted with a NEMA socket and this shall be located in the canopy. The control column shall be sited immediately adjacent to the control pillar and a PECU fitted into the NEMA socket;</p> <p>(v) meet the structural design and aesthetic approval requirements of Clause 1302. The external finish shall be to BS4800 RAL9007 Silver;</p> <p>(vi) a range of luminaires of varying rating shall be available in a common style / design;</p> <p>(vii) curved glass manufactured from toughened safety glass shall be used. Flat glass shall only be used in the vicinity of railways, airfields and navigable waterways or by agreement with the Overseeing Organisation. Luminaires shall be of the full-cut-off / low-threshold increment type as agreed with the Overseeing Organisation;</p> <p>(viii) electronic ballast units shall be provided in luminaires rated up to 400 Watts and shall be suitable for operation over the input voltage range of 210 – 250 Volts. Electronic ballasts shall incorporate over-temperature protection and have a power factor of 0.95 (lagging/leading) or greater. Unless otherwise agreed with the Overseeing Organisation, all replacement lamp control gear shall be of electronic type, DALI compatible, enabled and accredited, capable of being controlled via a lighting central management system, capable of implementing set dimming/trimming control regimes autonomously, and be ELEXON approved. Prior to delivery of any luminaire using electronic control gear the Overseeing Organisation shall be provided, by the supplier, with a 'statement of compatibility'. This statement shall detail and confirm that the electronic control gear being supplied is capable of operating over the temperatures range to which it will be exposed in use within the luminaire housing and that the lamp and control gear are fully compatible. The 'statement of compatibility' shall indicate the testing regime to which the equipment has been exposed.</p> <p>(ix) conventional ballast units shall have a power factor no less than 0.85;</p> <p>(x) luminaires shall incorporate some form of anti-condensation vent or similar measures to minimise moisture build-up within the luminaire;</p> <p>(xi) all luminaires shall operate correctly over the temperature</p>

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Clause Number	Title
	<p>range of -20 degrees Celsius to +35 degrees Celsius;</p> <p>luminaires may be Class I where the luminaire has an integral earth terminal linked to all exposed metalwork or Class II where there is no earth terminal provided for connection of the luminaire's exposed metalwork to the circuit protective conductor. Fortuitous earth connection provided by connection to mechanical fixings shall not be relied upon;</p> <p>(xii) safe access to the lamp and control gear enclosures for maintenance purposes shall require a tool. Doors shall be hinged and include a safety catch.;</p> <p>(xiii) luminaire housings shall be manufactured from corrosion resistant die-cast aluminium. suitable for use in their intended environments. This shall include locations directly adjacent to the sea, and similar salt-laden locations;</p> <p>(xiv) Any electrical wiring that could be subjected to heat shall be fitted with additional heat insulating sleeving;</p> <p>(xv) Luminaires with remote control gear shall not be used unless previously agreed with the Overseeing Organisation; and</p> <p>(xvi) Luminaires shall conform to the requirements of the appropriate sections of the ROHS and WEEE Regulations.</p> <p>3) Traffic sign luminaires shall comply with BS 873-5 and meet the minimum requirements expressed in this Clause:</p> <p>(i) luminaires shall use low energy, high efficiency lamps with electronic control gear.</p> <p>(ii) traffic sign luminaires shall be manufactured from cast aluminium unless otherwise specified;</p> <p>(iii) the external finish shall be to BS4800 RAL7000. External sealing shall be to no less than IP54. The construction shall be suitable for use in all environments including locations directly adjacent to the sea at ferry terminals and in similar salt-laden locations;</p> <p>(iv) for the overhung illumination of a sign:</p> <p>(a) the mounting arrangement of the luminaire(s) shall incorporate a vandal and wind loading resistant anti-rotational support fixing capable of accommodating all commonly used post diameters;</p> <p>(b) the sign lighting luminaire(s) shall provide efficient illumination of the sign;</p> <p>(c) all luminaires shall include integral control gear which shall be mounted on a single readily removable tray; and</p> <p>(d) suitable arrangements must be incorporated to</p>

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Clause Number	Title
	<p style="text-align: center;">prevent un-necessary light spillage;</p> <ul style="list-style-type: none"> (v) for up-lighter illumination of a sign: <ul style="list-style-type: none"> (a) the mounting arrangement of the luminaire(s) shall incorporate a vandal and wind loading resistant anti-rotational support; (b) the sign lighting luminaire(s) shall provide efficient illumination of the sign; (c) all luminaires shall include integral control gear; and (d) suitable arrangements must be incorporated to prevent un-necessary light spillage; (vi) for internally illuminated 'light box' and electroluminescence signs, the signs shall conform to all applicable standards in relation to their use including background light intensity; (vii) access doors into lamp and control gear compartments on all luminaire types shall be hinged and tamperproof; (viii) the mean sign luminance shall be Category I of BS 873-5 and use high efficiency lamp(s); (ix) the impact strength shall be Category 1 of BS 873-5; and (x) sign lighting luminaires shall conform to the requirements of the appropriate sections of the ROHS and WEEE Regulations. <p>4) Illuminated Traffic Bollards shall generally comply with or exceed the requirements of this Clause and may be of either a rigid or flexible design. Furthermore these bollards shall conform to the following Sub-Clauses:</p> <ul style="list-style-type: none"> (i) all graphics shall be high profile 'moulded-in' with a minimum life for such graphics of 5 years; (ii) all bollard units shall be date coded; (iii) the bollard body shall be interchangeable with other industry standard base equipment in all important physical and electrical parameters; (iv) the access cover on the base unit shall be fitted with stainless steel hinges and locking mechanism. The base unit lens shall be manufactured from UV stabilised polycarbonate; (v) the base unit shall be cast aluminium construction with sealing to no less than IP67. The unit shall be suitable for use in all environments including directly adjacent to the sea at ferry terminals; (vi) the bollard base unit shall incorporate high efficient lamps compatible with the electronic control gear; and

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Clause Number	Title
	(vii) the bollard shall conform to the requirements of the appropriate sections of the ROHS and WEEE Regulations.
1409TS	<p>1 Photo-electric Control Units (PECUs)</p> <p>1.1 Delete Sub-Clauses 1, 2, 3 and 4.</p> <p>Insert the following:</p> <p>"1 Photo-electric control units (PECUs) shall comply with BS 5972 1980 and BS EN 60068 for vibration and certified to EN 50081-1 EMC Emissions and to EN 50082-1. The PECU shall incorporate synchronous switching technology and be of one-part construction.</p> <p>The PECUs shall:</p> <ul style="list-style-type: none"> (i) be protected against mains borne surges and spikes; (ii) unless otherwise agreed with the Overseeing Organisation, have NEMA type mounting sockets only; (iii) be of electronic type with a switching level of 70 lux with switching differential ratio of 1:0.5 negative. The photoelectric sensor shall have zero sensor shift over a five year period; (iv) have a power consumption of no more than 0.25 watts with a uniform operating temperature range of -20 degrees Celsius to +50 degrees Celsius; (v) where used to control contactors, be able to switch a continuously rectified circuit of less than 20 watts; (vi) date stamped and have a manufacturer's guarantee of at least 6 years; and (vii) be designed so that in the event of a fault occurring in the unit they cause the load to be switched 'on'. <p>2 PECUs shall:</p> <ul style="list-style-type: none"> (i) be secured as appropriate to the: <ul style="list-style-type: none"> (a) road lighting luminaire canopy; (b) top of pole located close to feeder pillar; (c) top of sign post; (d) internally illuminated sign housing; or (e) luminaire of externally illuminated sign; (ii) include a delay device to prevent the lamp being switched in response to transient changes in light conditions; (iii) be indelibly marked with the <ul style="list-style-type: none"> (a) manufacturer's identification mark;

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	<p>(b) model number; and</p> <p>(c) switch on level;</p> <p>(iv) be provided with a gasket or grommet to maintain the IP protection rating of the luminaire; and</p> <p>(v) be installed to the manufacturer's instructions.</p> <p>3 Single and multi-bracket lighting circuits shall be group switched under the control of the group PECU. Such control shall include provision for remotely switched or time switched lighting control."</p>
1412TS	<p>1 Ballasts</p> <p>1.1 Sub-Clause 1: Delete existing Sub-Clause 1 and replace with: "Ballasts and other lamp control gear, including LED lamp drivers shall be electronic and comply with Clause 1407. Ballasts shall comply with BS EN 61347-1, BS EN 61347-2-1, BS EN 61347-2-8, BS EN 61347-2-9 and BS EN 60921 or BS EN 60923 as appropriate and be tap selected to the specified operating voltage of the network. Lantern control gear shall be rated at 300 volts, thermally protected with super imposed pulse ignitor. Electronic ballasts and LED Driver circuits shall be capable of operating over a range of input voltages 210-250 Volts without any form of tap selection."</p>
1416TS	<p>1 Cut-outs, Fuse Holders, Fuses and Miniature Circuit Breakers (MCBs)</p> <p>1.1 Delete Sub-Clause 1, 2, 3, 4, 5, 6 and 7. Insert the following:</p> <ol style="list-style-type: none"> 1 Cut-outs, fuse holders and MCBs shall have moulded plastic drip-proof housing to IP34 or above. This requirement applies to the device when installed in a normal operational orientation and fully assembled. 2 Cut-outs shall be double pole and comply with BS7654. 3 Terminals shall be sufficient for the conductors. All terminals shall be clearly labelled to differentiate circuits and phases. 4 When fuses are intended to be used as isolating devices, no special tools shall be necessary to extract the fuse from its carrier to achieve disconnection. However some method of then securing the device in the disconnected (OFF) condition must be provided. To achieve full isolation the fuse carrier shall incorporate the means of neutral disconnection. 5 Fuse links shall comply with the requirements of BS EN 60269-1, BS 88-2, BS 646/BS 2950, or BS 88-3. They shall be of high rupture capacity (HRC) type and be of a rating as specified in Sub-Clause 14 below.

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	<p>6 Miniature circuit breakers shall be in accordance with BS EN 60898 and unless agreed with the Overseeing Organisation be the preferred method of circuit protection. Miniature circuit breakers shall be suitable for use on the specified operating voltage of the network at single or 3-phase as appropriate. Their short circuit current rating shall be no less than 10 kiloamps. The Company shall ensure by enquiry of the DNO that the prospective short circuit current rating, of the supply is no greater than 16 kiloamps.</p> <p>7 Thermal or magnetic overcurrent tripping devices shall be provided with a mechanism to ensure that the contact cannot be held closed against a fault. Circuits shall be designed such that devices are operated within the ratings specified by the manufacturer.</p> <p>8 Where MCBs are intended to be used as isolating devices, a 'lock off' facility shall be provided to allow the device to be secured in the disconnected (OFF) condition.</p> <p>9 All single phase road lighting cut-outs shall be double-pole ensuring both phase and neutral is broken by the removal of the fuse carrier. An earth terminal shall be provided within the cut-out enclosure. The continuity of the earth path will not be broken by the removal of the cut-out fuse carrier.</p> <p>10 The cut-out gland plates shall be an integral part of the cut-out and be capable of terminating XLPE / PVC SWA cables up to 25 square millimetres and have the capacity for looping in-out. The gland plate shall typically accommodate up to 3 No cables; however, additional armoured cable termination and cut-out capacity shall be provided at multi-headed columns, at columns where the group PECU is fitted and at locations where spur supplies are provided.</p> <p>11 At columns fitted with more than one luminaire, each luminaire shall be wired and fused separately, however all cut-out fuse carriers shall be arranged to be withdrawn as one. Where a PECU is fitted to any of the luminaires then the cut-out for that luminaire shall carry the fuse for the PECU and provide simultaneous isolation of both PECU and luminaire. Each cut-out fuse carrier shall be clearly marked indicating the luminaire or device that it protects.</p> <p>12 The design of the cut-out shall be such that it is possible to incorporate facilities, integral within the unit, to feed additional spur(s) to sundry equipment such as lit bollards and signs. The supply to each spur shall have its own dedicated circuit protection and be individually isolated by a separate fused cut-out. Spur supplies will be protected using a dedicated fuse carrier allowing the supply to be individually isolated. Where spurs are required for supplies to third parties then reference should also be made to Cl. 1401TS.</p>

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	<p>13 The design of the cut-out shall be such that when the fuse carrier / neutral link is removed no live parts are accessible i.e. have a minimum rating of IP2X. Any protective cover exposed by the removal of the fuse link shall be designed so it cannot be separated from the main housing without the use of a key or tool.</p> <p>14 Circuit protection on lamp circuits shall be provided by high rupturing capacity (HRC) fused links complying with BS 88 category of duty 300 AC 16 rating Q1 and shall be rated to suit the lamp circuit type.</p> <p>Typical fuse rating for High pressure sodium and Metal Halide lamp types are:</p> <table style="margin-left: 40px;"> <tr> <td>6 amps</td> <td>for</td> <td>70 – 150 watts</td> </tr> <tr> <td>10 amps</td> <td>for</td> <td>151 – 250 watts</td> </tr> <tr> <td>16 amps</td> <td>for</td> <td>251 – 400 watts”</td> </tr> </table>	6 amps	for	70 – 150 watts	10 amps	for	151 – 250 watts	16 amps	for	251 – 400 watts”
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16 amps	for	251 – 400 watts”								
1417TS	<p>1 Base Compartment Fixing Arrangements</p> <p>1.1 Sub-Clause 1.</p> <p>Delete whole Sub-Clause text and replace with:</p> <p>“Electrical equipment described in Clauses 1411 to 1416 installed within the base compartment of columns or posts shall be positioned and fixed in accordance with manufacturers’ instructions and secured with corrosion resistant fixing screws.”</p>									
1418TS	<p>1 Feeder Pillars</p> <p>1.1 Delete Sub-Clause 1, 2, 3, 4, 5, 6, 7, 8 and 9.</p> <p>Insert the following:</p> <p>1 Feeder pillars, forming part of a road lighting installation, are required to:</p> <ul style="list-style-type: none"> (i) house the DNO service connection facilities; (ii) provide the electrical distribution to individual circuits and their associated circuit protection; (iii) provide circuit energisation under the control PECUs or time-clocks. Where time-clocks are used these shall be housed within the feeder pillars. PECUs shall be mounted on an immediately adjacent column or post. <p>2 Feeder pillars shall comply with IP34 of BS EN 60529. They shall include a securely installed full sized backing board at least 15 millimetres thick manufactured from varnished marine plywood or other suitable non-hygroscopic material. Alternatively a purpose-designed equipment mounting system may be used. Cable entry shall be via the root only.</p>									

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	<p>3 The distribution MCB or fuse enclosures shall have sufficient spare capacity to accommodate at least one extra circuit. (e.g. 1 single phase spare way on a single phase distribution unit) and there shall be at least 25 per cent usable spare space on the backing board. All MCBs, fuses, isolators, switches, contactors, bus-bars and similar parts shall be clearly identified by correctly fitted permanent labels.</p> <p>4 The feeder pillar shall be fitted with a suitably rated single or 3-phase and neutral switch disconnecter / isolator and the circuit fused in accordance with BS7671 using fuses to BS 88 rated as appropriate for the consumer circuits.</p> <p>5 Feeder pillar distribution boards shall be provided with an external earth, be phase barriered, and correctly colour coded. They shall be fitted with the same number of live and neutral bus-bar terminals as there are outgoing circuits plus at least one spare way. The main earthing terminal in each feeder pillar shall be connected to earth in accordance with BS 7671 and BS 7430.</p> <p>6 Feeder pillars shall be mounted typically on a 150 millimetre thick foundation of ST2 concrete in compliance with Clause 2602. However, where special ground conditions exist the foundations shall be adjusted to accommodate such conditions. Foundations for pillars considered as 'passively safe' shall be constructed in accordance with all specific guidance for such pillars. Such pillars will typically have larger foundations than normally required.</p> <p>After completion of the cabling the feeder pillar base shall be filled to 25 millimetre below the door with pea gravel conforming with Table 2 of BS EN 12620, 4/14 aggregate with a grading category of GC90/15. Prior to the addition of pea gravel all duct ends entering the pillar shall be cut back no greater than 25 millimetre above the finished level of the infill. Under no circumstances shall sharp gravel be used. Prior to the addition of the pea gravel the duct ends shall be completely sealed with expanded foam.</p> <p>7 Lighting feeder pillars shall be used for the energising of the lighting equipment and associated electrical circuits only.</p> <p>8 Feeder pillars shall be constructed from stainless steel, hot dipped galvanised steel or aluminium to the required standard. The enclosure shall be adequately ventilated by a suitable method preventing the ingress of water, snow or foreign bodies.</p> <p>9 The feeder pillars shall carry a nameplate showing the manufacturers name or trade mark and the type designation or identification number of the product.</p> <p>10 Where a feeder pillar is erected on a grass verge, an area of hard standing of minimum size 900 x 600 millimetre shall be provided. The hard standing shall be set into the ground at a level such as to allow grass cutting to be readily undertaken.</p>

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	<p>11 Access to the external enclosure shall be by means of close fitting hinged door(s) opening to a full 180 degrees at the front. Hinges shall be of stainless steel construction or similar approved materials. Means shall be provided to secure the door(s) in the open condition during maintenance visits.</p> <p>12 The door frame shall be fitted with a heavy duty non-perishable gasket to provide a minimum rating of protection against ingress of foreign materials of IP54.</p> <p>13 The external pillar door locking shall be by means of tamperproof wedge type locks, with the actuator protected by plastic sealing plugs. 2 No sets of keys are to be provided per feeder pillar. The locks shall be fitted with triangular actuators operated by a single key. All hinges and locks shall be of stainless steel unless otherwise agreed with the Overseeing Organisation.</p> <p>14 Door locks on the wedge side should have a generous application of suitable inhibitor grease applied when installed to inhibit the effects of moisture and corrosion / rust.</p> <p>15 A durable warning sign indication 'Danger 400 Volts' or 'Danger 230 Volts' shall be fixed to the front of the feeder pillar door and the inner panel door where applicable to comply with the Health and Safety (Safety Signs & Signals) Regulations and the Electricity at Work Regulations. In compliance with these regulations these warning labels shall be triangular and no less than 75 millimetres wide.</p> <p>16 Circuit details, including details of the supply circuit shall be provided in each feeder pillar. The details / diagram shall be laminated or similarly protected from moisture and held in a purpose made pocket attached to the inner face of the pillar door. The electrical details must include a circuit schematic.</p> <p>17 All equipment fitted within the feeder pillars shall be securely fixed to the back board.</p> <p>18 All ducts leaving the root of the pillar shall extend beyond the immediate concrete foundation of the pillar. A separate black duct shall be provided for the supply authority's incoming cable.</p> <p>19 The main earth terminal size M8 x 32 millimetre long shall be provided at a readily accessible location within the cabinet section of the pillar. The earth terminal shall be supplied complete with one full nut, two half nuts and two washers all manufactured in material compatible with the pillar material.</p> <p>20 The bonding conductor cross-sectional area for all lighting feeder pillars shall be not less than 10mm sq. Tri-rated.</p> <p>21 The inner enclosure should contain the following equipment;</p> <p>(i) A single phase double pole / 3-phase & neutral isolator to BS5419;</p>

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	<ul style="list-style-type: none"> (ii) A single phase single pole / 3-phase contactor rated at BS 5424; (iii) A push button operated test switch accessible from within the outer enclosure and providing a timed over-ride of the photocell; (iv) A DIN rail fitted with BS EN 60898 miniature circuit breakers / Modular fuse holders fitted with fuses to BS 88-2.1. The control circuit fuse shall normally be rated at 6 amps with any spare output circuit fuses rated at 20 amps, unless agreed with the Overseeing Organisation; and (v) A neutral rail and an earth rail to accept the installed wiring with at least one spare termination provided on each rail. <p>Note: within the inner enclosure all electrical apparatus shall be shrouded to a minimum of IP2X including the neutral rail and all neutral connections / terminals."</p>
1419TS	<p>1 Wiring</p> <p>1.1 Delete Sub-Clause 1, 2, 3, 4, 5, 6, 7, 8 and 9.</p> <p>Replace with the following:</p> <ul style="list-style-type: none"> 1 All wiring and installation of components within the column, post, lit sign unit, bollard or pillar shall conform to the requirements of the Agreement and be as described within this Clause. 2 The wiring between the luminaire and the components in the base of the column or sign unit shall be PVC insulated 'arctic grade', 3-core 2.5mm sq. flexible cable with blue sheath. This cable shall generally be to BS6500 and be suitable for use over the temperature range -20 to +70 degrees Celsius. The circuit protective conductor within this cable shall connect the earth terminal on the luminaire to the main earth terminal associated with the column cut-out in the base compartment. <p>NOTE: Under no circumstances shall domestic grade flat 'Twin and earth' cable be used for any purpose within lighting installations.</p> <ul style="list-style-type: none"> 3 All wiring / cables shall be correctly colour coded throughout their length and labelled appropriately at all points of termination. <p>NOTE : The Company shall comply with BS7671:2008 with regard to harmonized wiring colours and the warning notices required should 'old' and 'harmonized' wiring colours form part of a single installation.</p> <ul style="list-style-type: none"> 4 Unsupported lengths of cable shall be kept to a minimum and shall not be allowed to come into contact with components by their freedom of movement. Where there is more than one cable they shall be secured together at one metre intervals throughout the unsupported length. Vertical cables within posts or columns shall

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	<p>be adequately anchored and supported along their length and at the top of the cable run. Correctly selected and fitted plastic glands shall protect and seal all cable penetrations.</p> <p>5 Wiring shall, wherever possible, be housed inside columns, wall brackets and posts or stiffening members. Where it is external it shall be secured using appropriate methods and in accordance with BS7671. Connections between conduit and sign housings, switchboxes and other components shall be sealed to no less than IP66. Internal surfaces in contact with such cables shall be smooth. Only plastic conduit, rigid or flexible, shall be used.</p> <p>6 All unused cores shall be cut to a suitable length for safe, unobtrusive stowage and the ends sealed and insulated.</p> <p>7 Under no circumstances shall wiring, cables and cable tails come into direct contact with the inner surfaces of access doors or be located adjacent to hinges, sharp metal edges, fixing screws or similar items. Installers shall, at all times ensure that conductor insulation is protected from being penetrated, cut, abraded, or crushed or in any other way physically damaged as a result of contact with such items."</p>
1420TS	<p>1 Earthing</p> <p>1.1 Sub-Clause 1</p> <p>Delete whole text and replace with:</p> <p>"Circuit protective and equipotential bonding conductors shall be installed in accordance with BS7671 and BS7430 and shall be green / yellow PVC or XLPE insulated or sleeved. Where bolted connections are required, these shall be terminated in accordance with manufacturers' instructions in correctly sized purpose made lugs. Such connections shall be made using brass or stainless steel or other compatible non-ferrous nuts, bolts and washers."</p> <p>1.2 Sub-Clause 3</p> <p>Delete whole text and replace with:</p> <p>1 "A separate circuit bonding conductor not less than 10mm sq. cross-sectional area shall connect the earth terminal of the luminaire to the adjacent earth stud of the column / bracket."</p> <p>1.3 Sub-Clause 4</p> <p>Delete whole text and replace with:</p> <p>"All extraneous conductive parts, as described in BS 7671, and including doors to feeder pillars, lighting columns and lit sign units, shall be bonded to the main earth terminal using an equipotential bonding conductor of 10mm sq. cross-sectional area. When the earth conductor forms part of a 3-core cable the equipotential bonding conductor can be</p>

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	<p>reduced to a size equal to the other cores but not less than 2.5mm sq. cross-sectional area. Earthing of lighting equipment in general and the design and installation of earth electrodes in particular shall all be in accordance with BS7674 and BS7430."</p> <p>Insert the following additional Sub-Clauses:</p> <p>6 Where lighting pillars, columns, signs are adjacent to the same or separately supplied electrical equipment i.e. equipment fed from different electrical supply pillar and these are located within three metres of each other, then they shall be bonded together in accordance with BS7671 Reg. 411.3.1. However in accordance with BS7671 Reg. 559.10.3.1(v) bonding is not required to adjacent metallic structures such as safety fences, handrails and similar however where lightning protection is to be provided the bonding shall satisfy BS EN 62305.</p> <p>7 It should also be also noted that:</p> <p>(i) no lighting infrastructure equipment shall be located within 5 metres of metallic conductive parts forming part of a separately supplied electrical equipment, such as Traffic Scotland and similar equipment. Bonding between the metal parts of such equipment is specifically excluded by this note in accordance with BS7671 Reg. 542.1.3-8.</p> <p>(ii) where an electrical supply is required to permanently power third party equipment located at the same site then this shall be accommodated through the provision of a separate feeder pillar housing, with its own electricity suppliers cut-out. If this second housing is located within three metres of a road lighting pillar then the 2 pillars shall be bonded together in accordance with BS7671 Reg. 411.3.1.</p> <p>8 The main earthing conductor within the feeder pillar shall be of copper and be of a size no less than the supplier's phase conductor. Where the supplier's phase conductor is greater than 16mm sq. the main earth conductor is 16mm sq.. The main earth conductor shall connect the main earthing terminal to the incoming supply earth.</p> <p>NOTE: Under no circumstances shall fortuitous contact via mechanical fixings be relied upon as a conductive path in place of a specific, correctly selected, rated, terminated and installed earthing conductor.</p> <p>Crimp connections for earth conductors shall meet the performance criteria suggested in BS 7609 using a matching tool, die set and connector i.e. the first and second barrels shall crimp the conductor, the third set shall crimp the insulating, and facilitating stress relief and allowing for increased movement of the conductor. All bolted earth connection shall be made between two plain washers manufactured using material compatible with</p>

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	<p>the equipment metalwork.</p> <p>9 Earth electrodes shall be fitted to all lighting electrical installations both adjacent to the electricity supply pillar and at the end of each circuit. The acceptable resistance to earth of these electrodes shall be selected in accordance with the requirements of BS7671 and BS7430. Unless lightning protection is required typical values are likely to be no greater than 20 ohm for each individual electrode used as part of a TN-S circuit. For circuits energised by TN-C-S type electricity supply the typical electrode resistance to earth shall be as specified in Table 9.3 of BS7671 Guidance Note 5 where the circuit wattage sets the maximum resistance allowed. Lightning protection typically requires electrode resistances below 10 ohms. For the avoidance of doubt the electrode resistance values referred to above are provided for guidance only and must be confirmed by the designer before use.</p> <p>10 Where there are exposed metal casings of capacitors / ignitors these shall be directly connected to earth. Reliance on the earthing of security clips shall not be acceptable. All bonding conductors shall terminate at a common point."</p>
1421TS	<p>1 Underground and Ducted Cable</p> <p>1.1 Sub-Clause 1: Delete "Contractor" and replace with "Company". Insert "purple" prior to "XLPE" in the first sentence.</p> <p>1.2 Sub-Clause 2: Insert "purple" following "self coloured" in first sentence.</p> <p>1.3 Sub-Clause 3: Delete whole Sub-Clause text and replace with: "Cable covers for protection of underground cables shall comply with BS 2484 and shall be installed as described in Appendix 14/4. When cable covers are installed, marker tapes are not required."</p> <p>1.4 Sub-Clause 4: Delete "described in Appendix 14/4" from the first sentence.</p> <p>1.5 Sub-Clause 5: Delete whole Sub-Clause text and replace with: "Cables shall be laid without sharp bends and kinks. If required, additional protection and support shall be provided as required."</p> <p>1.6 Sub-Clause 8: Delete whole Sub-Clause text and replace with:</p>

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	<p>"Electrical supply cables shall not be installed within 500mm of signal or communication cables or within 300mm of HV cables."</p>
1.7	<p>Sub-Clause 9: Insert "on a rising thermometer" following "0°C" in the first sentence.</p>
1.8	<p>Sub-Clause 11: Delete "as described in Appendix 14/4" from the last sentence.</p>
1.9	<p>Sub-Clause 14. Delete whole Sub-Clause text and replace with: "Metallic trace marker tape shall be laid above the duct or cable to permit cable detection by electronic route tracing equipment. This shall be purple, self-coloured PVC or polythene plastic tape for cable marking shall be laid approximately 250mm above any electrical supply/distribution cable. The tape shall be not less than 0.1mm thick and 150mm wide with the wording "Street Lighting Cables Below" printed in black along the full length so as to occupy not less than 75% of its available length and occurring at least at 1m intervals. Where several cables are laid in one trench, only one line of marker tape need be installed.</p>
1.10	<p>Sub-Clause 15: Delete "Contractor" and replace with "Company" in the first sentence.</p>
1.11	<p>Sub-Clause 16: Delete "Contractor" and replace with "Company" in the second sentence.</p>
1.12	<p>Sub-Clause 17: Delete "Contractor" and replace with "Company" in the first sentence.</p>
1.13	<p>Add Sub-Clauses 20 to 29:</p>
"20.	<p>Cable laid in troughs shall not be used.</p>
21.	<p>Only steel wire armour cabling shall be used underground for lighting supply distribution. All cabling shall be purple in colour and installed within continuous purple self-coloured ducts in accordance with Cl. 1421.15. Straight or split-concentric cable shall not be used as part of any lighting installation. Direct buried cables shall not be installed."</p>

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Clause Number	Title
22.	Under no circumstances shall cables enter a column, post, bollard or pillar base without the protection of ducting typically 60mm diameter. Such ducts, shall continue into the base and terminate at a suitable height to allow a seal to be formed using expanded foam sealant or similar.
23	When laid in carriageways, road lighting service ducts shall be twin walled high density polypropylene with smooth bore of 150mm in internal diameter to BS EN 50086-2-4, purple in colour and printed "STREET LIGHTING" at intervals of not more than one metre lettering throughout out its length. A minimum cover of 450mm shall be provided.
24	Cable duct laid under carriageways shall consist of 2 No. 150mm ducts and having a minimum cover of 750mm and shall be protected by concrete surround of mix ST2 concrete or similar as directed by the Overseeing Organisation. The ducts shall be twin walled high density polypropylene with smooth bore of 150mm in internal diameter to BS EN 50086-2-4, purple in colour and printed "STREET LIGHTING" at intervals of not more than one metre lettering throughout out its length and shall terminate in an underground draw-in chamber at each side of the carriageway.
25	When laid in verges and footways, road lighting service ducts shall be twin walled high density polypropylene with smooth bore of 100mm in internal diameter to BS EN 50086-2-4, purple in colour and printed "STREET LIGHTING" at intervals of not more than one metre lettering throughout out its length. A minimum cover of 650mm shall be provided.
26	Ducts shall be impervious to water, capable of being laid in temperature down to -10 degrees C and be sufficiently flexible to follow undulation in a trench bottom.
27	At least 75mm clearance shall be given between the cable duct and the sides of the trench and between ducts sharing the same trench.
28	At least 150mm clearance shall be given between cable ducts and services pipes belonging to other Undertakers.
29	At least 500 mm shall be provided between lighting electrical cable

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Clause Number	Title
	ducts and communications cable ducts."
1422TS	<p>1 Cable Joints</p> <p>1.1 Sub-Clause 1</p> <p>Delete whole Sub-Clause text and replace with:</p> <p>"Cable joints, other than for short term remedial work, shall not be permitted for underground cables supplying road lighting. Lighting installations shall be designed to employ a loop in - out arrangement without joints. When joints are installed these shall be made using jointing kits complying with BS 6910-1 which shall be installed in compliance with BS6910-2. The Company shall repair damaged cables by replacing the full length of the damaged cable."</p> <p>1.2 Sub-Clause 2</p> <p>Delete the following text:</p> <p>"Prior to any cable laying, the Company shall provide evidence to the Overseeing Organisation of the jointer's competence in the use of the adopted cable joint kit."</p> <p>And replace with:</p> <p>"Approval is required from the Overseeing Organisation for any remedial jointing during new work."</p> <p>1.3 Sub-Clause 3</p> <p>Delete "in Appendix 14/4" from the first sentence.</p> <p>1.4 Sub-Clause 6</p> <p>Delete the following text:</p> <p>"Where described in Appendix 14/4,"</p>
1423TS	<p>1 Armoured Cable Terminations</p> <p>1.1 Delete Sub-Clause 1, 2, 3 and 4.</p> <p>Delete whole Sub-Clause text and replace with:</p> <ol style="list-style-type: none"> 1 Cables shall be individually terminated and existing cables re-terminated, and secured at switches, cut-outs and other electrical apparatus by means of a compression type gland and, where not provided as part of the apparatus, a gland plate compatible with the apparatus material and complying with 'BS 6121-1, BS EN 50262'. 2 Earth connection to the cable armouring shall be made to the gland plate. At least one non-ferrous earthing terminal compatible with the equipment shall be provided on the gland plate.

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Clause Number	Title
	<p>3 PVC sleeves shall be of the same colour as the PVC over sheath. All of the conductors within the cable shall be terminated with cable lugs.</p> <p>4 Cable glands shall be manufactured in brass to BS 2874.</p>
1424TS	<p>1 Inspection and Testing to be Carried Out by the Company</p> <p>1.1 Delete Sub-Clause 1, 2, 3, 4, 5, 6 and 7.</p> <p>Insert the following text:</p> <p>1 Every Lighting Unit and Network, on completion and before being energised, shall be inspected and tested to verify that the requirements of BS 7671 have been met. The method of testing shall be such that no danger to persons or property or damage to equipment can occur even if the circuit tested is defective.</p> <p>2 Unless otherwise agreed by the Overseeing Organisation, three months prior to commencing testing the Company shall submit an inspection and testing method statement, risk assessments, and the extent and limitations statement, forming part of the BS7671 Electrical Installation Certificate initial verification. The extent and limitations shall include:</p> <p>(i) a description of the electrical aspects of the lighting units including the Class of the luminaires to be used i.e. Class I or Class II together a statement of the testing regime to be adopted for these items;</p> <p>(ii) the extent of the network fixed wiring covered by BS7671 including the point of termination within the lighting units and the point of supply (origin) for the installation; and</p> <p>(iii) any specific issues relating to the inspection and testing of the particular electrical installation.</p> <p>The method statement shall detail all tests and items of inspection to be undertaken, the sequence of tests, how each test will be undertaken and what records will be recorded and what values for each test will prove compliance with BS7671. The method statement shall include the lighting installation design drawings and schematics. The schematic shall be suitable for inclusion within the pillars and cabinets forming part of the circuit described. Such included schematics shall be laminated or otherwise protected against damage by moisture or handling during use.</p> <p>The Company shall ensure that all required aspects of the electrical installation are sufficiently and correctly inspected and tested as required by BS7671 Part 6 and as further described in IEE Guidance Note 3 titled 'Inspection and Testing'. Without reduction to the importance of any other aspect of BS7671 Inspection and Testing the attention of persons undertaking this work is particularly drawn to the following:</p> <p>(i) a cable over-sheath insulation test shall be carried out prior</p>

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Clause Number	Title
	<p>to any other testing of the network cables;</p> <ul style="list-style-type: none"> (ii) continuity testing of protective conductors within the Network circuits, including main and supplementary equipotential bonding conductors, shall be carried out and the values of $R1+R2$ with respect to the circuit origin recorded. These measurements shall be carried out in a way that excludes any 'parallel paths'; (iii) the resistance of all earth electrodes shall be measured and recorded; (iv) for Periodic Testing Class I luminaires a 500 volt insulation test shall be carried out between the phase and neutral cores connected together relative to the earth core and metalwork of the lighting unit. The initial commissioning testing being carried out on each individual core. Insulation resistance shall not be less than 1 megaohm in either case; (v) for Periodic Testing Class II luminaires a 500 volt insulation test shall be carried out between the phase and neutral cores connected together relative to the metalwork of the lighting unit. The initial commissioning testing being carried out on each individual core. Insulation resistance shall not be less than 2 megaohm in either case; (vi) For the Periodic Testing of Network cables a 500 volt insulation test shall be carried out, with the phase and neutral cores connected together, relative to the earth core and the metalwork of the lighting column. The initial commissioning and testing being carried out on each individual core. Insulation shall not be less than 6 megaohm regardless of cable length. This test shall be carried out with cables in place and connected to the supply side of the lighting units cut-outs. During the testing all luminaires shall be isolated on the consumer side of the cut-out; (vii) The Company shall ensure that a voltage reading is taken at each feeder pillar and at the terminals of the last current-using equipment on each circuit, with all equipment energised. Where a spur is created from the main circuit to energise a bollard, sign or similar the voltage at all such spurs shall also be recorded. The voltage measured at the last current consuming piece of equipment on a given circuit shall be below 223.1 volts (3 per cent of 230 volts; BS7671:2008) at full load; (viii) The Company shall record the earth fault loop impedance at the suppliers cut-out at every lighting unit with all earth conductors and earth electrodes in place in accordance with Guidance Note 3 para. 2.7.14. Values of Z_s measured for any circuit shall not exceed those given in BS7671 Tables 41.2 and 41.3 for 0.4 second disconnection; and

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Clause Number	Title
	<p>(ix) The Company shall ensure that inspection and testing undertaken shall be sufficient to fulfil the requirements of the Electricity at Work Regulations 1989; Regulation 4(1) and other relevant Legislation.</p> <p>3 On conclusion of the inspection and testing, submission of the results to the Overseeing Organisation shall take place within 7 days of the completion of each circuit inspection and testing. If, in the opinion of the Overseeing Organisation, the inspection and testing is not considered adequate or the installation is not considered correct then all such necessary remedial work and repeated inspection and testing shall be undertaken by the Company and all corrected results submitted to the Overseeing Organisation.</p> <p>4 The cable sheath insulation test shall be carried out using an insulation tester. The insulation resistance test of 1000 volts, direct current, shall be applied and maintained for not less than one minute between the continuous cable armouring or earth conductor and the general mass of earth. The measured insulation resistance shall not fall below 1.0 megaohm for the full duration of the test. The cable sheath insulation test shall be carried out after the cable has been laid and the trench back-filled, but before jointing has taken place.</p> <p>5 The Company shall provide and maintain an installation, inspection and testing programme. The programme shall be provided to the Overseeing Organisation at least 14 days prior to any installation work being undertaken and shall be updated and provided to the Overseeing Organisation when the programme changes from that previously provided to the Overseeing Organisation. The programme shall detail duct laying, cable pulling, column erection, inspection and testing. The programme will include dates when records will be provided.</p> <p>6 The Company shall furnish the Overseeing Organisation with two copies of a certificate verifying compliance with BS 7671 upon satisfactory completion of the inspection and tests. The layout of the BS7671 Certificate shall conform to the sample Certificates as provided in the LDS8005 A.2 InspTest - Electrical Inspection and Testing of Lighting and associated Electrical Assets and Installations with Model Forms. The separate certificate covering the testing of the luminaires and similar items considered outside of the scope of BS7671 shall also be submitted.</p> <p>7 The value of Ze provided by the electricity supplier at the electrical origin shall be no greater than 0.35 ohm for TN-C-S supplies and 0.8 ohm for TN-S supplies. The Overseeing Organisation shall not accept values that exceed these Ze maximum values. The Company shall ensure the Ze values are achieved by the DNO prior to acceptance of the supply on behalf of the Overseeing Organisation.</p>

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Clause Number	Title
	<p>8 The Company shall ensure that all test instruments have been calibrated and adjusted in accordance with BS EN ISO 9001 and come complete with calibration certificates to verify that BS EN ISO 9001 has been complied with.</p>
1501A	<p>1 Introduction</p> <p>1.1 Trunk Road Communications for the Scottish Trunk Road Network shall be referred to as Traffic Scotland Equipment. The Traffic Scotland Equipment is provided to support the provision of Traffic Scotland service and forms part of the Scottish Minister's Intelligent Transport System. All work relating to the design provision, uplifting, diversion, relocation, construction, installation, connection, testing, commissioning, integration, documentation and handover of Traffic Scotland Equipment shall comply with this Series. This Series supersedes all previously published versions of this Specification Series. For the purposes of this Series unless otherwise described in the Agreement the word "provide" or "provision" means design, uplift, divert, relocate, construct, install, connect, test, commission, integrate, document and handover to maintenance and operations.</p> <p>1.2 This document serves as the outline specification for the provision of Traffic Scotland Equipment which shall typically consist inter alia of the following elements :</p> <ul style="list-style-type: none"> (a) ducting and chambers and cable management systems; (b) cables and all cable fittings; (c) cabinets and all ancillary items; (d) Emergency Roadside Telephones ("ERT"); (e) Closed Circuit Television ("CCTV") cameras; (f) National Traffic Data Service (NDS) detection equipment – 3 classification levels; (g) NDS vehicle detection – EuroVI classification levels; (h) Variable Message Signs ("VMS"); (i) Lane and Speed Control Signalling; (j) Motorway Access Control ("MAC"); (k) Journey Time ("JT") equipment; (l) Ramp Metering ("RM"); (m) not used; (n) not used; (o) enforcement systems; (p) Weigh-in-Motion ("WIM") systems;

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Clause Number	Title
	<ul style="list-style-type: none"> (q) communications infrastructure; (r) mains power supply and distribution infrastructure; (s) Instation equipment; (t) hard landscaping; (u) transmission stations; (v) structural infrastructure on which Traffic Scotland equipment is mounted on.
1.3	<p>The Overseeing Organisation is Transport Scotland, an agency of the Scottish Government. The representative of the Overseeing Organisation is the Traffic Scotland Manager who is responsible for all aspects of the Traffic Scotland Equipment. Contact details for the Traffic Scotland Manager are provided in the Schedule 4 Part 2. The Contracting Authority is acting on the behalf of the Overseeing Organisation in respect of all O&M Works Requirements detailed in Schedule 4 Part 2.</p>
1.4	<p>The Traffic Scotland Equipment and system are unique and differ in many respects from other driver information and control systems operating within the UK such as those operated by the Highways Agency. The Company shall ensure that all parties working on any Traffic Scotland element of the Agreement take cognisance of the differences as expressed in this Series 1500 and other relevant documents.</p>
1.5	<p>This Series 1500 is applicable to all work undertaken under any Agreement that includes Traffic Scotland Equipment and structural infrastructure on which Traffic Scotland Equipment is mounted.</p>
1.6	<p>Roadside verges on or into which Traffic Scotland infrastructure or equipment is to be provided shall be of an adequate width and topology acceptable to Traffic Scotland. The Traffic Scotland roadside sites shall be of suitable for future maintenance activities and if required access by ERT user and shall either be finished horizontal or be of an appropriate minor single gradient.</p>
1.7	<p>The design and construction of any works adjacent to a Traffic Scotland Equipment location shall be such as to adequately route surface water away from the Traffic Scotland Equipment.</p>
1.8	<p>The design of safety fences, barriers and works directly adjacent to Traffic Scotland Equipment shall ensure that such works are achievable and are undertaken without the adjacent Traffic Scotland Equipment being damaged or the service provided by that Traffic Scotland Equipment being adversely affected.</p>
1.9	<p>There are requirements for all Traffic Scotland Equipment to be located and suitably protected from collision and either vehicle restraint systems or passively safe infrastructure shall be provided in accordance with all relevant requirements and specifications relating to vehicle restraint systems or passively safe equipment</p>

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Clause Number	Title
1502A	<p>1 General Requirements.</p> <p>1.1 The Company shall carry out all such work as required by the Agreement in such a way as to comply with this 1500 Series and the O&M Works Requirements.</p> <p>1.2 The NDX drawings are typical/none site specific representing the Overseeing Organisation's preferred arrangements. The Company is required to develop a design based on the principles laid down in these drawings.</p> <p>1.3 Traffic Scotland Equipment that is issued by the Overseeing Organisation is referred to as Transport Scotland Issued Equipment in this Series 1500. Transport Scotland Issued Equipment is listed in the O&M Works Requirements. The Company, unless otherwise described in the O&M Works Requirements, shall be responsible for the collection and loading of Transport Scotland Issued Equipment from the Overseeing Organisation's stores. The general location of the Overseeing Organisation's stores is given in the O&M Works Requirements. The Company shall be responsible for all effort associated with the uplifting of Transport Scotland Issued Equipment.</p> <p>1.4 The Company shall be responsible for the management, maintenance, safe handling and safe keeping of all Traffic Scotland Equipment whether supplied by the Company or supplied as Transport Scotland Issued Equipment from the point in time that the equipment is uplifted by the Company from the Traffic Scotland Service Nominated TSIE Store or delivered by the Contracting Authority to the Company's TSE Assembly Point, until the Taking Over Certificate is issued. Where Traffic Scotland Equipment is not being directly installed following it coming into the Company's possession, the Company shall store all equipment within a secure, safe, pest proof, dry ambient temperature warehouse environment. At the time of Transport Scotland Issued Equipment uplift the Overseeing Organisation shall provide a record stating that the Transport Scotland Issued Equipment is operationally compatible with the O&M Works Requirements Traffic Scotland Equipment. The Company shall prepare and issue a report and method statements detailing proposals associated with the management, maintenance and safe keeping of all Traffic Scotland Equipment.</p> <p>1.5 The Company shall provide a written request detailing what Transport Scotland Issued Equipment is required, its type, and configuration, required date for delivery to or uplift by the Company. All Transport Scotland Issued Equipment shall be uplifted in accordance with the arrangements agreed with the Traffic Scotland Manager and the organisation responsible for the Overseeing Organisation's stores at the times and in the manner described in the O&M Works Requirements. The Company shall adjust the requested uplift time as reasonably requested by the organisation responsible for the Overseeing Organisation's stores. The Company shall retain a record of all documentation associated with requesting and uplifting Transport Scotland Issued Equipment as described in the O&M Works</p>

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	<p>Requirements and such records shall form part of the records and documentation in compliance with Clauses 1504SR and 1540SR.</p> <p>1.6 Unless otherwise stated in the O&M Works Information, the Company shall be responsible for providing written notice within 24 hours and documented evidence within three days, of any defects or damage to equipment received or uplifted from the Overseeing Organisation's store.</p> <p>1.7 The Company shall be responsible for undertaking all works associated with repairing and replacing any Traffic Scotland Equipment damaged or missing after purchase by the Company or uplifted from the Overseeing Organisation's stores. In compliance with the Agreement the Company shall be responsible for the Company's and Overseeing Organisation's costs associated with repairing and replacing any Traffic Scotland Equipment damaged or missing after purchase by the Company or uplifted from the Overseeing Organisation's stores. The period for which the Company shall be responsible and all associated costs for replacement and repairing of Traffic Scotland Equipment shall be in compliance with the Agreement.</p> <p>1.8 Prior to commencing any site work the Company shall supply to the Overseeing Organisation written information and confirmation of compliance with the Agreement for all Company supplied Traffic Scotland Equipment and Traffic Scotland related materials that will be incorporated in the O&M Works. This information shall include the following details:</p> <ul style="list-style-type: none"> (i) Detail of the manufacturer; (ii) The specification, safety regulations and statutory requirements the equipment is compliant with; (iii) The manufacturers' product number; (iv) A specification sheet; (v) Transportation, handling and storage requirements; (vi) Installation instructions; (vii) Safety information for installation and operation; (viii) Maintenance requirements; (ix) Operational Instructions; and (x) De-commissioning information. <p>1.9 The Company shall provide all self certification, production acceptance testing and factory testing documentation and test results for each item of active/operational Traffic Scotland Equipment that the Company has to provide in accordance with the O&M Works Requirements. The testing undertaken shall be no less than that detailed in the O&M Works Requirements.</p> <p>1.10 In order to allow time for the integration, testing and commissioning of the Traffic Scotland Equipment, the Company shall programme the</p>

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	<p>O&M Works or sections thereof so that the Traffic Scotland Equipment is available for integration, testing and commissioning for a period of time before the O&M Works or sections thereof is open to the road user and such period of time shall be in compliance with the testing requirements highlighted within the O&M Works Requirements.</p> <p>1.11 The Company shall provide information, access and appropriate facilities for and to the Electricity Supply Company and communication suppliers as required by them to fulfil their obligations to undertake service connections, disconnections, repairs and reconnections, in compliance with the Agreement. The Company shall provide information, access and facilities for and to the Contracting Authority and other Traffic Scotland Service providers as required by them to fulfil their appropriate obligations associated with the O&M Works in compliance with the Agreement. The Company shall provide site supervision resources at all times.</p> <p>1.12 The Company shall provide all drawings, documentation and certification in compliance with the Agreement</p> <p>1.13 The Company shall only employ personnel, sub-contractors and consultants qualified and experienced in the provision of Intelligent Transport Systems and associated Internet Protocol (IP) communications systems. The Company shall provide the Overseeing Organisation with full details of the qualifications and experience of all personnel, sub-Contractors and consultants whom he proposes to employ. Such details shall be provided in writing, 56 days prior to the commencement of any Traffic Scotland Equipment work or at any earlier date as required to comply with the O&M Works Requirements.</p> <p>1.14 The Company shall be responsible for the appropriate disposal of all waste, existing equipment and materials, in compliance with TR1100, the WEEE Regulations and any additional obligations required for compliance with the O&M Works Requirements. The Company shall maximise recycling of all forms of waste arising from existing equipment materials and shall detail such recycling measures in the Project Environmental Plan.</p> <p>1.15 The Company shall comply with all energy generation requirements as detailed in the O&M Works Requirements.</p> <p>1.16 Unless stated otherwise in the Agreement, the Company shall prepare specific method statements for all work to be undertaken under the Agreement and provide such method statements to the Overseeing Organisation for comment at least 28 days prior to the specific type of work commencing that the method statement refers to.</p>
1503A	<p>1 Materials, Equipment and Workmanship</p> <p>1.1 The Company's Electrical workmanship, materials and equipment supplied shall comply with current BS 7671 Requirements for Electrical Installations (IEE Wiring Regulations), the Electricity at Work</p>

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	<p>Regulations and the Electricity Safety, Quality and Continuity Regulations (ESQCR).</p> <p>1.2 Unless otherwise described in the O&M Works Requirements, Traffic Scotland Equipment shall not share any electricity supply with any other equipment.</p> <p>1.3 All Traffic Scotland Equipment provided by the Company shall comply with TR1100, and subsequent Scottish amendments to TR1100 and shall be fitted with such mounting, support and access arrangements to allow for compliant installation, maintenance and operation within the Traffic Scotland Equipment cabinet space or on post, mast, bracket or gantry as made available by the Overseeing Organisation or Company.</p> <p>1.4 The Company shall take full account of future maintenance requirements of all Traffic Scotland Equipment to be undertaken by the Contracting Authority. When taking account of future maintenance the Company shall comply with the requirements of Construction (Design and Management) Regulations 2007, or subsequent revisions, and the need for the Overseeing Organisation to maintain journey time reliability through minimising traffic management and meet all specific objectives of the Traffic Scotland Service as described in the O&M Works Requirements.</p> <p>1.5 The minimum general technical and Quality Control requirements for work carried out on the Traffic Scotland Equipment shall be as those set out in the document TR1100 and subsequent Scottish amendments to TR1100 and within the Company's O&M Works Quality Plan and method statements. The method statements shall ensure outputs are delivered that are in compliance with this Series 1500 and the O&M Works Requirements. The Company's O&M Works Quality Plan shall include reference to a recognised and current workmanship standards document and the Company shall comply with such workmanship standards and the Company's method statements.</p> <p>1.6 A listing of Standard Drawings and other Specifications to be supplied to the Company and used for this Agreement is given in Appendix 0/4 of this Schedule 4 Part 6. The Contracting Authority details all Agreement specific drawings and documents applicable to this Agreement.</p>
1504A	<p>1 Site Records</p> <p>1.1 The Company shall keep a daily record in duplicate in a clear and legible form of all work carried out for Traffic Scotland Equipment as it proceeds. One copy of the daily records shall be kept available on site for inspection by the Overseeing Organisation during the Agreement and shall form part of the overall documentation package as detailed in the O&M Works Requirements to be handed to the Overseeing Organisation for record purposes. All design phase records and design information shall be kept available on site for inspection by the Overseeing Organisation during the Agreement and shall form part of the documentation as detailed in the O&M Works Requirements to be handed to the Contracting Authority for record purposes. As a minimum</p>

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	<p>the following information shall be recorded by the Company:</p> <ul style="list-style-type: none"> (i) Duct locations including depth, offset from carriageway edge, number and size of ducts and duct material, duct joints/seals used, ducted network layout, infill material used, record sheets showing dates and results of mandrelling and pressure testing; (ii) Chamber locations including type, depth, incoming and outgoing ducts, type of chamber cover, and duct plugs or duct sealing method used; (iii) Cabinet locations, configuration and type; (iv) Cabinet and cable identifiers; (v) Route, length and type and cable drum number of each individual length of installed cable; (vi) Position of Electricity Supplier supply points together with Electricity Supplier name and Electricity Supplier provided information as detailed in NDS9551 "Requirements for Electricity Supply to Traffic Scotland and Associated Equipment Sites"; (vii) Position of any private communications interfaces together with private wire supplier name, type identifying no, circuits records, capacity and capability; (viii) Within an electronic spreadsheet all Traffic Scotland Equipment within the Site shall be logged and contain the Traffic Scotland Operational ID, the Ordinance Survey grid reference of all Traffic Scotland Equipment, configuration, addressing and serial numbers, site reference/Operational ID and Traffic Scotland marker post reference and cross sectional position with kerbline offsets of all installed Traffic Scotland equipment including all equipment within cabinets, racks and buildings. This will form part of an overall Traffic Scotland Equipment Inventory. The means of establishing the identifier for Traffic Scotland Equipment is described in the O&M Works Requirements. Both the Company's identification method and final chainage/Traffic Scotland Operational ID shall be provided within the same document; (ix) Details regarding the removal only and removal and re-siting of existing Traffic Scotland Equipment. These records shall detail the original location, the date it was made disused and the method of disposal of any Traffic Scotland Equipment; (x) Details of all works undertaken in the Traffic Scotland Control Centre (TSCC), transmission stations and any other location where Traffic Scotland Equipment is provided so that the necessary as built records can be prepared and in compliance with the O&M Works Requirements; (xi) Any additional requirements detailed in the O&M Works Requirements; (xii) The Company shall maintain an up to date record of all equipment

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	<p>and cable provided by the Overseeing Organisation as detailed in the Contracting Authority;</p> <p>(xiii) At a minimum, in an electronic spreadsheet, a record of requests for, uplift, storage and installation, integration, commissioning, testing and handover of Transport Scotland Issued Equipment and Company supplied Traffic Scotland Equipment so that there is an up to date understanding of the current status of all Traffic Scotland Equipment; and</p> <p>(xiv) Current and historic equipment calibration records.</p>
1505A	<p>1 Provision of Cabinets and Ancillary Items</p> <p>1.1 All cabinets shall be manufactured using aluminium or stainless steel unless described otherwise in the O&M Works Requirements and shall be painted using a paint system suitable for the cabinet material and complying with the 1900 Series. The top coat exterior colour shall be Slate Grey RAL 7015. Ancillary Items shall be provided as detailed in the O&M Works Requirements.</p> <p>1.2 All locking mechanisms shall be stainless steel and shall use a form of lock and key that is compatible with existing Traffic Scotland Equipment cabinets. Where dissimilar materials will be encountered, suitable barriers or gaskets shall be supplied to prevent corrosion or galvanic action resulting from the direct contact of dissimilar metallic materials.</p>
1506A	<p>1 Cables</p> <p>1.1 Traffic Scotland cable types shall be in compliance with the O&M Works Requirements.</p> <p>1.2 Other than cables used for internal wiring of cabinets and equipment, non-armoured communications cables and mains power cable shall not be used. Cables that are only located within cabinets and racks shall be referred to as wiring.</p> <p>1.3 Unless otherwise described in the O&M Works Requirements, the Company shall be required to submit reasons to the Overseeing Organisation for any installations requiring the use of mains power cable with conductors larger than 25mm². If such reasons are justifiable the Overseeing Organisation shall approve the use of conductors larger than 25mm² otherwise the request shall be rejected and a compliant design shall be made by the Company.</p> <p>1.4 Each drum of cable delivered to the O&M Works Site shall have quality inspection certificates attached to each flange in accordance with the relevant cable specification. The Company shall ensure that the certificate relates to the cable to which it is attached. The certificate shall form part of the Site Records and a copy shall be given to the Overseeing Organisation prior to the installation of the cable. Before installing armoured communication cables, the Company shall test and</p>

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	<p>accept the integrity of the sheath in accordance with cable test specification MCG1022 (for copper cables) or MCG1055 (for fibre cables). All cable test results shall form part of the Site Records (Clause 1504) and a copy of all cable test result shall immediately, on completion of each cable test, shall be stored with the Site Records and be provided to the Overseeing Organisation. The Company shall include the necessary hold points within the O&M Works Quality Plan for the immediate provision of cable test results. The location in the ground of cable lengths by reference to their drum numbers shall be kept with the daily records in compliance with Clause 1504.</p> <p>1.5 All underground Traffic Scotland Equipment cables shall be installed in ducts.</p> <p>1.6 The outer sheath of all Traffic Scotland Equipment cables shall be coloured black.</p> <p>1.7 The Company shall return part used drums of cable to the Company's site compound area for subsequent use. Part used drums shall be clearly marked and kept separate from unused drums. The Company shall keep and maintain a register of all cable drums; the register shall for each cable drum include the cable drum number, cable size and the length(s) of cable removed. Surplus cable lengths shall be neatly coiled or drummed as appropriate and the Company shall record the length and other details as for drummed cable specified above. Cable ends will be sealed in accordance with NDX Drawing NDX1061-00.</p> <p>1.8 The Company shall be responsible for arranging with the cable supplier for the collection of empty cable drums where the cable supplier offers such a service. The Company shall provide a record of all drums collected. Where no collection of empty cable drums is offered by the supplier the Company shall then offer the empty cable drums to the cable supply industry otherwise the Company shall dispose of the empty cable drums in an environmentally friendly manner and shall confirm the method of disposal to the Overseeing Organisation.</p>
1507A	<p>1 Cable Installation</p> <p>1.1 All cables shall be laid in accordance with this Clause.</p> <p>1.2 Cables shall only be laid when the ambient temperature is above 0° C on a rising thermometer, and the cable has been stored for at least the previous 24 hours at a temperature greater than 0° C.</p> <p>1.3 Sufficient length of cable shall always be installed to allow for correct cable termination and provision of service loops all in accordance with Clause 1507.18SR. When termination does not proceed immediately following the installation of the cable, the cable ends shall be protected from damage and sealed against the ingress of moisture in accordance with drawing NDX1061-00.</p> <p>1.4 The Company shall not install cables into ducts until the duct mandrel testing and pressure tests have been completed and stored with the daily records as described in Clause 1504SR. The Company shall</p>

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	make the completion of the mandrel and pressure test a hold point in the Company's O&M Works Quality Plan. Furthermore the Company shall satisfy himself that ducts are, in all respects, suitable for cable installation prior to the installation of cables.
1.5	No cable shall be left exposed at the end of any work period.
1.6	In the event of any damage whilst cables are being installed, the whole of the length of cable shall be removed, replaced or repaired, reconnected and re-tested at the Company's expense prior at the earliest possible date. All cable repairs shall be at the discretion and to the satisfaction of the Overseeing Organisation.
1.7	Every cable shall be permanently labelled using plastic cable markers (Critchley type or equivalent) to identify the destination of the cable in accordance with the drawing NDX1061-00 to ensure its unambiguous identification immediately following its installation. The cable markers shall be near to the cable terminations and visible within the cabinet.
1.8	The Overseeing Organisation shall be provided with the opportunity to witness the installation of all cables and the Company shall provide an indication to the Overseeing Organisation of where cable installation will take place at least 14 days prior to the cable installation unless otherwise detailed in the O&M Works Requirements.
1.9	For duct installations cables shall be drawn into cable ducts and chambers that have been installed in compliance with Clauses 1530SR, 1531SR and 1532SR. For cable tray or similar cable management installations the cable installation shall be in accordance with this Clause 1507SR.
1.10	Unless otherwise described in the O&M Works Requirements, power supply cables shall not share the ducts with longitudinal communications cables. For power supply cable runs less than 50 metres, a relaxation has been permitted to allow shared ducts for power and communications cables. For power cable runs greater than 50 metres a separate duct shall be installed for the power cable which at no point is less than 0.5 metres from the ducts containing communications cabling.
1.11	Cables shall be installed from a central chamber point outwards using a static mechanical winch fitted with an adjustable clutch, the setting of which shall ensure that at no time during the drawing of cables will the maximum longitudinal mechanical cable loading be exceeded. A copy of the current calibration certificate relating to the winch shall be provided to the Overseeing Organisation prior to use and shall also be held with the daily records in compliance with Clause 1504SR.
1.12	The ducts shall be lubricated during installation using a suitable water based, biodegradable lubricant. Such lubricant shall be compatible with all elements of the installed cable and duct infrastructure. The draw cord shall not be used for cable installation. The Company shall use the draw cord to pull through a purpose made cable pulling rope which shall then be used for cable installation. The cable pulling rope shall be

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	attached to the cable by means of a pulling eye fitted to a stocking (copper and power cable) or a pulling eye attached directly to the central strength member (fibre cable). In all cases the Company shall attach a swivel between the cable pulling rope and the pulling eye.
1.13	Purpose made bell-mouths shall be fitted to the exit and entry of every duct, including all intermediate points, prior to the commencement of cable installation. A purpose made cable chute shall be used at the cable entry point to the network. Also, during cable laying purpose made rollers shall be temporarily secured to the chamber cover frame to ensure the cable sheath is protected from contact with the frame metal. Cable guides shall be used to support the cable at all intermediate chambers through which the cable is being installed.
1.14	Where intermediate chambers exist on a cable route, the cables shall where practical, be installed through these chambers in one operation; the Company shall ensure that an operative is present at every such chamber to ensure the safe installation without damage to the cable. Where cables pass through intermediate chambers, the Company shall, immediately after installation, label each cable with the destination of the cable and chamber or equipment reference as appropriate approximately 150 mm from the entry and exit points of the chamber. The type of labelling to be used shall comply with drawing NDX1061-00.
1.15	Where more than one cable is to be installed in a duct, before the second cable is pulled the Company shall ensure that the duct is unobstructed and the cable pulling rope to be used does not pass around the existing cable. If the Company cannot ensure the cable pulling rope is not around the existing cable the Company shall introduce a new pulling rope by using rods or other means independent of the existing draw rope. Where multi-pair copper and optical fibre cables are to be installed into the same duct, the multi-pair copper cable(s) shall be installed first.
1.16	Optical fibre cables shall additionally be marked at intervals of 500 mm along their length, inside chambers. If the cable sheath is not indelibly marked during manufacture the marking shall be added using 25 mm wide, yellow PVC adhesive tape or alternative fit for the purpose.
1.17	Cables shall not be bent to an internal radius of less than 12 times the external diameter of the cable or the radius recommended by the manufacturer, whichever is greater.
1.18	Unless otherwise described in the O&M Works Requirements, all fibre optic and copper communications cables shall be provided with service loops. These service loops shall be installed in a Type 'C' chamber located at each copper or fibre termination pillar of sufficient dimensions to ensure the cable is not exposed to bends below the minimum bending radius. Each loop shall be made of a minimum of 3 metres of each cable and comply with drawing NDX1063-03.
1.19	Unless otherwise described in the O&M Works Requirements or required by the Overseeing Organisation, no uncoated metal cable

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	<p>supports shall be fitted within the chambers. All metal supports shall be plastic coated or similar.</p> <p>1.20 The Company shall ensure that on completion of the cable installation works a draw cord is installed in each duct and both ends secured within the terminating chambers or enclosure.</p> <p>1.21 The use of verge located cable troughs shall not be permitted without the specific written authority of the Overseeing Organisation unless used in temporary situations to provide continuity of service. Such written authority shall only be provided where the Company can provide evidence of constraints that would prevent the installation of ducts.</p> <p>1.22 In above ground situations cables shall be installed on cable management systems such as ladder type cable trays or trunking or troughs. The cable management systems shall prevent the cables being bent to a diameter less than that specified in Clause 1507.17SR. No cables in an external environment shall be left exposed and cable tray lids and trunking covers shall be provided to protect the cables from physical and environmental damage. All cable tray lids and trunking covers shall be positively retained using suitable fixings. In situation where the cable management system covers and lids could fall and cause injury or damage the covers and lids shall be provided with stay chains or wires to prevent the covers and lids falling. On horizontal cable management systems the cables shall be tied to the cable management system at intervals not exceeding 5 metres and at points where the cables change direction. On vertical cable management systems the cables shall be tied to the cable management system at intervals not exceeding 500mm and shall be tight enough to provide cable strain relief. The support and attachment mechanisms for the cable managements systems shall be of sufficient strength to support the calculated cable mass and the spacing of the support and attachment mechanisms shall be at intervals that will only allow a maximum deflection of 10mm in the cable tray or trunking. All cable management system parts, fittings supports and attachment mechanisms shall be protected from corrosion and shall be fit for purpose for at least 30 years within the environment they are installed.</p> <p>1.23 Cables shall be routed within masts and posts.</p>
1508A	<p>1 Installation of Cabinets – General items</p> <p>1.1 Cabinet types shall be those as described in the O&M Works Requirements.</p> <p>1.2 The Company shall provide and install paved areas around cabinets together with access paths, steps and hard standings in accordance with Clause 1539. With the cabinet door fully open a minimum 700mm clearance shall be provided between the edge of the cabinet door and any retaining wall, fence, embankment or cutting. The 700mm clearance does not take into account the required working width and access requirements and such requirements shall be included in the</p>

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	<p>overall clearance between cabinets and adjacent features.</p> <p>1.3 The Company shall install foundations and erect cabinets in accordance with the appropriate NDX or Agreement Specific Drawing.</p> <p>1.4 Unless otherwise described in the O&M Works Requirements or where Combined Equipment Cabinets (CECs) are utilised, cabinets shall be situated in groups located in a consistent sequence as shown typically in NDX1063-00.</p> <p>1.5 Cabinet doors shall be orientated to provide the safest possible environment for roadside maintenance staff and wherever possible cabinets shall be orientated so when the doors are open they provide protection from spray from vehicles. Cabinet doors shall be capable of opening and closing without being fouled by paved area or access paths or steps.</p> <p>1.6 Where cabinets are to include a resin seal then after completion of the terminations and testing, but before the addition of gravel, the entry and exit ducts into the base of the cabinets or below the cabinets shall be sealed with expanded foam to prevent the ingress of soil, pea gravel and water into the duct ends. The internal void within the plinth or base shall then be filled with 6mm-pea gravel to the level shown on the relevant cabinet drawing. Furthermore the base of each cabinet shall additionally be resin sealed typically in accordance with drawing NDX1002-01 or specific Agreement Drawing. To achieve the required resin seal the duct ends shall be above the finished level of the resin seal by a minimum of 10mm and a maximum of 30mm. The resin seal shall be poured to provide a waterproof seal to all cables and finished to provide a smooth and level surface.</p> <p>1.7 For CEC cabinets and similar where cable entry takes place via penetrations through a suspended metal base plate then correct and compatible glands shall be used in accordance with the cabinet manufacturer's instructions.</p> <p>1.8 The Company shall keep the interior of cabinets free from moisture and dirt. The Company shall ensure that the doors of each cabinet are closed and properly secured after the installation of Traffic Scotland Equipment in the cabinet and after the completion of any other work.</p> <p>1.9 The Company shall ensure that all enclosures and cabinets, following the drilling cutting or removal of cable entry knockouts, maintain the manufacturer's quoted IP Classification ratings and are cleaned of all waste, swarf and surplus material prior to any further work being undertaken. Where such drilling and modification of an enclosure and cabinet causes removal or damage to any protective coating, the coating shall be made good in accordance with the manufacturer's instructions and/or in accordance with Series 1900.</p> <p>1.10 The Company shall ensure that power is available and all cabinet environmental control equipment is tested, commissioned and operational before any Active Equipment is installed in the cabinet.</p>

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	<p>1.11 Power supply distribution and protection circuits shall be housed in cabinets. The power supply cabinets are as detailed in drawings NDX1011-06, NDX1011-07 and NDX1011-08. The layout of the supply distribution and protection circuits shall be as detailed in the drawings. The circuits detailed on the NDX Drawings are shown for example only and the Company shall provide power schematic layout drawings in a format as agreed with the Overseeing Organisation. The Company shall also ensure that this work conforms to the requirements of the BS7671.</p> <p>1.12 Where cabinet type 600(S) is used, they shall be installed as shown on drawings in the NDX1002 series. The Company shall install such wiring and supports to accommodate equipment to be housed in accordance with the Agreement. Where a termination frame arrangement is required, the frame shall be wired using 0.5 mm single stranded copper twisted jumper wire for the links. Where appropriate the frame can be wired off-site. All wiring shall be mechanically supported and retained using suitable ties or cord and terminations shall conform to the relevant sub-clause of Clause 1513 and shall satisfy the requirements of the applicable Workmanship Standards Manual that forms part of the O&M Works Quality Plan.</p> <p>1.13 Where specialist cabinets or CECs are used, they shall be installed in accordance with the Agreement Drawings and/or manufacturer specific installation requirements.</p>
1509A	<p>1 Gantries for Overhead Equipment</p> <p>1.1 Where required to be installed, the Company shall provide Gantries in compliance with the Agreement.</p>
1510A	<p>1 Emergency Roadside Telephones</p> <p>1.1 The Company shall install HA type 354 Emergency Roadside Telephones including foundations, posts housings and handsets in compliance with the Specifications and the O&M Works Requirements. NDX Drawing NDX1049-02 provides further information about the provision of Emergency Roadside Telephones. The layout for each site shall be agreed by the Overseeing Organisation.</p> <p>1.2 All non-operational Emergency Roadside Telephones shall be covered with purpose made bags displaying the words 'Not in Use' until such time as the telephones have been commissioned and are available for use by the public.</p>
1511A	<p>1 Marker Tape</p> <p>1.1 All ducts installed underground shall have their position indicated by the use of detectable marker tape. Unless otherwise described in the O&M Works Requirements such marker tape, as described below, shall be buried in the trench above the cable/duct as detailed in NDX1063-00.</p> <p>1.2 Marker tape shall be manufactured from self coloured thermoplastic material not less than 150 mm wide; it shall have a metallic insert or</p>

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	<p>backing which will allow detection by electronic route tracing equipment. The detectable metallic component and the form of tape construction shall be either:</p> <p>(i) Stainless steel wire or wires with a minimum total cross sectional area of 0.30 mm sq. laid in a sinusoidal wave form or stainless steel strip with minimum dimensions of 10 mm wide and 100 micron thick. The stainless steel wire or strip shall be sandwiched in between two layers of thermoplastic tape with a combined minimum tape thickness of 150 micron or bonded to one layer of thermoplastic tape with a minimum thickness of 150 micron.</p> <p>(ii) Aluminium foil with minimum dimensions of 50 mm wide and 9 micron thick totally enclosed in between two layers of thermoplastic tape. The combined thickness of the two tape layers shall be a minimum of 400 micron.</p> <p>1.3 Joints between successive lengths of tape shall be made using crimps or clamps such that the electrical continuity and tensile strength of the tape is maintained. The joint shall be protected from corrosion and attack from ground chemicals.</p> <p>1.4 The wording on the marker tape shall read "CAUTION COMMUNICATIONS/ POWER CABLES BELOW". The wording shall occur at intervals up to a maximum of 1m apart. The letters of the wording shall be a minimum of 30 mm high with a minimum of 5 mm line thickness</p> <p>1.5 Marker tape shall be yellow in colour, with wording in black.</p>
1512A	<p>1 Provision of and Installation of Ancillary Items</p> <p>1.1 Unless otherwise described in the O&M Works Requirements, the Company shall provide all ancillary items forming part of the Traffic Scotland Equipment as required to complete the O&M Works.</p> <p>1.2 The Company shall be responsible for all provision associated with ancillary items of Traffic Scotland Equipment at all locations where such ancillary items are required unless otherwise described in the O&M Works Requirements.</p>
1513A	<p>1 Jointing and Termination of multi-pair communications and feeder Cables</p> <p>1.1 No permanent multi-pair communications cable underground joints are permitted on Traffic Scotland installations. Temporary above and below ground joints in damaged operational cables shall be allowed until the full length of damaged cable is replaced. Repairs to operational cables shall be undertaken immediately after the damage has occurred. Cable replacement shall take place as soon as possible. Unless otherwise described in the O&M Works Requirements the Company shall be responsible for all cable repairs and replacement.</p> <p>1.2 All permanent multi-pair communication cables joints and terminations</p>

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	<p>shall take place with a cabinet except in the loop tail to feeder cable joints as described in Clause 1513.3.</p> <p>1.3 The Company shall use the type of cable joints between detector loops tails and feeder cables as detailed in NDX1063-04 and shall comply with Clause 1523 of this 1500 Series. The loop tail and feeder cable joints shall be installed in loop roadside chambers in accordance with NDX1063-04. The conductors shall be secured by tightening the screws with a torque screwdriver to within the range 0.4 to 0.6 Nm. The conductors shall be of sufficient length to facilitate routine maintenance and allow for four subsequent re-terminations. Care shall be taken at all times to maintain correct pairing. The Company shall use proprietary cable markers to clearly identify all cables and cable cores by using correctly fitting labels at both ends. To terminate multi-pair cables in cabinets, the outer SWA shall be removed at the gland plate and the inner sheaths at the highest point within the frame. This shall be carefully removed from the cable ends to reveal the pairs of insulated conductors. All surplus jelly shall be removed by the use of a clean dry cloth taking care not to stretch the insulation, and any fluid substance to aid the cleaning process shall have had the prior approval of the cable manufacturer and be shown to have no detrimental effect on the cable or, if applicable, the jointing system.</p> <p>1.4 Cables shall be glanded and dressed neatly and routed within the cabinet with proprietary pair ties and pair identification markers in a neat and orderly manner and shall be terminated in compliance with the pair allocation tables as detailed in the O&M Works Requirements. The Company shall route the incoming and outgoing cables to vertically align the cables gland plate position with the point they enter/leave the cabinet</p> <p>1.5 The lay of the cable shall be maintained up to the termination position. All conductor pairs shall be identified by means of a numbered plastic sleeve or collar.</p> <p>1.6 Conductors shall be terminated in terminal blocks complying with Clause 1514. The conductors shall be secured by tightening the screws with a torque screwdriver to within the range 0.4 to 0.6 Nm. The conductors shall be of sufficient length to facilitate routine maintenance and allow for four subsequent re-terminations. Care shall be taken at all times to maintain correct pairing. The Company shall clearly identify all links by using correctly fitting labels at both ends.</p> <p>1.7 Where the Company is required to joint or terminate cables onto existing operational cables, the Company shall comply with clause 1522.</p> <p>1.8 Links shall be installed and connected using, as appropriate, the insulated conductors of multi-pair/0.9 mm cable with its outer sheath, armour and inner sheath removed. The links shall be of sufficient length to facilitate routine maintenance and allow for four subsequent re-terminations and shall not obstruct any other accessory. The Company shall maintain multi-pair colour coding so that colour code</p>

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	<p>duplication does not occur. Care shall be taken at all times to maintain correct pairing. Unused ends of all conductors shall be neatly tied back.</p> <p>1.9 Where the Company requires to terminate multi-pair communication cables in existing multi-pair communication cable termination cabinets or cabinets which contain operational Traffic Scotland Equipment the Company shall comply with Clause 1522.</p>
1514A	<p>1 Cable Connectors</p> <p>1.1 Cable connectors shall be as described within the O&M Works Requirements and be of a suitable industry standard for the cable type and intended use. Where required, the connectors shall be provided with suitable retaining clips to prevent vibration causing loosening of the connection.</p>
1515A	<p>1 Jointing and Termination of Fibre Optic Communications Cable</p> <p>1.1 Fibre Optic Communication cables shall be jointed and terminated in Combined Equipment Cabinets (CEC), Type 600(S) or within transmission stations using standard 1U 19" termination units and associated break out boxes.</p> <p>1.2 Within existing Transmission Stations, the Company shall use the existing fibre optic cable jointing and termination facilities or provide the same as existing fibre optic cable jointing and termination facilities if the existing facilities do not have the capacity to accommodate the fibre optic cable being provided in compliance with the O&M Works Requirements.</p> <p>1.3 Where fibre optic cables are required to terminate within a non environmental enclosure then the cables shall be terminated in an approved hermetically sealed box containing silica gel to prevent damage due to the occurrence of moisture. The fibres shall be fusion spliced and protected from mechanical strain. The fusion splicing shall not cause losses greater than that detailed in MCG 1055</p> <p>1.4 Unless required for equipment connection, all joints shall be permanent, fusion spliced type.</p>
1516A	<p>1 Termination and Jointing of Power Supply Cables for Traffic Scotland Equipment</p> <p>1.1 Underground joints may in limited circumstances be permitted on Scottish Motorways Communications system but only with the specific approval of the Overseeing Organisation and in compliance with NDS 9565 "Guidance on the use of standard Traffic Scotland termination pillars"</p> <p>1.2 Termination of power supply cables shall be undertaken in accordance with good working and recognised electrical engineering practices. Prior to commencing with power supply terminations the Company shall deliver to the Overseeing Organisation method statements and a</p>

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1.3	<p>Transport Scotland Issued Equipment power cabinet fully terminated and complete as evidence of the workmanship that will be provided as part of the Works</p> <p>Where the Company requires to terminate power supply cables in existing power supply cabinets or cabinets which contain operational Traffic Scotland Equipment the Company shall comply with Clause 1522.</p>
1517A	<p>1 Earthing and Bonding</p> <p>1.1 The earthing and bonding of the Traffic Scotland installations shall comply with the recommendations contained in BS7671 and BS7430. Where required, further details of the earthing and bonding requirements may also be given in the O&M Works Requirements.</p> <p>1.2 The area of gland plates or boxes, which will come into contact with a cable gland shall be cleaned prior to fitting of all paint and, in existing equipment any corrosion, before a cable gland is fitted. Once the gland is fitted, exposed metalwork of gland plates or enclosures where required, shall be suitably treated to protect against corrosion. Furthermore an appropriate earth tag forming part of the gland kit, and retained by the gland fixing nut, shall also be installed and connected to the main earth bonding point within the cabinet using correctly sized cable and crimps as required by the Electricity Safety, Quality and Continuity Regulations. This bonding cable shall be copper and have insulation coloured green/yellow – also see Clause 1517.5SR below.</p> <p>1.3 All connections to bolted fixtures shall be made through crimped type lugs and using correctly sized bolts with appropriate washers and lock nut all as NDX1002-01</p> <p>1.4 All Traffic Scotland Equipment cabinets grouped in close proximity shall be effectively earth bonded together in accordance with the requirements of BS7671 Requirements for Electrical Installations. The Company shall introduce correct and adequate earth bonding arrangements particularly when the cabinet group includes lighting or similar cabinets energised by a different Electricity Supply Company supply to the Traffic Scotland Equipment. It is the Company's responsibility to design the installation to ensure no high fault currents from earth faults on other systems enter the Passive Network.</p> <p>1.5 In all Traffic Scotland Equipment cabinets all SWA gland earth tags shall be installed within the cabinet and bonded together and to the cabinet earth stud using green/yellow insulated bonding wire unless otherwise required by applicable Regulations. This requirement applies to all SWA Communications and Power Supply cables.</p> <p>1.6 At all equipment sites where a power supply is installed it is a requirement that an earth rod be installed as follows:</p> <p>(a) If the Termination Pillar contains the DNO's cut out, then an earth rod will be installed adjacent to the Termination Pillar in accordance with the requirements of BS7671 and BS7430 to act</p>

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	<p>as the Electricity Supply local protective earth.</p> <p>(b) Where Traffic Scotland equipment includes a mast or support introducing an increased risk of damage by lightning then a earth rod shall be installed adjacent to the cabinet as a communications local earth. The earth impedance of the earth rod shall be no greater than 10 ohms.</p> <p>1.7 All pillar, cabinet and Signal pole doors shall be earth bonded to the main structure chassis using a flexible 6 mm sq. green/yellow insulated conductor cable reference. The bonding conductor shall be sufficiently long as not to be strained when the doors are fully extended. Where crimp terminals are used these shall be sound in assembly and protected from strain typically using an insulated clip or similar retaining arrangement.</p>
1518A	<p>1 Cable Testing</p> <p>1.1 Armoured communications cables shall be tested by the Company in accordance with the Specifications MCG1022 (for multi-pair communications cable) and MCG1055 (for optical fibre cable). The Company shall undertake tests on cables as detailed in this document and the Specification for Highway Works. Appendix 1/5. Scottish modifications to the MCG1022 are as follows :</p> <p>(a) Communications cables to MCE1173 shall be tested to MCG1022C paragraphs. 2.3.1. 2.3.3.(a), 2.3.4.(a) and 3.1. corrected as 1518.2</p> <p>(b) Communications cables to CW1128/1198 shall be tested to MCG1022C paragraphs. 2.3.3.(a) , 2.3.4.(a) and 3.1. corrected as 1518.2</p> <p>(c) Power cables to BS6346 (3- core SWA) shall be tested to MCG1022C paragraphs. 2.3.2., 2.3.3.(b), 2.3.4.(b) and 3.2.</p> <p>1.2 Modifications to MCG1022C are as follows;</p> <p>(a) Para 1.5.2.</p> <ol style="list-style-type: none"> i. delete "loading patterns ii. delete "attenuation" and "impedance" diagrams in Appendix 2 <p>(b) Para. 3.1.</p> <ol style="list-style-type: none"> i. Attenuation measurements shall be on all pairs at all listed frequencies. ii. No loading will be installed - all pairs treated as identical (600 ohms) iii. Graphs shall be produced to cover all pairs <p>(c) Para. 3.1.5. Measurement of Near End cross talk with 600 ohm termination only.</p>

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	<p>(d) Para. 3.1.6 Not undertaken</p> <p>(e) Para. 3.1.7. To be carried out on all pairs.</p> <p>(f) Para. 3.1.8 Not undertaken</p> <p>(g) Para. 3.1.9 Not undertaken</p> <p>(h) Para. 3.1.10 Not undertaken</p> <p>(i) Para. 3.1.11 Not undertaken</p> <p>(j) Telephone pair test: Measure loop resistance to telephone and note value. (Max. 29ohms/Km) and using 600 ohm termination measure attenuation at 800Hz to telephone and note value. (Max. 0.74dB/Km).</p>
1.3	All Cables, both optical fibre and copper, supplied by the Company to specification shall be tested in accordance with MCH1221 at the manufacturer's works prior to delivery to ensure compliance with those specifications and the testing shall be witnessed by a specialist consultant appointed by the Company.
1.4	Loop detector and feeder cables shall be tested in accordance with Clauses 1523 and 1537.
1.5	Power cable testing shall be carried out in accordance with both MCG1022 and BS7671 and Clause 1526. The Overseeing Organisation may appoint a specialist consultant to witness all testing.
1.6	No site cable tests shall be carried out until the cable trench containing the cable duct has been back-filled and the ground above the cable reinstated and the cable ends have been installed (un-terminated) in the respective termination cabinets. No site cable tests shall be carried out until all the cables to be installed in one duct have been installed. No site cable tests shall be carried out until adjacent work, which may damage the cable have been completed.
1.7	Cable test result documentation shall be in compliance with clause 1504 and Clause 1540. The cable being tested and the instruments being used to complete the test shall be clearly marked on each cable test result.
1.8	The Company shall provide all safety equipment, display warning notices, erect barriers and ensure trained personnel are present at all points where dangerous voltages may be present during testing.
1.9	All test instruments requiring calibration shall have a current calibration certificate. Copies of the calibration certificate covering the whole period of cable testing shall be provided with the cable test results.
1.10	The Company shall give at least 14 days' notice, in writing, to the Overseeing Organisation of his intention to test any cable and shall be provided with the opportunity to witness the installation of all cables.
1.11	In the event of the Company drawing further cables through a duct after cables have been tested, then all cables in the duct shall be re-tested.

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	1.12 Any cable damage identified shall be rectified by the Company in accordance with sub-clause 1550. and re-tested.
1519A	<p>1 Labelling and Numbering</p> <p>1.1 All Traffic Scotland equipment when detailed in drawings and documentation prepared by the Company shall be numbered in accordance with the Traffic Scotland Equipment numbering scheme in the NDX series drawings and the O&M Works Requirements. The Company shall not use any other equipment numbering at any time.</p> <p>1.2 Cabinets, Emergency Roadside Telephones, Signals, and cables shall be numbered and labelled, in accordance with the relevant NDX drawings, using Traffic Scotland labelling procedures and, unless specified otherwise in the O&M Works Requirements, it shall be the responsibility of the Company to provide such manufactured labels. All equipment labels shall be attached in accordance with the NDX series drawings unless otherwise described in the O&M Works Requirements.</p> <p>1.3 The Company shall not leave cables unlabelled at any time and shall provide temporary labelling accordingly to facilitate testing and termination prior to the implementation of permanent labelling.</p> <p>1.4 All cabinets containing power shall be labelled to indicate the source of supply, destination, circuit arrangements and details of testing in accordance with the BS7671 regulations. Cabinets shall also include a copy of the applicable electrical schematic.</p> <p>1.5 All cabinets containing Traffic Scotland Equipment shall have the circuit diagrams of both the cabinet and the external cable circuits stored within the cabinet so that the maintenance engineer can understand the cable connections and cable routing. These circuit diagrams should be an extract of the as built drawings and should be supplied in a modifiable electronic form to the Overseeing Organisation as part of the documentation requirements.</p> <p>1.6 All records contained within cabinets shall be waterproof and version controlled.</p> <p>1.7 Where the Company carries out modification work to existing cabinets, new labels shall be fitted where appropriate and shall update the existing records in compliance with the O&M Works Requirements.</p> <p>1.8 All standard warning labels shall be supplied by the Company and installed on cabinet doors.</p>
1520A	<p>1 Loading</p> <p>1.1 Not used.</p>

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1521A	<p>1 Removal and Re-siting of Existing Equipment</p> <p>1.1 Prior to existing Traffic Scotland Equipment being removed/re-sited as determined by the design, the Company shall provide a report titled "Strategy of ITS New Works for Traffic Scotland Equipment Document" in accordance with the O&M Works Requirements.</p> <p>1.2 Unless otherwise described in the O&M Works Requirements, the Company shall remove and dispose of all existing equipment in compliance with this 1500 Series.</p> <p>1.3 Where required in accordance with "Strategy of ITS New Works for Traffic Scotland Equipment Document", as prepared by the Company under Clause 1521.1SR, the disconnection and reconnection of Traffic Scotland Equipment shall either be witnessed or undertaken by the Operator and Infrastructure Service Contractor in compliance with Clause 1522SR.</p> <p>1.4 All Traffic Scotland Equipment that has not to be disposed of shall be stored by the Company until required or returned to Overseeing Organisation stores. The Company shall store equipment to be returned to the Overseeing Organisation for a period of up to 3 months or as otherwise detailed in the O&M Works Requirements.</p> <p>1.5 Items of equipment to be re-sited shall be unbolted from their plinths or supports together with their holding down bolts, stored, and removed or re-sited. Where any foundations, support infrastructure and hard landscape associated with existing site is not required in the future the Company shall undertake all necessary site clearance in compliance with Clause 201 of the Specification.</p> <p>1.6 Conductors shall be disconnected from the equipment in which they are terminated, the terminal screws and glands re-tightened and the cable withdrawn clear of the equipment.</p> <p>1.7 Where cables are to be recovered, they shall be carefully withdrawn, and the Company shall comply with the requirements for duct sealing, cleaning and roping. Recovered cables shall be coiled onto drums at the time of removal and transferred to the Company's site storage area for subsequent re-use or removal to the Overseeing Organisation's Store, unless otherwise detailed in the O&M Works Requirements.</p> <p>1.8 The sites of cabinets, plinths and cable trenches shall be reinstated to the level of the surrounding ground as in Clause 201 of the Specification, unless otherwise described in the O&M Works Requirements.</p> <p>1.9 All re-used cables shall be tested in accordance with Clause 1506SR and 1507SR.</p> <p>1.10 Where cables are being disconnected and removed, or being disconnected and left in situ, the operation shall be carried out in a safe manner which does not form a hazard to maintainers, operators or Users and shall be in compliance with the O&M Works Requirements.</p>

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1522A	<p>1 Works Impacting on Operational Traffic Scotland Systems</p> <p>1.1 All works shall be programmed and planned to prevent any detrimental impact on the operation of Traffic Scotland Equipment and systems. The details of the works to mitigate the impact on the Traffic Scotland Service or part thereof shall be prepared by the Company and made available to the Overseeing Organisation and the relevant Traffic Scotland Service providers prior to the start of such works. Notification of any such mitigating arrangements shall, unless otherwise stated within the O&M Works Requirements be no less than 28 days prior to the works commencing.</p> <p>1.2 Detrimental impact may include but not be limited to loss of service due to cable damage, loss of electrical supply or communications link or damage to equipment and similar.</p> <p>1.3 Mitigating arrangements may include temporary equipment housing, temporary electrical supply, temporary communications link by copper cable, optical fibre cable, line-of-sight microwave or similar or combinations of these.</p> <p>1.4 Where no alternative is available, the Company shall provide documentation detailing all the investigated alternatives.</p>
1523A	<p>1 Loop Detectors</p> <p>1.1 Where required and unless otherwise described in the O&M Works Requirements, the Traffic Scotland Loop detectors shall be installed in accordance with Specification MCH1540 and NDX 1097.</p> <p>1.2 The roadside loop chamber as described in Clause 1532 shall be installed prior to the detector loops being installed and at the completion of detector loop installation all loop tails shall be located within the roadside loop chamber and each tail shall be labelled.</p> <p>1.3 Slots for the detector loops shall be cut from within the base course level.</p>
1524A	<p>1 Trial Pits</p> <p>1.1 Trial pits shall be excavated by the Company to determine the location of Traffic Scotland Equipment located below the surface. The use of mechanical digging methods is prohibited.</p>
1525A	<p>1 Not Used</p>
1526A	<p>1 The Inspection and Testing of Electrical Installations and Electrical Equipment</p> <p>1.1 The Company shall carry out all works associated with the Inspection and Testing of Electrical Installations in compliance with BS7671 and Guidance Note 3 for BS7671 and for equipment not forming part of the fixed installation be in accordance with the latest edition of "Code of</p>

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	<p>Practice for In-service Inspection and Testing of Electrical Equipment" published by the IET. The Company shall provide paper copies of the Inspection and Completion Certificates to the Overseeing Organisation in accordance with BS 7671 and also in 'soft copy'. Both paper and softcopy shall generally conform with the NICEIC format for BS7671 Certificates and be compatible with Industry standard archiving software.</p>
1.2	<p>Where the Inspection/Tests show that existing cabinets or electrical circuits, or the earthing arrangements do not meet with the requirements of BS 7671, the Company shall make the installation safe and carry out all such works to make the installation compliant with BS7671. When designing the electrical installation, the Company shall take fully into account all aspects of access for maintenance. Also, where the Company considers safety and operational risks associated with quarterly testing of a Residual Current Device (RCD) to be unacceptable an alternative design must be provided.</p>
1.3	<p>For the purposes of carrying out the Tests the Company shall use appropriate instruments which shall be tested and calibrated at six monthly intervals. Copies of the test/calibration certificates shall be forwarded to the Overseeing Organisation with the first certificate dated within three months of the Commencement Date. The Earth Loop Impedance testing instrument shall be of the digital display type and shall operate from zero to 19.99 Ohms (Accuracy $\pm 1\%$ ES. $\pm 1.5\%$ Reading) with 0.01ohm Resolution. Where alternating current measurements are required, testing instruments shall be of the digital display type and shall be capable of operation with an accuracy of $\pm 1\%$ in the useable ranges.</p>
1.4	<p>Where appropriate and prior to testing the installation in accordance with the requirements of BS7671 all extent and limitations to be applied must be agreed with the Overseeing Organisation. The agreed extent and limitations must include consideration of all cables and equipment making up the installation that may be required to be excluded from the testing of the fixed electrical installation.</p>
1.5	<p>Such electrical equipment not forming part of the fixed wiring of the installation shall be disconnected while carrying out BS7671 testing on the electrical installation. Items so excluded from the BS7671 inspection and testing shall be inspected and tested in accordance with the HSE publication "Maintaining portable and transportable electrical equipment" HSG107 and the "Code of Practice for In-service Inspection and Testing of Electrical Equipment" or as otherwise agreed with the Traffic Scotland Manager. The frequency of the inspection and testing of such equipment shall be appropriate for the equipment type, its frequency of use and environment in which it is used.</p>
1.6	<p>The frequency of inspection and testing of fixed installations shall be;</p> <ul style="list-style-type: none"> (a) Periodic BS7671 Inspection and Testing – 5 yearly (b) Routine Check as BS7671 Guidance Note 3 – Annually

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	<p>(c) Where RCDs are an integral part of the installation earth fault protection then the RCDs shall be tested quarterly. TT supplies shall not form part of the permanent electrical supply infrastructure. RCDs shall be tested at minimum load.</p> <p>1.7 The Company shall provide all safety equipment, display warning notices, erect barriers and ensure personnel with suitable skill and ability are present at all points where dangerous voltages may be present during testing.</p>
1527A	<p>1 Cable Installation at Transmission Stations</p> <p>1.1 Cables shall be installed into and terminated within Transmission Stations in compliance with the O&M Works Requirements.</p> <p>1.2 Work shall not be undertaken in active Transmission Stations by the Company until the Company is in compliance with Clause 1522.</p>
1528A	<p>1 Modification of Existing Cabinets</p> <p>1.1 The Company shall terminate new cables, terminate diverted cables, install Traffic Scotland Equipment and undertake such other modifications to existing Traffic Scotland Equipment cabinets in compliance with the O&M Works Requirements and this 1500 Series.</p> <p>1.2 The Company shall, prior to laying any underground duct or cable to or from the existing Traffic Scotland Equipment cabinets, locate, by electronic means, the position of all cabling and ducting, expose all cables and ducts by careful hand excavation and identify the type, size and designation of each cable found.</p> <p>1.3 The Company shall as required undertake any or all of the following as required to comply with the O&M Works Requirements</p> <ul style="list-style-type: none"> (a) remove, retain for re-use, and replace the cabinet base pea gravel (b) remove and relay any hard standing; (c) remove all redundant materials and make good soft landscaping (d) excavate to expose cable remake loop, (e) excavate duct and cable routes; (f) re-route cable to gain sufficient lengths for the proposed modification; (g) reinstate duct and cable trenches; (h) break open and re-seal resin filled base; (i) disconnect and reconnect, undo existing gland and re-gland, including the provision of new gland assemblies and cable termination ancillaries where required; (j) withdraw and reinstall cables at cabinet base

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	<ul style="list-style-type: none"> (k) un-terminate, re-terminate and terminate cables (l) remove and or relocate existing Traffic Scotland Equipment and install new Traffic Scotland Equipment and connect internal wiring (m) reroute and provide new internal wiring to create a tidy wiring and incoming outgoing cable layout (n) modify power distribution unit by adding or removing out going circuits and adding or altering the electrical distribution protection devices (o) remove all waste and redundant material and clean out the cabinet (p) renew external labels (q) undertake any works such as painting, replacing locks, hinges and general cabinet maintenance works such as oiling and greasing the hinges, adding a document holder; and (r) updating records and inserting records to be held in cabinet <p>1.4 All existing direct buried cables exposed during modification of existing Traffic Scotland Equipment shall be installed in ducting laid in compliance with Clauses 1530SR and 1531SR. Also where remake loops in direct buried cables are exposed, Type C chambers shall be constructed to accommodate the remake loop.</p>
1529A	<p>1 Temporary Emergency Roadside Telephones</p> <p>1.1 Temporary Emergency Roadside Telephones shall be installed for use by the public when it would be necessary to cross either a live traffic lane or construction site to use the nearest working Emergency Roadside Emergency Telephone. When not in use temporary Emergency Roadside Telephones shall either be removed or covered with purpose made bags displaying the words 'Not in Use' until such time as the telephones have been commissioned and are available for use by the public.</p> <p>1.2 The direction to the Temporary Emergency Roadside Telephones shall be indicated in a manner approved by the Overseeing Organisation at 100 metre intervals. The location and orientation of temporary Roadside Emergency Telephones shall be agreed with the Overseeing Organisation.</p> <p>1.3 Telephone instruments and posts shall be supplied by the Contracting Authority unless otherwise described in the O&M Works Requirements.</p> <p>1.4 Cable for temporary Emergency Roadside Telephones shall be identified at 20 metre intervals in a suitable manner. Cables shall be laid in existing ducts to cross the carriageway and on the surface elsewhere when suitable protection from damage can be reliably provided.</p> <p>1.5 Cable for temporary Emergency Roadside Telephones shall be connected to the nearest Copper Termination Pillar or equivalent on the</p>

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	<p>live communications network. A loop of cable of 3 metres length shall be coiled on the ground adjacent to the cabinet or pillar.</p> <p>1.6 Connections and disconnections from the live communications network shall be carried out by the Transport Scotland Operations and Infrastructure Services Contractor. The Company shall give at least two week's written notice of the need for such work. The need for this work shall be identified in advance in the Company's programme and agreed with the Overseeing Organisation.</p> <p>1.7 The Company shall install, place in position, maintain, cover up, uncover, reposition, re-cable and remove temporary Emergency Roadside Telephones and associated work as necessitated by the progress of any O&M Works.</p> <p>1.8 Maintenance of temporary Emergency Roadside Telephones connected onto the network shall only be undertaken by the Transport Scotland Operations and Infrastructure Services Contractor. The Company must allow, at all times, access arrangements to any Overseeing Authorities' Traffic Scotland Maintenance Contractor and Traffic Scotland Operator.</p>
1530A	<p>1 Cable Ducts</p> <p>1.1 The term cable duct used in this Series describes the ducts used for Traffic Scotland Equipment communication and power cables.</p> <p>1.2 Longitudinal ducts are those ducts forming the longitudinal route of ducts installed generally parallel to the carriageway. Transverse ducts are those ducts linking the longitudinal ducts and installed underneath and at right angles to the carriageway. Local ducts are those ducts installed from chambers forming part of the longitudinal duct network to the cabinets and Traffic Scotland Equipment</p> <p>1.3 The ducts installed to this specification are used for all types of Traffic Scotland cables</p> <p>1.4 The ducts shall comply with this Series and the O&M Works Requirements. The Company shall be responsible for ensuring that all components used within the ducts are compatible with each other, with the cable and with existing ducts to which they may be connected.</p> <p>1.5 The ducts shall comply with the general requirements of BS EN 50086-1 and in particular requirements of BS EN 50086-2-4. The ducts shall have a current British Board of Agreement Roads and Bridges Certificate or equivalent in accordance with Clause 104 of the Specification.</p> <p>1.6 The ducts shall be manufactured from thermoplastic material. The internal bore shall be smooth and even. The external surface shall be even or corrugated in the longitudinal section. The ducts shall be twin walled. Non homogeneous ducts with honeycomb or foam filled construction between the inner and outer surfaces shall not be permitted.</p> <p>1.7 The longitudinal, transverse and local ducts shall meet BS EN 50086-2-</p>

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	4 and be classified as "Normal duty" and rigid. These ducts will be supplied and laid in lengths no greater than 6 metres and be jointed using compatible couplers, sealing rings and lubricant. Rigid smooth walled pre-formed bends and junctions shall be used. Pliable or flexible ducting shall not be used to provide a continuous route.
1.8	The nominal sizes of the ducts shall be as described in the O&M Works Requirements. The minimum internal diameters shall be 150 mm, 100 mm and 50 mm.
1.9	The external wall of the ducts shall be coloured black for all Traffic Scotland installations regardless of whether they contain power or communications cable.
1.10	The materials from which the duct and fittings are made shall be treated so that they are protected from the deleterious effects of short term exposure to ultra violet light and shall be resistant to degradation by acids, alkalis, common chemicals, bacteria, fungi, and moulds occurring in soils. The Company shall protect the duct and fittings on site in accordance with the supplier's recommendations.
1.11	Each duct shall be fitted with a pigmented, stranded polypropylene or equivalent rot-proof material draw cord of 5kN breaking load and having a design life of not less than 20 years, the ends of which shall be secured within the chamber or enclosure to which the duct is terminated. Draw cords shall be secured to the duct plugs where fitted. Draw cords shall not be knotted within ducts; where a joint is required it shall be a spliced joint.
1.12	The duct network shall be sealed in compliance with Clause 1533.
1.13	Ducts containing Traffic Scotland cables or power cables for motorway communications systems installed on motorways shall be clearly and permanently marked with the legend "MOTORWAY COMMUNICATIONS /POWER" in two, diametrically opposite, planes. The ducts shall be installed such that the legend is uppermost. The method of marking shall not affect the integrity of the duct. This marking is in addition of the markings required in the BS EN 50086 series. The method marking and the durability test shall comply with the BS EN 50086 series.
1.14	Each duct shall be fitted with a proprietary branded duct insert as shown in NDX1063-00.
1.15	Four and six way ducts shall be supplied with purpose made spacers and strapping as indicated on drawing NDX1063-00. The strapping shall bind the ducts tightly in the specified formation during installation, back-filling and for the whole life of the duct. The spacing of the strapping shall be such that the ducts shall not separate by more than 50 mm; this spacing would typically be 1m. The contact area between spacer and duct shall be large enough to ensure that the spacer cannot penetrate or distort the walls of the duct.

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1531A	<p>1 Installation of Ducts</p> <p>1.1 Ducts shall be laid at the level as shown in NDX1063-00 and at a typical offset of 2 metres from the edge of the carriageway. Longitudinal ducts shall generally be run parallel to the edge of the hard shoulder. Transverse ducts shall run at right angles to the carriageway. The exact location of the ducts shall be in accordance with the drawings or where applicable the Company's Design. All ducts shall terminate in an access chamber. Excavations shall comply with Clauses 502 and 602. Immediately following the excavation of the trench, the ducts shall be jointed and laid on the bedding material. Newly laid ducts shall not deviate unnecessarily from straight such as to cause undue loading on the cables during installation. The deviation in level from that specified at any point shall not exceed 50mm</p> <p>1.2 Ducts and fittings shall be examined for damage and the joint surfaces and components shall be cleaned immediately before laying. Measures shall be taken to prevent soil or other material from entering ducts, and to anchor each duct to prevent movement before the work is complete.</p> <p>1.3 Cable ducts shall comply with the appropriate British Standard and shall be tested in accordance with Clause 1533. Ducts with push-fit joints shall have a register and clear markings to ensure that the duct joint is fully engaged.</p> <p>1.4 Cable duct configurations, bedding, haunching and surround shall be as shown on drawing NDX1063-00.</p> <p>1.5 Backfilling shall be undertaken immediately after the required operations preceding it have been completed.</p> <p>1.6 Trenches for the cable ducts shown on drawing NDX1063-00 shall be backfilled with Class 8 lower trench fill material, as described in Table 6/1 and in compliance with the 600 Series, which shall be placed above the surround material. The Class 8 material shall extend to within 150 mm of ground level. The material shall be spread and compacted evenly without dislodging, disturbing or damaging the ducts. Power hammers shall not be used within 300 mm of the ducts.</p> <p>1.7 For ducts shown on drawing NDX1063-00, top soiling, grass seeding and/or turfing as described in Clause 618 and 3005 shall be placed in the top 150 mm of the cable duct trench unless otherwise specified in the O&M Works Requirements.</p> <p>1.8 For ducts shown on drawing NDX1063-00 marker tape shall be laid within the trench excavation at a depth of 150 mm or at the class A/topsoil interface whichever is the greater. The marker tape shall comply with Clause 1511.</p> <p>1.9 Prior to mandrelling, the Company shall swab through each duct to clear all debris.</p> <p>1.10 Ducts that are laid across or within the filter drains (French drains) shall be surrounded with 150 mm of mix ST2 concrete in compliance with Clause 2602. In the event that the route of a duct comes within 500mm</p>

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	<p>of the line of a filter drain then either an alternative line shall be determined or precautions taken to ensure that the granular infill used to surround the ducting cannot, over time, compromise the integrity of the filter drain by migration of the infill material into the drain. Any damage caused by the Company to any drain shall be repaired to the satisfaction of the Overseeing Organisation and at no cost to the Contracting Authority.</p> <p>1.11 Unless otherwise described in the O&M Works Requirements the Traffic Scotland Equipment duct network comprises of:</p> <ul style="list-style-type: none"> (a) quad 100mm inside diameter sealed longitudinal communication ducts installed along both verges terminating at each roadside longitudinal Type A chamber constructed at each equipment site and at transverse duct locations and additional location such that no duct run is greater than 250m. A nominal spacing of Type A chambers shall be 250m centres. Additional Type A chambers shall be provided where changes of level or direction occur; (b) Six way 100mm inside diameter sealed communication ducts at carriageway cross connection points terminating at each roadside longitudinal Type A chamber at frequencies detailed in the O&M Works Requirements and at both extents of entry/exit slip roads; (c) single 100mm inside diameter local ducts as typically shown in NDX1063-00; (d) Single 50mm inside diameter local ducts as NDX1063-00 to provide for cables connecting to the Emergency Roadside Telephones; and (e) Single 150 mm inside diameter local power ducts for power cable connection from Termination Pillar to Traffic Equipment Distribution Pillars where not local to the CEC.
1532A	<p>1 Chambers for Traffic Scotland Cables</p> <p>1.1 Chambers shall be either a Type A, B, C or Loop chamber (Type D). Chambers Type A, B and C are rectangular in plan with a standard plan size and are constructed so that their covers are raised 50mm above the level of the adjacent ground. Type A and B are shown in the drawings NDX1063-01 and NDX1063-02. Type C is shown on NDX1063-03. The construction of the Detector Loop roadside chamber is shown in NDX1063-04.</p> <p>1.2 Chambers shall be used solely for Traffic Scotland Equipment.</p> <p>1.3 Unless otherwise described in the O&M Works Requirements, the following chamber types shall be installed at the locations as follows:</p> <ul style="list-style-type: none"> (a) Type A chambers shall be placed between 400m and 500m intervals along the length of the longitudinal ducts in both verges. The chambers shall be installed at the same chainage in both verges. Additionally, six way transverse ducts installed at gantry locations and at 400-500m intervals;

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	<p>(b) Type A intermediate chambers shall also be installed in both verges along the longitudinal ducts midway between chambers detailed in the sub clause 1532.3SR (i) so providing duct access at between 200 and 250m intervals. At these intermediate chambers no transverse ducts are required to be installed;</p> <p>(c) A cable stowage Type C chamber shall be constructed adjacent to all individual or group of communications cable termination cabinets and at other locations where cable service loops are required;</p> <p>(d) Additional Type A chambers where Traffic Scotland Equipment site is not adjacent to the Type A chambers detailed in sub clause 1532.3SR (i) and (ii);</p> <p>(e) Additional Type A chambers for cable access shall also be constructed wherever the associated ducts change level or direction; and</p> <p>(f) Type A or Type B chambers shall also be constructed as required to accommodate local ducting containing Electricity supply or Private wire interface cables.</p>
1.4	Roadside Loop Chambers shall be installed in the verge adjacent to each Traffic Scotland vehicle detection site and each National Traffic Data Service vehicle classification detection site.
1.5	Foundations to chambers shall be of mix ST4 concrete in accordance with Clause 2602.
1.6	Brickwork shall comply with the 2400 Series and be built with mortar designation (i) in English bond. The joints of brickwork where exposed shall be finished as specified for un-pointed joints in Clause 2412. The ends of all ducts shall be neatly built into the brickwork and finished flush with mortar designation (i).
1.7	Chambers not exceeding 1.3 metres in depth to invert may be constructed from complete plastic units or other units in equivalent material. Where the units do not meet the loading requirements of BS 5911: Part 200, they shall be surrounded by 150 mm of mix ST4 concrete. Where preformed plastic chambers are used with duct entries then correctly located round duct access holes shall be core cut to provide a clearance fit on each duct. The outer surface of the ducts shall be sealed against the chamber wall using epoxy putty or similar as required by the manufacturer's instructions. No more than 6 off 100mm diameter ducts shall enter on a single wall. Unless otherwise agreed with the Overseeing Organisation plastic chambers shall be installed in accordance with, the manufacturer's instructions and this Series 1500.
1.8	Where the depth of invert of chambers exceeds 900 mm below the finished surface of the carriageway or the adjacent ground, manhole steps complying with BS 1247: Part 1 or Part 2 shall be built in as specified in BS 5911: Part 200. Steelwork fittings shall comply with BS 970: Part 1 and be galvanised in compliance with Clause 1909 after

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	<p>fabrication. Threaded components shall be galvanised in compliance with Clause 1909. The depth of chambers shall not exceed the dimensions given in the NDX series drawings.</p> <p>1.9 Excavation around chambers shall be backfilled with general fill materials as described in Table 6/1 and compacted in compliance with Clause 612. Where mechanical compaction is impracticable, the excavation shall be backfilled with mix ST2 concrete complying with Clause 2602. Where there are pre-cast concrete access shafts to pre-cast or similar concrete chambers, the shafts shall be surrounded by a minimum thickness of 150 mm of mix ST4 concrete, and the remaining excavation backfilled with general fill material as described in Table 6/1 compacted in compliance with Clause 612 of the Specification.</p> <p>1.10 Chamber covers and frames shall be suitable for purpose to comply with BS EN 124 and be agreed by the Overseeing Organisation. Special duty covers for use in carriageways and other special situations shall be as agreed with the Overseeing Organisation.</p> <p>1.11 A concrete apron shall be provided at all Traffic Scotland chambers in accordance with the NDX Drawings. Such aprons shall be constructed to provide adequate surface run-off and should generally be arranged to form a continuous and level hard standing area joining with the access pathway and other such adjacent paved or concrete aprons. Under no circumstances should the chamber apron form any part of safety fence foundations or similar civils construction.</p> <p>1.12 Four sets of lifting keys shall be delivered to the Overseeing Organisation for each type of cover supplied. Additionally, a suitable cover lifter shall be delivered to the Overseeing Organisation.</p> <p>1.13 Frames for chamber covers shall be set in cement mortar designation (i) complying with Clause 2404 or a suitable proprietary quick setting mortar of equivalent strength.</p> <p>1.14 Chambers shall be constructed with a sump as shown in the NDX Drawings. This sump shall be constructed to drain into a soak away immediately below the chamber. It is a requirement of this specification that the chamber drainage is adequate to minimise the accumulation of water in the chamber. Under no circumstances should running water be allowed to drain through the chambers.</p> <p>1.15 Chambers shall be clearly identified by the legend "MOTORWAY COMMUNICATIONS"; the lettering shall be 25 mm high and shall be embossed into each cover. Where covers have a concrete infill a plate manufactured from a non-corrodible metal or steel, galvanised in accordance with Clause 1909, shall be cast into the concrete flush with the concrete surface.</p>
1533A	<p>1 Proving and Testing of Ducts</p> <p>1.1 Longitudinal and transverse ducts shall be proved by drawing a wooden or plastic mandrel as shown on HCD Drawing I2 through the ducts. Local ducts shall be proved by drawing through each length of</p>

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	<p>completed duct a spherical mandrel of a diameter 10% less than the nominal bore of the duct. On the successful completion of each mandrel pull the Company shall certify compliance of the duct and immediately plug the duct in accordance with Clause 1530.</p> <p>1.2 All longitudinal and transverse ducts shall be tested in sections, e.g. between chambers, by means of the air test described in sub-Clause 3 of this Clause after backfilling. On the successful completion of each test the Company shall certify compliance of the duct and immediately plug the duct in accordance with Clause 1530.14</p> <p>1.3 To undertake the air test, air shall be pumped into the duct by suitable means until a stable pressure of 100 mm head of water is indicated in a U-tube connected to the system. The air pressure shall not fall to less than 75 mm head of water during a period of five minutes without further pumping, after an initial period to allow for stabilisation.</p> <p>1.4 A register of mandrel and air test certificates shall be maintained by the Company and handed to the Overseeing Organisation on the successful completion of the ducting work.</p> <p>1.5 Unless otherwise described in the O&M Works Requirements, the Company shall provide and install in the end of every duct at every point of entry into cabinets, purpose made push fit duct inserts/end caps. These inserts/end caps will be installed in a fashion to allow the polypropylene draw cord to pass through. NDX drawing 1063-00 sheet 7 of 10 refers.</p>
1534A	<p>1 Closed Circuit Television</p> <p>1.1 Closed Circuit Television (CCTV) typically consists of cameras, associated masts, Pan Tilt and Zoom (PTZ) units, camera mast cables and video transmission equipment.</p> <p>1.2 At sites remote from gantry locations, the Company shall design and install a camera mast foundation in accordance with the standards detailed in the mast manufacturer's instructions, the O&M Works Requirements and typically described in the NDX1010 Series Drawings.</p> <p>1.3 All Sites shall be designed and configured to enable safe maintenance and access.</p> <p>1.4 At gantry locations, the Company shall design and install a camera mast fixing arrangement in accordance with the standards detailed in the mast and CCTV manufacturer's instructions, the O&M Works Requirements and the Agreement Drawings.</p>
1535A	<p>1 Variable Message Signs</p> <p>1.1 Variable Message Sign equipment will consist of a variation of Sign types and mounting arrangements as stated within the O&M Works</p>

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Clause Number	Title
	<p>Requirements.</p> <p>1.2 Where the Company provides and installs VMS foundations and associated infrastructure these shall be in accordance with the standards and requirements detailed in the Agreement Documents. NDX1001-02 describes a typical ladder arrangement to satisfy the access requirements of the equipment to be installed.</p> <p>1.3 Cabinet types shall be in line with typical gantry requirements.</p> <p>1.4 Any ducting required to pass through the foundation shall comply with the O&M Works Requirements.</p>
1536A	<p>1 Traffic Monitoring Units</p> <p>1.1 Traffic Monitoring Units shall be installed in the types of cabinets as described in the O&M Works Information.</p> <p>1.2 Cabinets housing TMU's shall be co-located at other Traffic Scotland Equipment sites. The length of feeder cable connecting the loop tails to the TMU shall not exceed 200 metres. Within the cabinet housing the TMU the loop feeder cables shall be terminated in terminal blocks complying with Clause 1514, secured to the equipment frame. Terminal screw tightness shall be within the range 0.4 to 0.6 Nm. Each feeder cable shall have a minimum of 3 metre of cable coiled in the chamber adjacent to the Cabinet housing the TMU to allow for subsequent re-terminations. Each feeder cable shall be individually identified in compliance with NDX1061-00.</p> <p>1.3 Where a standalone TMU site is required the Company shall provide all power and hard landscape in compliance with that required of any Traffic Scotland Equipment site and detailed in the O&M Works Information.</p>
1537A	<p>1 National Traffic Data Service Detectors and Equipment</p> <p>1.1 An NDS site comprises of loop detectors providing vehicle parameters for all lanes and hard shoulders in both directions and NDS vehicle count equipment. Unless otherwise described in the O&M Works Requirements NDS sites shall be installed in addition to Traffic Scotland vehicle detection sites but shall be co-located with a Traffic Scotland Equipment site unless specifically required to be standalone.</p> <p>1.2 Where a standalone SRTDb site is required the Company shall provide all power and hard landscape in compliance with that required of any Traffic Scotland Equipment site and detailed in the O&M Works Requirements.</p> <p>1.3 The NDS Detectors and equipment shall be provided as described in the O&M Works Requirements and this 1500 series.</p> <p>1.4 NDS equipment shall be installed within a specialist Transport Scotland Issued Equipment cabinet, suitably located and protected in full</p>

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Clause Number	Title
	<p>compliance with TD19.</p> <p>1.5 A D type chamber shall be provided adjacent to the cabinet for loop tail stowage.</p> <p>1.6 The distance between where the loop tails enter the verge and the detector unit shall not be more than 200 metres including any stowed loop tails.</p>
1538A	<p>1 Lane Control Signalling Equipment</p> <p>1.1 Not Used.</p>
1539A	<p>1 Paved Areas, Access Paths, Access Steps and Hard standings</p> <p>1.1 Paved areas, access paths, access steps, handrails and hard standings shall be provided at each existing and new Traffic Scotland equipment site that the Company shall require to modify or provide. Each existing and new equipment site is unique and the Company shall provide and install paved areas, access paths, access steps, handrails and hard standings appropriate to each new and existing site.</p> <p>1.2 The general requirements for paved areas, access paths, access steps and handrails shall be as typically shown on NDX Drawings and detailed within the O&M Works Information.</p> <p>1.3 Hard standings shall be of a size and construction to provide safe parking of a vehicle off the hard shoulder. Such an arrangement shall be contiguous with the access pathway to the Traffic Scotland equipment and provide safe access for the maintenance engineer. Unless installed adjacent to an Emergency Roadside Telephone installation, the hard standing shall be constructed from open cementitious block and be typically as shown in the NDX1072-00.</p>
1540A	<p>1 Required Documentation</p> <p>1.1 TR1100, and subsequent Scottish Amendments to TR1100 shall be considered as a general guide to Traffic Scotland deliverable documentation requirements. The final overall documentation package relating to the Traffic Scotland Equipment shall reflect inter alia the contents, requirements, structure and format as described in the Traffic Scotland NDS9001 'Traffic Scotland Health and Safety File Requirements and Model Forms'. Any significant changes with respect to this requirement shall be agreed with the Overseeing Organisation.</p> <p>1.2 All final As-Built Documentation as required by this Clause 1540SR forming all or part of the Traffic Scotland deliverable documentation shall be provided in accordance with the O&M Works Information.</p> <p>1.3 Documentation shall be made available to the Overseeing Organisation on request relating to Traffic Scotland Equipment until issue of the Performance Certificate.</p> <p>1.4 The Company shall provide new Traffic Scotland documentation in a</p>

Part 5: Specification

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Clause Number	Title
	<p>style and format identical to the existing Traffic Scotland documentation as indicated in the Traffic Scotland Equipment Manual, the Traffic Scotland Maintenance Manual and the Traffic Scotland drawings. Where the Company is required by the Agreement to update existing Traffic Scotland documentation the Overseeing Organisation shall release the necessary Traffic Scotland documentation to the Company and the Company shall update the documentation. All such updated documentation shall be presented to the Overseeing Organisation for approval.</p> <p>1.5 The Company shall use current versions of AutoCAD™ computer software and Microsoft Word/Excel to provide or modify all Traffic Scotland Equipment documentation. All soft versions shall be supplied without any software restriction and shall be capable of being modified by the Overseeing Organisation. The standards and procedures for all CAD Drawings provided under the requirements of this Agreement shall comply with the O&M Works Information. All test results and test certificates shall be produced in a suitable software format or by an industry standard software package.</p> <p>1.6 An up to date Drawing/Document Register will at all times be maintained reflecting issue, revision dates, status and application. All changes to drawings, or documents, shall be indicated by a change of issue.</p> <p>1.7 Location measurements shall be taken of the underground equipment to the nearest 100mm from the nearest edge of the carriageway or fence line. Offsets to the cables/ducts shall be recorded at 20 metre intervals and at every change of direction along the line of the cable/duct. Offsets shall be defined longitudinally by distance from a permanent highway feature, a marker post or other point and agreed with the Overseeing Organisation. All details shall ensure compliance with the requirements of the Agreement relating to the NRSWA.</p>
1541A	<p>1 Journey Time Equipment</p> <p>1.1 Journey time equipment shall be as described in the O&M Works Information</p>
1542A	<p>1 Communications Equipment</p> <p>1.1 Communications equipment shall be as described in the O&M Works Information.</p>
1543A	<p>1 Specific Equipment Commissioning, Testing Integration and Certification</p> <p>1.1 Specific equipment commissioning, testing, integration and certification shall be as described in the O&M Works Information.</p>

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Clause Number	Title
1544A	<p>1 Power Supplies for Traffic Scotland Equipment</p> <p>1.1 Power supplies shall be provided in accordance with the O&M Works Information.</p> <p>1.2 All Electrical supplies shall be single phase and in accordance with NDS9551 "Requirement for electricity supply for Traffic Scotland and associated sites."</p> <p>1.3 Earthing and bonding shall be as Clause 1517SR.</p> <p>1.4 Inspection and Testing shall be to Clause 1526SR.</p>
1545A	<p>1 Spares</p> <p>1.1 Unless otherwise stated in the O&M Works Information, spares shall be as described within NDS9001 "Traffic Scotland Health and Safety File Requirements and Model Forms"</p>
1546A	<p>1 Meteorological Equipment</p> <p>1.1 Meteorological Equipment does not normally form part of the Traffic Scotland Equipment. However where Meteorological equipment (weather stations) are required the meteorological equipment shall be located within a Traffic Scotland Equipment site and will consist of a combination of sensors and inputs at a roadside location which will include a roadside CEC/600 Cabinet type. The equipment type and layout shall be manufacturer specific and details will be provided by the Overseeing Organisation.</p> <p>1.2 Meteorological Equipment shall be provided and installed as described in the O&M Works Information and within the Agreement Drawings.</p>
1547A	<p>1 Ramp Metering</p> <p>1.1 The Company shall install Ramp Metering and all ancillary support in accordance with the requirements of the Agreement. This will be in accordance with the Agreement Drawings and as described in the O&M Works Information.</p>
1548A	<p>1 Enforcement Systems</p> <p>1.1 The Company shall install the necessary enforcement systems, mountings, power and communications in accordance with the requirements of the Agreement. This will be in accordance with the Agreement Drawings and as described in the O&M Works Information.</p>
1549A	<p>1 Weigh In Motion Equipment</p> <p>1.1 Weigh in Motion Equipment will consist of a series of specialist detectors providing detection for all lanes and both directions where required combined with a standalone detection unit.</p> <p>1.2 Weigh in Motion equipment shall be installed within a Type 600(S) Issued cabinet, suitably located and protected in accordance with</p>

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Clause Number	Title
1.3 1.4	<p>TD19/06.</p> <p>The Company shall install Weigh in Motion Equipment and all ancillary support systems in accordance with the requirements of the Agreement. This will be in accordance with the Agreement Drawings and as described in the O&M Works Information.</p> <p>Typical site layout and cabinet arrangement is shown in NDX1097-01.</p>
1550A	<p>1 Damage and Repair Procedures</p> <p><i>Reserved for completion by Traffic Scotland. Contact the Traffic Scotland Manager</i></p>
1911SE	<p>1 Paint and Similar Protective Coatings</p> <p>1.1 The term "paint" shall be deemed to refer also to similar protective coatings including specialist coatings such as grease paints.</p> <p>1.2 Where a registered paint is specified, the Company shall ensure that the paint conforms with the formulation which has been registered by the manufacturer with the Highways Agency on or before the date entered at Part 2 of Appendix 19/1 Form HAVP1 (Works) paint system sheet.</p> <p>1.3 All paints shall be supplied in sealed containers of not more than 5 litre capacity and these shall be used in order of delivery. Each container shall be of the completely removable lid type and be clearly marked on the side to show the name of the manufacturer, registered description of the material (including purpose, e.g. whether primer, undercoat or finish), colour, Item No, paint manufacturer's reference number, batch number and date of manufacture. Where date of manufacture is coded, the Company shall provide the code key.</p> <p>1.4 The Company shall ensure that the properties of the paints he has selected are suitable for the conditions in the shops and on site, including temperature and humidity, and that he is able to apply the paints satisfactorily to all parts of the Structure in these conditions.</p> <p>1.5 Unless otherwise described in Appendix 19/5, all paints forming any one protective system, or overlapping systems, shall be obtained from the same manufacturer, as named by the Company in Form HAVP1 (Works) Paint System Sheet.</p> <p>1.6 The requirements of Sub-Clauses 1911.3, 7, 8, 9, 10 and their respective tables shall apply in Scotland.</p>
1912SE	<p>1 Testing of Paints</p> <p>1.1 Unless otherwise described in the this Agreement, the Company shall provide unopened 5 litre samples, known as 'A' samples, of each type of paint to be used in the Works for testing for quality assurance purposes. 'A' samples shall be taken from the first batch of each type of paint delivered to the fabricator's shop or site. In addition, during the painting work, the Company shall supply 500 millilitre samples, known</p>

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Clause Number	Title
1.2	<p>as 'B' samples taken from painters' kettles or from nozzles of airless spray guns directly into clean new tins. For 2-pack systems separate samples of the base and activator shall be dispatched by the Company to the testing authority.</p> <p>Depending upon the importance of the proposed painting application, the Contracting Authority may elect to have 'A' samples sent for limited testing by a local paint testing firm or other agency specified by the Contracting Authority. Appropriate forms for use in connection with limited testing shall be derived from the standard paint forms and shall be agreed with the Contracting Authority.</p>
1.3	<p>The Company shall supply paint in sufficient time to allow for sampling and testing of 'A' samples before the start of application. The Company shall be responsible for handling, provision of clean tins for samples, packing as necessary and prompt despatch and transit of all samples for testing.</p>
1.4	<p>'A' and 'B' samples are tested for paint composition and / or properties against the original formulation issued by the paint manufacturer at the registration with HA.</p>
1.5	<p>The requirements of Sub-Clauses #1912.10, 11 and 12 shall apply in Scotland.</p>
1.6	<p>Except for procedure trials painting shall not start until the first of the 'A' samples are confirmed as satisfactory.</p>
1920SE	<p>1 Additional Requirements for the Protection of Steel in Bridge Bearings</p> <p>1.1 Applicable Clauses</p> <p>1.1.1 Unless otherwise described in this Agreement, the work described in this Clause shall be carried out in compliance with Appendix 19/1 and with Clauses 1901 to 1919 inclusive.</p> <p>1.2 Supply of Coatings</p> <p>1.2.1 Information, including the name of the paint manufacturer, required for completing Form HA/P1 (Works) Paint System Sheet, for the bearings, shall be obtained by the Company from the bearing manufacturer.</p> <p>1.2.2 Item 155 and MIO Epoxy paints when required for application on site shall be obtained from the manufacturer of the shop applied coats. Paint applied to the bearings on site to match the bridge steelwork paint system shall be obtained from the manufacturer of that system.</p>

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List of Minor Alterations Clauses, Tables and Figures

Clause Number	Title
1702.2	<p>1 Concrete – Ordinary Structural – Constituent Materials</p> <p>1.1 At end of Clause add the following: The minimum testing frequency shall be in accordance with Table 3 of BS812: Part 120: 1989.</p>
N/A	<p>1 Appendix A, Page 8</p> <p>1.1 Delete Note 2 and replace with the following: The implementation date of this scheme is the Base Date.</p>

Appendix 1/1: Temporary Accommodation and Equipment for the Contracting Authority**1 Accommodation Required**

- 1.1 Office Accommodation for the Service Period shall be as defined in this Appendix 1/1.
- 1.2 An office facility comprising accommodation for the Scottish Ministers shall be provided by the Company including conference room and messing facilities, car parking and security arrangements.
- 1.3 The Operational Office and hall accommodation shall accommodate three staff.
- 1.4 The office buildings shall be constructed of secure 'anti-vandal' steel shell office-accommodation units or any system, which is deemed suitable for temporary accommodation of this nature, which is acceptable to the Scottish Ministers.
- 1.5 The office building facilities shall be connected to existing water, 240 volt AC electricity supply, and telecommunication utilities for provision of water, heating, lighting and telephone.
- 1.6 Sewage disposal shall be either direct to existing piped mains facility or specially provided septic tank which shall be regularly serviced.
- 1.7 The office buildings shall comply with and be maintained to comply with the Construction (Health, Safety and Welfare) Regulations 1996. The Electricity at Work Regulations 1989 shall be complied with in all respects in the case of equipment and furnishing of rooms in the office buildings.
- 1.8 Prior to occupation the Company shall have the buildings appropriately certified by the local authority and fire brigade as suitable for occupation and use intended.
- 1.9 The office accommodation for the use of the Scottish Ministers shall be to a high standard of, including but not limited to, structural integrity, aesthetics, internal finishing, equipment and furniture as described below.
- 1.10 The location and layout of the integrated office facilities shall be wholly acceptable to the Scottish Ministers whilst conveniently located in close proximity to, and possibly overlooking, the O&M Works. The integrated office building facilities shall be set apart from the Company's site operations plant store and depot and routes used by construction traffic.
- 1.11 The office buildings shall also be provided with a separate entrance and lobby area, conveniently located within its layout for direct access by personnel of the Scottish Ministers and Company when either visiting or returning from the O&M Works Site for purpose of changing into or removing/cleaning and storing boots and safety gear.
- 1.12 Raised doorway entrances and accessways to the office building that have steps/stairway approaches shall have tubular steel handrails fitted either side of the access stairway.
- 1.13 The Company shall form a 3 metre wide access from the public road and provide car parking at the principal office allowing space for 5 number Scottish Ministers vehicles and 3 number visitor's cars.
- 1.14 Fire exit routes from the office buildings shall be of concrete slabs or bituminous surface free from steps and other obstacles constructed so as to enable rapid and efficient drainage.
- 1.15 All road surfaces and access to the public road connected with the office buildings shall be constructed on prepared ground and covered with bituminous surfacing and have positive drainage.
- 1.16 The roads and car park shall have a bituminous surface and the road access shall be kept clear of mud and debris and shall not be used by construction plant.

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- 1.17 The Company shall consult and comply with the Scottish Ministers with regard to the entire integrated layout and specification of the office building facilities that the Company intends to provide, based on the requirements stated in this Appendix.
- 1.18 The Company shall provide a Consultation Certificate in accordance with the Certification Procedure in respect of this requirement, prior to commencement of any work in connection with these building facilities.
- 1.19 The integrated office building (or units) facilities shall be adequately guarded at all times to ensure no unlawful or unauthorised entry.
- 1.20 The integrated office buildings (or units) facilities shall fulfil the following construction requirements and operational conditions as a minimum requirement:
- 1.20.1 The office buildings shall be erected on pre-prepared under-building of brick or concrete dwarf walls founded on concrete strip-footings with damp-proof course.
- 1.1.1 The underside of the external walls and floors of the office-building shall not be less than 400 millimetres above surrounding ground level.
- 1.1.2 Floors of the office shall be of tongue and groove timber, lined with hardboard or plywood and covered with vinyl floor covering* (*Wall to wall carpet overlay shall be provided in particular rooms occupied by the Scottish Ministers and Scottish Ministers Representative as indicated in the list below).
- 1.1.3 External walls shall contain a suitable vapour barrier and a 25 millimetres layer of glass wool or equivalent insulation. Internal walls shall be smooth with coloured oil based paint.
- 1.1.4 Headroom shall be not less than 2.25 metres.
- 1.1.5 Ceilings shall be plasterboard covered on top with 25 millimetres layer of glass wool insulation and finished with two coats of white water based paint.
- 1.1.6 The office buildings shall be completely weatherproof and watertight. Windows shall comprise double-glazed sealed units or equivalent with window-area being not less than 2 square metres for every 10 square metres of floor area and with each window having opening facility for at least one-third of the window size.
- 1.1.7 All windows shall be fitted with external roller-blinds operated internally for purpose of security and Venetian-type blinds shall be fitted internally.
- 1.20.2 All pipe-work shall be suitably lagged and/or insulated to prevent freezing.
- 1.20.3 All internal doors to rooms shall be fitted with mortice-locks and 2 [all] sets of keys for rooms occupied by the Scottish Ministers and Scottish Ministers Representatives shall be handed over to the Scottish Ministers.
- 1.1.8 The Company shall record the distribution of all room-keys and control additional issue of room-keys.
- 1.1.9 The external doors shall be fitted with draught excluders and mortise locks, whilst the doors to the entrance and reception area shall be fitted with an electronic opening and closing / locking device operated by means of electronic smart-card.
- 1.1.10 The Company shall provide smart-cards for use by individuals in the Scottish Ministers staff and shall record the distribution of all smart-cards.
- 1.20.4 The offices shall be provided with 13 amp socket outlets suitably spaced and provided around the office on the basis of 2 dual gang socket for each 5 square metres of office space.

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- 1.1.11 The offices shall be adequately provided with electric heating capable of maintaining a uniform room temperature of at least 20 degrees centigrade and shall be lit with electric fluorescent diffused lighting to an acceptable standard.
- 1.20.5 The office building facilities including both individual office space/rooms and the jointly occupied office space/rooms and facilities provided for use by the Scottish Ministers shall include furniture, fixtures and fittings, equipment, stores, protective clothing, and surveying equipment and supplies as listed below, for the Scottish Ministers exclusive use and shall be regarded as the minimum requirement.
- 1.20.6 All furniture, fixtures and fittings, equipment, stores, protective clothing, and surveying equipment computers, computer peripherals software and all supplies for the Scottish Ministers exclusive use shall be new and unused
- 1.20.7 Complete security, privacy and confidentiality shall be ensured at all times in the rooms and for all facilities including computers and peripherals which are provided for contract administration activities undertaken by the Scottish Ministers as described below.
- 1.20.8 All the telecommunication lines and facilities provided for use by the Scottish Ministers as described below, shall be completely independent of the Company's facilities, to ensure privacy and confidentiality and shall be as a separate account.

The layout and particular room requirements of that part of the office building facility occupied by the Scottish Ministers and Scottish Ministers Representatives shall have minimum floor areas as listed in the table below:

Room Description	Reference	Area (square metres)	Particular Requirements
Scottish Ministers Office	A	20	Floor to be fitted with wall to wall carpet
Storage room	N	12	
Conference Room	D	15	Shared/managed by Company. Located near main entrance and reception Floor to be fitted with wall to wall carpet
Kitchen	O	20	Cooking and dish washing facilities shared with Company
Male Toilet Facilities	R		
Female Toilet Facilities	T		

- 1.20.9 A regularly serviced supply of bottled drinking water and dispensing device shall be provided in the Kitchen/Dining Area
- 1.20.10 The management and administration system implemented by the Company shall include for effective and advance allocation of the shared conference room facility to meet the requirements of both the Scottish Ministers and the Company.
- 1.20.11 The office buildings shall be properly cleaned and serviced at least once per working day, for so long as it is in use, with essential cleaning and servicing being

Appendix 1/1: Temporary Accommodation and Equipment for the Contracting Authority

carried out outside normal working hours but not without presence of office security or other authorised personnel.

2 Furnishings and Fitments

Room A: Scottish Ministers Office

Quantity	Item
2	Independent telephone and ISDN line
2	Telephone extension connected to switchboard and connection to Company
3	1.8 metres by 1 metre double pedestal desk with locking drawers with side unit with veneered surface
3	5 point swivel wheeled desk armchair fully adjustable
3	Lockable 4 drawer, steel filing cabinet, each drawer complete with file hangers
6	Coat hooks
3	Wastepaper bin
2	Paper punch and stapler
2	Set of 4 tier filing trays
2	Cat 5 (RJ45) surface mounted boxes – connected to LAN
2	Personal Computer as per Section 4.1 below - with Port Replicator
2	Desk fan

Room D: Conference Room

Quantity	Item
1	Conference table 4 metres by 1.5 metres or similar approved
12	Conference chairs
1	White Marker Board 1 metre x 1.5 metres (with supply markers) mounted on wall at appropriate position.
2	Cat 5 (RJ45) surface mount boxes – connected to LAN
1	Telephone extensions connected to switchboard
2	Wastepaper baskets
20	Coat hooks
1	Window mounted powered extractor fan
1	Free standing fan

ROOM N Storage Room

Quantity	Item
1	10 metres shelving
1	Storage racks for survey equipment
2	Lockable steel cabinet 1 metres wide by 2.0 metres high with shelving

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ROOM O

Quantity	Item
1	Stainless steel sink with draining board, complete with cupboards and Formica worktop, hot and cold water supply
1	'King size' waste bin complete with supply of liners
1	Wall mounted cupboard 2 metres long
1	Base unit 2 metres long with drawers and cupboards complete with Formica worktop 3.5 metres long
1	3 pint electric kettle with automatic switch-off
1	3 pint teapot
1	3 pint coffee pot
1	6 cubic feet refrigerator
1	800 watt microwave with turntable
1	Cold water drinking dispenser
1	Fire extinguisher (dry powder)
1	Fire blanket
1	Window mounted powered extractor fan
1	First aid kit complying with the requirements of the Health and Safety (First Aid) Regulations 1981.
2 set	Crockery, cutlery and cooking utensils for 6 persons or as required by the Scottish Ministers (to be replaced as required)
	Supply of tea, coffee, milk and sugar (replenished as required during periods)
	Supply of towels (replenished and laundered during periods)

ROOM R

Quantity	Item
1	WC suites
1	Toilet roll holders and supply of toilet rolls
1	Wash-hand basins complete with taps and hot and cold water supply
1	Towel dispensers laundered and replenished when required
1	Liquid soap dispensers with supply of liquid soap, or supply of soap
1	Electric wall-mounted hand drier
1	Wall mirror
1	Coat hook

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1	Powered extractor fan
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ROOM T

Quantity	Item
1	WC suite
1	Toilet roll holders and supply of toilet rolls
1	Wash-hand basins complete with taps and hot and cold water supply
1	Towel dispensers laundered and replenished when required
1	Electric wall-mounted hand drier
1	Liquid soap dispensers with supply of liquid soap, or supply of soap
1	Sanitary bin
1	Wall mirrors
1	Coat hook
1	Powered extractor fan

3 Computer Equipment

3.1 All the equipment listed below shall be maintained by the Company up to Handback plus 12 months unless otherwise stated. The equipment shall be installed and commissioned by a reputable quality assured supplier (BSN002). The equipment shall be covered by a hardware maintenance contract with an eight hour maximum response time for repair or replacement.

3.2 Desktop Personal Computers (PC's)

Personal Computers shall be installed in the respective rooms described above in the preceding Section 2 according to the details specified below; these are regarded as typical and alternative suppliers may be considered; the details of the entire package of computers and peripherals shall however be agreed with the Scottish Ministers:

IBM ThinkCentre M50 or similar approved	Intel Pentium 4 Processor 3E Ghz 1 MB L2 Cache
	512MB PC2700 DDR SDRAM
	40GB Hard Drive 7200rpm (1 Computer which is to double as a network server shall have two hard-drives)
	Optical Drive 24x/24x/24x/8x Max CD-RW/DVD-Rom
	Intel Extreme Graphics 2
	SoundMAX Cadenza
	Ethernet Intel PRO/1000 Gigabit
	IBM Full Size Keyboard

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	IBM Optical Wheel Mouse
	Tower case
	Microsoft® Windows® XP Professional
	IBM 19 inch monitor

3.3 Network (LAN)

The Company shall provide the following:

- 3.3.1 An Asynchronous Digital Subscriber Line (ADSL) or ISDN line for three concurrent users
- 3.3.2 All routers, hubs, cabling and connections required to connect six concurrent users to the ADSL/ISDN line and also to the network server.

One desktop pc is required to have two hard drives to double as a network server. The server shall have a degree of hardware redundancy built in by utilising hard drive mirroring or similar.

The network shall be installed by the Company to facilitate free access to internet and enable inter-office communication via email.

3.4 Ancillary Equipment

- 3.4.1 Computer Software - All of which shall be the most up to date version available at the Date of Award of Contract.

The following software shall be installed on each computer, but shall not be limited to:

- (i) Microsoft Office Professional;
- (ii) Outlook;
- (iii) Zone Alarm Pro (Firewall software) or approved equivalent;
- (iv) Anti Virus software (and weekly updates for the duration of the contract);
- (v) Modem sharing software;
- (vi) Photo CD;
- (vii) CD authoring/writing software on PC with CD writer; and
- (viii) Adobe Professional 7.0 (laptops only)

The software shall be installed on each computer while each full set of the disks and documentation shall be supplied for each set of software installed to the Scottish Ministers.

The Company shall provide two Autocad LT licences, two MS Project and two CorelDraw x3 licences with software to be installed on computers as directed by the Scottish Ministers.

3.4.2 Printers

The following are required to be installed in the respective rooms described in Section 2.

- (i) 2 Lexmark A4 colour printer/scanner or similar as approved; and

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- (ii) 1 Epson A3 colour printer (in Room A).

All Printers shall be connected to the computer network (LAN) and shall have associated network software and cabling. Paper and ink cartridges shall be supplied by the Company as required.

3.4.3 Photographic and Video Equipment

The following equipment shall be provided and installed, where appropriate, by the Company:

- (i) 1 digital camera and peripheral equipment (minimum specification as follows: Sensor resolution of 6 megapixels, optical zoom of 4x and additional memory card size of 128 MB) along with the associated software and cables for downloading and printing pictures onto PCs.
- (ii) All photographic equipment shall be retained by the Scottish Ministers for the duration of the O&M Works plus 12 months.

4 Schedule of Surveying and Other Equipment

- 4.1 The following equipment shall be for the exclusive use of the Scottish Ministers and his staff, and shall be as described, or equivalent. The Company shall be responsible for the supply of labour and materials for cleaning and maintaining the equipment throughout the Services Period:

Quantity	Item
2	30 metre measuring fibron tape. To be renewed by the Company as required by the Scottish Ministers
2	5 metre pocket measuring tapes
2	Flashlights with batteries – replaced as and when required
-	Waterproof marking chalk in various colours. Supplies to be renewed by the Company as and when required
-	Oil based paint in various colours. Supplies to be renewed by the Company as and when required
-	Nails as and when required.

The Company shall make available to the Scottish Ministers the use of any other survey equipment on the O&M Works Site as required.

5 Safety and Protective Clothing

- 5.1 The following shall be supplied new by the Company as and when required by the Scottish Ministers in sizes as required.

Item
Wellington boots with steel toe cap and mid-sole

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Protective safety boots with steel toe cap and mid-sole (type to be as agreed by Scottish Ministers Representative)
Fleece jacket 380g/m with 2 zipped pockets and draw cord hem.
Two band and brace high visibility yellow coats made from high performance waterproof and breathable fabric conforming to EN471 Class 3 and EN343 3,3. (GORE-TEX or equivalent type as agreed with the Scottish Ministers Representative)
Waterproof overtrousers
Safety helmets with comfort band chin straps and detachable ear defenders
Industrial rubber gloves
Industrial logger gloves
High visibility vests to BS 6629 : Class 'A' : Appendix G Plus
Seaboot stockings
Safety glasses / goggles

5.2 Additional protective clothing for up to 3 visitors shall be made available on request, for periods of up to one day, comprising 3 sets of high visibility waterproof anorak and safety helmets.

5.3 Initial Consumable Stores

The Company shall provide regular supplies of consumable items including, but not limited to, those identified in the list below as required for the sole use of the Scottish Ministers.

Description
A4 lever arch files with dust covers
A4 ring binder files
Set A4 file indices (plastic) (A - Z or 1 – 20)
Set A4 file dividers
A4 fold over clipboards
A4 pads ruled feint and margin (200 sheets)
A4 pads graph paper
A3 pads graph paper
Ruled all weather cover A6 notebook
Ruled hard cover A4 books

Appendix 1/1: Temporary Accommodation and Equipment for the Contracting Authority

Description
Box Formatted diskettes (1.44 MB) (10 per box)
Box CD-R 650 MB 74 min recordable disc (25 per box)
Box 25 millimetres paper clips
Box large drawing pins
Bottle white correction fluid
Ball point pens (black)
Ball point pens (blue)
Ball point pens (red)
Felt tip pens (Fineliner or equivalent) (black)
Felt tip pens (Fineliner or equivalent) (red)
Felt tip pens (Fineliner or equivalent) (green)
Pencils (HB)
Box coloured pencils (12 assorted)
Pack highlighter marker pens (6 assorted)
A4 manila envelopes
DL gummed envelopes
Stick adhesive (Pritt stick or equivalent)
Roll sellotape with dispenser (25 millimetres wide)
Roll invisible tape with dispenser (25 millimetres wide)
"Post it" note pads 76 x 127 millimetres
Roll drafting tape
Time and date received dial stamp
Stamp pad with black ink
Foolscap document wallet
A4 clear plastic file pockets (top opening)
Suspension files with tabs and inserts

Appendix 1/1: Temporary Accommodation and Equipment for the Contracting Authority**6 Office Insurance**

- 6.1 The Company shall provide for the insurance against all risks, of the contents of the offices including the property of the Scottish Ministers and his staff together with any staff of the Scottish Ministers who may visit the offices from time to time. This includes personal effects required in the normal course of duty and other computer equipment supplied by the Scottish Ministers.

7 Heating and Lighting

- 7.1 The offices shall be adequately provided with electric heating capable of maintaining a uniform room temperature of at least 20 degrees centigrade and shall be lit with electrical fluorescent diffused lighting to a standard acceptable for a drawing office to achieve a minimum of 500 lux measured at drawing boards and the horizontal tops of desks. An external light shall be provided over the entrance to the building shielded to prevent misleading traffic on the public road.

Appendix 1/2: Vehicles for the Contracting Authority

- 1 The following specification fulfils the vehicle requirements for the O&M Works.**
- 1.1 The following vehicles shall be provided for the exclusive use of the Scottish Ministers.
- 1.2 The Company shall indemnify the Scottish Ministers, Scottish Ministers, his representatives and their respective staff authorised to drive the vehicles against claims in respect of damage to vehicle including claims from passengers.
- 1.3 The following vehicles of EU manufacture shall be provided:

Type	Number Required	Period Required	Cleaning Frequency
D	1	The Service Period as defined in the Project Agreement	Weekly

- 1.4 Type D – 4 door Estate car, 1800 cc

This vehicle shall have a carrying capacity of at least 0.25 tonne, a minimum clearance (unladen) of 150mm and independent suspension. The vehicle shall be supplied in light colour and shall be free from markings identifying any company associated with this Agreement. The equipment shall include: reversing lamp, fire extinguisher, luggage straps suitable for carrying survey equipment, sign board and roof mounted amber flashing light.

Appendix 1/5: Testing to be Carried out by the Company**1 Notes:**

- 1.1 Unless otherwise stated below, all sampling and testing in this Appendix shall be undertaken by the Company.
- 1.2 Tests comparable to those specified in this Appendix will be necessary for any equivalent work, goods or materials proposed by the Company (See sub-clause 105.4 of the Specification)
- 1.3 (N) indicates that a United Kingdom Accreditation Service (UKAS) or European Cooperation for Accreditation of Laboratories (EAL) accredited laboratory sampling and test report or certificate is required.
- 1.4 Unless otherwise shown in this Appendix, tests for work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.
- 1.5 Cube strengths are not required for concrete complying with Clause 2602 of the Specification.
- 1.6 Unless otherwise shown in this Appendix, test certificates for work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.
- 1.7 The Company's attention is drawn to the Requirements for additional testing requirements.
- 1.8 The Company shall incorporate in the schedule of tests required under Clause 36 of the Conditions of Agreement as a minimum the tests detailed in the following table together with all additional tests required by the Agreement.
- 1.9 All samples and cores taken for testing in accordance with series 900 of the Specification shall be photographed against a suitable base scale to the approval of the Contracting Authority.
- 1.10 The photographs, together with corresponding RRS1 and CRS1 Forms included in Clause 970AR of Appendix 0/1, shall be delivered to the Contracting Authority within seven days of the sampling on site.
- 1.11 All reference to FWD within this Appendix shall mean Falling Weight Deflectometer as described in HD29 of the DMRB.
- 1.12 All references to LWD within this Appendix shall mean Light Weight Deflectometer as described in Clause 895 of Interim Advice Note 73/06. The use and interpretation of the LWD shall be in accordance with Interim Advice Note 73/06 and the "LWD Good Practice Guide" (2009) produced by Loughborough University.
- 1.13 Where supplier declaration is required for material properties then this shall be in accordance with the factory production control system outlined in Annex C and D respectively of BS EN 13285.

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Appendix 1/5: Testing to be Carried out by the Company

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 300					
306	Permanent fencing				Quality management scheme applies
		Concrete components	Cover to reinforcement	1 per consignment (maximum 1 per 100 components) (BS 1722)	
308	Gates and stiles				Quality management scheme applies
		Reinforced concrete posts	Cover to reinforcement	1 per consignment (maximum 1 per 100 components) (BS3470)	
308 and 311	Preservation of timber	Full sapwood penetration	As required in sub-Clause 311.2(v)	Required for each batch	Quality management scheme applies.
Series 400					
402	Welding	Welding procedures (Manufacturer's tests)	(Every seven years)	Required	Quality management scheme applies
		Welder qualification (Manufacturer's tests)	As required in sub-Clause 402.6 (iii)		
		Production testing (Manufacturer's tests)	As required in sub-Clause 402.6(iv)		
	Welded joints	Destructive testing			
403	Anchorage and attachment systems for use in drilled holes.	Ultimate tensile load (Manufacturer's tests).		Required	To provide well attested and documented evidence.
404	Anchorage in drilled holes	On-site tensile load test	As required in Appendix 4/1	Required	
	Post foundations				
406	Vehicle Parapets.			Required	Quality Management Scheme applies
407	Anchorage and attachment systems for use in drilled holes	Ultimate tensile load (Manufacturer's tests)		Required	To provide well attested and documented evidence.

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 400 continued					
409	Vehicle parapet posts	Production testing as specified in BS 6779-1 1998 (Amd No 14290, 21 March 2003) (Manufacturer's tests)		Required	Certification in accordance with Clause 409 is required
410	Anchorage in drilled holes	On site tensile load test	As required in Appendix 4/1	Required	

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Appendix 1/5: Testing to be Carried out by the Company

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments	
Series 500						
501	Pipes for drainage and service ducts	Vitrified clay			Product certification scheme applies	
		Concrete - PC/SRC	not exceeding 900mm diameter			
		Concrete - Pre-stressed				
		Iron - cast				
		Iron - ductile				
		PVC-U				
		GRP				
		Plastics. See Table 5/1				
		Corrugated steel	(Manufacturer's tests)			Required (AASHTO)
		Corrugated steel bitumen protection		Not exceeding 900 mm diameter		
	Other materials			Required	BBA certification (or equivalent) applies	
503	Pipe bedding	Grading and fines content	1 per week (min of 3)	Required		
		Water-soluble sulphate (WS) content (N)	5 per source			
		Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	5 per source			
		Resistance to fragmentation (N)	1 per source			

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Appendix 1/5: Testing to be Carried out by the Company

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 500 continued					
505	Filter medium backfill	Plastic index (N)	1 per source	Required	
		Resistance to fragmentation (N)	1 per source		
		Water-soluble sulphate (WS) content (N)	5 per source		
		Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	5 per source		
		Grading and fines content	1 per week		
		Permeability (N)	1 per source		
506	Sealing existing drains				
	Concrete				
	Grout				
507	Chambers				Product certification scheme applies
	Precast concrete				
	Corrugated galvanized steel	(Manufacturer's tests)		Required	Product certification scheme applies
	Manhole steps				
	Steel fittings				
	Covers, grates and frames				Product certification scheme applies
	Cover bolts				Quality management scheme applies

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Appendix 1/5: Testing to be Carried out by the Company

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 500 continued					
508	Gullies and pipe junction				Product certification scheme applies
	Precast concrete				
	Clay				
	Cast iron and steel				
509	Watertightness of joints	Air test	All pipelines with watertight joints	Required	
512	Backfill to pipe bays	Grading	1 per 50 tonnes (min of 3)	Required	Minimum to allow for natural variability of sulphur compounds
		Water-soluble sulphate (WS) content (N)	5 per source		
		Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	5 per source		
513	Permeable backing to earth retaining structures	Plastic index (N)	1 per source	Required	
		Water-soluble sulphate (WS) content (N)	5 per source	Required	
		Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	5 per source		
		Resistance to fragmentation (N)	1 per source		
		Grading	1 per 200 tonnes (min of 3)		
		Permeability (N)	1 per source		
	Precast hollow concrete blocks	(Manufacturer's tests)		Required	

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Appendix 1/5: Testing to be Carried out by the Company

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 500 continued					
514	Fin Drains	(Manufacturer's tests)		Required	BBA certification (or equivalent) applies
515	Narrow filter drains	Geotextile, pipes and fittings	(Manufacturer's tests)	Required	BBA certification (or equivalent) applies
		Granular fill	Plastic index (N)	1 per source	
			Resistance to fragmentation (N)		
			Water-soluble sulphate (WS) content (N)	5 per source	
			Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	5 per source	
			Grading and fines content	1 per week (min of 3)	
			Permeability (N)	1 per source	
516	Combined drainage and kerb systems	Load test	A minimum of 1 test and not less than 1 test per 1000 metres for each type and source	Required	Certification that the systems comply with Clause 516 is required
517	Linear Drainage Systems	Load Test	A minimum of 1 test and not less than 1 test per 1000 metres for each type and source	Required	Certification that the systems comply with Clause 517 is required
518	Thermoplastics structured wall pipes and fittings	(Manufacturer's tests)		Required	BBA certification (or equivalent) applies

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments	
Series 600						
601, 631 to 637, 640	Acceptable material				Required	
	Class	General Description				
	1	General granular fill	Grading/uniformity coefficient	Twice a week		
			mc/MCV (N)	2 per 1000 m ³		
			IDD of chalk (N)	Twice a week		
		1C only	Resistance to fragmentation (N)	Weekly		
	2	General cohesive fill	Grading	Twice a week	Required	
			mc/MCV/PL Undrained shear strength (N)	2 per 1000 m ³		
			IDD of chalk (N)	Twice a week		
			Bulk density (pfa) (N)	2 per 1000 m ³		
	3.	General chalk fill	mc(N)	2 per 1000 m ³	Required	
			IDD (N)	Daily		
	4.	Landscape fill	Grading/mc/MCV (N)	Daily		
	5.	Topsoil	Grading	Daily		
	6.	Selected granular fill	Grading/uniformity coefficient	1 per 400 tonnes		
PI/LL (N)			Daily			
Resistance to fragmentation (N)			Weekly for on-site material			
IDD of Chalk (N)			Weekly			
omc/mc, mc / MCV (N)			1 per 400 tonnes			

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Appendix 1/5: Testing to be Carried out by the Company

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 600 continued					
601, 631 to 637 640 cont	6 (cont'd)	Selected Granular fill (cont'd)	Organic matter/water soluble (WS) sulphate content (N)	Weekly	Required
			Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	Weekly	
			pH/chloride ion content (N)	Weekly	
			Resistivity redox and microbial activity index (N)	As required	
			Permeability	As required or as a minimum 1 per source at each structure	
			Effective angle of internal friction and effective cohesion	As required	
			Undrained and drained shear parameters (N)	As required	
	6F4 and 6F5	Selected Granular fill	Size designation and overall grading category	1 per week	
			Maximum fines and oversize categories	1 per week	
			Volume stability of blast furnace slag	6 monthly	
			Volume stability of steel (BOF and EAF) slag	6 monthly	
			Other aggregate requirements	Annex C of BS EN 13242	
			Laboratory dry density and optimum water content	1 per 400 tonnes	
Water content	1 per 400 tonnes				

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Appendix 1/5: Testing to be Carried out by the Company

	7.	Selected cohesive fill	Grading/mc/ MCV/ bulk density (N)	1 per 400 tonnes	Required
			IDD of chalk (N)	Twice a week	
			PI/LL (N)	Daily	
			Organic matter/total or water soluble (WS) sulphate content (N)	Twice a week or daily when sulphates are expected	

Appendix 1/5: Testing to be Carried out by the Company

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments	
Series 600 continued						
601, 631 to 637 640 cont	7. cont'd	Selected cohesive fill cont'd	Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	Twice a week or daily when sulfides are expected	Required	
			pH/chloride ion content (N)	Weekly		
			Resistivity (N)	As required or as a minimum 1 per source at each structure		
			Undrained and drained shear parameters (N)	As required or as a minimum 1 per source at each structure		
			Permeability (N)	As required or as a minimum 1 per source at each structure		
	8.	Miscellaneous fill	mc/MCV (N)	Daily		
	9.	Stabilised materials	Pulverisation	1 per lane width per 200 metre length		
			mc/MCV (N)			
			Bearing ratio (N)			
	Pulverised fuel ash		Chemical analysis	1 per consignment		
	Furnace bottom ash		Grading	1 per 300 tonnes		
Fill adjacent to cementitious material or metallic items		Water-soluble sulphate (WS) content, oxidisable sulfides (OS) content and total potential sulfate (TPS) content and pH (N)	1 per 400 tonnes or per location if less than 400 tonnes			
602	Earthworks material beneath surface of a road or paved central reserve	Frost heave (N)		Required		
	(i) Off site source					1 every four months
	(ii) On Site source					1 per source
609	Geotextiles	Tensile load	1 per 400 square	Required		

Appendix 1/5: Testing to be Carried out by the Company

621			metres		
		Permeability			
		Pore size			
		Strain			

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Appendix 1/5: Testing to be Carried out by the Company

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments	
Series 600 continued						
612	Compaction of fills			Required		
		Method compaction	Field dry density (N)			As required
		End product compaction	Optimum mc (2.5kg/4.5kg rammer/vibrating hammer method) (N)			Each class or sub class of material
			Field dry density (N)			1 per 400 tonnes
614	Cement stabilisation to form capping	Rate of spread of cement	1 per 500 square metres of cement spread	Required		
615 641 643	Lime stabilisation to form capping	Rate of spread of lime	1 per 500 square metres of lime spread	Required		
		Available lime content	Each source of lime weekly during stabilisation operation			
622 638 639	Earthworks for reinforced soil and anchored earth structures	Redox potential	5 locations within the affected area	Required		
		Drainage layers	Grading			1 per 400 tonnes
			Chemical analysis			
		Reinforcing elements	Coeff. of friction			Each type of element with each type of fill
Anchor elements	Adhesion					
624	Ground anchorages	Proof loading	As required in Appendix 6/10	Required		
626	Gabions			Required		
		Fill	Grading			1 per 400 tonnes
			10% fine values (N)			
		Geomesh	As appropriate to properties stated in Appendix 6/10			1 per 400 square metres
PVC coated wire			Required (ASTM G23)			
631	Subgrade	LWD tests augmented by independently verified dynamic Plate Bearing Tests	LWD testing 30m centres per lane (offset by 15m between lanes) . Dynamic Plate Bearing typically at 100m centres per lane.		Subgrade Modulus Surface	
	Capping or Stabilised Materials	Falling Weight Deflectometer Testing (FWD) augmented by independently verified dynamic Plate Bearing Tests	FWD testing at 10m centres per lane Dynamic Plate Bearing tests typically at 50m centres per lane		Stiffness Modulus	

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Appendix 1/5: Testing to be Carried out by the Company

642	Earthworks materials for corrugated steel buried structures	Constrained modulus (M*)	soil	3 on each side of each structure	Required	
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Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 700					
710	Constituent materials in recycled aggregate and recycled concrete aggregate	Quality control	Checks are to be carried out by the Company in accordance with the 'Quality Protocol for the production of aggregates from inert waste' and the requirements of Clause 710	Required	The quality control procedure should be in accordance with the 'Quality Protocol for the production of aggregates from inert waste' and the @producers compliance checklist' published by Waste and Resources Action Programme (WRAP) The results of all quality control checks shall be delivered promptly to the Contracting Authority on request
711	Overbanding and inlaid crack sealing systems			Required	BBA certification (or equivalent) applies
Series 800					
801 803 804 805 806	General requirements for Unbound Mixtures for adjacent to cement bound materials, concrete pavements, structures or products	Water-soluble sulfate (WS) content (N)	1 per 400 tonnes or per location if less than 400 tonnes	Required	
		Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	1 per 400 tonnes or per location if less than 400 tonnes		
	Unbound mixtures beneath surface of a road or paved central reserve	Frost heave (N)	1 per source		
		Grading and fines content	1 per week		
		Plastic index (N)			
		Resistance to fragmentation (N)	6 monthly		
		Resistance to wear micro-Deval test			
		Resistance to freezing and thawing (magnesium sulfate soundness) (N)	1 per source		
		Water absorption (N)	As required		
		Volume stability of blast furnace slags	6 monthly		
		Volume stability of steel (BOF and EAF) slags	6 monthly		
		CBR (N)	1 per source and then monthly		
	OMC/mc (N)	As required			

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Appendix 1/5: Testing to be Carried out by the Company

	Density (N)	As required	
	Water absorption (N)	As required	

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Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments	
Series 800 (continued)						
821, 822, 823, 830, 831, 832, 834, 835, 840	Cement and other Hydraulically Bound Mixtures (HBM)	Tests for control and checking of HBM	Tests specified in table 8/14 and Table 8/15	Required		
		Coefficient of linear expansion				
		Tests for laboratory mixture design	Test specified in Clause 880			
Series 900						
901, 925, 937, 938, 943	Aggregates for bituminous material			Required	National quality management scheme applies	
		Resistance to fragmentation (hardness)	Resistance to fragmentation (N)			Monthly
		Resistance to freezing and thawing (durability)	Soundness (N)			1 per source
			Water absorption (N)			As required
		Cleanness	Sieve test (mass passing 0.063mm sieve) (N)			Monthly
		Shape	Flakiness index (N)			Monthly
		Blast furnace slag	Bulk density (N)			1 per 500 tonnes
			Soundness (N)			Once every 4 months
			Dicalcium silicate disintegration (N)			1 per 500 tonnes
			Iron disintegration (N)			
		Steel slag	Bulk density (N)			1 per 500 tonnes
			Volume stability (N)			1 per 500 tonnes
		Coarse aggregate for surface courses	Resistance to polishing (PSV) (N)			1 per source
			Resistance to surface abrasion (AAV) (N)			1 per source
	Binders for bituminous materials	Penetration (N)	1 per 750 tonnes	Required	National quality management sector schemes apply. Modified binders should have a BBA HAPAS Roads and Bridges Certificate. In the event that no such Certificates have been issued, then in the interim, only modified binders undergoing BBA assessment should be considered for approval by the Contracting Authority	
Softening part (N)		1 per 750 tonnes				

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Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 900 continued					
903 to 907, 909 to 912, 914, 916, 925, 926, 929, 930, 937, 938, 941, 943, 946 to 948	Bituminous mixtures	Grading (N)	For Audit Test purpose only		National quality management sector schemes apply
		Binder Content (N)			
929	Base and Binder Course Asphalt Concrete (Design Mixtures)	In situ air void content (N)	As required	Required	
		Refusal air void content (N)			
		Binder volume (N)			
		Grading (N)			
		Binder content (N)			
		Deformation Resistance			
		Deformation Resistance (Design)	As required	Required	The test certificate is the CE Mark for the mixture
Stiffness (Design)					
930	EME 2	In situ air void content (N)	As required	Required	
		Binder volume (N)			
		Grading (N)			
		Binder content (N)			
		Richness modulus (design)	As required	Required	The test certificate is the CE Mark for the mixture
		Duriez (design)			
		Deformation Resistance (Design)			
Stiffness (Design)					
911	Hot Rolled Asphalt surface course (Design Mixtures)	Design Binder content	1 per source	Required	The test certificate is the CE Mark for the mixture
915	Coated chippings for application to Hot Rolled Asphalt Surfacing	Grading (N)	1 per stockpile	Required	
		Binder content (N)	1 per stockpile		
		Flakiness Index (N)	1 per source		
		Resistance to polishing PSV (N)	1 per source		
		Resistance to surface abrasion (AAV)(N)	1 per source		
		Hot sand test (N)	1 per source		
		Rate of spread (N)	As required		
921	Surface macrotecture	Volumetric Patch (N)	BS EN 13036-1	Required	National quality management sector schemes apply

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Appendix 1/5: Testing to be Carried out by the Company

924	High friction surfaces	Quality control checks	As required in sub-Clause 924.5	Required	BBA HAPAS Roads and Bridges certification (or equivalent) applies
		System coverage	As required in sub-Clause 924.6		
	Aggregate	Resistance to polishing PSV (N)	1 per source and as required for coated chippings in Clause 915.3	Required	

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Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 900 continued					
937	Stone mastic asphalt (SMA) binder course and regulating course	In situ air void content (N)		Required	
		Deformation resistance			
		Binder drainage test		Required	The test certificate is the CE Mark for the mixture
		Deformation resistance (design)			
938	Porous asphalt surface course				National quality management sector scheme applies
		Relative hydraulic conductivity	In accordance with Clause 938		
		Modified binder storage stability	In accordance with Clause 941		Modified binders should have a BBA HAPAS Roads and Bridges Certificate. In the event that no such Certificates have been issued, then in the interim, only modified binders undergoing BBA assessment should be considered for approval by the Contracting Authority.
		Binder drainage test	In accordance with BS 594987: 2010		
942	Thin surface course systems				National quality management sector scheme applies. BBA certification (or equivalent) applies.
		Binder drainage test	In accordance with BS 594987: 2010		
943	Hot Rolled Asphalt surface course and binder course (performance-related design mix)	In situ air void content (N)	As required	Required	National quality management sector scheme applies
		Deformation resistance			
		Grading (N)			
		Binder content (N)			
		Density (N)			
		Wheel tracking rate (N)			
		Wheel tracking rut depth (N)			
Deformation resistance (design)	As required		The test certificate is the CE Mark for the mixture		

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Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments		
Series 900 (continued)							
918	Slurry surfacing incorporating microsurfacing	Binder				Modified binders should have a BBA HAPAS Roads and Bridges Certificate. In the event that no such Certificates have been issued, then in the interim, only modified binders undergoing BBA assessment should be considered for approval by the Contracting Authority. Tests are expected to be repeated every two years	
			Product identification	Per product per source	Required		Tests are expected to be repeated every two years
			Vialit cohesion	Per product per source	Required		Tests are expected to be repeated every two years
			Rate of spread	For each machine	Required		Not more than 6 weeks prior to start of work
			Penetration at 25°C and 5°C (N)	Every manufactured batch			Manufacturer's QA test results may be submitted
		Aggregates	Flakiness index (N)	1 per source	Required		
			Resistance to polishing (PSV) (N)	Source approval	Required		
			Resistance to surface abrasion (AAV) (N)	Source approval	Required		
			Grading (N)	1 per 200 tonnes	Required		
		System	TAIT or BBA/HAPAS		Required		
		920	Bond coats, tack coats and other bituminous sprays	Binder	Product identification	1 per product per source	Required	Tests are expected to be repeated every two years
Vialit cohesion	1 per product per source				Required	Tests are expected to be repeated every two years	
Accuracy of spread	1 for each binder and sprayer per month				Required	Not more than 6 weeks prior to start of work and one per month	
Rate of spread	1 per week						
Penetration at 25°C and 5°C (N)	Every manufactured batch					Manufacturer's QA test results may be submitted	

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Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments		
Series 900 (continued)							
919 922	Surface Dressing				National quality management sector scheme applies		
		Binder				Modified binders should have a BBA HAPAS Roads and Bridges Certificate. In the event that no such Certificates have been issued, then in the interim, only modified binders undergoing BBA assessment should be considered for approval by the Contracting Authority.	
			Product identification	1 per product per source	Required	Tests are expected to be repeated every two years	
			Vialit cohesion (N)	1 per product per source	Required	Tests are expected to be repeated every two years	
			Accuracy of spread	1 for each binder and sprayer per week	Required	Not more than 6 weeks prior to start of work and one per week	
			Rate of spread	Every 1000 linear metres initially	Required	Frequency to be reduced to daily after 3 satisfactory results, but not less than 1 test per site	
			Penetration at 25°C and 5°C (N)	Every batch		For cut back binders as supplied, manufacturer's QA viscosity test results may be submitted	
			Chippings	Resistance to (PSV) polishing (N)	Source approval	Required	Less than 6 months prior to work
				Resistance to abrasion (AAV) (N)	Source approval	Required	Less than 6 months prior to work
				Grading (N)	1 per 200 tonnes	Required	
				Binder content (N)	1 per 200 tonnes	Required	Coated chippings only
		Flakiness index (N)		1 per 200 tonnes	Required		
		Accuracy of spread (N)		1 for each chipping spreader for every change of chipping size or source	Required	Initial test not more than 6 weeks prior to start of work	
			Rate of spread	Every 500 linear metres initially		Frequency to be reduced to daily after 3 satisfactory results, but not less than 1 test per lane per site	
			System	TAIT or BBA/HAPAS	Required		
			Rollers	Spray bars working	Before work starts and daily during works		

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 900 (continued)					
950	Depressions				BBA HAPAS Roads and Bridges Certification (or equivalent) applies.
Series 1000					
1001 1030 1044	Cement			Required	Quality management and product certification schemes apply
	Portland cement CEM I				Tests and test certificates are required
	Portland blastfurnace cement				
	Blastfurnace cement CEM III/A				
	Portland PFA cement CEM II/B-V				
	Pozzolanic cement CEM IV/A			Required (BS6610)	
	Portland cement with microsilica			Required	
	Pulverised - fuel ash				Tests and test certificates are required. Product certification schemes apply to pfa and slag.
	Ground granulated blast furnace slag				
	Admixtures				
	Mixing water	Sulphate content (N)	Monthly		
	Aggregates	Resistance to freezing and thawing - magnesium sulphate soundness (N)	1 per source	Required	
		Water absorption (N)	As required		

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1000 (continued)					
1001	Aggregates cont'd	Flakiness index (N)	Monthly	Required	
1030		Shell content (N)	1 per source		
1044 cont'd		Resistance to fragmentation (N)	6 monthly		
		Resistance to polishing (PSV) (N)	1 per source		
		Resistance to abrasion (AAV) (N)	1 per source		
		Grading and fines content (N)	1 per week as per source		
		Chloride content (N)	Weekly or as otherwise agreed (1 per source for CBM Aggregate)		
		Total sulphur (TS) and acid-soluble sulphate (AS) content (N)	Every 6 months		
	Flint coarse aggregate containing white flints	Water absorption (N)	3 per source thereafter weekly	Required	
	Sand (i.e. Fine aggregate)	Acid-soluble material (N)	Monthly			Not required for CBM aggregate
	Blastfurnace slag	Bulk density (N)	Every 6 months		
		Dicalcium silicate disintegration (N)	Every 6 months		
		Iron disintegration (N)	Every 6 months		
		Total sulphur (TS) and acid-soluble sulphate (AS) content (N)	Every 6 months		
	Pulverised-fuel ash			Required (BS3092: Part 2)	

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1000 continued					
1002 1003 1004 1044	Pavement Concrete	Air content test (N)	As required in Table 10/10	Required	Product certification scheme applies
		Density (N)	As required in Table 10/10		
		Strength (N)	As required in Table 10/10		
1005	Consistence (Workability)	Degree of Compactability (Compaction Index) (N)	As required in Table 10/10	Required	
		Vebe (N)			
		Slump[(N)			
1011 1012	Dowel bars Tie bars			Required (BS4449)	Product certification scheme applies
	Dowel bars and supporting cradles	Load test	1 per arrangement		
	Sheathed dowel bars	Bond stress	4 bars		
	Cranked tie bars (coated)	Bend test	4 bars		
		Salt fog cabinet	4 bars		
1015	Joint filler board Cork filler board	Weathering test	3 per source	Required	Normally undertaken by manufacturer
		Compression and recovery	4 per source		
		Extrusion	1 per source		
		Immersion in water	2 per source		
		Immersion in acid	2 per source		
1016 1017	Applied sealants	Initial Penetration	1 per 1000 m or 1 per day	Required (BS EN14188-1, BS 2499-2, BS5212-1, BS5212-2) (BSEN13880-2, BSEN13880-3 and BS4254)	
		Resilience	1 per 1000 m or 1 per day		

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1000 continued					
1016 1017 cont.	Compression seals			Required (ASTM D2628)(BS2752)(BS4443:Part 4) Method 10 and BS EN ISO 2440) (BS EN ISO 1856) (BS903: Part A16 or BS IS) 1817	
		Compression set	1 per type of seal		
		Immersion in oil	1 per type of seal		
	Self expanding cork seal	Tests specified in Clause 1017	1 per type of seal	Required	
1026 1044	Surface macrotexture	BS EN 13036 - 1 Volumetric Patch Technique (N)	1 per day (set of 10)	Required	
1027	Aluminised curing compound	Efficiency index	1 per source	Required	
1030	Wet lean concrete	Density	As required in Table 10/9	Required	
		Cube strength (N)			
1043	Foamed Concrete	Cube strength (N)	2 cubes per 12m ³	Required	
Series 1100					
1101	Precast concrete kerbs, channels, edgings and quadrants	Bending Strength	Minimum of 8 per 1000 units of each product (BS EN 1340)	Required	
1102	In situ asphalt kerbs	Grading	1 test per 500 metres laid	Required	
		Binder content			

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1100 continued					
1104	Precast concrete flags	Bending strength	Minimum of 8 per 1000 m ² of each product (BS EN 1339)	Required	
	Bedding	Granular material Mortar			
1107	Concrete block paving	Compressive strength	Minimum of 8 per 1000 m ² of each product (BS EN 1338)	Required	
1108	Clay pavers	Bending strength	Minimum of 8 per 1000 m ² of each product (BS EN 1344)	Required	
		Skid resistance	Minimum of 8 per 1000 m ² of each product (BS EN 1344)		
Series 1200					
1202	Permanent traffic signs			Required	Quality management scheme applies. Certification that the traffic sign is capable of passing the tests in BS 873: Part 1 is required.
1207	Anchorage in drilled holes to supports of traffic signs	Loading test on site			
1210	Holding down bolts and anchorages to bases of permanent bollards			Required	Certification that the holding down bolts and anchorages are capable of complying with the performance requirements of BS873:Part 3 is required.
1212	Road Markings	Tests specified in BS EN 1824		Required	National quality management sector scheme applies. Procedures are given in BS EN 1824

Appendix 1/5: Testing to be Carried out by the Company

		Glass Heads	Arsenic trioxide content, Lead content and Antimony content (N)	One per contract and/or per specific source of supply	Required	
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Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1200 continued					
1214	Permanent traffic cones and traffic cylinders			Required	Certification that permanent traffic cones and cylinders have been tested and comply with BS873:Part 8 is required
		Test specified in BS873:Part 8	2 of each size and category/type		
	Flat traffic delineators			Required	Certification that the FTD's have been tested and comply with Clause 1214 is required
		Test specified in Clause 1214	As required		
	Other traffic delineators			Required	Certification that the delineators have been tested and comply with Clause 1214 is required.
		Test specified in Appendix 12/4	As required		
Temporary cones, cylinders, FTD's and other delineators			Required	Certification that at least 1 in 500 of any batch of cones, cylinders, FTD's and other delineators to be used in the Temporary Works have passed the tests in Clause 1214 as appropriate is required.	
1217	Traffic signals				Quality management scheme applies. Statutory type approval of equipment applies.
	Cables				Product certification scheme applies
	Controllers [Other equipment]	Test specified in Appendix 12/5	Each controller before delivery to Site and again after installation		
	Cabling	Tests a, b, c, e, f, g, h, j as defined in sub-Clause 1424.2	Each traffic signals installation	Required	Certification that the installation complies with BS7671 (the IEE Wiring Regulations) is required

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1200 continued					
1218	Detector loops				
	Cable			Required	Certification that completed cables comply with specification TR 2029 is required
	Epoxy resin			Required	Certification that the epoxy resin complies with specification MCH 1540 is required
	Feeder cable			Required	Certification that completed cables comply with specification TR 2031 is required.
	Joints	Pull test (4 kgf)	Each crimp		
	Installation	Series resistance	Each loop	Required	Certification in accordance with specification MCH 1540 is required
	Insulation resistance				
	Inductance				
Series 1300					
1305	Anchorage for use in drilled holes	Tensile load (Manufacturer's tests)		Required	To provide well attested and documented evidence
1306	Anchorage in drilled holes to columns and masts with flange plates	Loading test on site	As required		
1310	Welding	Welding procedures (Manufacturer's tests)	(Every seven years)		Quality management scheme applies
		Welder qualification (Manufacturer's tests)	(Sub-clauses 1310.1 and 1310.2 (7.1.3.))		Quality management scheme applies
		Production testing (Manufacturer's tests)	(Sub-Clauses 1310.1 and 1310.2 (7.1.4))		
	Welded joints	Destructive testing	(Sub-Clause 1310.1 and 1310.2 (7.1.5))		
1313	GFRP laminates	Loss of ignition	1 per 50 production columns		
		Colour fastness	1 per batch		
		Electric strength			

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1300 continued					
1313 cont.	GFRP laminates cont'd	Water absorption	1 per batch		
		Impact strength			
1314	Brackets for laminated GFRP lighting columns			Required	
	Polyurethane foam	Bulk density	1 per batch		
		Surface hardness			
		Apparent bulk density	2 per batch		
		Impact strength			
		Flexural stress			
Series 1400					
1421	Cable				Product certification scheme applies
1424	Lighting Units	Tests specified in Clause 1424	Each unit	Required	Product certification scheme applies Certification that the installation complies with BS7671 (the IEE Wiring Regulations) is required.
	Networks	Test specified in Clause 1424	Each network	Required	Certification that the installation complies with BS 7671 (the IEE Wiring Regulations) is required
Series 1500					
1506	Copper communications cable			Required	Certification that each completed cable complies with specification TR2150 or TR 2158, as appropriate, is required
	Optical fibre communications cable			Required	Certification that each completed cable complies with specification TR2151 or TR 2159, as appropriate, is required
	Coaxial communications cable				Certification that each completed cable complies with specification TR2152 or TR 2160, as appropriate, is required
	Energy cable			Required	Certification that each completed cable complies with specification TR2153 or TR 2161, as appropriate, is required

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1500 continued					
1513	Cable joint enclosures	Test specified in Clause 1513.12	Each CJE	Required	Certification that CJE satisfies the air pressure test is required
1518	Coaxial and copper Communications and power cable	Tests specified in specification MCG 1022 or MCG 1099, as appropriate	Each cable (Stage 1) As required in Appendix 15/1 (Stage 2)		Results to be reported in accordance with MCG 1022 or MCG 1099, as appropriate
	Optical fibre communications cable	Tests specified in specification MCG 1055 or MCG 1099, as appropriate	Each cable (Stage 1) As required in Appendix 15/1 (Stage 2)		Results to be reported in accordance with MCG 1055 or MCG 1099, as appropriate
1522	Motorway System				
	Steel posts			Required (BS 6323)	
1526	Electrical installations	Tests specified in BS 7671	Each installation	Required	Certification that the installation complies with BS7671 (the IEE Wiring Regulations) is required
1530	Cable ducts	Tests specified in BS EN 50086-1, 2 and 4	Each supplier	Required	Current British Board of Agrément Certificate is required
1533	Cable ducts				
	Mandrel test	Tests specified in Clause 1533	Each duct	Required	Certificate that each length of duct between chambers satisfies the mandrel test is required
	Air test	Tests specified in Clause 1533	Each duct	Required	Certificate that each length of duct between chambers satisfies the air test is required
Series 1600					
1601	Soil samples			Required	
	In situ soil tests				
1602 to 1606	Concrete			Required	
	Grout				
1610 to 1615	Reinforcement				
	Prestressing				
	Steelwork				
	Welding				
1606	Protection against corrosion				
	Coatings for protection against corrosion	Adhesion	As required in Appendix 16/6		

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1600 continued					
1607	Reduction of friction on piles				
1608	Integrity testing				
1616	Dynamic testing				
1609	Static load testing of piles			Required	
1612	Self hardening slurry mixes			Required	
1617	Instrumentation			Required	
1618	Support fluids	To be proposed by the Company			See Appendix 16/18
Series 1700					
1702 1704	Cement types as stated in sub-Clause 1702.1			Required	Certificate to be provided monthly for each type of cement. Quality management and product certification schemes apply.
	Cements (all types)	Chloride content	Monthly		Tests to be carried out by the manufacturer and results included on the test certificates required above
	Pulverised-fuel ash	Sulfate content	Monthly		
	Ground granulated blast furnace slag	Acid-soluble alkali content	Daily (PC) Weekly (pfa ggbfs)		
	Aggregates	Grading and fines content	1 per delivery (per source)		Results of routine control tests from the factory production control system operated by the producer to be provided - see Annex H of BS EN 12620 Product certification scheme applies
		Shell content (N)	Monthly		
		Flakiness index (N)	Monthly		
		Resistance to fragmentation (N)	Monthly		
		Drying shrinkage (N)	1 per 5 years		
		Chloride content (N)	1 per week or as otherwise agreed		
		Sulphate Content (N)	Yearly		
	Blastfurnace slag	Bulk density (N)	Every 6 months		
		Stability (N)	Every 6 months		
		Sulphur content (N)	Every 6 months		
	Water	Tests specified in BS EN 1008	As required		

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
1700 continued					
1702 1704 cont	Water cont	Chloride content	Monthly		
		Sulphate content	Monthly		
		Acid-soluble alkali content	Weekly		
	Admixtures	Chloride Content	1 per consignment	Required (BS-934-2)	
		Sulphate content	1 per consignment	Required	
		Acid-soluble alkali content	1 per consignment		
1707	Concrete	Cube strength (N)	Pre stressed concrete two cubes from 12 m ³ or 2 batches whichever represents the lesser volume	Required	Company to cast and test sufficient additional cubes to demonstrate cube strength before transfer
			Reinforced concrete two cubes from 24 m ³ or 4 batches whichever represents the lesser volume		
			Mass concrete - two cubes from 50 m ³ or 50 batches whichever represents the lesser volume		
			Additional cubes for special purposes		
		Cube strength - identity testing as described in Appendix 17/4 (N)	2 cubes from each of 2 samples of each batch		
		Density	As required		
		Modus of elasticity			
	Fresh concrete	Consistence (slump or compacting factor or Vebe) (N)	Each batch	Required	
		Air content	Each batch		
		Cement content	As required		
Water/cement ratio					

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1700 (continued)					
1709	Silane			Required for each delivery	Certification that the silane complies with Clause 1709 is required
		Refractive Index	Three samples		
		Trial panels, where required in the Contract			
1710	Concrete packing Mortar packing Epoxy resin bonding agent				
	Precast concrete manufactured off Site	Cube strength (Manufacturer's tests)			Company to make available records of tests by the manufacturer
1711	Grouting and Duct Systems for Post-tensioned tendons				CARES Scheme for supply and installation of Post-tensioned Systems In Concrete Structures or an equivalent scheme is required. Quality management and product certification schemes for cement apply.
		Full scale trials, where required in the Contract			See sub-clause 1711.1 and Appendix 17/6
		Air pressure tests			See sub-clause 1711.3 and Appendix 17/6

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1700 (continued)					
1711 cont'd	Grouting and Duct Systems for Post-tensioned tendons cont'd	Duct assembly verification tests	See Table 17/4		See sub-clause 1711.3 and Appendix 17/6
		Wall thickness of ducts after tensioning			See sub-clause 1711.3 and Appendix 17/6. Company should provide evidence of testing
		Fluidity			See sub-clause 1711.8 and sub-clause 1711.9 and Table 17/5
		Bleeding			
		Volume change			
		Cube strength			
		Sieve			
		Sedimentation			
	Admixtures			Required	Quality management and product certification schemes apply. Data on their suitability, including previous experience should be made available. See sub-Clause 1711.10
1712	Reinforcement	Steel bars			Required (BS4449)
		Steel wire			Required (BS4482)
		Steel fabric			Required (BS4483)
		Stainless Steel			Required (BS6744)
1713	Fabricated reinforcement			Required	Certification that fabricated reinforcement complies with the routine inspection / testing requirements of BS 8886 shall be required if the fabrication is not covered by a product certification scheme listed in Appendix B
1716	Reinforcement jointing systems	Permanent elongation Characteristic strength (Manufacturer's test)			Required for each type of connection BBA Roads and Bridges certificate or CARES certificate of product assessment or fully equivalent scheme apply

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1700 (continued)					
1717	Reinforcement metal arc welding	Welding procedure approval (BS7123)	As required in BS7123		Tests should be carried out by an independent testing body specified in BS 8666
		Welder approval (BS7123)			
1718	Prestressing tendons	Steel wire		Required (BS5896)	Product certification scheme applies
		Steel bar		Required (BS4486)	
		Seven-wire strand		Required (BS5896)	
		Prestressing steel (all types)		Proof load Breaking load Elongation Ductility Relaxation Modulus of elasticity		As required Required (BS5596) (BS4486)
	Super strand to BS5896 or other than lowest strength 3-7 millimetres dia wires to BS5896	0.1% proof load Breaking load	Each reel		
1724	Post-tensioning anchorages	Tests in accordance with BS EN 13391 (Manufacturer's tests)		Required (BS EN 13391)	Product certification scheme applies
1726	Stainless steel bar			Required (BS6744)	Product certification scheme applies
1727	Inspection and testing of structures and components				
Series 1800					
1801	Structural steels to BS EN 10025-1 to -4 and . BS EN 10025-6, BS EN 10210			Required	
1803	Structural steels to BS 7668			Required (BS7668)	
	Stainless steels to BS 970, BS EN 10084, BS EN 10087, BS EN 10095,			Required (BS 970, BS EN 10084, BS EN 10087, BS EN 10095)	

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1800 continued					
1801 1803 cont'd	Stainless steels to BS EN 10029, BS EN 10048, BS EN 10051, BS EN 10258, BS EN 10259.			Required (BS EN 10029, BS EN 10048, BS EN 10051, BS EN 10258 and BS EN 10259)	
	Steel plate	Ultrasonic testing	As required		
	Bolts, nuts and washers				Quality management scheme applies
	All types except high strength friction grip	Test specified in BS 4395: Part 2	As required in BS 4395: Part 2		
	High Strength Friction Grip	Test specified in BS 4395: Part 1 or Part 2	As required in BS 4395: Part 1 or Part 2		
	Tension Control Bolts	Test specified in JSS II-09-1996 or BS 4395	As required in JSS II-09-1996 or BS 4395		
	Welding electrodes				
	Covered steel			Required (BS EN 499)	
	Wire			Required (BS EN 756, BS EN 760)	
	Welding				
	Welding procedures	Tests specified in BS EN ISO 15614-1	As required in BS ISO 15614-1 and Appendix 18/1		Results to be reported in accordance with Annex A of BS EN ISO 15614-1
	Welder qualification	Tests specified in BS EN 287: Part 1	As required in BS EN 287: Part 1 for each welder	Required (BS EN 287: Part 1)	Certificate to be in accordance with Annex B of BS EN 287: Part 1
	Butt weld 'run-off' plates	Destructive tests specified in BS 5400: Part 6	As required in BS 5400: Part 6		
	Butt welds and adjacent areas of steelwork	Non-destructive tests using methods to be agreed	As required in BS 5400: Part 6		
	Fillet welds	Non-destructive tests			

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1800 continued					
1801 1803 cont'd	Welding (cont'd)				
	Flame cutting and shearing	Tests to demonstrate procedures comply with BS5400: Part 6 and Appendix 18/1	As required in Appendix 18/1		
	Stud connectors shear	Fixing (BS 5400: Part 6)	Each stud		
		Bending (BS5400: Part 6)	As required		
Series 1900					
1903	Abrasives	Grading	As required		
		Hardness			
1909	Galvanised coatings	Test specified in BS EN ISO 1461	As required		
	Aluminium and zinc spray coatings	Test specified in BS EN 22063	As required		Areas to be tested to be in accordance with Clause 1910
	Aluminium coating material			Required (BS EN 1301-1)	
	Zinc coating material			Required (BS EN 1179)	
	Sherardized coatings	Test specified in BS 4921	As required		
	Zinc electroplated coatings	Test specified in BS 3382: Part 2	As required		
	Plating to high strength friction grip and tension control bolts				
1910	Metal spray coatings	Tensile test specified in BS EN 22063	As required		
		Grid test specified in BS EN 22063	As required		

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1900 continued					
1911	Paints	'A' and 'B' Samples	Specific gravity		Samples will be selected in accordance with Clause 1911SE
			Colour match		
			Composition		
			Application characteristics		
Series 2000					
2003	Permitted waterproofing systems				Registration and BBA Roads and Bridges Agreement certification apply
	Additional bituminous protection	Tests specified in BS594: Part 1	1 per 15 tonnes		Sampling to comply with BS594: Part 1
	Stability value	Test specified in BS598: Part 107	1 per 15 tonnes		
2004	Tar	Tests specified in BS76	1 per source		Sampling to comply with BS76
	Cut back bitumen	Tests specified in BS3690: Part 1	1 per source		Sampling to comply with BS3690: Part 1
Series 2100					
2101	Bridge bearings	Elastomeric bearings	Hardness	As required	Required (BS5400: Section 9.2)
			Tensile strength		
			Elongation		
			Ageing		
			Compression set		
			Ozone resistance		
	Complete bearings	Tests specified in Appendix 21/1	As required in Appendix 21/1		

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 2400					
2401	Masonry cement			Required (BS EN 413-1)	Quality management scheme applies
		Chloride content	Monthly	Required	Test to be carried out by the manufacturer and results included on the test certificate
2402	Sand			Required per consignment (BS EN 13139)	
		Chloride content	Monthly		Test to be carried out by the manufacturer and results included on the test certificate
2403	Water	Tests specified in BS EN 1008	As required		
2404	Mortar admixtures			Required (BS EN 934-3)	
2405	Lime			Required (BS EN 459-1)	
2406/ 2417	Bricks				
		Clay	(Soluble salt content Efflorescence Comprehensive strength Water absorption Initial rate of suction) (BS EN 771-1/TRL Report 447)		
		Calcium silicate		Required (BS 187)	
		Concrete		Required (BS 6073-1/BS EN 772-2)	
2407	Blocks				
		Concrete		Required (BS6073-1/BS EN 772-2)	

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 2400 continued					
2408	Reconstituted stone				
2410 2411	Stainless steel				
	Wire/fabric			Required (BS EN 10088-1)	
	Bars			Required (BS6744)	
	Ready mixed mortars			Required (BS4721)	
	Mortars	Tests specified in Appendix A1 of BS EN 10521-1	1 set of tests per mix		
Series 2500					
2501	Materials for corrugated steel buried structures exceeding 900 mm clear span or internal diameter				Type approval applies
	Steel components			Required as appropriate to the standard or specification listed in the type of approval Certificate	BBA Roads and Bridges Certification applies
	Zinc coating				
	Protective coating				
	Paved invert system				
2502	Materials for reinforcing elements, prefabricated facing and capping units, and washers				BBA Roads and Bridges Certification applies
	Carbon steel strip			Required (BS1449: Part 1.1 or BS EN 10025-1) and BS EN 10025-2)	Silicon content and mechanical properties to be stated on the certificate
	Stainless steel strip			Required (BS EN 10029, 10048, 10051, 10258 and 10259)	Mechanical properties to be stated on the certificate
	Reinforcing bar for anchor elements			Required (BS4449)	Tests scheduled under Clauses 1717 and 1909 are required for welding and galvanising of anchor elements

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments																				
Series 2500 continued																									
2502 cont'd	Materials for fasteners																								
	<table border="1"> <tr> <td>Stainless steel</td> <td></td> <td></td> <td>Required (BS EN 10088-1 (BS EN ISO 3506-1 and 3506-2)</td> <td></td> </tr> <tr> <td>Bolts, screws and nuts</td> <td></td> <td></td> <td>Required (BS EN ISO 898, 4016, 4018, 4034)</td> <td>Tests scheduled under Clause 1909 are required for hot dip galvanising</td> </tr> </table>	Stainless steel			Required (BS EN 10088-1 (BS EN ISO 3506-1 and 3506-2)		Bolts, screws and nuts			Required (BS EN ISO 898, 4016, 4018, 4034)	Tests scheduled under Clause 1909 are required for hot dip galvanising														
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2503	Materials for pocket type reinforced brickwork retaining wall structures																								
	<table border="1"> <tr> <td>Clay bricks</td> <td>(Soluble salt content Efflorescence Compressive strength Water absorption Initial rate of suction) (BS 3921/TRL Report 447) (N)</td> <td>1 set of tests per type of brick</td> <td></td> <td></td> </tr> </table>	Clay bricks	(Soluble salt content Efflorescence Compressive strength Water absorption Initial rate of suction) (BS 3921/TRL Report 447) (N)	1 set of tests per type of brick																					
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2504	Environmental barriers				Quality management scheme applies																				
	<table border="1"> <tr><td>Timber</td></tr> <tr><td>Concrete</td></tr> <tr><td>Steel</td></tr> <tr><td>Brickwork</td></tr> <tr><td>Other materials</td></tr> </table>	Timber	Concrete	Steel		Brickwork	Other materials																		
	Timber																								
	Concrete																								
	Steel																								
	Brickwork																								
	Other materials																								
Barriers	Sound absorption	As required in Appendix 25/4																							
	Sound insulation																								
Post foundations	Loading test on site	As required in Appendix 25/4																							
2505, 2506	Drainage structures/buried rigid pipes for drainage structures.																								
	Pipes for drains and culverts having diameters or clear span exceeding 900 mm																								
	<table border="1"> <tr> <td>Vitrified clay</td> <td></td> <td></td> <td></td> <td>Product certification scheme applies</td> </tr> <tr> <td>Concrete PC/SRC</td> <td>(Manufacturer's test)</td> <td></td> <td></td> <td>See sub-clause 2506.28</td> </tr> <tr> <td>Iron</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Corrugated steel</td> <td>(Manufacturer's test)</td> <td></td> <td></td> <td>Type Approval Certificate and BBA Roads and Bridges Certificate apply</td> </tr> </table>	Vitrified clay				Product certification scheme applies	Concrete PC/SRC	(Manufacturer's test)			See sub-clause 2506.28	Iron					Corrugated steel	(Manufacturer's test)			Type Approval Certificate and BBA Roads and Bridges Certificate apply				
Vitrified clay				Product certification scheme applies																					
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Iron																									
Corrugated steel	(Manufacturer's test)			Type Approval Certificate and BBA Roads and Bridges Certificate apply																					

Appendix 1/5: Testing to be Carried out by the Company

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 2600					
2601	Bedding mortar materials			Required for each batch	Certification in accordance with Clause 2601 is required
	Bedding Mortar	Flow cone test	Each batch		Laboratory tests
		Flow between glass plates			
		Compressive strength			
		Expansion test			
		Water absorption			
		Elastic stability	1 per source		
Flow cone test Compressive strength	Each load		Site control tests		
2604	Plastic coating to fencing posts, gates and ancillaries			Required (BS 1722 : Part 16)	Certification by powder manufacturer and coating applicator is required.
2607	Granolithic concrete				Testing to be in accordance with Clauses 1702, 1703, 1707 and 1710
Series 3000					
3001	General				Inspection reports as required in Appendix 30/1
3005	Grass Seeding, Wildflower Seeding and Turfing	Rate of spread of fertiliser	1 per 1000 square metres		
		Rate of spread of seeding	1 per 1000 square metres		
		Chemical analysis of fertiliser	1 per source		
		Grass seed germination and purity (Official Seed Testing Station tests)	1 per source and mix variety	Required prior to sowing	
Series 5000					
5003	Abrasives	Grading	As required		
		Hardness			
5005	Aluminium and zinc spray coatings	Test specified in BS EN 22063	As required		Areas to be tested in accordance with Clause 5006
	Aluminium coating material			Required (BS EN 1301-1)	
	Zinc coating material			Required (BS EN 1179)	

Part 5: Specification

Appendix 1/5: Testing to be Carried out by the Company

Series 5000 continued					
Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
5005 cont	Sheradized coatings	Tests specified in BS 4921	As required		
	Zinc electroplated coatings	Tests specified in BS 3382: Part 2	As required		
	Plating to high strength grip and tension control bolts				
5006	Metal spray coatings	Tensile test specified in BS EN 22063	As required		
		Grid test specified in BS EN 22063	As required		
5007 5007SE	Paints				
	'A' and 'B' Samples	Specific gravity			Samples will be selected in accordance with Clause 5007SE
		Colour match			
		Composition			
		Application Characteristics			

1. When required by the Contracting Authority, the Company shall provide samples of any material proposed to be incorporated in the O&M Works.

Appendix 1/7: O&M Site Extent and Limitations of Use**1 O&M Works Site Extent**

- 1.1 The O&M Works Site extent is detailed in the Agreement and comprises:
- a) The land as detailed in the 'Land Made Available by the Contracting Authority for the O&M Works' drawings listed in Appendix 0/4; and
 - b) Any further land acquired by or conveyed to the Contracting Authority (from any persons, including the Company) from time to time for the purposes of the Design and the O&M Works.
- 1.2 The Company shall make provision for carrying out work on private land as required under this Agreement for example Accommodation Works, traffic signing, road lighting, drainage works and otherwise.

2 Limitations on the Use of the O&M Works Site

- 2.1 The O&M Works Site shall be used solely for the construction and completion of the O&M Works.
- 2.2 The Company shall not use areas of land with a temporary right of access for any purpose other than the construction and completion of the O&M Works.
- 2.3 The Company shall ensure that all areas of land which have been temporarily occupied are reinstated to the satisfaction of the affected landowner, occupier and the Relevant Authorities.
- 2.4 Road access to the O&M Works Site shall be gained solely via roads as detailed by Appendix 1/19.
- 2.5 The Company may gain entry to the O&M Works Site via private land only with the prior express agreement in writing of the landowner and occupier/tenant. Any access to private land from a public road shall be to the satisfaction of the Relevant Authority. The Company shall bear full responsibility for negotiation, paying for and bearing all costs relating to these accesses and for any matters arising with parties who consider themselves to be affected by these accesses.
- 2.6 The Company shall erect appropriate signs to show accesses and restricted routes.
- 2.7 The Company shall comply with the restrictions imposed by Network Rail for all O&M Works to be carried out within or adjacent to Network Rail property.
- 2.8 The Company shall not cross any watercourses via the river banks and bed and shall take all necessary measures to avoid any disturbance of the banks and bed.
- 2.9 The Company's attention is drawn to the Special Requirements detailed in these O&M Works Requirements.

Appendix 1/9: Noise Control Applicable to the O&M Works Site**1 Noise Control Applicable to the O&M Works Site**

- 1.1 The Company shall consult and comply with the requirements of:
Aberdeen City Council; and
Aberdeenshire Council.
as appropriate, prior to commencement of work on the O&M Works Site.
- 1.2 These requirements, together with the Company's proposed methods of work and Constructional Plant, shall be discussed and agreed in writing by:
Aberdeen City Council; and
Aberdeenshire Council.
as appropriate, prior to commencement of the relevant activities.
- 1.3 The Company shall provide Consultation Certificates in accordance with the Certification Procedure in respect of these requirements.
- 1.4 The Company shall comply with the contents and recommendations of British Standard 5228: 'Noise and Vibration Control on Construction and Open Sites', together with the specific requirements of this Appendix 1/9.
- 1.5 Further to this, the company shall refer to the Department for Environment, Food and Rural Affairs 'Update of Noise Database for Prediction of Noise on Construction and Open Sites' which is an update to the existing construction plant noise database, contained in Annex C, Part 1 of British Standard 5228 'Noise and Vibration Control on Construction and Open Sites'.
- 1.6 All Constructional Plant used for the O&M Works shall be subject to the acknowledgement of the Overseeing Organisation and shall be the quietest of its type practical for carrying out the work required and shall be maintained in good condition with regard to minimising noise output.
- 1.7 In this respect, the Company shall refer to the Department for Environment, Food and Rural Affairs 'Update of Noise Database for Prediction of Noise on Construction and Open Sites', which contains details of typical Constructional Plant noise levels that the Contracting Authority shall use as a basis prediction.
- 1.8 All Constructional Plant shall be operated and maintained in accordance with the manufacturer's written recommendations including the use and maintenance of any specific noise reduction measures.
- 1.9 Where the Design requires a diversion for traffic which places the traffic temporarily closer to adjacent properties, the Company shall carry out an assessment of the predicted noise levels associated with the construction and completion of the O&M Works (either temporary or permanent) and the use by traffic. If this assessment indicates an increase in the ambient noise levels at any properties of more than 3dBLA10(18hr), a suitable noise barrier (temporary or permanent) shall be provided as a minimum for the duration of the diversion works and diversion, and shall be placed prior to the commencement of any such work.

Appendix 1/9: Noise Control Applicable to the O&M Works Site

- 1.10 Best practicable means shall be employed including the positioning of Constructional Plant and activities to minimise noise at sensitive locations, the use of mufflers on pneumatic tools, the use of non-reciprocating Constructional Plant and the use, where practical, of affective sound reducing enclosures to ensure all Constructional Plant used in connection with the O&M Works operates with the minimum of noise.
- 1.11 The Company shall ensure that any piling works are kept to a practicable minimum and that machinery and vehicles are switched off when not in use.
- 1.12 Subject to the other requirements of this Agreement, the normal working hours within the O&M Works Site shall be Monday to Friday between 0700 and 1900 hours and Saturday between 0800 and 1300 hours, with no working on Sundays and public holidays.
- 1.13 Permissible construction noise levels for these periods in relation to pre-construction ambient noise levels are detailed in Table 9/1 below. Consent for work outside these hours may be given by Aberdeen City Council and Aberdeenshire Council as appropriate.
- 1.14 The Company shall have written permission to operate at the relevant permissible noise levels for each area, within the normal working hours, from Aberdeen City Council, and Aberdeenshire Council as appropriate.
- 1.15 The Company shall apply, in writing, for consent to work outside normal working hours to Aberdeen City Council, and Aberdeenshire Council as appropriate, at least 14 days in advance of the proposed work.
- 1.16 The granting of such consents shall be dependent, amongst other things, on the Company demonstrating to the satisfaction of Aberdeen City Council, and Aberdeenshire Council as appropriate in their application that:
- (a) it is not reasonably practicable to carry out the work during standard working hours;
 - (b) the Company has considered all mitigation measures and has implemented appropriate measures;
 - (c) all interested parties have been consulted; and
 - (d) all alternative means to reduce the amount of work to be undertaken outwith standard working hours has been explored.
- 1.17 Written confirmation of consent shall be required for each and every occasion when the Company proposes to work outwith standard working hours.
- 1.18 In the event of written permission being granted, the Company shall provide the Contracting Authority with a copy of the written permission at least 48 hours prior to commencing the work.
- 1.19 The Company shall also arrange for leaflets to be delivered to residents within 200 metres of the proposed O&M Works, giving a full description of the proposed Works, their duration, and of the sources, character and levels of noise expected to arise, including a named contact to respond to any noise or vibration concerns or nuisance.
- 1.20 Operating times and noise levels for Sundays and public holidays shall be subject to the agreement and written consent of Aberdeen City Council, and Aberdeenshire Council as appropriate.

Appendix 1/9: Noise Control Applicable to the O&M Works Site

- 1.21 A pre-construction ambient noise assessment shall be undertaken by the Company, using an appropriately qualified acoustician who is a member of the Institute of Acoustics for agreement with Aberdeen City Council, and Aberdeenshire Council as appropriate within 100 metres of where the O&M Works shall be undertaken, before the commencement of the O&M Works.
- 1.22 The noise assessment shall demonstrate the typical pre-construction ambient noise levels at representative properties adjacent to the O&M Works Site.
- 1.23 Measurement locations chosen for the pre-construction ambient noise assessment shall be representative of surrounding properties, shall be considered the "worst case" property in terms of noise levels for that particular area, and shall be directly compatible with the noise levels given in Table 9/1 below for L_{Aeq} , 2hr (0800 – 1000) and L_{Aeq} 2hr (1900 – 2100).
- 1.24 The Company's acoustician shall be required to undertake additional assessments or noise measurements at locations and methods agreed previously in writing with the Contracting Authority, Aberdeen City Council, and Aberdeenshire Council as necessary.
- 1.25 The pre-construction ambient noise levels, as detailed in paragraph 1.21 above, shall be used to calculate maximum permissible construction noise levels.
- 1.26 Any measured construction noise level shall not exceed any appropriate level, given in Table 9/1 below when compared to the pre-construction ambient noise level. The permissible construction noise level shall not be exceeded at any property in the surrounding area of the O&M Works.
- 1.27 In exceptional circumstances, permission may be granted to carry out works which exceed the levels given in Table 9/1 below with the agreement of the Aberdeen City Council, and Aberdeenshire Council as appropriate, provided that the Company can demonstrate that all possible mitigation measures shall be implemented.
- 1.28 Notwithstanding the specific requirements of this Appendix 1/9, the Company shall comply with the contents of Scottish Office Roads Directorate Office Section Instruction 2/92, The Noise Insulation (Scotland) regulations 1975.

Appendix 1/9: Noise Control Applicable to the O&M Works Site

TABLE 9/1: PERMISSIBLE CONSTRUCTION NOISE

Typical Pre-Construction Ambient Noise as appropriate	Permissible Construction Noise Levels							
	Weekday working Monday to Friday excluding Public Holidays					Saturday (08.00-13.00) *L _{Aeq, 5hr}	Sunday and public holidays	
	Day (07.00-19.00) *L _{Aeq, 12hr}	L _{Amax} (Fast)	Evening (19.00-22.00) *L _{Aeq, 3hr}	L _{Amax} (Fast)	Night Hours (22.00-07.00)			
35	65	86	55	65	Given on request	65	86	Given on request
40	65	86	55	65		65	86	
45	65	86	60	70		65	86	
50	70	92	60	70		70	92	
55	75	96	65	75		75	96	
60	75	96	65	75		75	96	
65	75	96	65	75		75	96	
70	80	101	80	90		80	101	
75	80	101	80	90		80	101	

*All permissible levels should be façade.

Notes

- (i) The pre-construction ambient noise level shall be the total L_{Aeq} as determined from the pre-construction ambient noise assessment from all the noise sources at the measurement location over the specified period.
- (ii) Maximum sound level shall be the highest value indicated on a sound level meter. New sound level meters shall comply with EC 61672-1:2002 (BS EN 61672-1:2003 Electroacoustics; Sound Level Meters; Specifications), Class 1 or 2. For all others, compliance with BS EN 60651:1994 or its equivalents, and also to BS EN 60804:1994 if either Leq or SEL is available, to Types 0, 1 or 2.
- (iii) The measurement location shall be representative such that the measurements are representative of the noise which is experienced by the neighbouring properties and the microphone shall not be subject to any unusual screening.

2 Vibration Control

- 2.1 The Company shall consult and comply with the requirements of, Aberdeen City Council, and Aberdeenshire Council as appropriate prior to commencement of O&M Works.
- 2.2 These requirements, together with the Company's proposed methods of work and Constructional Plant to be used shall be discussed and agreed in writing by Aberdeen City Council, and Aberdeenshire Council as appropriate, prior to commencement of the relevant activities on Site.
- 2.3 The Company shall provide Consultation Certificates in accordance with the Certification Procedure in respect of this requirement.

Appendix 1/9: Noise Control Applicable to the O&M Works Site

- 2.4 The maximum permitted peak particle velocity generated by continuous construction of the O&M Works shall be 5 millimetres/second measured at the property closest to the operations being carried out and applies to all operations.
- 2.5 Where the Construction of the Work is intermittent, the maximum permitted peak particle velocity generated shall be no greater than 10 millimetres/second.
- 2.6 Ground vibration at any Structure, property or building and otherwise affected by blasting, shall be kept within the levels given in BS 7385: Part 2. Evaluation and Measurement for Vibration in Buildings; Guide to Damage Levels From Groundbourne Vibration.
- 2.7 The maximum peak component particle velocity measured next to any Structure under construction shall be:
- (a) Equal to or less than a zero to peak displacement of 0.6mm/s at frequencies less than 4Hz;
 - (b) Less than 15mm/s at 4Hz, rising to less than 20mm/s at 15Hz; and
 - (c) Less than 20mm/s at 15Hz, rising to less than 50mm/s at 40Hz or above.
- 2.8 With regard to vibration, the level for up to a maximum of three blasts per day, should be 8.5mms, Monday to Friday between 10.00 hours and 16.00 hours. At any other times it should be 2.8mms.
- 2.9 The Company shall provide written details of the proposed method and periodicity of monitoring of the Vibration Dose Value, to Aberdeen City Council, and Aberdeenshire Council as appropriate.

2.10 Vibration Monitoring Equipment

- 2.10.1 The type of instrumentation suitable for monitoring vibration shall be a digital seismograph having the following minimum specification:
- (a) Minimum sampling rate 1000 samples/second/channel;
 - (b) Capable of recording Peak Particle Velocity (Directly), Peak Acceleration (Calculated), Peak;
 - (c) Displacement (Calculated), Frequency at the Peak Velocity (Calculated);
 - (d) Dual Mode instrument having (a) Self Triggering Mode and (b) Continuous Monitoring Mode;
 - (e) Transducer - 3 orthogonally mounted transducers on one mounting unit;
 - (f) Frequency Range - 4.5 to 200 Hertz;
 - (g) Minimum Resolution - 0.05 millimetres/second, velocity;
 - (h) Range - 0 to 100 millimetres/second, velocity;
 - (i) Record of Events - hard copy printout and storage on solid state memory or disc for subsequent printout; and
 - (j) Power - 240 volt mains for continuous unattended operation plus internal battery with minimum of 24 hours capacity.

Appendix 1/17: Traffic Safety and Management

1 General Requirements

- 1.1 All traffic management shall be carried out in a manner which avoids causing traffic to divert on to alternative routes, minimises the impact on the local community and minimises delays and disruptions to existing traffic. The Company shall demonstrate to the satisfaction of those consulted as given in Part 1 of these O&M Works Requirements that his traffic management proposals have been developed such that they include all necessary measures to minimise delays, disruptions and diversions to traffic. This shall include traffic modelling measures as appropriate using micro-simulation measures and the like. Consultation Certificates shall be submitted in accordance with the Certification Procedure.
- 1.2 Subject to the other requirements of this Agreement the Company shall comply at all times with the requirements of Chapter 8 of the Traffic Signs Manual 2009 and any relevant Transport Scotland Publication including those detailed in the DMRB.
- 1.3 The Company shall submit details of its proposed traffic management programme to the Contracting Authority at least 6 weeks before the date for commencement of the O&M Works. The programme shall identify the Temporary Traffic Management Scheme associated with each construction operation, and the duration of each phase of the programme. The scheme or schemes proposed shall take into account the information contained in this Appendix 1/17 and in Appendices 1/18, 1/19 and 1/20, and be consistent with any traffic management measures and construction operations being undertaken on adjacent roads.
- 1.4 All applications relating to Traffic Orders and/or authorisation of signs and/or signals shall be submitted to the Overseeing Organisation in writing and require the following notice:
- i) amending or making temporary traffic orders - 8 weeks;
 - ii) authorisation of temporary traffic signals - 3 weeks;
 - iii) authorisation of non prescribed signs – 1 week.
- 1.5 For advance notice of requirements for diversions, occupations and works occupations refer to Appendix 1/18.
- 1.6 The Company shall be responsible for the payment of all charges associated with the preparation and publication of all road related orders.
- 1.7 The Company shall undertake Stage 2 and Stage 3 Road Safety Audits and submit Road Safety Audit Certificates in respect of the Temporary Traffic Management Schemes in accordance with Part 1 of these O&M Works Requirements and the Certification Procedure.

Appendix 1/17: Traffic Safety and Management

- 1.8 Prior to any Works starting on the O&M Works Site, the Company shall supply to the Overseeing Organisation details of traffic management proposals including, but not limited to, the following:
- i) phasing of Works;
 - ii) drawings showing traffic management layouts including, but not limited to, the following:
 - a. position of traffic signs, signals and cones;
 - b. width of lanes;
 - c. working areas;
 - d. safety zones;
 - e. details of temporary barriers for the protection of personnel;
 - f. entry and exit points for site traffic;
 - g. provisions for emergency vehicles;
 - h. provisions for vehicle recovery;
 - i. provisions for wide loads; and
 - j. crossovers;
 - iii) timing of Operations;
- 1.9 Sufficient information to demonstrate the objectives stated in paragraph 1 of this Appendix 1/17 can be achieved.
- 1.10 Names and telephone numbers of a minimum of 3 personnel who can be contacted by the Police and/or Overseeing Organisation, both during or outwith the working day, and who shall be responsible for initiating whatever action shall reasonably be required in the event of an emergency. At least 2 of these contacts shall be available at any one time including periods when the O&M Works Site is closed.
- 1.11 The erection and removal of any traffic management installation, temporary diversion or Stage 3 Road Safety Audit shall not be carried out during the following hours and at any other time periods specified by the Overseeing Organisation:
- 1.12 Monday to Saturday – 06:00 to 09:30 hours inclusive and 16.00 (15.30 on Fridays) to 20:00 hours inclusive and on any local or national public holiday unless agreed in writing by the Relevant Authority, or on specific instructions from the Police.
- 1.13 Where the Company proposes to carry out the erection and removal of any traffic management installation, temporary diversion or Stage 3 Road Safety Audit on a Sunday, they shall give at least 7 days notice of their proposals to the Police and shall not carry out such work without the approval of the Police.
- 1.14 Temporary crossovers shall be designed for a minimum Design speed (85 percentile speed) of 70kph, or a minimum of 60kph where it can be demonstrated to the Overseeing Organisation that it is necessary in the interests of safety.
- 1.15 The Company shall maintain access across the O&M Works Site to the requirements and standards in Table 1/18 of Specification Appendix 1/18.
- 1.16 The Company shall ensure that while any Temporary Traffic Management Schemes are in force they are inspected and constantly monitored, any Defects identified being

Appendix 1/17: Traffic Safety and Management

rectified immediately to the satisfaction of the Overseeing Organisation, the Police and Aberdeen City Council, and Aberdeenshire Council, as appropriate.

- 1.17 Frequency of inspections and maximum response times shall be as follows:

Location	O&M Roads		All other Roads	
	Frequency of inspection per 24 hour period	Maximum Response Time	Frequency of inspection per 24 hour period	Maximum Response Time
Advance Signing	4	60 minutes	2	60 minutes
Taper	12	15 minutes	6	15 minutes
Lane Closure	6	30 minutes	3	30 minutes
End Signing	4	60 minutes	2	60 minutes

- 1.18 During the period when traffic restrictions are imposed on any road, the Company shall provide a minimum of two responsible and appropriately experienced operatives with an appropriate vehicle on a 24 hour day, 7 days a week basis whose sole responsibility shall be for the operational supervision of the Temporary Traffic Management Scheme.
- 1.19 The operatives shall be equipped with a mobile cellular telephone and mobile message pager to enable direct communication with them at all times. They shall be empowered to accept instructions from the Police and Roads Authority personnel with regard to the layout of the Temporary Traffic Management Scheme for which they are responsible.
- 1.20 The Company shall keep a daily record of all Defects in any Temporary Traffic Management Schemes, the times when they were identified or reported to him, the action taken to correct the defects, and the times when they were successfully corrected.
- 1.21 A copy of this record shall be forwarded to the Overseeing Organisation and the Contracting Authority on the following day.
- 1.22 In the event of a traffic accident occurring in or adjacent to the O&M Works Site, the Company shall immediately contact the Police, Fire and Ambulance emergency services as appropriate and the Overseeing Organisation informing them of the following:
- i) Location of the accident; and
 - ii) The seriousness of the accident and whether any persons are trapped; whether the collision involves vehicles carrying inflammable, corrosive or hazardous substances; whether there is a possibility of ignition from leaking fuel or chemicals.
- 1.23 The Company shall attend such accidents in accordance with the requirements for recovery set out in Specification Appendix 1/20.
- 1.24 The Company shall remove any debris from the road to restore the road surface to a serviceable condition and shall then carry out any interim repairs or reinstatement that is required to reinstate the traffic control to its original layout. In any event complete reinstatement shall be made within 24 hours of the accident.

Appendix 1/17: Traffic Safety and Management

- 1.25 The Company shall ensure that sufficient personnel and a sufficient stock of spare signs and cones etc, are available at all times to make good damage to any traffic control layout.
- 1.26 When a contraflow is in operation an emergency lane shall, where practicable, be provided at all times for emergency vehicles. The emergency lane shall be kept free of materials, plant and stationary vehicles but it may be used for site access. The route shall be signed and delineated in order to ensure easy and free flow of any emergency vehicle.
- 1.27 The needs and safety of non motorised users shall be considered at all times.
- 1.28 The Company shall comply with the advice of paragraph D3.10.4-6 and O3.13 of Chapter 8 of the Traffic Signs Manual 2009.
- 1.29 All non motorised users diversions shall have a hard surface and adequate drainage to prevent flooding or ponding. They shall be kept clean and free from all materials, Construction Plant and stationary vehicles.
- 1.30 Excessively long lengths should be avoided where possible to avoid 'shortcuts'. Care shall be taken to avoid crossing areas regularly traversed by heavy plant.
- 1.31 No at-grade crossings of the A90 Trunk Road shall be permitted.
- 1.32 All diversions of pedestrian routes which are normally lit shall be provided with a standard of lighting at least equal to that of the original route.
- 1.33 Refer to the standards given in Table 1/18B of Appendix 1/18.
- 1.34 Works required to Pedestrian Underpasses shall be undertaken in such a way that the non motorised access provided by adjacent Underpasses is not restricted at any one time.
- 1.35 All drivers including those delivering Constructional Plant and materials shall be given clear instructions regarding the traffic arrangements applicable at any particular time.
- 1.36 Provision for the passage of abnormal loads through the O&M Works shall be as follows:
- i) The Company shall assist the Police in moving abnormal loads through the Works by modifying the signing/coning as necessary; and
 - ii) Signs/cones so moved shall be replaced immediately the abnormal loads have passed through the O&M Works.
- 1.37 For the purposes of this Appendix, an abnormal load shall consist of any number of vehicles in convoy at any one time, requiring special measures to be taken in order to gain passage through the O&M Works.
- 1.38 Meetings between the Overseeing Organisation, the Company, Police and Aberdeen City Council, and Aberdeenshire Council, as appropriate, shall be arranged by the Company monthly throughout the duration of the O&M Works, at initiation or changes of traffic management layouts and at any other time deemed necessary by any of these parties.
- 1.39 The Company shall ensure that his traffic management proposals take account of events and public holidays which are likely to affect traffic flows.
- 1.40 The Company shall accommodate roadwork schemes adjacent to the O&M Works and shall consult and comply with the Relevant Authority in this respect.

Appendix 1/17: Traffic Safety and Management
2 Monitoring of Roadworks

- 2.1. The Company shall nominate two members of staff to liaise with Traffic Scotland at all times.
- 2.2. The Company shall inform the National Network Control Centre (NNCC), Transport Scotland, AA Roadwatch, RAC, Radio Scotland, local radio, local press, North East Management Unit, Aberdeen City Council, Aberdeenshire Council, and the emergency services at least two weeks in advance of any planned major changes to the traffic management layouts, including any plans to reduce the number of lanes in accordance with paragraph 5.2.
- 2.3. In accordance with Appendix 1/24 the Company shall within his method statements for traffic management include procedures to inform the motoring public of delays and queues on the approaches to and within the O&M Works Site.
- 2.4. The following organisations shall be informed of the frequencies indicated in the reporting frequencies section of paragraph 3.0 below:
- i) National Network Control Centre;
 - ii) AA Roadwatch;
 - iii) Radio Scotland;
 - iv) Local Radio Networks;
 - v) Traffic Link; and
 - vi) any other organisations as specified by the Overseeing Organisation and/or the Contracting Authority.
- 2.5. Traffic queues shall be monitored at all times during periods when Temporary Traffic management Systems are in operation for the duration of this Agreement.
- 2.6. Traffic queues shall be measured by means of time delay.
- 2.7. Queue lengths measured as being less than eight minutes shall be defined as representing "no substantial delay".
- 2.8. Substantial delay queue lengths shall be quoted in the following bands;
- | Measured Delay | Quoted Delay |
|--------------------------------|----------------------|
| Up to 8 minutes | No substantial delay |
| Between 8 and 12 minutes | 10 minute delay |
| Between 13 and 17 minutes | 15 minute delay |
| Between 18 and 22 minutes | 20 minute delay |
| Subsequent 5 minute time bands | add 5 minutes |
- 2.9. When communicating a traffic queue its length shall also be quoted as a distance in miles.
- 2.10. For the purposes of this Agreement, a queue is defined as being where the speed of vehicles is less than 20 miles per hour.

Appendix 1/17: Traffic Safety and Management

3 Reporting Frequencies

- 3.1 Traffic Information Outlets shall be informed if:
- i) a queue reaches eight minutes delay;
 - ii) queue changes by five minute band;
 - iii) substantial delay ends i.e. delay less than eight minutes; and
 - iv) the Company shall report to NNCC every 30 minutes irrespective of traffic conditions.
- 3.2 The Company shall not open any area to traffic unless the following requirements are met:
- i) appropriate road markings have been laid or removed;
 - ii) the carriageway has been fully swept and cleared of all items of Construction Plant, personnel, materials and debris;
 - iii) adjacent road restraint systems, where required, have been erected and tensioned;
 - iv) the Company shall not have to impose future traffic restrictions on the section of carriageway to undertake O&M Works which could have reasonably been completed under the preceding traffic control period; and
 - v) all temporary or permanent signing and lighting is in place.

4 Traffic Safety and Control Officer

- 4.1 The Company shall appoint a senior member of its staff to act as Traffic Safety and Control Officer. This person shall be responsible for all traffic safety and control during the O&M Works and shall liaise with the Relevant Authorities as required. The Traffic Safety and Control Officer shall take instructions direct from the Contracting Authority and, in the case of emergency, from the Police where they have assumed control. Radio contact should be maintained at all times with the Traffic Safety and Control Officer.
- 4.2 The responsibilities of the Traffic Safety and Control Officer shall include the following:
- i) All traffic management measures associated with the O&M Works;
 - ii) Ensuring that all equipment is in place and in full working order at all times;
 - iii) Enforcement of all relevant Health and Safety directives, relating to operations and live traffic;
 - iv) Enforcement of site access requirements;
 - v) liaison with the Contracting Authority and the Relevant Authorities and continued monitoring of the traffic management measures adopted; and
 - vi) Arranging for watchmen and other staff so that the O&M Works Site is patrolled and inspected at all times and equipment attended to and maintained and in the case of accidents have replacement signs, cones, bollards and lights and the like erected without delay.
- 4.3 The Company shall notify the Contracting Authority and the Relevant Authorities with the name and 24 hour contact telephone number of the Traffic Safety and Control Officer appointed.

Appendix 1/17: Traffic Safety and Management**5 Lane Occupations**

- 5.1 Notwithstanding other provisions of this Agreement, one lane for use by all permitted classes of vehicles and one narrow lane for the use of cars and other light vehicles shall be provided in each direction on the mainline carriageway of the A90 Trunk Road, A956 Trunk Road, , and the A96 Trunk Road between the hours 06:00 and 20:00 during the O&M Works, as a minimum requirement.
- 5.2 The Company may apply to the Overseeing Organisation for written approval to reduce the Lane provisions described in paragraph 5.1 above to a minimum of one Lane for use by all permitted classes of vehicle in each direction on the mainline carriageway of the A90 Trunk Road, A956 Trunk Road and the A96 Trunk Road during the O&M Works.
- 5.3 The Company shall demonstrate to the Overseeing Organisation that such applications are necessary in terms of either buildability or health and safety.
- 5.4 Applications shall be made a minimum of 4 weeks in advance of any planned reduction to the provision of paragraph 5.1 above during the O&M Works.
- 5.5 In very exceptional weather circumstances, such as very heavy snow, or in other very exceptional circumstances necessary for the carrying out of the O&M Works and approved by the Overseeing Organisation, (which shall not be unreasonably withheld) a minimum of one Lane for use by all categories of vehicle in each direction shall be provided on the mainline carriageway of the A90 Trunk Road, A956 Trunk Road and the A96 Trunk Road.
- 5.6 Reduction to the provision of paragraph 5.1 above shall not be permitted during the following periods, except in the case of emergencies:
- i) Christmas and New Year holidays (24 December to 2 January inclusive);
 - ii) Good Friday to Easter Monday inclusive;
 - iii) between Friday and Monday inclusive on any local Bank holiday or public holiday weekend during May or September;
 - iv) between the inclusive dates for the Offshore Europe Oil and Gas Conference and Exhibition each year;
 - v) between the inclusive dates for the Scottish Golf Open each year that it is held in the Aberdeen area; and
 - vi) as directed by the Police.
- 5.7 On Side Roads reduction to the existing provision of Lanes shall be subject to the prior written approval of the Relevant Authorities or land owners or occupiers and a temporary replacement route or temporary diversion is in operation.

6 Safety of Personnel

- 6.1 Notwithstanding any other requirements of this Agreement, safety zones at all Temporary Traffic Management Schemes on the O&M Works Site shall be a minimum of 1.2 metres wide unless the Company shall as part of the Temporary Traffic Management Schemes incorporate a temporary vertical concrete or steel safety barrier in lieu of other means of demarcation allowed under the other requirements of this Agreement. In such an event, the safety zone shall be a minimum of 500 millimetres wide.
- 6.2 No personnel or items of plant (other than that required for signing and coning operations) shall enter a newly closed off area until such times as the traffic has been satisfactorily diverted.

Appendix 1/17: Traffic Safety and Management

- 6.3 The Contracting Authority have the right to instruct the Company's workmen on any matter relating to the safety of personnel and traffic safety and control, including signing and coning.
- 6.4 All drivers including those delivering plant and materials shall be given clear instructions regarding the traffic management arrangements applicable at that particular time.
- 6.5 All personnel working on or adjacent to trafficked roads shall be issued with printed copies of appropriate safety instructions and receive training as necessary.
- 7 Requirements for Vehicles used on the O&M Works**
- 7.1 Where Works are carried out on or adjacent to a road open to vehicles, all vehicles and mobile plant operating on or adjacent to that road in the execution of the Works shall be painted in a conspicuous colour as described hereafter :
- i) All vehicles used in mobile lane closures defined in Section 8 and 10 of part 2 to Chapter 8 of the Traffic Signs Manual shall be painted in non-reflectorised yellow (Colour No 355 to BS 381 C or similar).
 - ii) Similarly all vehicles engaged in O&M Works within unprotected trafficked lanes (for example, setting up major traffic management layouts such as tapers and contraflows) on high speed roads shall be painted non-reflectorised yellow.
 - iii) All other vehicles undertaking O&M Works shall be generally light in colour preferably but not necessarily non-reflectorised yellow and/or provide, over the full width and height of the vehicle which is exposed to approaching vehicles, conspicuous markings and signs to define clearly that the vehicle is a roadworks vehicle.
 - iv) Vehicles shall have a sign board reading "Highway Maintenance" (to Diagram 740A of Schedule 12 Part V of the Traffic Signs Regulations and General Directions 1994) fixed at the rear.
 - v) The lettering shall be 150 millimetres "x height" except that for light vans and cars it shall be the largest "x height" that can be accommodated out of the following heights: 37.5, 50, 62.5 or 100 millimetres.
 - vi) The lettering shall be black capital letters from the alphabet described in the Traffic Signs Regulations and General Directions 2002 Schedule 13 Part II on a yellow non-reflectorised background in accordance with BS 381C, Colour No 355.
 - vii) All goods vehicles classes and construction vehicles shall be fitted with an audible reversing warning device.
 - viii) All vehicles entering the O&M Works Site for any purpose shall comply fully with the requirements of Specification Appendix 1/19.
- 7.2 Vehicles and plant shall be provided with either roof mounted light bars or at least two amber flashing beacons, and light vans and cars shall be provided with a roof mounted amber flashing distinctive lamp.
- 7.3 All warning lamps shall be switched on when the vehicle or plant is manoeuvring into or out of the location of the O&M Works, operating at low speed on the carriageway or hardshoulder open to vehicles or standing on a carriageway or hard shoulder open to vehicles.
- 7.4 Hazard warning lights are not an acceptable alternative to roof mounted flashing lamps, but may be used in addition.

Appendix 1/17: Traffic Safety and Management

- 7.5 All vehicles and plant shall be free from oil and fuel leaks and if refuelled on the O&M Works Site care shall be taken to prevent spillage.
- 7.6 Side tipper vehicles shall be used where such shall limit turning manoeuvres alongside trafficked lanes.
- 7.7 No vehicle shall be permitted to stop on a live section of any carriageway to load or unload materials or personnel unless specifically and unavoidably for traffic management purposes.
- 7.8 During the hours of darkness no vehicle under the control of the Company shall be driven towards oncoming traffic on a closed section of the O&M Works Site adjacent to live traffic.

8 Temporary Traffic Signs

- 8.1 The Company shall not take down existing local or advance direction signs or regulatory or informatory signs without first either providing temporary signs displaying the same information or replacement permanent signs.
- 8.2 All traffic signs required by the Traffic Signs Regulations and General Directions 2002 to be reflective shall be made reflective by the application of Class 1 retroreflective material.
- 8.3 All temporary traffic signs shall comply with the Traffic Signs Regulations and General Directions 2002.
- 8.4 In addition to the minimum requirements for signing and coning under Chapter 8 of the Traffic Signs Manual the Company shall erect and maintain the following:
- i) Advanced signing two miles prior to roadworks as drawing No (P) 7004 sheet 1 of 3) detailing modification to sign WBM 338.1 of Chapter 8 of the Traffic Signs Manual.
 - ii) The standard two-line legend "Road Repairs" shall be replaced by "Major Roadworks".
 - iii) Signing erected one mile in advance of roadworks as drawing No (P) 7005 detailing modification to sign WBM 338 of Chapter 8 of the Traffic Signs Manual.
 - iv) The standard two line legend shall read "Delays Possible" and a third line added to the legend indicating how long delays are possible.
 - v) At the commencement of the roadworks, the additional line shall read, for example "until July 09".
 - vi) At least ten working days before the end of the carriageway restrictions, the date shall be specified more precisely, for example "until 25 June 2009".

Appendix 1/17: Traffic Safety and Management

- vii) This date shall be further revised if necessary, until the restrictions are removed.
- viii) Only the following abbreviations shall be used: Jan, Feb, Mar, Apr, Aug, Sep, Oct, Nov and Dec.
- ix) Traffic calming chevrons shall be provided within the left hand lane prior to the Works commencing at the end of the right hand Works coning splay over a length of 10 metres. See Drawing Number 100/1 illustrating traffic calming chevrons to be provided.
- x) Signing to Drawing Numbers W(S) 148 and W(S) 149 shall be deposited in accordance with signs WBM 339.1 and WBM 339 respectively under Chapter 8 of the Traffic Signs Manual.
- xi) Where within all of the drawings listed above reference is made to "The Scottish Office", it shall be deleted and replaced with "Transport Scotland".
- xii) Black on yellow signs as Drawing Numbers [(P) 7004 sheet 2 of 3] and [(P) 7004 sheet 3 of 3] sited at the beginning and at 1 kilometre intervals through the Works to explain why part of the road has been coned off but no Works is, or appears to be taking place.
- xiii) This signing shall comprise a frame on to which signs displaying any one of the approved messages below shall be fitted.
- xiv) This equipment shall either be permanently sited, for the duration of the Works, where it is safe and convenient to do so, or kept on one side ready for display when it is required.
- xv) The signs shall be constructed and mounted in accordance with the general principles outlined in Topic 3 of Chapter 8 of the Traffic Signs Manual.
- xvi) They shall be reflectorised by the use of Class1 retroreflective material.
- xvii) The legends required to the works are:
 - (a) WORK SUSPENDED
 - (b) UNSUITABLE WEATHER
 - (c) ROAD REPAIRS
 - (d) MATERIALS HARDENING
 - (e) LANE CLOSED FOR SAFETY
 - (f) CONCRETE SETTING
 - (g) LANE CLOSED TO PROTECT WORKFORCE
 - (h) FURTHER WORKS AHEAD
 - (i) LANE REMAINS CLOSED FOR SAFETY PURPOSES

8.5 The minimum period of inactivity which would warrant the display of a sign is 15 minutes.

Appendix 1/17: Traffic Safety and Management

Drawg. No. (P) 7004 Sheet 1 of 3
 © CROWN COPYRIGHT. This drawing must NOT be reproduced. Further copies may be obtained from the Department of Transport, M&M1 Division signs office.
 NOTES: 1. The legends are from the Transport Heavy Alphabet at the x-heights shown.
 2. The outlines of the tiles do not form part of the sign.
 3. Colours:- BS. 873: Part 6 (Black & White: Table 5) Other colours- Clause 4.3.3
 Legend & Border----- Black
 Background----- Yellow P7001 triangle { Border----- Red
 Symbol----- Black
 Background-- White
 Supplate { Border & Legend- Black
 Background----- White
 4. Illumination: The sign may be internally or externally lit, but if not so lit throughout ALL the hours of darkness it shall be reflectorized.
 5. x-heights are in millimetres, other dimensions in stroke widths at large x-height. (4sw equals the x-height)
 6. The signs shall comply with the current edition of BS. 873.

Other variants

TOP LINE- Repairs to, or Renewing
 CENTRE LINE- worn out, or weak
 BOTTOM- road, bridge deck (2 lines), concrete, or surface

(0.8 of large x-ht) **2 miles** 80 min 200 max x-ht
 supplate designed to x-ht used in it, distance may be varied.

DETAILS OF ROADWORKS TRIANGLE
 ON DRAWG NO (P) 7001

modified M&M(R)338.1
 FIRST ISSUED: 18.6.92
 REVISIONS:
 THIS ISSUE: 18.6.92
 Drawn: S.P. Approved:
 Title: Roadworks
 DESCRIPTION AND DISTANCE TO WORKS
 DEPARTMENT OF TRANSPORT
 Drawg. No. (P) 7004 Sheet 1 of 3

P7004-1

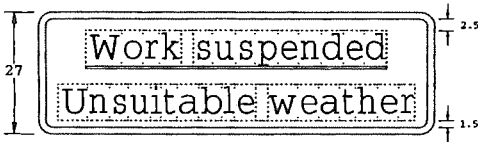
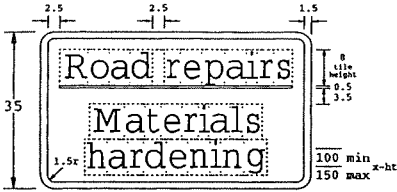
Before using this drawing confirm that it has not been superseded.

Appendix 1/17: Traffic Safety and Management

Dwg.No.
(P) 7004 sheet
2 of 3

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- NOTES:-
1. The legends are from the Transport Heavy alphabet at the x-heights shown.
 2. The outlines of the tiles do not form part of the signs.
 3. Colours:- BS.873:Part 6 (Black & White- Table 5 (Other colours- Clause 4.3.3)
Legend, Borders and underline--- Black
Background----- Yellow
 4. Illumination:-
Internal or external lighting or reflectorized in accordance with the Traffic Signs Regulations and General Directions.
 5. Dimensions :-
x-heights are in millimetres, all other dimensions are in stroke widths (4sw = x-height).
 6. The signs shall comply with the current edition of BS.873.


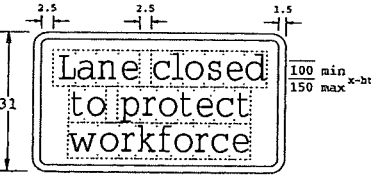



FIRST ISSUED: 10.6.92 REVISIONS:
THIS ISSUE: 10.6.92 Drawn: R.M. Approved:
Title: Roadworks DESCRIPTION OF WORKS
DEPARTMENT OF TRANSPORT Dwg.No. (P) 7004 sheet 2 of 3

P7004-2

Before using this drawing, confirm that it has not been superseded.

Appendix 1/17: Traffic Safety and Management

Dwg. No. (P) 7004	sheet 3 of 3	<p style="text-align: center;">© CROWN COPYRIGHT. This drawing must NOT be reproduced. Further copies may be obtained from the Department of Transport, MNDI Division signs office.</p> <p>NOTES:-</p> <ol style="list-style-type: none"> 1. The legends are from the Transport Heavy alphabet at the X-heights shown. 2. The outlines of the tiles do not form part of the signs. 3. Colours:- BS.873:Part 6 (Black & White- Table 5 Legend & Borders- Black Other colours- Clause 4.3.3) Background----- Yellow 4. Illumination:- Internal or external lighting or reflectorised in accordance with the Traffic Signs Regulations and General Directions. 5. Dimensions :- x-heights are in millimetres, all other dimensions are in stroke widths (stw * x-height). 6. The signs shall comply with the current edition of BS.873. 									
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">FIRST ISSUED: 19.6.92</td> </tr> <tr> <td style="padding: 5px;">REVISIONS:</td> </tr> <tr> <td style="padding: 5px;"> </td> </tr> <tr> <td style="padding: 5px;">THIS ISSUE: 18.6.92</td> </tr> <tr> <td style="padding: 5px;">Drawn: R.M. Approved:</td> </tr> <tr> <td style="padding: 5px;">TITLE: Roadworks</td> </tr> <tr> <td style="text-align: center; padding: 5px;">DESCRIPTION OF WORKS</td> </tr> <tr> <td style="padding: 5px;">DEPARTMENT OF TRANSPORT</td> </tr> <tr> <td style="padding: 5px;">Dwg. No. sheet (P) 7004 3 of 3</td> </tr> </table>	FIRST ISSUED: 19.6.92	REVISIONS:		THIS ISSUE: 18.6.92	Drawn: R.M. Approved:	TITLE: Roadworks	DESCRIPTION OF WORKS	DEPARTMENT OF TRANSPORT	Dwg. No. sheet (P) 7004 3 of 3
FIRST ISSUED: 19.6.92											
REVISIONS:											
THIS ISSUE: 18.6.92											
Drawn: R.M. Approved:											
TITLE: Roadworks											
DESCRIPTION OF WORKS											
DEPARTMENT OF TRANSPORT											
Dwg. No. sheet (P) 7004 3 of 3											
											
P7004-3		Before using this drawing, confirm that it has not been superseded.									

Appendix 1/17: Traffic Safety and Management

Drawg.No.
(P) 7005

© CROWN COPYRIGHT. This drawing must NOT be reproduced. Further copies may be obtained from the Department of Transport, NDIS Division signs office.

NOTE: 1. The legends are from the Transport Heavy Alphabet at the x-heights shown. Details of Roadworks triangle on (P)7001.

2. The outlines of the tiles do not form part of the sign.

3. Colours:- BS.873:Part 6 (Black & White- Table 5
Other colours- Clause 4.3.3)

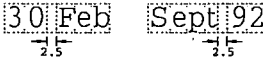
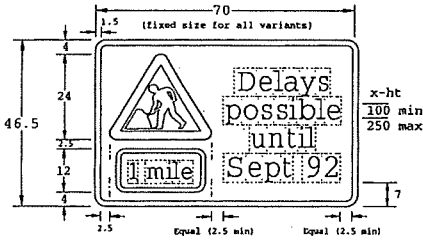
Legend & Border---- Black
Background----- Yellow P7001 triangle { Border----- Red
Symbol----- Black
Background-- White

Supplate { Border & Legend- Black
Background----- White

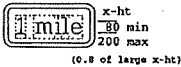
4. Illumination: The sign may be internally or externally lit, but if not so lit throughout ALL the hours of darkness it shall be reflectorised.

5. The data may be varied to suit the circumstances.

6. x-heights are in millimetres, other dimensions in stroke widths at large x-height. (x equals the x-height)



Supplate designed to x-ht used in it, distance may be varied.



modified WMR(R)338	
FIRST ISSUED: 18.6.92	
REVISIONS:	
1. Spacing amendments 10.11.93	
THIS ISSUE: 10.11.93	
Drawn: S.P. Approved:	
Title: Roadworks	
DELAY AND	
DISTANCE TO WORKS	
DEPARTMENT OF TRANSPORT	
Drawg.No. (P) 7005	

P7005

Appendix 1/17: Traffic Safety and Management

The drawing shows a rectangular traffic sign with a white background and a black border. The overall width is 3000 units and the height is 2000 units. The sign is divided into three horizontal sections. The top section contains the Royal Coat of Arms of Scotland on the left and the text 'THE SCOTTISH OFFICE' on the right. The middle section contains a triangular warning sign on the left showing a person carrying a large object, and the text 'WORK STARTS HERE' in a large, bold font, followed by '16 AUG' and 'FOR 2 WEEKS' in a smaller font. The bottom section contains the text 'DELAYS POSSIBLE' in a large, bold font. To the right of the sign, vertical dimension lines indicate the height of each section: 50 x-height for the top section, 125 x-height for the top part of the middle section, 125 x-height for the middle part of the middle section, 100 x-height for the bottom part of the middle section, 100 x-height for the bottom part of the middle section, and 125 x-height for the bottom section.

REFERENCE DRAWINGS:
W(S)137: The Scottish Office logo
WM564; Warning Sign - Road Works

NOTES:

1. © Crown copyright. This drawing must NOT be reproduced. Further copies may be obtained from The Scottish Office Roads Directorate.
2. All dimensions are given in millimetres.
3. The outlines of the text do not form part of the sign.
4. Where no dimensional design rules apply see Scottish Development Department Circular F3322.
5. The signs shall comply with the current edition of D.5.873.
6. The signs will be retroreflective by the application of Class 1 material on Trunk Roads.
7. The legend shall be from the Transport Heavy alphabet at a height of 50 x-height.
8. The logo as shown, with "THE SCOTTISH OFFICE" in Fitz-Quade's alphabet at the equivalent of 50 x-height.
9. Details of "THE SCOTTISH OFFICE" logo crest is as shown on drawing no. W(S) 137.
10. Colour: BS473 Part 6
Legend, Borders and The Scottish Office logo = Black, Background = Yellow
WM564 Warning Sign, Border = Red, Symbol = Black, Background = White
11. The Durability of the sign must accord with the requirements of the current "Traffic Signs Regulations and General Directions", Regulations 15-10 as they apply to: sign 864.
12. Details of the Road Works triangle and the Scottish Office logo are given on WM564 and W(S)137.

REVISIONS

DATE: February 1994
SCALE: 1:20
"WORK STARTS HERE, DELAYS POSSIBLE"
The Scottish Office Roads Directorate
Drawing No. W(S) 148

07/18

Appendix 1/17: Traffic Safety and Management

REFERENCE DRAWINGS:
 W(S)137: The Scottish Office logo
 WM564 : Warning Signs - Road Works
 WM545: Supplementary plate - End

REVISIONS	
DATE:	February 1994
SCALE:	1/20
"SORRY FOR ANY DELAY"	
The Scottish Office Roads Directorate	
Drawing No. W(S) 149	

NOTES:

- © Crown copyright. This drawing must NOT be reproduced. Further copies may be obtained from The Scottish Office Roads Directorate.
- All dimensions are given in millimetres.
- The outlines of the lines do not form part of the sign.
- Where not dimensioned design rules apply see Scottish Development Department Circular R332.
- The signs shall comply with the current edition of B.5.873.
- The signs will be retroreflective by the application of Class 1 material on Trunk Roads.
- The legend shall be from the Transport Heavy alphabet at x-heights shown.
- The logo as shown, with "THE SCOTTISH OFFICE" in Ffd-Quadruple alphabet at the equivalent of 37.5 x-height.
- Details of "THE SCOTTISH OFFICE" logo crest is as shown on drawing no. W(S) 137.
- Colours: BS472 Part 6
 Legend, Borders and The Scottish Office logo = Black, Background = Yellow
 WM564 Warning Sign; Border = Red, Symbol = Black, Background = White
- The dimensions of the sign must accord with the requirements of the current "Traffic Signs Regulations and General Directions", Regulations 15-19 as they apply to: days 564.
- Details of the Road Works triangle, supplementary plate and the Scottish Office logo are given on WM564, WM545 and W(S)137.

Appendix 1/18: Temporary Diversions for Traffic**1 Design Of Temporary Diversions For Traffic**

- 1.1 Safe access across the O&M Works shall be maintained or diversions provided in accordance with the minimum standards shown in Tables 1/18A and 1/18B to this Appendix.
- 1.2 The Company shall Design temporary diversions for traffic and the associated traffic management measures as required to suit the construction staging, methods of work and Undertakers diversions.
- 1.3 The Company shall provide and maintain access to all properties adjacent to the O&M Works. Temporary diversions shall be maintained at all times.
- 1.4 Where existing central reserve crossovers shall be used for temporary diversion of traffic such crossovers shall require to be upgraded in advance to current design standards detailed in the DMRB.
- 1.5 The Company shall construct temporary diversion ways wherever the O&M Works interfere with existing public or private roads or other ways over which there is a public or private right of way for traffic, whether vehicular or non motorised user.
- 1.6 The Company shall submit for approval to the Overseeing Organisation his detailed proposals as below for the temporary diversion of traffic (including non motorised user routes) at least 6 weeks prior to the implementation date:
 - i) Phasing of the diversion works including all concurrent diversions;
 - ii) Drawings showing traffic management layout including as follows:
 - (a) position of traffic signs, signals and cones;
 - (b) width of lanes;
 - (c) working areas;
 - (d) safety zones;
 - (e) details of temporary barriers for the protection of personnel;
 - (f) entry and exit points for site traffic;
 - (g) provisions for emergency vehicles;
 - (h) provisions for vehicle recovery;
 - (i) provisions for wide loads; and
 - (j) crossovers.
 - iii) Making or amending traffic orders.
 - iv) The Company shall be responsible for the payment of all charges associated with the preparation and publication of all road related orders.
 - v) The standard of construction and lighting of diversions shall be suitable in all respects for the class or classes of traffic using the existing ways. Any temporary diversion of a road shall have a bituminous or asphaltic surface. All access provision shall be to a standard equivalent to that in place upon commencement of the O&M Works.
 - vi) Temporary diversions of the Trunk Roads and Motorways shall be designed in accordance with the DMRB to a minimum Design speed of 70kph.

Appendix 1/18: Temporary Diversions for Traffic

- vii) Any temporary diversions of Slip Roads and Side Roads shall be designed to a minimum Design speed of 50kph.
- viii) The Company shall give the Contracting Authority at least 14 days written notice of any phased Works which require Lane Occupations.
- ix) Table 1/18B gives minimum standards for diversions of traffic.
- x) The standards shall be used to Design temporary diversions of traffic for the road or way in question should it not be possible to maintain the required width on the existing carriageway.
- xi) Notwithstanding any other requirements of this Agreement any generator required for powering temporary traffic lights shall not be permitted within 100 metres of any occupied property.

2 Maintenance

- 2.1 Temporary diversions are deemed to be temporary works and are the responsibility of the Company. They shall be maintained such that the routes are available and in a suitable condition for public use at all times while the diversion is in operation.
- 2.2 The Company shall make all necessary arrangements with owners and occupiers of any land, in addition to that provided in this Agreement, which is temporarily required for the diversion of traffic.
- 2.3 No revised arrangement affecting the bus stops as a consequence of the Design or the construction of the O&M Works shall be permitted without the prior written approval of the Relevant Authority. The Relevant Authority shall require a minimum of 3 weeks notice to consider such approval.
- 2.4 Temporary diversion signing shall be maintained in good order and covered or removed when the diversion is not in operation.

Appendix 1/18: Temporary Diversions for Traffic**Table 1/18A: Requirements of the Overseeing Organisation in the Execution of Temporary Diversions Necessitated by the O&M Works.**

Description	Requirements	Remarks
Existing A90 Trunk Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	To be kept open at all times. One lane for use by all permitted classes of vehicles shall be maintained in each direction as a minimum unless approval is granted in accordance with Paragraph 5.2 of Appendix 1/17.	Refer to Appendix 1/17
Existing A956 Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	To be kept open at all times. One lane for use by all permitted classes of vehicles shall be maintained in each direction as a minimum unless approval is granted in accordance with Paragraph 5.2 of Appendix 1/17.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
Existing A944 Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	To be kept open at all times. One lane for use by all permitted classes of vehicles shall be maintained in each direction as a minimum unless approval is granted in accordance with Paragraph 5.2 of Appendix 1/17.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.

Appendix 1/18: Temporary Diversions for Traffic

Description	Requirements	Remarks
Existing A93 Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	To be kept open at all times. One lane for use by all permitted classes of vehicles shall be maintained in each direction as a minimum unless approval is granted in accordance with Paragraph 5.2 of Appendix 1/17.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
Existing A96 Trunk Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	To be kept open at all times. One lane for use by all permitted classes of vehicles shall be maintained in each direction as a minimum unless approval is granted in accordance with Paragraph 5.2 of Appendix 1/17.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
All Existing Slip Roads.	Single Lane width of minimum 3.0 metres shall be kept open at all times unless otherwise agreed in writing with the Contracting Authority.	Except where Slip Roads shall be closed permanently in which case temporary or new provision shall be in place prior to closure of existing provision.
B979 Netherley Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
U89K Auquorthies to Ury Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
U88K Fishermyle to Clayfolds Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
U167K Cantlayhilld to Wellhead Road within the LMA	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeenshire	Refer to Appendix 1/17. Non motorised user access shall be

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Appendix 1/18: Temporary Diversions for Traffic

Description	Requirements	Remarks
and/or Traffic Management linked to the AWPR/B-T Project.	Council and the Contracting Authority.	provided at all times.
C12K Bridge of Muchalls to Netherley Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C25K Muchalls to Burnhead Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C24K Skateraw to Cookney Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C13K Lairhillock to Portlethen Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C5K Lochton to Auchlunies to Nigg Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
B977 Echt to Balmedie Road within the LMA and/or Traffic Management linked to the AWPR/B-T	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.

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Appendix 1/18: Temporary Diversions for Traffic

Description	Requirements	Remarks
Project.		
C25C Newmacher Church Road Link Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
U19C Leuchlands to Cranbog to Shielhill Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C1C Belhelvie to Waterdigmuir Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
A947Aberdeen to Oldmeldrum to Turriff Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
U63K Maryculter Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2300 and 0600 on Weekdays if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
B9077 South Deeside Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 23:59 on Fridays to 23:59 on Sundays if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.

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Appendix 1/18: Temporary Diversions for Traffic

Description	Requirements	Remarks
C5K Lochton to Auchlunies to Nigg Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C30K Hillside to Batchart Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C5K Schoolhill to Lochton to Nigg Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
Milltimber Brae Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
A93 North Deeside Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	To be kept open at all times. Restricted lane widths are permitted.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
Culter House Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
Contlaw Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.

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Appendix 1/18: Temporary Diversions for Traffic

Description	Requirements	Remarks
C127C Wester Ord to Blacktop Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
Kingsford to Gairlea Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
A944 Aberdeen to Alford to Strathdon Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C93C Clintery to Kingsford Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C89C Chapel of Stoneywood to Fairley Road (1) within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C89C Chapel of Stoneywood to Fairley Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.

Appendix 1/18: Temporary Diversions for Traffic

Description	Requirements	Remarks
U90C Tulloch Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
B999 Aberdeen to Tarves Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
U19C Leuchlands to Cranbog to Shielhill Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
A956 Wellington Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Sundays if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
U168K Old Stonehaven Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
Dyce Drive Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.

Appendix 1/18: Temporary Diversions for Traffic**Table 1/18B: Schedule of Standards for Temporary Diversions of Traffic**

Description	Requirements	Remarks
Existing A93 Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	To be kept open at all times. One lane for use by all permitted classes of vehicles shall be maintained in each direction as a minimum unless approval is granted in accordance with Paragraph 5.2 of Appendix 1/17.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
Existing A96 Trunk Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	To be kept open at all times. One lane for use by all permitted classes of vehicles shall be maintained in each direction as a minimum unless approval is granted in accordance with Paragraph 5.2 of Appendix 1/17.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
All Existing Slip Roads.	Single Lane width of minimum 3.0 metres shall be kept open at all times unless otherwise agreed in writing with the Contracting Authority.	Except where Slip Roads shall be closed permanently in which case temporary or new provision shall be in place prior to closure of existing provision.
B979 Netherley Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
U89K Auquorthies to Ury Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
U88K Fishermyre to Clayfolds Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
U167K Cantlayhill to Wellhead Road within the LMA	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeenshire	Refer to Appendix 1/17. Non motorised user access shall be

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Appendix 1/18: Temporary Diversions for Traffic

Description	Requirements	Remarks
and/or Traffic Management linked to the AWPR/B-T Project.	Council and the Contracting Authority.	provided at all times.
C12K Bridge of Muchalls to Netherley Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C25K Muchalls to Burnhead Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C24K Skateraw to Cookney Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C13K Lairhillock to Portlethen Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C5K Lochton to Auchlunies to Nigg Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
B977 Echt to Balmedie Road within the LMA and/or Traffic Management linked to the AWPR/B-T	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.

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Appendix 1/18: Temporary Diversions for Traffic

Description	Requirements	Remarks
Project.		
C25C Newmacher Church Road Link Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
U19C Leuchlands to Cranbog to Shielhill Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C1C Belhelvie to Waterdigemuir Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
A947Aberdeen to Oldmeldrum to Turriff Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
U63K Maryculter Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2300 and 0600 on Weekdays if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
B9077 South Deeside Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 23:59 on Fridays to 23:59 on Sundays if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.

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Appendix 1/18: Temporary Diversions for Traffic

Description	Requirements	Remarks
C5K Lochton to Auchlunies to Nigg Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C30K Hillside to Batchart Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C5K Schoolhill to Lochton to Nigg Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeenshire Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
Milltimber Brae Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
A93 North Deeside Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	To be kept open at all times. Restricted lane widths are permitted.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
Culter House Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
Contlaw Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.

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Appendix 1/18: Temporary Diversions for Traffic

Description	Requirements	Remarks
C127C Wester Ord to Blacktop Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
Kingsford to Gainlea Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
A944 Aberdeen to Alford to Strathdon Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C93C Clintery to Kingsford Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C89C Chapel of Stonywood to Fairley Road (1) within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
C89C Chapel of Stonywood to Fairley Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.

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Appendix 1/18: Temporary Diversions for Traffic

Description	Requirements	Remarks
U90C Tulloch Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
B999 Aberdeen to Tarves Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
U19C Leuchlands to Cranbog to Shielhill Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
A956 Wellington Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Sundays if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
U168K Old Stonehaven Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Weekdays and Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.
Dyce Drive Road within the LMA and/or Traffic Management linked to the AWPR/B-T Project.	May be closed between the hours 2100 and 0600 on Saturday and Sunday if approval is granted in writing from Aberdeen City Council and the Contracting Authority.	Refer to Appendix 1/17. Non motorised user access shall be provided at all times.

Appendix 1/19: Routing of Vehicles**1 General**

- 1.1 The Company shall submit his proposals for O&M Works Site access points including access to offices etc. at least four weeks in advance of the proposed start date for construction.
- 1.2 Access to the O&M Works Site for the Company's vehicles of over 3 tonnes unladen weight shall be taken at the following points only:
- i) A90 Trunk Road;
 - ii) A965;
 - iii) A944;
 - iv) A96 Trunk Road;
- 1.3 Any other existing public and private roads including footways, farm and house accesses shall only be used by the Company with the prior agreement of the owner, the Overseeing Organisation and Aberdeen City Council, and Aberdeenshire Council, as appropriate.
- 1.4 The Company shall provide, maintain and keep available at all times equipment as may be necessary to keep such ways clean.
- 1.5 The Company shall appraise itself of the standards of such routes with regard to height, weight or other restrictions by which its O&M Works may be limited or affected.
- 1.6 Any strengthening work required shall be carried out by the Company to the approval of the Contracting Authority, Aberdeen City Council, and Aberdeenshire Council, as appropriate.
- 1.7 The access and egress points shall be kept clear at all times and shall be constructed to a suitable standard to achieve a suitable gradient and running surface to permit a smooth access and egress of vehicles in a forward direction.
- 1.8 All accesses shall comprise a minimum paved width of 6.5 metres for a distance of 20 metres from the public road.
- 1.9 All accesses shall incorporate a suitable wheel wash on the exit side.
- 1.10 All roads and accesses within the O&M Works Site, including existing public and private roads, footpaths, bridleways, farm field and house accesses used by any vehicles engaged on the O&M Works or any new roads which are part of the O&M Works and which are being used by traffic shall be kept clean and clear of all dirt, mud or other materials dropped by the said vehicles.
- 1.11 The Company shall provide, maintain and keep available equipment, such as a vehicle incorporating a suction device and a road brush, as may be necessary to keep the roads clean.
- 1.12 If the proposed method of construction involves the use of any part of the permanent O&M Works by construction traffic, the Company shall take any necessary measures to protect such permanent O&M Works.
- 1.13 The Company shall submit to the Overseeing Organisation and Contracting Authority details of proposed borrow pits and tipping areas, which are off O&M Works Site and the intended routing of vehicles to and from such sites.

Appendix 1/19: Routing of Vehicles

- 1.14 The Company should also inform the Overseeing Organisation and Contracting Authority of the type of such vehicles to be used for transport, which should be compatible with the standard of the above routes.
- 1.15 The Company shall provide, erect and maintain such traffic signs, lamps and barriers etc. complying with Clause 117 of the Specification as may be required to ensure the observance of requirements and restrictions detailed in this Appendix.
- 1.16 At-grade right turns or U-turns to and from or on the Trunk Roads shall be prohibited at all times.
- 1.17 Right turn manoeuvres shall only be permitted at grade separated interchanges.
- 1.18 Persistent infringement of the foregoing restrictions shall be deemed a Company Event of Default in terms of this Agreement.
- 1.19 If the Company wishes to make use of existing laybys as access points to the O&M Works Site, approval shall be obtained from the Relevant Authorities and, where required, an alternative layby provided for the duration of the O&M Works, to accommodate bus services, breakdown situations and police traffic monitoring operations.
- 1.20 Any work which necessitates machinery and plant crossing public roads shall only be permitted with the prior written approval of the Relevant Authority.
- 1.21 Notwithstanding such approval being granted all such work shall be in compliance with the requirements of Chapter 8 of the Traffic Signs Manual and Traffic Signs Regulations and General Directions 2002.

2 Movement of Machinery and Plant across Public Roads

- 2.1 The Company shall not move excavated material across public roads unless written authorisation has been obtained from the Relevant Authorities.
- 2.2 Any plant crossing shall be traffic signal controlled and shall meet the requirements of Section 4.5 of Chapter 8 of the Traffic Signs Manual.
- 2.3 The Company shall keep the crossing area in a safe condition and as good a condition at all times as the road surface on either side of it. The Company shall take such action as is necessary to protect and maintain the surface of the public road crossed by Constructional Plant.

3 Temporary Structures for the Diversion of Public Roads or for Construction Traffic Spanning Areas used by the Public

- 3.1 For any temporary structures which may be required for temporary diversions of public roads or for spanning areas used by the public, the following criteria shall apply:
 - i) The Company shall follow the technical approval procedures contained in BD2 of the DMRB for the design of all temporary structures required to carry public roads or to span areas used by the public.
 - ii) The Company shall provide copies of the Design and Design Check Certificates in accordance with the Certification Procedure.
 - iii) For temporary Structures spanning the Trunk Roads, the headroom shall be not less than 5.7 metres, excepting where the road below is designated a 'High Load Routes', where the minimum headroom shall be 6.45 metres
 - iv) Notwithstanding the provisions of BD 2, all temporary structures for the diversion of public roads or spanning areas used by the public shall be designated as Category 3 structures.

Appendix 1/19: Routeing of Vehicles

- v) Designs shall be undertaken in accordance with the DMRB and Transport Scotland's Interim Amendments.

Appendix 1/20: Recovery of Vehicles for Breakdowns**1 Recovery Vehicles to be Provided****1.1 Heavy Recovery Vehicles****1.1.1 Consideration shall be given to the provision of 1 number heavy recovery vehicle on the O&M Works Site wherever works involve one or more of the following:**

- 1) reduction in the number of lanes available;
- 2) narrow lane widths;
- 3) sections of motorway without hard shoulders;
- 4) hard shoulder running; and
- 5) known congestion sites.

Consideration shall include the preparation of a risk assessment. Where a heavy recovery vehicle is not considered necessary a copy of the risk assessment shall be provided to the Contracting Authority before works commences.

Heavy recovery vehicles shall not be required for Type C Works.

1.1.2 The heavy recovery vehicle shall comply with the following:

- i) Be a 3 axled vehicle capable of suspend towing a fully laden 44 tonne vehicle up a slope of 4 per cent and shall comply with all appropriate current legislation including Road Vehicles (Construction and Use) Regulations, Road Transport Act and Road Traffic Act. The vehicle shall be fitted with either a 10 tonne single power winch or two power winches of not less than 8 tonnes each. All equipment shall be power-operated with safe working load ("SWL") indicated and with operating levers/buttons clearly marked for operational use.
- ii) Be equipped with chains, wire ropes and shackles suitable for the recovery a fully-laden 44 tonnes gross vehicle weight ("GVW") vehicle. All chains, wire ropes and shackles shall have test certificates and/or stamped showing the SWL, be free from snags, excess stretch and wear.
- iii) Have seating for not less than two adult passengers (in addition to the recovery operatives).
- iv) Be conspicuous, for example, by marking with suitable tape (not less than 125 mm wide) to sides and rear of the vehicle.
- v) The heavy recovery vehicle shall be fitted with the following as a minimum requirement:

Appendix 1/20: Recovery of Vehicles for Breakdown

Quantity	Item
1	Amber lightbar to comply with The Road Vehicles Lighting Regulations 1989
2	Fully adjustable lights to illuminate both sides and rear of the vehicle
2	Fire extinguishers (1 Number 6 kilograms (net) dry powder; 1 Number 9 litre (net) aqueous film forming foam)
1	1-10 person first aid kit to include disposable surgical gloves
2	10 metres 12 tonne nylon straps
2	30 metres by 13 millimetres polypropylene rope
1	44 tonne straight tow pole
1	44 tonne cranked tow pole
10	Highway cones 750 millimetres high
1	Proof load tested crane. (Overlift proof test – static 7.5 tonnes, underlift proof test –static 7.0 tonnes.);
1	Suitable socket set including AF/Metric and BA sizes
1	Suitable tool kit
2	12 tonne bottle jacks
1	Suitable wheelbrace to fit Heavy Goods Vehicles in common use and a torque wrench
1	Suitable jump leads (24 volt)
1	Explosion and flame proof hand lamp
1	Crowbar
1	Copper hammer
	The necessary fittings for connection, from air braking system of a broken down or accident damaged vehicle, to the air braking system of the heavy recovery vehicle
2	Wheel chocks of Heavy Goods Vehicle size
4	Suitable lengths of wood block skidding
1	Rear lighting board incorporating 'ON TOW' legend in lettering of not less than 70 millimetres on conspicuously coloured background to conform with the size, colour and type illustrated by Diagram 5, Section B, Schedule 19 of the Road Vehicles Lighting Regulations, 1989. The board shall be fitted with lights, reflectors and indicators. When required the recovery vehicle index number or trade license plate shall be fitted
1	Sledge hammer – 7lbs minimum
	ADR (HAZCHEM) chart
50kg	Dry fine sand stored in a waterproof container

Appendix 1/20: Recovery of Vehicles for Breakdown

- vi) The heavy recovery vehicle shall also carry as a minimum requirement;

Quantity	Item
4	(a) 'D' shackles SWL 12 tonnes each
4	(b) 'D' shackles SWL 3 tonnes each
2	(c) Suitable length chains SWL 12 tonnes each
2	(d) Suitable length chains SWL 5 tonnes each
2	(e) Suitable length chains SWL 3 tonnes each

NOTE: All lifting chains and equipment shall be fully certified by an independent competent person to comply with all current legislation. Shackles listed in (vi) (a) and (b) should be stamped with the appropriate SWL. Equivalent wire ropes may be substituted for chains listed in (vi) (c), (d) and (e).

- vii) The heavy recovery vehicle shall carry, and use when necessary, equipment designed and manufactured for the purpose of locking the steering of the broken-down or accident damaged vehicle in order to tow in a reverse direction.
- viii) The heavy recovery vehicle shall carry equipment to enable the recovery crew to remove the drive line or shafts of the broken down or accident damaged vehicle.
- ix) The heavy recovery vehicle shall carry blocks with a SWL of 8 tonnes, 1 number per winch and 2 number on boom (crane) wires.
- 1.2 Light Recovery Vehicle
- 1.2.1 One number light recovery shall be provided on the O&M Works Site at all times available for roadworks to New and Existing Trunk Roads.
- 1.2.2 The light recovery vehicle shall comply with the following:
- i) be capable of carrying or towing, by means of an underlift, a vehicle weighing 2800kg up a slope of 4° and shall comply with all appropriate current legislation including Road Vehicles (Construction and Use) Regulations, Road Transport Act and Road Traffic Act.
 - ii) Be capable of recovering motor cycles.
 - iii) Be capable of recovering trailers (i.e. caravans, boat trailers, horse boxes, etc.)
 - iv) Have seating capacity for four adult passengers (in addition to the recovery operatives).
 - v) Be conspicuous, for example, by marking with suitable tape (not less than 125 mm wide) to sides and rear of the vehicle.

Appendix 1/20: Recovery of Vehicles for Breakdown

- vi) The light recovery vehicle shall be fitted with the following as a minimum requirement:

Quantity	Item
1	Amber lightbar to comply with The Road Vehicles Lighting Regulations 1989
2	Fully adjustable lights to illuminate both sides and rear of the vehicle
2	Fire extinguishers (1 Number 6 kilograms (net) dry powder; 1 Number 9 litre (net) aqueous film forming foam)
1	1-10 person first aid kit to include disposable surgical gloves
1	30 metres by 13 millimetres polypropylene rope
1	6 tonne straight tow pole
10	Highway cones 750 millimetres high
1	Proof load tested winch and/or spectacle lift
1	Suitable socket set including AF/Metric and BA sizes
1	Suitable tool kit
1	3 tonne bottle or trolley jack
1	Suitable wheelbrace to fit cars and Light Goods Vehicles in common use
1	Suitable jump leads (24 volt)
1	Explosion and flameproof hand lamp
1	Crowbar
1	Quick change towing hitch suitable for 50 millimetres, 2 inch or jaw type fittings
1	Broom and shovel
1	Wheel chocks of Light Commercial size
2	Suitable lengths of wood block skidding
1	Rear lighting board incorporating 'ON TOW' legend in lettering of not less than 70 millimetres on conspicuously coloured background to conform with the size, colour and type illustrated by Diagram 5, Section B, Schedule 19 of the Roads Vehicles Lighting Regulations, 1989. The board shall be fitted with lights, reflectors and indicators. When required the recovery vehicle index number or trade licence plate shall be fitted
	Total lift facility – 2800kg slideback deck (7.6 metres minimum) or heavy duty dollies
50kg	Dry fine sand stored in a waterproof container

Appendix 1/20: Recovery of Vehicles for Breakdown

- vii) The light recovery vehicle shall also carry as a minimum requirement:

Quantity	Item
4	(a) 'D' shackles SWL 3 tonnes each
2	(b) suitable length wire ropes SWL 3 tonnes each
2	(c) ratchet jackets SWL 6 tonnes each, or hydraulic equivalent
2	(d) suitable towing trolley

NOTE: All lifting chains and equipment shall be fully certified by an independent competent person to comply with all current legislation. An equivalent chain may be substituted for the wire rope listed in (vii) (b).

- viii) The light recovery vehicle shall carry, and use when necessary, equipment designed and manufactured for the purpose of locking the steering of the broken-down or accident damaged vehicle in order to tow in a reverse direction.

2 Inspection Requirements

2.1 The Vehicle

2.1.1 The Company shall ensure that all recovery vehicles are maintained in such condition that at all times the vehicles conform to the Road Traffic Act and Regulations made thereunder (Construction and Use and Road Vehicle Lighting Regulations) so as to be fit to be used on the road. The Company shall provide to the Contracting Authority evidence of this roadworthiness of the Company's recovery vehicles by successful completion of an inspection by the Vehicle Inspectorate or Freight Transport Association, conducted not less than 14 days nor more than 28 days before the vehicles are required.

2.1.2 The Company shall arrange for all recovery vehicles to be inspected by the Vehicle Inspectorate or Freight Transport Association at not less than 6 monthly intervals and shall provide evidence of inspection and testing results to the Contracting Authority when necessary.

2.2 Lifting equipment

2.2.1 All lifting equipment shall be fully certified by an independent competent person to comply with all current legislation.

2.3 Reports

2.3.1 A copy of each inspection report shall be:

- i) provided to the Contracting Authority.
- ii) kept in the relevant recovery vehicle.

2.4 Record form

2.4.1 The Company shall submit weekly to the Contracting Authority duplicate record forms which log the regular checks made on each recovery vehicle. A sample form is given in Sheet 2 of this Appendix.

3 Location for Recovery Vehicle(s)

3.1 Locations of vehicle shall be determined by the Company and agreed with the Contracting Authority prior to commencement of each stage of the O&M Works.

Appendix 1/20: Recovery of Vehicles for Breakdown

3.2 The recovery vehicles shall be located within easy access to any Temporary Traffic Management Scheme.

4 Communication System

4.1 The Company shall:

- i) provide a communications system (e.g. mobile telephone, 2-way radio link or land line) between the recovery base station and all recovery vehicles, and
- ii) provide an emergency telephone and direct land line between the recovery base station(s) and the police.

4.1.1 The Company shall be responsible for all associated equipment and payment of fees to operate the system which shall be established and fully tested prior to the start of the O&M Works.

5 Location(s) for Vehicle Removal

5.1 At all times when roads have traffic management due to the O&M Works, the Company shall be responsible for the removal of shed loads and vehicles that are stationary due to mechanical breakdowns, accident damage or abandoned in the trafficked road. The Company shall accept the instructions of the Contracting Authority or the Police in connection with this service but generally shall be required to remove the obstruction clear of the O&M Works, such that the running carriageway is cleared in the shortest possible time. Should the Police be unavailable then the driver's consent shall be obtained in writing if possible prior to such removal.

5.2 Broken down or accident damaged vehicles shall be removed to a safe location with public telephone facility on the local road network.

5.3 If a vehicle cannot be moved immediately and, in the opinion of the Police, the traffic flows are heavy enough to justify such action, the Company shall direct traffic onto an emergency route.

5.4 The Company shall make no charge for this recovery service to the owner or driver of the recovered vehicle.

6 Explanatory Leaflet

6.1 The Company shall ensure that the recovery vehicle operatives issue leaflets to the drivers of vehicles requiring assistance, before recovery commences. These shall have been prepared in liaison with the Police and in accordance with Sheet 3 of this Appendix, and have been approved by the Contracting Authority before issue to the recovery firm.

7 Limits of Service

7.1 The service shall operate within the limits of the O&M Works Site.

8 Requirements for Recovery Personnel

8.1 Suitability: It is the responsibility of the Company to ensure that all personnel involved with vehicle recovery are suitable to work with 'vulnerable' motorists.

Appendix 1/20: Recovery of Vehicles for Breakdown

- 8.2 Training: The Company shall ensure that all personnel involved with vehicle recovery shall hold a certificate certifying successful completion of an appropriate vehicle recovery course recognised by either the Institute of the Motor Industry (IMI) or the Moor Industry Training Standards Council (MITSC). A copy of each certificate shall be provided to the Contracting Authority not less than 14 days before the commencement of the O&M Works.
- 8.3 Personal Protective Equipment: In addition to the provisions identified in the Health and Safety risk assessment conducted by the Company, the following items shall be provided for each crew member of the recovery vehicle:
- i) Safety helmet CE marked to EN 397:1995 Specification for Industrial Safety Helmets;
 - ii) Reflective safety garment complying with sub-Clause 117.18 of the Specification;
 - iii) Boots with steel reinforcement toecaps and/or safety footwear in accordance with BSEN 345;
 - iv) Suitable gloves with the appropriate CE mark; and
 - v) Protective goggles in accordance with BS 2092.
- Note: All personal protective equipment should be stored and maintained in good, clean condition.
- 8.4 Identification: The Company shall ensure that all personnel involved with vehicle recovery are issued with the following:
- i) An identity card which incorporates the name of the recovery contractor (or the Company), and the name and a photograph of the holder. This card shall be available for inspection at all times and a copy shall be submitted to the Contracting Authority prior to commencement of the operative working.
 - ii) A reflective safety garment (referred to in 2.13.2 above) which prominently displays the Company's name.
 - iii) Working hours: Recovery vehicles shall be provided 24 hours a day during the O&M Works. Recovery operatives shall be on duty for a maximum of 12 hours with the provision that no work should be undertaken in the following 12 hour period.

9 Record Form

- 9.1 The Company shall submit weekly to the Contracting Authority completed duplicate record forms which log the assistance given by the recovery vehicle and their operatives. Sample forms are given in Sheet 4 of this Appendix.

Appendix 1/20: Recovery of Vehicles for Breakdown
SHEET 2: FORM FOR 'RECOVERY VEHICLE DAILY CHECK SHEET'

RECOVERY VEHICLE DAILY CHECK SHEET							
Week Commencing:.....							
Driver's Name:				Vehicle Number:	Type/Registration	Mileage:	
Driver to initial against check list below:							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
OIL LEVEL							
WATER							
ENGINE							
CLEANLINESS- interior							
CLEANLINESS- exterior							
WIPER/WASHERS							
TYRES							
LIGHTS							
Driver's Report (detail any problems):							
Action Taken (to solve above problems):							
Date:				Supervisor's Signature:			
COMPLETED SHEET TO BE RETURNED TO CONTRACTING AUTHORITY EACH WEEK							

Appendix 1/20: Recovery of Vehicles for Breakdown**SHEET 3: LEAFLET FOR ISSUE BY RECOVERY VEHICLE OPERATIVES TO DRIVERS OF ALL BROKEN DOWN OR ACCIDENT-DAMAGED MOTOR VEHICLES**

Name of Scheme: Aberdeen Western Peripheral Route / Balmedie – Tipperty

Vehicle Recovery Service – Explanatory Leaflet authorised by Aberdeen City as the Contracting Authority for issue to drivers of broken-down and accident-damaged motor vehicles within the above works.

Leaflet to be distributed by recovery vehicle operatives of the appointed recovery firm on behalf of Aberdeen City Council as the Contracting Authority.

The roadworks operations commence at the 'Roadworks Ahead – 3 miles' sign and end at the 'Roadwork End' sign.

The recovery service provided along the extent of the roadworks operation is free.

Vehicles will be recovered clear of the roadworks operations to a safe location on the local network unless otherwise directed by the police.

It will then be at the discretion of individual drivers of broken-down or accident damaged vehicles requiring assistance to arrange for assistance or the removal of their vehicle to a garage of their choice. The operators of the free recovery service do not make such arrangements.

Useful contact numbers are given below:

- (a) Local Garage –To be populated by the Company
- (b) AA –To be populated by the Company
- (c) RAC –To be populated by the Company
- (d) Greenflag –To be populated by the Company

Appendix 1/2v: Recovery of Vehicles for Breakdown

SHEET 4 (Continued)

VEHICLE RECOVERY LOGSHEET (2 of 2) Aberdeen Western Peripheral Route / Balmedie – Tippetry			Recovery Vehicle:	Week Ending:...../...../.....	Sheet Number:.....	
Date and Time	Type of Vehicle	Registration Number.	Name and Address of Driver or Firm	Location of Breakdown	Nature of Breakdown	Recovery Operator's Name

Appendix 1/21: Information Boards**Appendix 1/21: Information Boards****1 General**

- 1.1 Details of Network Customer Contact Signs shall be as provided in Appendix H of Part 1 of Schedule 4.
- 1.2 The locations of Network Customer Contact Signs shall be as required in Part 1 of Schedule 4.
- 1.3 The Company may erect for its own purpose sign boards at the entrance to each of the compounds which it uses in connection with the maintenance of the O&M Works Site.
- 1.4 The size of these boards shall be no greater than the boards required for Network Customer Contact Signs and shall be subject to the written approval of the appropriate planning authority.

Appendix 1/23: Substances Hazardous to Health**Appendix 1/23: Substances Hazardous to Health****1 Substances Hazardous to Health**

1.1 The Company shall take all reasonably practicable steps to prevent members of the public being affected, due to its O&M Works, by substances hazardous to health (as defined in Clause 124 of the Specification), such, as inter alia, silane, bridge deck waterproofing systems, and paints.

1.2 Restrictions in Relation to Traffic Management Measures

1.2.1 The Company shall maintain vehicle and pedestrian access to the standards detailed in Appendix 1/18, on existing roads, as well as access to and from properties directly affected by or adjacent to the O&M Works, when planning measures to protect the public from substances hazardous to health.

1.2.2 If the Company proposes to carry out silane and deck waterproofing treatments for bridges over public roads without an enclosure, the Company shall arrange with the Relevant Authority an overnight closure of the road to allow these operations to proceed.

1.3 Restrictions in Relation to Working Practices

1.3.1 The Company shall make available all necessary personal protection equipment and other safety equipment necessary for the protection of all persons who may be exposed to substances hazardous to health in connection with the O&M Works. The Company shall ensure that all of its staff and sub-contractors' staff requiring such protection are fully trained in the use of the equipment and that the appropriate equipment is used by such persons when there is a risk of exposure to substance hazardous to health.

1.3.2 The Company shall submit detailed method statements, to the satisfaction of the Contracting Authority, stating how the Company will ensure that the public are not affected by substances hazardous to health which may be used during the construction of the O&M Works. Such method statements shall state the proposed methods to prevent, control and monitor exposure of the public to the above substances when used or generated in or about the O&M Works.

1.4 Measures to be taken to protect members of the public.

1.4.1 Where the Company is using or generating substances hazardous to health in its operations, the work must be carried out within a fully screened enclosure, otherwise a temporary diversion shall be provided for vehicular and pedestrian traffic. The Company should take account of the weather conditions, and if any change in these conditions renders either the enclosure or traffic diversions provided unsuitable, any work involving the use or generation of substances hazardous to health shall cease immediately.

1.4.2 If the Company employs temporary diversions as a method of protecting the public from substances hazardous to health, it shall Design all appropriate signing in accordance with chapter 8 of the Traffic Signs Manual 1991.

1.5 Monitoring to be undertaken by the Company.

1.5.1 The Company shall prepare and maintain a register of all substances hazardous to health which are brought on to the O&M Works Site. The Company shall operate a documented system to control the issue and use of such material in connection with the O&M Works subject to the approval of the Contracting Authority.

1.6 Compliance with the requirements of this Appendix shall not in any way relieve the Company of its statutory obligations.

Appendix 1/24: Quality Management Systems

Appendix 1/24: Quality Management Systems

The Company shall institute and operate a Quality System complying with Schedule 5 to this Agreement

Appendix 4/2: Information Required to Demonstrate Compliance of Vehicle Restraint Systems to BS EN 1317-1, BS EN 1317-2, and DD ENV 1317-4:2002**1 Information Required**

- 1.1 The Company shall submit the following supporting information demonstrating compliance with BS EN 1317-1, BS EN 1317-2, BS EN 1317-3 and DD ENV 1317-4:2002 to the Contracting Authority for acceptance:

2 EUROPEAN COMMITTEE FOR STANDARDISATION (CEN) COMPLIANCE¹

- 2.1 Initial submission documents to be supplied for consideration of initial type test are as follows:
- (a) test report in accordance with BS EN1317-1, Clause 9 (and including any additional test data required under BS EN 1317-3, Clauses 7.3 and 7.4 and DD ENV 1317-4:2002, Clauses 7.3 and 7.4);
 - (b) video / high speed film of test annotated showing date, test number and performance class;
 - (c) still photographs of complete installation including anchorage points;
 - (d) still photographs of vehicle before and after impact;
 - (e) full drawings of tested items;
 - (f) certification from the manufacturer that the item tested complies with drawing supplied; and
 - (g) certificate from test house accredited in accordance with the requirements of Series 400 (MCHW 1.400).
- 2.2 Additional information, which will be required on acceptance of initial type test prior to installation:
- (a) manufacturer's specification;
 - (b) installation drawings;
 - (c) manufacturer's installation instructions including foundation requirements and test methods to verify their performance;
 - (d) manufacturer's repair and maintenance manual;
 - (e) certificate of compliance with the Quality Management Scheme 1 for the Manufacture of Fencing Components²;
 - (f) compliance with the Quality Management Sector Scheme 2 - Supply and Installation of Fences:
 - (i) Sector Scheme 2B for Vehicle Restraint Systems³;
 - (g) certificate of compliance for the Quality Management Sector Scheme 5 for the Fabrication and Installation of Bridge Parapets and Cradle Anchorages⁴:
 - (i) Sector Scheme 5A for The Manufacture of Parapets for Vehicle restraint systems; and
 - (ii) Sector Scheme 5B for The Installation of Parapets for Vehicle restraint systems; and
 - (h) nominal loads (direct forces, moments and co-existent shears) to be transferred from the parapet to the Structure or foundations⁵.

Appendix 4/2: Information Required to Demonstrate Compliance of Vehicle Restraint Systems to BS EN 1317-1, BS EN 1317-2 and DD ENV 1317-4:2002**Notes**

- ¹ All documents are to be supplied in English.
- ² Item 1.2.2(e) is required for safety barrier systems and transitions.
- ³ Item 1.2.2(f) is required for safety barrier systems and transitions.
- ⁴ Item 1.2.2(g) is required for vehicle parapets.
- ⁵ Section 1.2.2(h) is required for vehicle parapets, safety barrier systems and transitions

Appendix 4/17: Re-Tensioning of Safety Barriers

Sheet 1 of 4

SUBMISSION FOR COMPLIANCE WITH BS EN 1317-1, BS EN 1317-2, BS EN 1317-3, AND DD ENV 1317-4:2002			
TYPE OF VEHICLE RESTRAINT SYSTEM:			
CONTAINMENT PERFORMANCE CLASS/PERFORMANCE LEVEL/PERFORMANCE CLASS (*):			
TEST REPORT NUMBER: (Test of)			
Test Type: Primary/Complementary Test) (*)			
TEST NUMBER:		TEST DATE:	
(*) delete as appropriate			
COMPANY NAME:			
CONTACT:			
ADDRESS:			
Tel./Fax./E-mail:			
PRODUCT NAME:			
Initial submission documents to be supplied for consideration of Initial Type Test (ITT)			
Item	Comment	Item Received (Y or N)	Date requested
1	Test report		
2	Video/high speed film		
3	Still photographs		
4	Still photographs		
5	Drawings		
6	Certification from the manufacturer		
7	Confirmation from test house		
Additional information, which will be required on acceptance of initial type test prior to installation			
8	System specification		
9	Installation details		
10	Installation procedures		
11	Maintenance Manual		
12	Certificate of compliance		
13	Certificate of compliance		
14	Certificate of compliance		
15	Support loads		
Signature:		Name:	
Date:			

Appendix 4/17: Re-Tensioning of Safety Barriers

Sheet 2 of 4

SUBMISSION FOR COMPLIANCE WITH BS EN 1317-1, BS EN 1317-2, BS EN 1317-3, AND DD ENV 1317-4:2002

TYPE OF VEHICLE RESTRAINT SYSTEM: Safety Barrier, Vehicle Parapet or Transition (*)

CONTAINMENT PERFORMANCE CLASS/LEVEL (*):

TEST REPORT NUMBER: (Test of)

Test Type: Primary/Complementary Test) (*)

TEST NUMBER: TEST DATE:

(*) delete as appropriate

COMPANY NAME:

CONTACT:

ADDRESS:

Tel./Fax:/E-mail:

PRODUCT NAME:

Initial submission documents to be supplied for consideration of Initial Type Test (ITT)

		Specified	Actual	Satisfactory (Yes or No)	Compliance
BS EN 1317-1, Table 1	Vehicle Details	Impact Conditions			
		Total vehicle mass (kg) (±...)		
		Speed (kmh)	..... (0, +7 per cent)		
		Angle (degrees)	..... (-1, +1.5)		
		Centre of Gravity			
		Vertical height (m)	..... (± 10 per cent)		
		Longitudinal (m)	..... (± 10 per cent)		
		Lateral (m)	±		
		Model			N/A
BS EN 1317-2, Clause 4.2	Vehicle Restraint System (VRS) Behaviour	The VRS shall contain and redirect the vehicle without breakage of principal longitudinal elements of the system No major part of the VRS shall become totally detached or present undue hazard to other traffic, pedestrians or personnel in a work zone Elements of the VRS shall not penetrate the passenger compartment that can cause serious injuries are not permitted Ground anchorages and fixings shall perform according to the design of the VRS			
BS EN 1317-2, Clause 4.3	Vehicle Behaviour	The centre of gravity (CG) of the vehicle shall not cross the centreline of the deformed system The vehicle shall remain upright during and after impact, although moderate rolling, pitching and yawing are acceptable The vehicle shall leave the VRS after impact so that the wheel track does not cross a line parallel to the initial traffic face of the VRS, at a distance A (2.2 metres) plus vehicle width + 16 per cent of the length of the vehicle within a distance B (10 metres) from the final intersection (break) of wheel track with the initial traffic face of the VRS			
BS EN 1317-2, Clause 5.3.2	Installation	The length of the VRS shall be sufficient to demonstrate the full performance characteristics of the system If the VRS has to develop tension, end anchorages shall be provided in accordance with the VRS specification. Post foundation shall meet the design specification			

Part 5: Specification

Appendix 4/17: Re-Tensioning of Safety Barriers

BS EN 1317-2, Clause 4.4	Severity Indices	SPECIFIED	ACTUAL		
		THIV Limit 33km/h PHD Limit 20g ASI Limit 1.4	THIV km/h PHD g ASI		
BS EN 1317-2, Clause 5.7, Figure 3	Photo graphic coverage	Photographics coverage shall be sufficient to clearly describe behaviour and vehicle motion during and after impact High speed cameras shall be operated at a minimum of 200 frames per second and stills As recommended in Clause 5.7 and Figure 3			
	Drawings	Drawings included			
				N/A = Not Applicable	
FULLY COMPLIES WITH STANDARD: BS EN 1317-1, BS EN 1317-2, DD ENV 1317-4:2002					
Signature:			Name:		
Date:					

Appendix 4/17: Re-Tensioning of Safety Barriers

Sheet 3 of 4

SUBMISSION FOR COMPLIANCE WITH BS EN 1317-1, and BS EN 1317-3
 TYPE OF VEHICLE RESTRAINT SYSTEM: Crash Cushion (Redirective [R] or Non-redirective [NR] (*))
 TEST REPORT NUMBER: TEST TYPE: (Primary/Complementary Test) (*)
 PERFORMANCE LEVEL: VELOCITY CLASS: (Test of)
 TEST NUMBER: TEST DATE:
 (*) delete as appropriate

COMPANY NAME:
 CONTACT:
 ADDRESS:
 Tel:/Fax:/E-mail:
 PRODUCT NAME:

		Specified	Actual	Satisfactory (Yes or No)	Compliance
BS EN 1317-1	Vehicle Details	Impact Conditions			
		Total vehicle mass (kg) (±...)		
		Speed (kmh)	..... (0, +7 per cent)		
	Angle (degrees)	..... (-1, +1.5)			
	Centre of Gravity				
	Vertical height (m)	..... (± 10 per cent)			
	Longitudinal (m)	..... (± 10 per cent)			
	Lateral (m)	..... (± 10 per cent)			
		±			
	Model				N/A
BS EN 1317-3, Clause 6.2	Crash Cushion Behaviour	Elements of the crash cushion shall not penetrate the passenger compartment of the vehicle. Deformations of, or intrusions into, the passenger compartment that could cause serious injuries are not permitted. No major element of the crash cushion, having a solid mass greater than or equal to 2.0 kg, shall become totally detached, unless this is required by the working of the crash cushion. No major element of the crash cushion shall impede the path of adjacent traffic. The final position of the detached element shall be considered to determine the displacement classification.			
BS EN 1317-3, Clause 6.3	Vehicle Behaviour	1) The vehicle shall remain upright during and after the collision although yawing and moderate rolling and pitching are acceptable. The post-impact trajectory of the test vehicle shall be controlled by means of the exit box shown in Figure 2 and specified as detailed in Tables 11 and 12.			
BS EN 1317-3, Clause 7.3.2	Installation	1) The installation of the crash cushion for the test shall comply with the structural design details and the on-road system details as given in the design specification.			

Part 5: Specification

Appendix 4/17: Re-Tensioning of Safety Barriers

BS EN 1317-3, Clause 5.4 and Table 4	Impact Severity Indices	SPECIFIED Level A: THIVs44km/h (Tests 1, 2 & 3) THIVs 33km/h (Tests 4 & 5) ASI ≤ 1.0 Level B: THIVs44km/h (Tests 1, 2 & 3) HIV ≤ 33km/h (Tests 4 & 5) ASI ≤ 1.4 Levels A & B : PHD ≤ 20g	ACTUAL		
BS EN 1317-3, Clause 7.7, Figure 4	Photo graphic coverage	High speed cameras and / or high speed video cameras shall be operated at minimum of 200 frames per second. Stills. As recommended in Clause 7.7 and Figure 4.			N/A = Not Applicable
	Drawings	Drawings included			
FULLY COMPLIES WITH STANDARD: BS EN 1317-1, and BS EN 1317-3					
Signature:			Name:		
Date:					

Appendix 4/17: Re-Tensioning of Safety Barriers

Sheet 4 of 4

SUBMISSION FOR COMPLIANCE WITH BS EN 1317-1 AND DD ENV 1317-4:2002						
TYPE OF VEHICLE RESTRAINT SYSTEM: Terminal						
PERFORMANCE CLASS: (Test of)						
Test Type: Primary/Complementary Test) (*)						
TEST TYPE NUMBER:						
TEST NUMBER: TEST DATE:						
(*) delete as appropriate						
COMPANY NAME:						
CONTACT:						
ADDRESS:						
Tel:/Fax:/E-mail:						
PRODUCT NAME:						
			Specified	Actual	Satisfactory (Yes or No)	Compliance
BS EN 1317-1, Table 1 DD ENV 1317-4: 2002, Clauses 7.4 and 7.5	Vehicle Details	Impact Conditions				
		Total vehicle mass (kg) (±...)			
		Speed (kmh)	..... (0, +7 per cent)			
		Angle (degrees)	..... (-1, +1.5)			
		Centre of Gravity				
		Vertical height (m)	..... (± 10 per cent)			
		Longitudinal (m)	..... (± 10 per cent)			
		Lateral (m)	±			
		Model				N/A
DD ENV 1317-4: 2002, Clauses 5.4 and 5.5.2	Terminal Behaviour	<p>Elements of the terminal shall not penetrate the passenger compartment of the vehicle. Deformations of, or intrusions into, the passenger compartment that could cause serious injuries are not permitted.</p> <p>No major part of the terminal shall be come totally detached and come to rest outside the permanent lateral displacement zones defined in Clause 5.4.</p> <p>Anchorage and fixings shall perform to the terminal design specifications and other specified requirements as listed in the test report.</p>				
DD ENV 1317-4: 2002, Clause 5.5.3	Vehicle Behaviour	<p>The vehicle shall not overturn, although rolling, yawing and moderate pitching may be accepted. For the performance class P1 rolling onto a side may be accepted.</p> <p>The exit box values for the specified test are as defined in Figures 5.6 and 7 (as appropriate).</p>				
DD ENV 1317-4, 2002 Clause 7.3.2	Installation	The terminal shall conform to the structural design details and with the system				

Part 5: Specification

Appendix 4/17: Re-Tensioning of Safety Barriers

DD ENV 1317-4: 2002, Clause 5.5.4 and Table 5	Impact Severity Indices	SPECIFIED Level A: THIV≤44km/h (Tests 1, 2 & 3 THIV≤ 33km/h (Tests 4 & 5 ASI ≤ 1.0 Level B: THIV≤44km/h (Tests 1, 2 & 3 HIV ≤ 33km/h (Tests 4 & 5 ASI ≤ 1.4 Levels A & B : PHD ≤ 20g	ACTUAL		
DD ENV 1317-4, 2002 Clause 7.7, Figure 7	Photo graphic coverage	Photographic coverage shall be sufficient to describe clearly terminal and vehicle motion during and after impact High speed cameras and / or high speed video cameras at a minimum of 200 framer per second. Stills.			
	Drawings	Drawings included			
FULLY COMPLIES WITH STANDARD: BS EN 1317-1 AND DD ENV 1317-4:2002					
Signature:			Name:		
Date:					

Appendix 4/17: Re-Tensioning of Safety Barriers

Safety Barriers shall be re-tensioned in accordance with the following procedure:

- 1 Tensioned Corrugated Beam Safety Barrier**
 - 1.1 Tensioned corrugated beam safety fence shall be re-tensioned in accordance with BS 7669 : Part 3, Section 2.1 or equivalent.
 - 1.2 Tensioning between any two limits shall not proceed until each limit shall be anchored sufficiently securely to resist the load effects due to tensioning.
 - 1.3 Tensioning shall be undertaken only when the ambient temperature shall be between 25°C and -5°C.
 - 1.4 Adjuster assemblies shall be located not more than 70.5 metres apart and each installation shall incorporate at least one adjuster assembly.
 - 1.5 On completion of tensioning, the centre of each screw securing beams to posts shall be not closer than 25 millimetres ± 2 mm to the end of the slotted hole in the beam.
- 2 Wire Rope Safety Barrier**
 - 2.1 Wire rope safety fence shall be re-tensioned in accordance with BS 7669 : Part 3, Section 2.5 or equivalent.
 - 2.2 Tensioning between any two limits shall not proceed until each limit shall be anchored sufficiently securely to resist the load effects due to tensioning.
 - 2.3 Tensioning shall be undertaken only when the ambient temperature shall be between 30°C and - 10°C.
 - 2.4 Before tensioning the ropes the ambient temperature shall be agreed by the Contracting Authority.
 - 2.5 The tension shall be measured using a tension indicating device approved in writing by the Contracting Authority.
 - 2.6 Before putting the safety fence into service the tension in each rope shall be checked and it shall be retensioned if necessary.
- 3 Tensioned Rectangular Hollow Section**
 - 3.1 Assembly and tensioning shall be carried out in accordance with BS 7669 : Part 3, Section 2.4 or equivalent.
 - 3.2 Tensioning between any two limits shall not proceed until each limit shall be anchored sufficiently securely to resist the load effects due to tensioning and that the safety fence has been completely assembled and connected to the anchorages.
 - 3.3 Tensioning shall be undertaken only when the ambient temperature is between 10°C and 20°C.
 - 3.4 Tensioner assemblies shall be located not more than 70.5 m apart and each installation shall incorporate at least one tensioner assembly.

Appendix 6/10: Ground Anchorages, Crib Walling and Gabions**1 Permanent Soil Nailing****1.1 General**

- 1.1.1 This specification for soil nailing is provided as the minimum acceptable standard for soil nailing forming part of the O&M Works. The Designer may propose more stringent protective measures if these are considered necessary. If the Company wishes to propose any modifications to this Specification then supporting information shall be provided to the Contracting Authority demonstrating that an equivalent quality of product will be provided.
- 1.1.2 Soil nails shall comprise both nail tendon and soil nail head components. Concrete pad soil nail heads shall be used.
- 1.1.3 Soil nail design shall be carried out in line with DMRB HA68/94 and CIRIA C637 Soil Nailing: Best Practice Guidelines taking cognisance where required of Geoguide 7 (Geotechnical Engineering Office, Civil Engineering Department, Government of the Hong Kong Special Administrative Region) for soil nail head design.
- 1.1.4 Corrosion protection for permanent soil nails shall be based on a detailed assessment of degradation risk, in line with CIRIA C637 Soil Nailing: Best Practice Guidelines. As a minimum, hot dip galvanised steel shall be used for tendon and head. In light of long term corrosion of the steel bar tendons, the Company shall allow for a reduction in effective diameter in the design of the soil nails.
- 1.1.5 Soil nails shall be fabricated and installed by a specialist contractor experienced in soil nail installation, using suitably trained personnel and to a method statement approved by the Designer.
- 1.1.6 The Company shall make every effort to create a green vegetated finish to soil nailed slopes including the use of recessed soil nail head assembly, with both erosion control fabric and mesh to encourage vegetation growth.

1.2 Method Statement

- 1.2.1 Soil nailing works shall be carried out in accordance with a detailed method statement, which is to be approved by the Designer. Approval by the Designer shall be sought at least four weeks prior to installing the first soil nails or carrying out associated earthworks. The approved method statement shall be forwarded to the Contracting Authority two weeks prior to installing the first soil nails or carrying out associated earthworks. The method statement shall provide details of:
- (a) earthworks including maximum unsupported excavation width and depth;
 - (b) method of nail installation, including measures to ensure minimum ground movements above the soil nailed slope and maximum standing time between drilling of holes to insertion of nail tendons;
 - (c) soil nail head assembly details, including method of recessing soil nail heads concrete pads;
 - (d) method of forming the facing, where appropriate;
 - (e) method of connecting the nail head assembly to the facing, where appropriate;
 - (f) methods of performing field tests;
 - (g) method of assessing damage to protective coatings where appropriate;
 - (h) grouting procedures including details on bleed, flowcone and strength testing;
 - (i) temporary support of slopes;
 - (j) the time after installation before a nail is considered to be fully operational;

Appendix 6/10: Ground Anchorages, Crib Walling and Gabions

- (k) maximum exposure period for untreated sections of excavation;
- (l) form of the test records; and
- (m) steel bar certificates; coupler, steel plate and nuts certificates; reinforcement bar certificates.

1.2.2 Soil nailing on existing slopes shall be undertaken without any risk of reducing the existing slope stability. Any proposed temporary excavation or placing of fill on the slope shall be agreed in advance with the Designer and detailed within the Company's method statement. Any such temporary works shall be reinstated to the original slope profile, or as otherwise agreed with the Designer, without damage or displacement of the soil nailing system.

1.3 Alterations

1.3.1 Once approval has been given to the method statement, details shall not be amended without prior approval of the Designer.

1.4 Company Design

1.4.1 Soil nails forming part of the O&M Works shall be designed by the Company to satisfy the requirements of this specification.

1.5 Sources of Material Supply

1.5.1 The proposed source of supply of the soil nails and such other materials as covered by this Specification shall be submitted by the Company for approval by the Designer prior to the commencement of the O&M Works. Sources of supply shall not be changed without prior approval by the Designer.

1.5.2 Details shall be provided to the Designer of the proposed soil nail reinforcement, splicers / couplers, centralisers, sheaths, load spreading plates, wedge washers, collar nuts, head assembly components and protective coatings for approval prior to the commencement of the Works. Details shall include:

- (a) galvanised steel bars
 - (i) galvaniser's certificate;
 - (ii) tensile test results;
 - (iii) bend test and rebend test results; and
 - (iv) galvanised coating (BS EN ISO 1461).
- (b) couplers, steel plates, nuts for couplers
 - (i) galvaniser's certificate;
 - (ii) permanent elongation and tensile test results;
 - (iii) galvanised coating (BS EN ISO 1461)

1.5.3 Materials shall be delivered to site in an undamaged condition and shall be handled, stored and protected in such a manner as to avoid corrosion or physical damage. Any soil nails or other such materials covered by this Appendix not conforming to these requirements shall be notified to the Designer for acceptance or rejection. Rejected materials shall be removed promptly from the site.

1.6 Reinforcement

1.6.1 High yield steel soil nails shall comply with BS 4449 or equivalent European national standard. The characteristic yield strength of the nail reinforcement shall be a minimum of 460 newtons per square millimetre.

Appendix 6/10: Ground Anchorages, Crib Walling and Gabions

- 1.6.2 The permanent soil nails shall have long term corrosion protection in the form of full length hot dip galvanising. This shall be applied in accordance with BS EN ISO 1461.
- 1.6.3 All permanent soil nails shall be of solid thread bar type.
- 1.6.4 The galvanised mild steel ("GMS") lock off plate shall be high yield steel conforming to BS 4449 or other equivalent Eurocode national standard. They shall be hot dip galvanised according to BS EN ISO 1461.
- 1.7 **Splicers / Couplers**
- 1.7.1 Splicers and couplers used in the works which require the removal or repair to damaged coatings shall not be permitted for use in the O&M Works. Only nails greater than 4 metres in length may be spliced or coupled using a mechanical splicer or coupler. The tensile, bearing and shear strength of a splice or coupler shall be not less than 90 percent of the soil nail when considering the influence of the combination of stresses.
- 1.7.2 Bolts, screws and nuts shall comply with one of the following:
- (a) BS EN ISO 898 and BS EN ISO 4016, BS EN ISO 4018 and BS EN ISO 4034, hot dip galvanized in compliance with Clause 1909 of the Specification for Highway Works. The property class of the bolts and screws shall be not less than 4.6, while the property class of the nuts shall not be less than 4.0; and
 - (b) stainless steel to BS EN ISO 3506-1 and BS EN ISO 3506-2 grade A4-70.
- 1.7.3 Plain washers shall be of either Form A or Form E complying with BS 4320 and shall be made from one of the following:
- (a) cold rolled carbon steel strip CS4 complying with BS 1449: Part 1.1 hot dip galvanized in compliance with Clause 1909 of the Specification for Highway Works; and
 - (b) stainless steel strip designation 1.4401 or 1.4436 complying with BS EN 10029, BS EN 10048, BS EN 10051, BS EN 10258 and BS EN 10259.
- 1.8 **Centralisers**
- 1.8.1 The Company shall provide a minimum of four centralisers shall be provided at suitable intervals over the total length of the nail. The centralisers shall be spaced at centres not exceeding 1.5 metres with the last centraliser 0.3 metres to 0.5 metres from the end of each nail.
- 1.8.2 The centralisers shall be fabricated from materials that have no deleterious effects on the soil nailing system. The centralisers shall be suitably robust to ensure they suffer no damage during installation, and maintain an appropriate grout cover to the nails and couplers.
- 1.8.3 Centralisers shall be designed to ensure that they permit the free flow of grout but retain the correct centralising function. Where soft or loose soils are encountered during nail installation, centralisers should be installed at closer spacing to ensure that the nails maintain the appropriate amount of minimum cover.

Appendix 6/10: Ground Anchorages, Crib Walling and Gabions

1.9 Grout

- 1.9.1 Unless otherwise approved by the Designer, grout for soil nails shall comprise a cement grout consisting of a pumpable mixture of Portland cement and water that can reach a minimum compressive strength of 40 newtons per square millimetre in 28 days. A minimum of four grout cubes per day shall be made and tested according to BS 1881. The water cement ratio shall not exceed 0.45 to reduce loss of grout into surrounding ground. The grout shall not be subject to bleeding in excess of 2 percent after 3 hours. Admixtures that can control, bleed or retard the set of the grout shall be used only when approved in writing by the Designer. Their use shall be strictly according to the manufacturer's instructions. Flow cone tests, bleed tests and cube strength tests shall be completed on all grout to be used in soil nailing on site and results of each batch are provided to the Designer prior to use.

1.10 Soil Nail Head Design

- 1.10.1 Soil nail head design shall be carried out to ensure both stability of the front face of the slope and design loads that may be applied under soil mobilisation. Sizing of soil nail heads shall be based on Highways Agency HA 68/94 Figure E.2(a) or Geoguide 7 (Geotechnical Engineering Office, Civil Engineering Department, Government of the Hong Kong Special Administrative Region) (Figure 5.4). Concrete pad soil nail head recessed into the slope shall be used (see Geoguide 7. These recessed pads shall be covered by hessian grow bags or similar and shall allow for a fully vegetated slope upon completion. A double layer of mesh and erosion control matting shall be fixed to the face to allow vegetation growth.
- 1.10.2 Concrete Pad: The concrete pad construction shall comprise excavation of the head, steel fixing and concreting. Reinforcement shall comprise a minimum of 3 T16 U bars in both directions. A minimum of 50 millimetres concrete cover around the reinforcing bars shall be provided. The number of T16 U bars in both directions shall be dependent upon the required head pad dimensions.
- 1.11 Limitations on Construction Plant**
- 1.11.1 All vehicles and construction plant having a mass more than 1000 kilograms shall be kept at least two metres behind soil nailed facing or external boundaries. Where appropriate, fill within two metres from the facing shall be compacted with compaction plant suitable for the class of fill material having a mass not more than 1000 kilograms.
- 1.12 Constructing Soil Nailed Slopes**
- 1.12.1 The Company shall construct soil nailed slopes from the top down as the soil in front of the cut slope is removed and the nails are installed and grouted at each level as approved in the method statement. The excavation shall be progressively formed in 'lifts' of not more than 2 metres height. Each lift shall be secured with any facing placed and secured in place before the subsequent lift is excavated.
- 1.12.2 The slope shall be excavated over the required width and depth as approved in the method statement. The excavated lift shall not be exposed for a period in excess of 24 hours or as specified in the method statement without prior approval of the Designer. Excavation shall proceed in stages exposing the minimum amount of soil which will allow the practical and expeditious installation of facing and soil nails while assuring stability of the excavated face and minimising ground movements. In all cases the maximum unsupported slope height shall not exceed 2 metres. Temporary surface protection shall be used for all cut faces exposed to inclement weather.
- 1.12.3 In anticipation of installing facing, the Company shall clean surfaces of all loose material and other foreign matter.

Appendix 6/10: Ground Anchorages, Crib Walling and Gabions

- 1.12.4 Where seeding of soil nailed slope faces is required seeding shall take place prior to topsoiling to reduce the risk of seed being washed away. Topsoiling and seeding shall be completed to within a maximum of 2 lifts above the working platform prior to the formation of a new lift. Erosion control matting shall be used for hydroseeding protection.
- 1.12.5 Adjacent panels of slope facing shall be joined together as instructed by the Designer.
- 1.12.6 Facing shall be terminated at the top and bottom of soil nailed slope as instructed by the Designer and detailed on the earthworks drawings.
- 1.13 **Drilling**
- 1.13.1 The Company shall drill holes for soil nails to the depth, diameter, alignment and position shown on the Designer's proposed earthworks drawings. Holes shall have a maximum deviation from the position shown on the drawings of +/- 50 millimetres. The maximum deviation of the drill holes from the specified horizontal alignment shall be +/- five degrees.
- 1.13.2 Casing shall not normally be required for soil nail holes. However, if the ground conditions are considered to be loose or of poor quality, casing may be considered. If casing is used, the method shall not promote mining and loosening of the soil at the perimeter of the drill hole or fracture soils with weak stratification planes by use of high pressures. Debris will need to be cleaned out of the hole prior to installation of the tendon.
- 1.13.3 Where the drill holes are located in such a way that debris can fall into the hole from the ground surface the drill hole shall be temporarily covered unless the soil nail is installed and grouted directly on completion of the drilling operation.
- 1.13.4 The drilled holes shall not be left open for more than 24 hours prior to the installation of the nail tendon and grouting, to prevent collapse of the holes. Nails should be grouted the same day.
- 1.13.5 Where soil nails are to be embedded into bedrock and bedrock level is found to be poorly defined the Company shall immediately inform the Designer and provide relevant draft drilling records to the Designer. The Designer shall then confirm bedrock level and hence required nail length prior to nail installation at that location. In all instances the decision of the Designer shall be final.
- 1.13.6 If heavily fractured bedrock material is encountered during drilling for soil nails to be embedded into bedrock the Company shall immediately inform the Designer and provide relevant drilling records to the Designer. The Designer shall then confirm whether longer nail lengths or additional nails are required prior to nail installation.
- 1.14 **Grouting**
- 1.14.1 Prior to grouting works, all plant, batchers, mixers, pumps, materials etc must be approved by the Designer. Calibration certificates shall be provided by the Company to the Designer and the Contracting Authority within 1 week of commencement of the grouting works.
- 1.14.2 The soil nails shall be installed in each drilled hole prior to grouting. The installation equipment and its operation shall be such as to minimise disturbance of the soil being treated. The maximum deviation of individual soil nails from the required angle of inclination shall be 1 in 30 unless otherwise specified. Each soil nail shall have a maximum departure from the positions shown on the drawings of +/- 50 millimetres.

Appendix 6/10: Ground Anchorages, Crib Walling and Gabions

- 1.14.3 Mixing equipment shall be used that produces a grout of homogenous consistency and shall be capable of providing a continuous supply to the injection equipment. The injection equipment shall be capable of continuous operation at a constant delivery pressure. The injection equipment shall include a system for recirculating the grout during pauses in the grouting operation.
- 1.14.4 Suitable grout testing shall be carried out (flowcone tests, bleed tests, strength tests, refer section 1.9.1 above.)
- 1.14.5 Grouting of drilled holes shall be carried out during withdrawal of the grout tube fixed onto the soil nail, or during the withdrawal of casing using tremie pipes, using hydrostatic, gravitational, or pressure grouting. Where pressure grouting is used the grout shall be injected at a pressure not exceeding 15 kilonewtons per square metre in soil and 20 kilonewtons per square metre per metre depth of ground above the hole. Grout shall be injected at the lowest point of the drill hole to ensure that the drill hole is filled without introducing air voids. Grout shall be injected slowly and progressively from the bottom to the top until the hole is completely filled without interruption in the grouting process and clean grout of the same consistency as that injected is seen to run from the top of the hole.
- 1.14.6 For uncased holes, grout pipes shall be fixed to the tendon of the nail to ensure grout cover commences at the lowest end of the nail and grout should be pumped into the hole at a continuous and steady rate, slow enough to prevent entrapping air and to prevent voids forming.
- 1.14.7 Excess quantities of grout should be reported to the Designer to ensure adequate control of grout and prevent grout migration into service ducts, etc.
- 1.14.8 Grouting shall be discontinued if the ambient temperature falls below three degrees Celsius or if the grout temperature falls below five degrees Celsius. When the grout has developed a strength not less than 80 percent of that specified for the 28 day strength, the Contractor shall install the nail head assembly. The small galvanised mild steel ("GMS") lock-off plate shall be bedded down and the nail tensioned by applying torque that induces a nominal load of 10 kilonewtons. The Company's programme of operations shall include sufficient time for these requirements prior to further excavation of the slope face.
- 1.14.9 In the case of soil nailed slopes the grout shall fill the hole flush with the slope face. The holes shall be checked after three to five days to check for any grout loss which shall be made good.
- 1.15 **Damage to Installed Nails**
- 1.15.1 If a soil nail or connection to slope facing or wall is damaged during installation it shall be replaced at the Company's expense unless otherwise instructed in writing by the Designer.
- 1.16 **Records**
- 1.16.1 The Company shall keep daily records of the soil nails installed. Copies of these shall be submitted to the Designer within three days following the installation of each soil nail. The records shall show:
- date of installation;
 - grid and area reference of each soil nail;
 - position (chainage and slope length above or below a fixed point or berm), length and inclination of each soil nail;

Appendix 6/10: Ground Anchorages, Crib Walling and Gabions

- (d) length of nail installed into competent strata (based on drillers log observations);
 - (e) (date and time of key installation activities (commencing drilling, completing drilling, commencing grouting and completing grouting);
 - (f) apparent nature and cause of obstructions (other than drilling in bedrock) and delays including time to resolve;
 - (g) grout loss;
 - (h) torque force applied to soil nail;
 - (i) number and type of tests carried out;
 - (j) readings from relevant instrumentation;
 - (k) relevant calibration certificates; and
 - (l) soil nail head dimensions and details.
- 1.16.2 Any unforeseen conditions encountered and reported shall be noted in the records.
- 1.17 **Testing of soil nails**
- 1.17.1 Prior to the installation of permanent soil nails, a minimum of six pull-out test nails shall be installed at locations agreed with the Designer and tested accordingly. Pull-out test numbers shall be around three per cent of the total number of working nails, ensuring that all soil types and levels in the slope are tested. In addition, proof testing of permanent nails shall be carried out at a rate of three tests per 100 installed soil nails at locations selected by the Designer and consistent with the progress of soil nailing operations.
- 1.17.2 Soil nails subjected to pull-out tests shall not form part of the Permanent Works. Any protrusions from the drill hole shall be cut flush with adjacent ground surfaces and the drill hole filled by grouting.
- 1.18 **Test Equipment**
- 1.18.1 Displacement measuring gauges that can measure to 0.1 millimetres or better and are mounted on an independent reference frame shall be used to measure movement of the soil nail being tested. The frame shall be securely installed so that readings are not affected by vibration or soil movements. Drilling and other plant movements next to test nails shall be stopped during soil nail testing. The load frame shall ensure that the load is applied in the same direction as the nail and shall not be permitted to within one metre radius of the centre of the drilled hole.
- 1.18.2 Hydraulic equipment capable of inducing pull-out failure of any selected nail, together with a pressure gauge, calibrated as a unit shall be used to apply the test load. Alternatively the applied load may be monitored utilising a suitably calibrated load cell. The load measuring system shall be capable of measuring the load increments to an accuracy of one percent of the design load or better.
- 1.19 **Pull-out Testing**
- 1.19.1 Unless instructed otherwise by the Designer, pull-out test nails are to be tested to 150 per cent of the design working loads of the nail or 90 per cent of the ultimate tensile stress of the steel bar, or until pull-out failure occurs, whichever is the lesser. The grouted portion of the test nail can vary, from the lower 2 metres of the bond length to the full bond length as specified by the Designer. The test nails shall be installed in accordance with the proposed construction methodology for the permanent soil nails. The nominal diameter of the drill hole shall be the same as for the permanent soil nails.

Appendix 6/10: Ground Anchorages, Crib Walling and Gabions

- 1.19.2 The Designer's approval of pull-out test results shall be obtained prior to installation of permanent soil nails for the Works. Unacceptable pull-out test results may result in the need to modify the nail lengths, testing and construction procedure or construction details. Such modifications shall be approved by the Designer and shall require the verification testing procedures to be repeated.
- 1.19.3 Pull-out test nails shall be grouted in place as part of a regular production grouting process. After grouting, the nail shall not be loaded until the minimum required 28 day compressive strength of the grout (40 newtons per square millimetre) has been proven by cube tests.
- 1.19.4 The pull-out tests shall be made by incrementally loading and unloading each nail over three cycles. Test loads shall be applied in accordance with testing pro-forma as proposed by the Company but with the approval of the Designer.
- 1.19.5 Pull-out failure is defined as movement in excess of 0.1 per cent of the tested bond length over the full test period or as confirmed by the designer. Movement shall be checked against possible extension of the steel tendon, movement between steel and grout as well as between grout and soil / rock.
- 1.20 **Proof Testing**
- 1.20.1 Permanent soil nails selected by the Designer shall be proof tested during the main soil nail works. Unless otherwise specified by the Designer these shall be tested by loading to 1.5 times the design working load or until pull-out failure, whichever is the lesser.
- 1.20.2 The proof testing procedure shall be similar to the requirements of Section 1.19 above for pull-out test nails, with the exception that the nails will be loaded and unloaded for only two cycles.
- 1.20.3 If earlier soil nail proof test results are accepted but subsequent tests fail to meet the acceptance criteria the Company shall inform the Designer without delay. All nails installed subsequent to the last successful test shall be proof load tested and if failed replaced.
- 1.20.4 Nails not meeting the acceptance criteria, or any nails identified by the Company or the Designer as being potentially defective shall be recorded by the Company along with the Company's proposals for treatment. These records shall be forwarded within 24 hours from testing to the Designer for comment.
- 1.21 **Records of Tests**
- 1.21.1 The Company shall keep records of all soil nail tests carried. Field sheets from soil nail tests shall be provided to the Designer within one hour of completion of each test and final copies of the test results provided within three days. The test records shall describe:-
- (a) the date of test;
 - (b) the area and location of test;
 - (c) the number of tests carried out;
 - (d) any variations from the specified procedure;
 - (e) details of the test results (including graphical result plots of load against displacement);
 - (f) any unforeseen conditions encountered; and
 - (g) any test procedure problems and how they will be resolved.
- 1.21.2 Test records shall be presented in the format as specified in the agreed method statement.

Appendix 6/10: Ground Anchorages, Crib Walling and Gabions

1.22 Temporary Soil Nails

1.22.1 To be completed by the Company

Appendix 6/11: Grouting Works (Swallow Holes and Other Naturally Occurring Cavities)**1 Work not Required**

- 1.1 Any Sections in this Appendix which relate to work or materials not required by the Contract shall be deemed not to apply.

2 General Safety

- 2.1 The Company shall be aware of the danger from gas which may be present whilst undertaking the O&M Works at and around mineworkings and shafts. The Company shall take all possible precautions in this respect including the supply, maintenance and operation, in accordance with the manufacturer's recommendations, of suitable equipment for monitoring the emissions of flammable or noxious gases. The Company shall consult and comply with the requirements of the Coal Authority on matters relating to the problems and method of treatment of gas which may arise from the presence of abandoned mineworkings.
- 2.2 The Company shall be aware of the hazards associated with the respective constituent grout materials and take every precaution necessary in the delivery, storage and use of these materials in the Works to protect the health, safety and welfare of person, animals and the environment.
- 2.3 The Company shall provide with his method statement details of the safety measures he proposes to implement in order to comply with the requirements of this Appendix. The Company shall take all necessary safety precautions to safeguard his equipment, employees and the public from all risks.
- 2.4 Grouting works shall be carried out in accordance with a detailed method statement, which is to be approved by the Designer. Approval by the Designer shall be sought at least four weeks prior to commencement of drilling the first hole or carrying out associated probe drilling works. The approved method statement shall be forwarded to the Contracting Authority two weeks prior to commencement of drilling. The method statement shall provide details of:
- (a) the proposed layout of the consolidation treatment works including details of the depth to and size of workings to be consolidated and angle of drill holes;
 - (b) the method of drilling holes and associated casing requirements and materials;
 - (c) the proposed flush medium and methods for monitoring flush returns and arisings;
 - (d) the proposed drilling plant;
 - (e) method of monitoring for mine gas;
 - (f) method of mixing, batching and placement of grout;
 - (g) source of grout materials and proposed grout mix design;
 - (h) grout properties including strength, flow properties and bleed capacity;
 - (i) method of testing grout properties;
 - (j) limitation on placement of grout;
 - (k) method of monitoring grouting pressure;
 - (l) maximum allowable grouting pressures;
 - (m) methods of performing pressure injection test holes;
 - (n) measures to minimise noise pollution and to prevent flush arising from drilling works and grout spillage running into existing drainage or watercourses;

Appendix 6/11: Grouting Works (Swallow Holes and Other Naturally Occurring Cavities)

- (o) form of the daily records and test records; and
- (p) material test certificates and equipment calibration records.

3 Pollution Control

- 3.1 The Company shall be aware of the hazards from contaminated minewater to persons, animals and the environment. The Company shall consult and comply with the requirements of SEPA and the Coal Authority on matters relating to the hazards from contaminated minewater, its treatment and disposal. The Company shall take every precaution to contain and dispose of contaminated minewater, and to prevent contamination of the drainage system and the surrounding environment.
- 3.2 The Company shall be aware of the hazards from grout residues to surface-water courses. The Company shall consult and comply with the requirements of SEPA on matters relating to the hazards from grout residue. The Company shall take every precaution to prevent contamination of surface-water systems and the surrounding environment.
- 3.3 All works shall be carried out without unreasonable noise and disturbance to the site and its environs and shall comply with the noise control requirements of Appendix 1/9.

4 Services

- 4.1 The Company shall take every precaution to avoid damage to or interference with apparatus and supplies, whether privately-owned or owned by Statutory Undertakers or local authorities and shall at his own expense rectify any damage done. He shall relieve the Contracting Authority of all claims in respect of any interruption or loss arising from such damage.
- 4.2 The Company shall carry out closed circuit television surveys of the sewers and ducts in the vicinity of the consolidation works before commencement and after completion of the Works.
- 4.3 The survey shall identify the existing condition of the sewers and ducts and their condition upon completion of the grouting works. A written report supported by a copy of the survey on DVD shall be supplied to the Contracting Authority by the Company within 7 days of the completion of each survey. The pre-condition report shall identify any defects within the sewers and ducts and provide proposals to protect them during the grouting works. The post-condition report shall identify any changes in condition of the sewers and ducts since commencement of the grouting works and provide proposals to remedy any defects.
- 4.4 The Company shall remedy any defects or damage to adjacent properties, apparatus and supplies caused by the grouting operations, as determined by the Contracting Authority.

5 Method

- 5.1 In respect of mineworkings and subsurface voids where more than one seam is to be treated then the uppermost seam shall be treated first and thereafter subsequent seams shall be treated in descending order, drilling through previously treated ground.
- 5.2 Where artesian groundwater conditions are encountered measures shall be taken to ensure that no permanent connection / pathway exists between the artesian water source and ground surface.
- 5.3 Drilling, batching, mixing, injecting, testing and the other various operations included in the Works shall be carried out in accordance with this Appendix.

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- 5.4 After the area has been treated, it shall be tested by the sinking of further boreholes to confirm the adequacy of the works. The test procedure contained within this Appendix 6/11 shall then be followed.

6 Drilling

- 6.1 Boreholes shall be drilled by rotary or rotary percussive techniques to intercept the mineworkings and subsurface voids and penetrate into the rock 1.0 metre below seam pavement level.
- 6.2 All boreholes shall be cased using steel casing within the drift deposits. The casing shall be sealed at an appropriate depth into rockhead so that there is no loss of grout to any superficial deposits during grout injection. Holes shall be cased in rock where soft, loose or broken strata are encountered below rockhead.
- 6.3 All boreholes shall be kept open over their full depth to enable them to be used for the injection of pea gravel and / or grout under pressure into the mineworkings and sub-surface voids and also into all breaks and fissures in the overlying rock strata. Collapsed or obstructed holes shall be redrilled, including the insertion of casing through the obstruction or zone of unstable / collapsing ground if necessary.
- 6.4 Where soft, loose or broken strata encountered below rockhead are associated with the mineworkings or with related void migration or racking then these strata shall also be consolidated by injecting grout under pressure. If the soft, loose or broken strata have been cased then the casing shall be withdrawn above these strata once the borehole has been grouted and pressurised and the grouting process shall be repeated in accordance with this Appendix.
- 6.5 Casing shall not be withdrawn until the grouting works are complete in any given borehole.
- 6.6 Drilling shall not take place within 18 metres of mineworkings that have been grouted within the preceding 24 hours.
- 6.7 **Perimeter Drilling (Optional)**
- 6.7.1 If required as part of the Company's design of the Works, vertical and inclined boreholes of 100 millimetres minimum diameter shall be drilled around the perimeter of the area of the grouting works, to be consolidated, as required, at not more than 3 metre centres at the seam pavement level.
- 6.7.2 Drilling of perimeter boreholes shall commence at the point where the worked seam is deepest and shall progress in both directions around the boundary of the grouting works.
- 6.8 **Infill Drilling**
- 6.8.1 When infilling the mineworkings and sub-surface voids, vertical and inclined boreholes of 50 millimetres minimum diameter, shall be drilled to the Company's grid pattern at seam pavement level.

7 Grouting

- 7.1 Immediately prior to grouting each hole, the Company shall check that it is clear of obstructions over its full length and capable of being grouted down to the required grouting depth.
- 7.2 Grout shall be injected into the mineworkings and sub-surface voids via a steel pipe placed to the bottom of borehole or as otherwise agreed with the Contracting Authority. Injection pressures, measured at ground level, should not exceed the lesser of 10 kilonewtons per square metre per metre of overburden or a maximum pressure of 200

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kilonewtons per square metre. If one of these criteria is reached quickly, the grout pipes shall be lifted to check that a local obstruction is not preventing the flow of the grout into the strata. A suitably graduated pressure gauge with an appropriate full scale deflection shall be incorporated within the grout line near the top of the hole. The applied pressure shall be monitored on this gauge, care being taken to reduce any risk of ground heave. The grout pipe is to be raised during progress of injection as limiting pressures are reached or as grout appears at the borehole surface.

- 7.3 As soon as the grout appears at the point of injection, then final pressurisation shall take place using a pressure gauge and grout connection fitted directly to the top of the casing.
- 7.4 During grout testing, limiting pressures shall be used. The use of a lower pressure during grouting and pressurising shall not relieve the Company of the responsibilities laid down in this Appendix relating to testing of treated areas.
- 7.5 The Company shall be responsible for ensuring that no damage to watercourses, existing Structures and existing Public Utilities results from the Grouting Works.
- 7.6 Should the injection pipe become blocked then it shall be removed immediately and cleared.
- 7.7 Immediately before commencing or re-commencing grouting of any borehole the Company shall ensure that it remains open over its full depth and that no collapse has taken place. Where an obstruction is encountered the borehole shall be redrilled and, if necessary, cased through the blockage.
- 7.8 Casing shall not be withdrawn until grouting of any given borehole is complete.
- 7.9 No grout injection shall take place within 18 metres of drilling operations. Infill grouting shall not be carried out until at least seven days have elapsed since the completion of any perimeter boreholes within 10 metres of the proposed infill borehole. Distances shall be measured at the pavement of the seam being treated.
- 7.10 Boreholes shall be topped-up to ground level during or immediately after withdrawal of the casing in such a manner as to prevent the overburden collapsing in the hole and to ensure the structure and strength of the grout column. Bores shall be completely filled so that no settlement will occur, or subsequent depression form, in the superficial deposits.
- 7.11 Care shall be taken to ensure that uplift pressures do not develop under any adjacent buildings or structure, including services, during grout injection. Where nearby buildings or structures may be affected by the grouting works, the Company shall take extra care and shall employ special monitoring techniques to record ground movement. Additionally, the Company shall monitor ground levels by precise levelling at intervals, both prior to and during operations.
- 7.12 The Company shall make every effort to remove any metal casing used. If the abandonment of any casing, or part of any casing, is unavoidable then the casing shall be grouted and cut a minimum of two metres below ground level. The location shall be permanently recorded by the Company and details included in the Operations and Maintenance Manuals and other relevant documentation.
- 7.13 **Perimeter Grouting**
- 7.13.1 Grout introduced into the mineworkings and sub-surface voids via perimeter boreholes shall be capable of setting quickly without undue spread and in such a way that an efficient barrier is formed in the worked seam around the perimeter of the grouting works. The rate of injection shall be limited to 1.5 tonnes of dry materials per hour per borehole.
- 7.13.2 A maximum of 7 tonnes shall be injected into one hole during any consecutive twelve hour period. In boreholes where cavities in excess of one metre high or interconnecting cavities in excess of 0.5 metres in height are encountered the Company will be required

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to simultaneously place pea gravel with the grout in the ratio 1:1 by weight using an approved hopper device. Consideration shall be given in the design to the addition of a thixotropic or accelerating agent.

7.14 Infill Grouting

- 7.14.1 For infill holes injection is to be carried out in such a way that all the mineworkings and sub-surface voids underlying the Site, together with all spaces, breaks and fissures therein and also in the overlying rock strata, are completely and tightly filled with grout.
- 7.14.2 If the limiting pressure is not achieved or grout has not appeared at the point of injection after 15 tonnes of grout materials have been placed, the grout tube or pipe shall be removed from the hole and the injection suspended. After a period of at least 12 hours, up to a further 10 tonnes of materials shall be injected. If grout has still not surfaced up the bore, injection shall again be suspended for at least 12 hours and the process shall be repeated with further quantities of 5 tonnes. If the hole is still accepting grout after a total of 50 tonnes of materials have been injected without any sign of the hole being completed the Company shall consult the Designer to determine whether the injection is to be continued or other measures, such as secondary or test holes are required.
- 7.14.3 Final tightening of each borehole shall be carried out by pumping an approved grout at a pressure, measured by a gauge at ground level, that should not exceed the lesser of 10 kilonewtons per square metre per metre of overburden or a maximum pressure of 200 kilonewtons per square metre to fill all joints and fissures in the rock strata overlying mineworkings and sub-surface voids. Mineral stoops encountered during drilling shall be treated in the same manner after being drilled to pavement level.

8 Grout Mixing, Batching and Pumping Plant

- 8.1 The grout mixer shall be capable of producing a homogenous mix with all particles thoroughly wetted and with no segregation.
- 8.2 It is essential that the mixer is fitted with a reliable automatic weigh batching device capable of consistently measuring the weight of component materials in the approved proportions.
- 8.3 Water supply to the mix shall be properly monitored by means of a suitable metering device incorporated in the mixer in order to ensure accurate control of the mixing water fed into each batch of dry materials.
- 8.4 After mixing the grout shall be fed into storage tanks fitted with powered agitators sufficient to ensure that no segregation of component materials occurs and that a continuous flow of grout is maintained at the insertion point.
- 8.5 Injection of the pre-mixed grouts shall be by means of positive displacement pumps and suitable pressure gauges shall be incorporated in the system to facilitate control of pressures.
- 8.6 Three valves shall be provided at each junction point to provide means for diversion of the grout away from the injection point when necessary and to prevent undue wastage of grout during transfer of the delivery line from one injection point to another.
- 8.7 The Company shall include within the relevant method statement details of the proposed methods of all O&M Works.

9 Grout materials

- 9.1 Cement shall be ordinary Portland cement and shall comply with British Standard Specification BS EN 197 having a compressive strength class (Table 2) of 42.5 newtons

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- per square millimetre or greater. The cement shall be suitably stored to prevent damage from the weather.
- 9.2 Sand for grouting shall comply with the requirements of BS EN 12620 and be of a suitable grading suitable for use in the Company's plant.
- 9.3 Pulverised fuel ash ("PFA") shall be fine grained complying with BS 3892: Part 3 Specification for PFA for use in grouts, be of a type suitable as a constituent for grout, meet grout workability and pumpability requirements and obtained from an approved supplier. PFA in storage shall be protected by tarpaulins, other covering or stored in a suitable container to prevent contamination with dust, protect the material from the effects of weather and prevent it becoming an airborne hazard.
- 9.4 Pea gravel shall be single sized 10 millimetres natural gravel and comply with requirements of BS EN 12620.
- 9.5 Bentonite shall be Fulbent 570 as supplied by the Fuller's Earth Contractor Limited, or approved equivalent.
- 9.6 Water:
- (a) All water used in the Works shall be clean, fresh water, free from impurities and obtained from a public water supply.
- (b) The Company shall pay the appropriate charges for water and shall make all arrangements to ensure a proper and sufficient supply for the duration of the Contract. A hydrant connection will not be accepted.
- 9.7 All mixes shall be appropriate for the groundwater conditions and groundwater chemistry encountered in the abandoned mineworkings.
- 9.8 The Company shall conduct moisture content and grading tests on materials supplied to the Site and shall provide the Contracting Authority with copies of the results of these tests. The frequency and the results of these tests shall be verified for compliance with the design before any grouting is commenced.
- 9.9 All materials shall be kept free from contamination with deleterious matter. Stockpiles of materials shall be kept adequately separated from one another
- 9.10 Unless otherwise directed, all materials shall be in accordance with the appropriate Clauses of the most recent applicable British Standard (or other) and all workmanship shall be in accordance with the appropriate Clause of the most recent British Standard Code of Practice (or other).
- 10 Grout Mixes**
- 10.1 The Company shall check for each proposed grout mix that 7, 14 and 28 day cube strength test results and flow test results comply with the design of the Works.
- 10.2 The minimum 28 day crushing strength shall be 1 meganewton per square metre.
- 10.3 All grout used in connection with the Contract shall contain cement.
- 10.4 Grout introduced at the perimeter probe hole locations shall have a cement content of between 120 and 150 kilograms per cubic metre of mixed volume.
- 10.5 Grout introduced at infill hole locations shall have a cement content of between 80 and 100 kilograms per cubic metre of mixed volume.
- 10.6 Using a "Colcrete" Flowmeter the following criteria shall apply with regard to grout flow properties.

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- (a) Perimeter and additional probe grout shall flow within the limits 300 millimetres to 400 millimetres.
 - (b) Infill grout shall flow within the limits 400 millimetres to 600 millimetres.
- 10.7 The Company shall undertake testing of grout mix proportions and materials. Results of these tests shall be verified for compliance with the design before any grouting is commenced.

11 Grout Tests

- 11.1 Throughout the course of grouting works the Company shall take cubes with 100 millimetre sides in sets of six at the rate of one set per day. The cubes shall be cured and crushed at a UKAS accredited laboratory. The cubes shall be uplifted and transported to the laboratory within 36 hours of their casting. One cube shall be crushed at 7 days, one at 14 days and two at 28 days. The test will be taken as conforming if both 28 day strengths exceed the minimum requirement contained in this Appendix. The Company shall permanently and clearly mark cubes for identification, and shall keep records which shall indicate exactly the location of the grout or concrete, the flow test readings of the mix, the date of placing and mix reference. The marking of cubes, handling, storage and testing shall be in accordance with BS 1881.
- 11.2 The Company shall test the flow properties of each batch of mixed grout in accordance with this Appendix relating to grout mixes before it is injected and shall carry out such additional random tests as may be required to ensure compliance with the design of the Works.

12 Testing of Infilled Grout

- 12.1 On completion of the grouting works the Company shall sink probe test holes into the filled mineworkings and subsurface voids (minimum of one probe per 500 square metres) and shall carry out grout injection tests to establish the adequacy of the works already completed. The Company shall provide details of numbers and locations of test holes to be undertaken to the Scottish Minister's Representative. Testing shall not be undertaken until a minimum of 48 hours has elapsed since the completion of treatment in the area to be tested.
- 12.2 These tests shall consist of injecting grout into the test holes in the normal fashion and noting the quantity required to produce an injection pressure of 200 kilonewtons per square metre or such lower pressure as specified in the design of the Works. When this injection pressure has been reached the injection pump shall be switched off and a suitable valve at the top of the hole closed to isolate any line pressure. The test shall be deemed successful where the quantity of grout injected is less than 0.5 tonnes or such higher quantity as specified in the design and where the pressure has not dropped by more than 10 per cent in three minutes.
- 12.3 The Company shall ensure that a good seal is maintained at rockhead during the test. Losses of grout and hence pressure at rockhead or into poorly consolidated fissures shall cause the test to fail if the conditions of the above Section are not met.
- 12.4 The Designer may in addition require core samples to be taken by rotary coring to check the adequacy of the grouting operation. Rotary coring shall be carried out in accordance with the MCHW, Volume 5, Section 3, Part 4.
- 12.5 Should any of the tests reveal incomplete grouting works or other defect, the Company shall make good such works in order to comply with the requirements of the Contract.

Appendix 6/11: Grouting Works (Swallow Holes and Other Naturally Occurring Cavities)**13 Cold Weather**

- 13.1 When the temperature of the air is near or below the freezing point of water, grouting works shall only be permitted at the entire risk of the Company, who shall take precautions to ensure that the materials are free from frost and to protect the grout or concrete from freezing.
- 13.2 The Company shall make good any works which may be damaged by frost. For the purpose of recording the air temperature a reliable maximum / minimum thermometer is to be located on the O&M Works Site. Precautions against cold weather conditions shall be such as to ensure that the grout shall, at no time during mixing, depositing, delivery to a point of injection or setting reach a temperature of, or below, five degrees Celsius.
- 13.3 The Company shall be deemed to have included for all measures necessary to comply with the aforementioned requirements.

14 Records

- 14.1 The Company shall prepare a daily drilling journal and a separate daily grouting record for individual boreholes including test boreholes, providing the information in Section 14.2 below and this shall be provided to the Contracting Authority the day after the date the records relate to.
- 14.2 Daily drilling journals shall include:
- (a) job name, location, borehole reference number and date;
 - (b) O.D. level at borehole location;
 - (c) date;
 - (d) contractors name;
 - (e) staging level - embankment boreholes;
 - (f) inclination of borehole;
 - (g) plant in use, type of flush and crew details;
 - (h) method of boring or drilling, flushing medium and type of drill bit;
 - (i) type / diameter and depth of all casing used;
 - (j) diameter and depth of hole at beginning and end of each working day/shift;
 - (k) depth of each change of stratum;
 - (l) rate of penetration;
 - (m) details of any loss of flush;
 - (n) occurrence of voided, soft or broken ground or packed waste;
 - (o) delays, breakdowns and / or obstructions with accompanying reason;
 - (p) details of underground services or drains located;
 - (q) daily and cumulative length drilled;
 - (r) details of any settlement or ground heave;
 - (s) description, with identification of the stratum and whether it is broken or intact;
 - (t) depth at which groundwater is encountered (if apparent);

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- (u) depth / description of any contaminated material or groundwater encountered;
 - (v) details of any emission of gas, water, foul air etc;
 - (w) depth of completed hole; and
 - (x) gas monitoring results.
- 14.3 Grouting records shall include:
- (a) location and borehole reference number;
 - (b) contractors name;
 - (c) date and times of grouting and grout crew details;
 - (d) details of type of injection and grout line dimensions (e.g. tremmie injection through 5 millimetre diameter line);
 - (e) grout materials employed;
 - (f) grout pressures recorded, with the corresponding depths;
 - (g) weight of grout mix accepted including the water / cement ratio and weights of the constituent components of the mix;
 - (h) the accurate position, inclination and orientation of abandoned casing; and
 - (i) delays and breakdowns with accompanying reason.
- 14.4 All daily drilling journals and grouting records shall be included in the as-constructed records.
- 14.5 The Company shall within three months of completion of the grouting works prepare typical drawings and sections to indicate where and how much grout was placed. He shall prepare a report on the grouting works outlining the conditions encountered and the final treatment carried out. A copy of this report shall be included in the as-constructed records.
- 15 Setting Out and Labelling**
- 15.1 For ease of reference, each borehole used in the grouting works shall be clearly marked on the Site with its reference number, depth and inclination. This labelling shall remain legible until the casing has been withdrawn and the bore is complete.
- 15.2 Setting out stations and reference lines used in the location of borehole positions shall be established on the O&M Works Site by means of permanent markers, clearly visible at all times.
- 15.3 A system shall be employed to record those boreholes which are completed and those which continue to accept grout. This system shall operate both at the borehole and in the Company's office.
- 16 Personnel for Grouting Works**
- 16.1 The Company, Designer and the Checker shall employ personnel who have relevant experience of grouting works.
- 16.2 The Company and the Designer shall have in charge of the grouting works a suitable number of engineer(s) experienced in the methods being employed and in underground mining conditions and the said engineer(s) shall be present at the Site at all times when drilling, grouting or testing is in progress.

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- 17 Treatment of Abandoned Mineshafts / Adits**
- 17.1 The Company shall inform the Contracting Authority immediately upon identification of any abandoned mineshaft or adit.
- 17.2 Abandoned mineshafts located beneath or within influencing distance of earthworks shall have a reinforced concrete cap constructed at rockhead level or as otherwise agreed with the Contracting Authority. The cap shall be designed to accommodate all imposed loadings. Any open shafts shall be backfilled with granular material prior to capping. A description of the granular material shall be provided to the Contracting Authority Representative.
- 17.3 Abandoned mineshafts are potentially dangerous. Their infilling and the ground immediately surrounding the top of a shaft is liable to collapse without warning. They may contain noxious and inflammable gases. The Company shall take all necessary safety precautions to safeguard his machinery, employees and the public from all risks.
- 17.4 The Company shall erect safety barriers and warning signs where the public have access to the vicinity of the shaft works.
- 17.5 Any mineshaft which is either open or becomes open during the course of the O&M Works shall as a matter of urgency and as soon as is reasonably practicable be:
- (a) Covered over with a substantial cover of metal or timber or other suitable material so as to prevent any person or material from falling into the shaft.
 - (b) Surrounded by a temporary (not less than 1.0 metre high) fence, the perimeter of which shall be not less than 5 metres from the edge of any ground settlement related to the shaft.
 - (c) Provided with a warning notice board or boards erected not more than 1 metre inside the temporary surrounding fence.
 - (d) The temporary fence, notice board and covering shall be maintained in good order at all times until permanent treatment works take place.
- 17.6 If any shaft is in close proximity to areas of normal public access, the area around the shaft shall be surrounded by a substantial fence not less than 1.8 metres high, the perimeter of which shall not be less than 5 metres from the edge of any ground settlement related to the shaft. Notices shall be placed around the fenced area warning of the presence of a mineshaft.
- 17.7 The Company shall not discharge nor permit to be discharged into any mineshaft water, effluent or other liquid matter and shall take all precaution necessary to prevent any such discharge from occurring from any other part of the Works.
- 17.8 Prior to infilling of any open shafts the Company shall ascertain the depth to solid bottom in the shaft, depth to standing water and if any water is contained therein. A copy of this information shall be provided to the Contracting Authority Representative.
- 17.9 If material is discharged into the shaft directly from transport vehicles or by plant operating in close proximity to the shaft, the Company shall erect a suitable barrier around or adjacent to the shaft mouth delineating a "safe working zone" that is of sufficient size and strength and so positioned as to prevent vehicles and / or tipping equipment or other infilling plant from falling into the shaft or causing a collapse of the shaft mouth.
- 17.10 All filling materials placed within an open shaft from a depth of not less than 10 metres from the surrounding ground level up to the mouth of the shaft shall be self compacting.

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- 17.11 Water raised in and / or displaced from a shaft by the placement of infilling shall be adequately drained away from the shaft mouth so as to maintain the shaft mouth and adjoining ground in a clean and dry condition.
- 17.12 As far as is practicable infilling shall be completed in one continuous operation. Where this is not possible, a temporary fence, cover and warning notice board, as specified above, shall be erected around and over the shaft mouth and maintained in good order at all times until works is resumed.
- 17.13 Upon completion of infilling a temporary fence and warning notice board shall be provided as specified above, and maintained in good order at all times until further treatment measures are carried out.
- 17.14 In the event of the infill settling in the shaft after completion of initial infilling and before further stabilisation measures are carried out, further filling shall be placed in the shaft. Any temporary fencing and / or warning notice boards removed or damaged either by the settlement of infilling or the placing of further infilling shall be reinstated or replaced upon completion.
- 17.15 The Company's attention is drawn in particular to the possibility of the collapse of fill material into the shaft or of the shaft itself whilst probe drilling operations are being carried out. During such operations a drilling platform must be used and where deemed necessary such a platform shall be anchored at a safe distance away from the shaft position.
- 17.16 The drilling platform or staging shall:
- (a) be of overall dimensions not less than three times the diameter of the shaft;
 - (b) be of metal construction and be of sufficient strength to carry the full weight of the drilling rig in the event of a collapse of the shaft mouth or surrounding ground; and
 - (c) be suitably covered by planking or plating so as to provide a safe working platform for all personnel engaged in operating the drilling rig and ancillary equipment.
- 17.17 The ground for the reinforced concrete slab shall be prepared by excavating the shaft lining, shaft infill and surrounding soil down to firm rockhead, or, where this is impractical, to a suitable and stable horizon. The base of the excavation shall be prepared clean and level by hand prior to construction of the slab.
- 17.18 Excavation for shaft caps should normally be undertaken using a track mounted back acting excavator. Any works carried out by operatives within any excavations so formed – hand finishing of the excavation, fixing of shuttering or reinforcement, etc., should only be undertaken with appropriate safety considerations. A minimum requirement in this connection will be the provision and use of appropriate safety harnesses anchored outwith the zone of influence.
- 17.19 Excavations deeper than nominally 1.0 metre shall have the upper parts battered to a safe angle to ensure stability of the excavation.
- 17.20 The concreting of shaft caps shall be carried out in one continuous operation without interruption. Construction joints will not be permitted.
- 17.21 The method of infilling the excavation above the slab shall be as follows:
- (a) batter the side excavation to a nominal gradient of 1 in 3 and replace excavated material or imported material under controlled conditions of spreading, in compacted layers of not exceeding 150 millimetres.
- 17.22 The Company shall maintain a record of all site works on a daily basis. The daily journal for the works included in this particular portion of the Specification shall include the following items using appropriate metric units where applicable:

Appendix 6/11: Grouting Works (Swallow Holes and Other Naturally Occurring Cavities)**Requirement of Daily Journal – Capping of Mineshafts**

- (a) Contractor's name;
 - (b) Contract name and location;
 - (c) Shaft number and location;
 - (d) Date of work;
 - (e) Plant and equipment in use;
 - (f) Crew employed;
 - (g) Weather;
 - (h) Hours of work;
 - (i) Standing time or delays or breakdowns;
 - (j) Dimensions of excavation;
 - (k) Stability of excavation;
 - (l) Brief description of strata;
 - (m) Groundwater encountered and rate of flow;
 - (n) Standing water level, at beginning and end of shift;
 - (o) Gas monitoring results;
 - (p) Details of services or drains encountered;
 - (q) Dimensions of cap;
 - (r) Construction of cap;
 - (s) Quantity of steel, concrete placed etc.;
 - (t) Details of backfilling;
 - (u) Ground settlement or heave;
 - (v) Materials delivered;
 - (w) Equipment delivered;
 - (x) Visitors to site and any instructions given;
 - (y) Any other relevant remarks; and
 - (z) Metric dimensions and units are to be used throughout.
- 17.23 The Company shall provide the Contracting Authority with the recorded position of any treated shafts, including each corner of the shaft and cap reported as National Grid Co-ordinates and information on the condition, infilling and lining of any shaft encountered during the Works. The Contractor shall also provide plans showing the location of any shaft in relation to the Works, the ground level of the cap (mAOD) and the ground level of rockhead if encountered (mAOD).
- 18 Waste Management (Pulverised Fuel Ash)**
- 18.1 The Company is responsible for supplying appropriate grout constituent materials.
- 18.2 PFA, a typical constituent of grout, is now regarded by the Environment Agency to be a waste material and, accordingly, its use in these sorts of works comes under the various waste management regulations and legislation.

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- 18.3 If the Company proposes to use PFA in the O&M Works then he will be responsible for discharging any liabilities and responsibilities in this respect and shall indemnify the Contracting Authority against any associated claims.
- 18.4 Copies of relevant correspondence, licences, permits and similar that may be required to discharge these responsibilities are to be copied to the Contracting Authority before use of PFA will be permitted.
- 18.5 As an alternative to using PFA, a suitable substitute material, or pre-bagged product may be used in the O&M Works, subject to approval by the Designer.

Appendix 7/1: Flexible Pavement Construction

The Company's Appendix 7/1 submitted as part of his Tender for the New Works shall be deemed to be the applicable Specification Appendix 7/1 for the O&M Works unless otherwise agreed in writing by the Contracting Authority.

Appendix 12/1: Traffic Signs General

1 General

- 1.1 Sign schedules which detail the individual requirements for sign assemblies shall be prepared by the Company in accordance with the other provisions of this Agreement. These shall include:
- i) Sign face details, dimensions and location;
 - ii) Mounting height;
 - iii) Post details; and
 - iv) Foundation details

2 Sign Faces

- 2.1 Sign faces shall generally be constructed using Class 1 retroreflective material to BS 873-6.
- 2.2 The requirement for the use of microprismatic retroreflective material and non reflective material shall be determined by the Company in accordance with the other provisions of this Agreement.
- 2.3 Where determined by the Company in accordance with the other provisions of this Agreement, sign faces shall be protected with dew resistant sheeting as manufactured by 3M Scotchlite or equivalent.

3 Foundations

- 3.1 Foundations for permanent traffic signs shall be in accordance with Clause 1203.

4 Sign Posts

4.1 Base Plates

- i) Each post shall have a galvanised base plate.
- ii) This shall be fixed to the post in order to prevent any rotation of the post.
- iii) It shall be of square section with the side dimensions being at least twice the diameter of the post.

4.2 Base Housings

- i) The minimum diameter of base housings on tubular posts shall be 168 millimetres.
- ii) Rectangular posts requiring an electrical supply shall be fitted with an integral flush fitting door above ground level.
- iii) Detachable root boxes are not to be used.
- iv) The internal base housing shall contain
- v) A baseboard manufactured from marine plywood or hardwood with a minimum thickness of 15 millimetres and minimum dimensions of 100 millimetres x 380 millimetres.
- vi) It shall be mounted securely to the back of the compartment on which the electrical equipment shall be mounted.
- vii) The minimum distance from the face of the baseboard to the inside of the front of

the housing shall be at least 100 millimetres.

- viii) A brass or stainless steel earthing screw or stud 8 millimetre diameter complete with two brass washers and a brass nut and locknut shall be provided on the housing in a suitable and easily accessible position.
- ix) A door aperture measuring not less than 110 x 400 millimetres.
- x) The lower edge of the door shall be positioned so that when the post shall be installed it shall not be less than 300 millimetres above ground level.
- xi) The door opening is to face away from oncoming traffic.

4.3 End Caps

- i) All posts shall be supplied complete with plastic end cap. End caps shall be shaped to shed water to the outside of the post and shall be the same colour as the post.

4.4 Protective Finish

- i) The protective finish to steel posts and brackets shall be as follows:-
 - (i) a) Hot dip galvanised to BS EN ISO 1461 at the fabrication factory.
 - (ii) b) The post shall be covered in bitumen in accordance with BS EN 40-5 both outside and inside the post up to 150 millimetres above proposed ground level.

5 Permanent Bollards

- 5.1 Internally illuminated bollards shall be base illuminated.

6 Sign Fix Clips

- 6.1 Sign fix clips shall be made of stainless steel.

7 Ducting

- 7.1 Ducting installed through the foundations of posts into which electrical equipment shall be installed shall be 50 millimetre diameter uPVC street lighting duct with a wall thickness of 5 millimetres.

8 Identification Numbers

- 8.1 Identification numbers shall be as follows:

- i) Each sign shall be identified by a unique system of letters and numbers for maintenance and inspection purposes.
- ii) Letters and numbers shall be provided on both sides of sign located in the central reservation on all other signs the numbers shall face oncoming traffic.
- iii) Letters and numbers shall be black on a yellow background with characters 75 millimetres high at a minimum height of 1.5 metres and a maximum height of 2.5 metres above ground level.
- iv) Letters and numbers shall be screen printed onto reflective self adhesive vinyl mounted on 3 millimetres thick Foamex.
- v) The number shall be fixed to the sign by an appropriate adhesive.

Appendix 12/2: Traffic Signs – Marker Posts**1 Hazard Marker Posts**

- 1.1 Hazard marker posts shall be capable of being overrun by vehicles so that they deflect and spring back to an upright position without shattering in all weather conditions and with little or no vehicular damage.
- 1.2 Hazard marker posts shall be fitted with anti-removal tabs below the ground
- 1.3 The reflectors shall be of Class 1 retro reflective sheet material to comply with Diagram 561 of Traffic Signs Regulations and General Directions 1994. The retro reflective sheeting shall be protected from damage from over-running vehicles by raised edges or other acceptable methods.
- 1.4 The hazard marker post shall have the main body self-coloured black with a highly visible weather resistant white band to the sizes quoted in Figure 4.84 in Chapter 4 of the Traffic Signs Manual.
- 1.5 The top of the hazard marker post shall be installed so that the top of the post is 750mm-1000mm above ground level.

Appendix 12/3: Traffic Signs – Road Markings and Studs**1 Road Markings**

- 1.1 The colour location and material type for permanent or temporary road markings shall be specified as part of an order for road marking.
- 1.2 Ribbed road markings shall be formed of hot applied thermoplastic formulated to allow the formation of transverse ribs. The transverse ribs shall not be less than 8mm and not greater than 10mm in depth and shall be at 500mm spacing except on slip roads where the spacing shall be reduced to 250mm.
- 1.3 All road markings shall provide a skid resistance level of 55.
- 1.4 Temporary road markings shall be laid in accordance with BSI document BD 6518 1985.
- 1.5 Where existing road markings shall be required to be covered over the cover application shall comply with BS 7962: 2000.

2 Road Studs**2.1 General Requirements**

- 2.1.1 Any road stud which has become displaced from its socket or is loose or broken shall be removed from the carriageway immediately and the resulting socket shall be filled with bituminous instant repair material as described in Clause 970AR.
- 2.1.2 Replacement road studs shall not be installed in old sockets. New road studs shall be placed in new sockets with a clearance of at least 300mm from the original sockets. Existing or refurbished road stud sockets may be re-used but in all cases shall be fitted with new inserts.
- 2.1.3 Road studs inserts shall be replaced when failing to meet the requirements of Schedule 2 to the Agreement.
- 2.1.4 Road studs to be used for this Agreement shall be as follows

2.2 Red White and Green Studs

- 2.2.1 All red white and green studs shall comply with Clause 1213.3. Red and green reflectors shall be uni-directional. White reflectors shall be bi-directional.
- 2.2.2 Where installation of road studs shall be the subject of a traffic regulation order at new locations Method No 1 as detailed in Paving Instruction 1984 Edition (Red) shall be used. This shall be Installation Method No 1.

2.3 Amber Studs

- 2.3.1 Amber studs shall be of the corner-cube reflection type and shall be fixed in accordance with the manufacturer's written recommendations. (Installation Method No 4)

2.4 Temporary Road Marking Studs shall be either

- 2.4.1 Hot melt adhesive type.
- 2.4.2 Self adhesive type.
- 2.4.3 Fixing of studs shall be in accordance with manufacturer's written recommendations with respect to whether the studs shall be fixed to existing or new surfacing.

Appendix 12/3: Traffic Signs – Road Markings and Studs**2.5 Existing metal node studs**

2.5.1 Existing metal node studs shall be removed to ensure minimum damage to carriageway. Reinstatement shall be carried out using filled bitumen or bituminous instant repair material.

2.6 Cored thermoplastic road markers to be installed as node points

2.6.1 Cored thermoplastic road markers to be installed as node points shall use the following method (Method No 5)

- (i) a 100mm diameter x 20mm deep pocket shall be formed using a central pilot bit surrounded by an annular bit
- (ii) the base of the pocket after breaking out the surfacing material shall be left jagged

2.6.2 the pocket shall be filled with hot thermoplastic material to the uppermost edge of the pocket projecting slightly above the road surface and the material allowed to cool and set to form a stud.

2.6.3 The material shall consist of a plastic resin with white filler and reflective glass particles to BS 3262.

Appendix 12/5: Traffic Signs – Traffic Signals

1 Permanent Traffic Signals

- 1.1 All traffic signal equipment supplied must be of a type approved by the Contracting Authority and comply with the latest edition of the relevant British Standards, TR Specifications, The Traffic Signs Regulations and General Directions, The Zebra, Pelican and Puffin Pedestrian Crossing Regulations and General Directions and IEE Wiring and "Electricity at Work" Regulations. The Design and method of maintenance must meet the above regulations.
- 1.2 Statutory Approvals must be in place for all traffic signs and signals (including associated control equipment) and copies of letter of acceptance must be submitted to the Contracting Authority prior to construction.
- 1.3 All lanterns, including nearside red man/green man lanterns, must be compatible with the proposed controller for fault monitoring, including full red lamp monitoring for installations with controlled pedestrian facilities.
- 1.4 Where required in the Contract to supply and install traffic signal heads and other traffic signal equipment, the Company shall provide equipment complying with the following requirements:
- 1.5 **Signal Heads**
- 1.5.1 Traffic Signal heads shall conform to TR2206 Specification of Road Traffic Signals, BS EN 12368 Traffic Control Equipment, Signal Heads, BS EN 50556 Road Traffic Signal Systems.
- 1.5.2 LED Signal Heads
- Aspect Types:- 200 mm diameter red, yellow and green roundels. 200 mm green left, right and straight on arrows.
- Signal heads shall comply with the following BS EN 12368 Classes:
- Optical Characteristics:- Luminous Intensity Class 3/2
Luminous Distribution Table 4
Phantom Class 5
Colour (inc. combined Colour) Compliant
Luminance Uniformity =1:10
- 1.5.3 LED Pedestrian Heads
- Aspect Types:- 200 mm diameter red and green pedestrian symbols.
- Signal heads shall comply with the following BS EN 12368 Classes:
- Optical Characteristics:- Luminous Intensity Class 3/2
Luminous Distribution Table 4
Phantom Class 5
Colour (inc. combined Colour) Compliant
Luminance Uniformity =1:10

Appendix 12/5: Traffic Signs – Traffic Signals**1.5.4 Push Button**

Operating Voltage:- All push buttons for pedestrian lights shall operate on a low voltage, 48 V, 40 W supply.

Push Buttons shall incorporate a "tactile cone" indicator at the base of the unit. (A tactile cone indicator serves to assist visually impaired pedestrians in identifying when it is safe to use a pedestrian crossing, by rotating when the pedestrian phase is in operation)

1.6 Nearside Units for Puffin and Toucan & Demand Units

1.6.1 Nearside units will comply with the latest version of TR2511 Performance specification for Nearside Signal and Demand Units.

1.6.2 All nearside and demand units must be installed in accordance with the manufactures instructions.

1.6.3 Nearside and demand units will be aligned in accordance with the approved site specific traffic signal drawings.

1.6.4 Demand units shall incorporate a "tactile cone" indicator at the base of the unit. (A tactile cone indicator serves to assist visually impaired pedestrians in identifying when it is safe to use a pedestrian crossing, by rotating when the pedestrian phase is in operation).

1.7 Tactile Equipment

1.7.1 Tactile cones and associated equipment will comply with the latest version of TR2508 Performance Specification for Tactile Equipment for use at Pedestrian Crossings.

1.8 Audible Equipment

1.8.1 Where it is proposed to install Audible units they shall comply with the latest version of TR2509 Performance Specification for Audible Equipment for use at Pedestrian Crossings.

1.9 Traffic Signal Controller Cabinets

1.9.1 Foundations for traffic signal controller cabinets shall be located in positions such that when the access doors of the installed cabinet are in the open position they cause minimal obstruction of the footway. It shall be possible to open the access doors fully and consideration must be given to the safety of operatives and Non Motorised Units during maintenance operations. If it is necessary to site the cabinet adjacent to the kerb then it shall not be possible for the access doors to be opened over the carriageway and the cabinet shall be sited at least 0.5m from the kerb edge.

1.9.2 The cabinet shall be positioned so that it does not obstruct the view of pedestrians waiting at traffic signal controlled crossings or motorists on their approach to the crossing. Where ever possible, the cabinet shall be sited at the downstream side of signal controlled pedestrian crossings. Cabinets shall be positioned such that a traffic engineer can view the operation of the signals whilst standing at the front of the cabinet.

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- 1.9.3 Case root base cabinets shall have the root located on one or more paving slabs which are themselves securely bedded and properly levelled at the appropriate depth. A bed of ST4 concrete shall be laid over the base of the root and paving slab(s). The top of the bed, when finished, shall be 1/3 of the way up the legs of the root and the site of the bed smoothed. That part of the excavation within the case root shall be back filled with compacted dry fine sand or pea gravel and topped with dry fine sand after the ducting has been installed and the cables have been terminated. The remainder of the excavation around the cabinet is to be backfilled with cement bound material to base course level and the surrounding area reinstated in accordance with the requirements of Clause 706 of the Specification.
- 1.9.4 A layer of epoxy resin 6 mm thick is to be laid on top of the sand to prevent ingress of gas and moisture into the cabinet through the root and to provide a seal with the case.
- 1.9.5 Pole mounted cabinets are to be mounted on poles correctly aligned in vertical positions. The excavation shall be adequate to allow the pole to be planted to the depth recommended by the manufacturer, typically 650 mm. The bottom of the hole around the pole is to be filled with at least 300mm of ST4 concrete to the bottom of the cable entry slot. When cable laying and testing is complete, the remainder of the backfilling shall be completed. The cable entry to the cabinet shall be effectively sealed against ingress of moisture into the unit.
- 1.9.6 Once the electronic modules are installed in the cabinet, the door seals and locks shall be checked and the base sealed as soon as possible to stop any moisture ingress to the modules.
- 1.9.7 When a cabinet is mounted on a verge of unmade ground a concrete pad, which may consist of paving slabs, shall be laid around the controller to a minimum width of not less than one metre on those sides to which access to the equipment is required.
- (i) All controllers and auxiliary cabinets shall be supplied with a metal case with a hinged main access door, with locking facilities.
 - (ii) Cabinets shall be IP55 rating.
- 1.10 **Controller Equipment**
- 1.10.1 The Company shall ensure that all controllers are fully UTMC compliant allowing fault monitoring equipment such as an Outstation Monitoring Unit (O.M.U), Outstation Transmission Unit (O.T.U) or MOVA Unit to be supplied by any manufacturer.
- 1.10.2 The Company shall install an Outstation Monitoring Unit (OMU) or Outstation Transmission Unit (O.T.U) of a type approved by the Overseeing Organisation.
- 1.10.3 The Company will install a MOVA unit in the controller at locations agreed with the Overseeing Organisation.
- 1.10.4 ELV and LV controllers will conform to the latest version of TR2500 Specification for Traffic Signal Controller and BS EN 12675 Traffic Signal Controller Functional Safety Requirements.
- 1.11 **Traffic Signal Poles**
- 1.11.1 The Company shall comply with DMRB Volume 8 Section 2 Part 2 TA 89/08 Use of Passively Safe Signposts, Lighting Columns and Traffic Signal Posts to BS EN 12767.
- 1.11.2 The Company shall be responsible for specifying which performance class is required.
- 1.11.3 All poles shall be installed in accordance with the manufacturer's recommendations, or as otherwise instructed by the Overseeing Organisation.

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- 1.11.4 Poles shall NOT be supplied with pre drilled holes for nearside and demand units.
- 1.11.5 All poles shall numbered in accordance with the numbering system used on the site specific drawings with appropriate labels, labels to be approved by the Overseeing Organisation.
- 1.11.6 All poles shall be numbered on the footway side at right angles to the traffic lantern brackets and immediately below the top cap; where all lantern fixings are allocated the numbering shall be placed below the bottom fixing bracket.
- 1.11.7 The areas of the pole on which the labels are to be impressed shall be cleaned/degreased before application.
- 1.11.8 The Company's proposed pole retention system shall be subject to the approval of the Overseeing Organisation. The retention system shall be of cast iron design and shall incorporate a pole locking system contained within an integral locking chamber. The design shall allow the pole to be aligned in any orientation with the cable installed, prior to the locking device being activated. The design shall not allow signal poles to rotate once fixed in position. Sockets shall be installed flush with the final surface. Flush sealing plugs shall be available for use when the signal pole is not present. The proposed system shall be adaptable to allow for a minimum insertion depth of 300 mm. The design of the pole retention system shall incorporate appropriate features to accommodate easy installation and replacement of signal poles and cables. The sockets and poles shall be installed in accordance with the manufacturer's instructions.
- 1.12 **Electrical Disconnection Equipment for Passively Safe Traffic Signal Poles**
- 1.12.1 The system must comply with BS EN12767 (Disconnection of Roadside Structures within 0.4s of Impact).
- 1.12.2 The system shall be housed within a suitably sized cabinet to house all isolation equipment, such as circuit breakers and monitoring units. This cabinet will be located alongside the signal controller cabinet.
- 1.12.3 The system shall include a self checking system, with an output to indicate system malfunction.
- 1.12.4 In normal operation the system must give a visual indication that it is operational, heartbeat or similar.
- 1.12.5 If the system is activated it must provide a positive visual indication of this and also indicate the location.
- 1.12.6 The isolation will be so designed that on impact all LV and ELV live and neutral circuit conductors are disconnected from the signal pole, together with any sensor voltages.
- 1.12.7 It must not be possible to re-energise a circuit that has been tripped.
- 1.12.8 The system will provide outputs to indicate a) Activation by impact, b) Activation by signal equipment fault, c) Isolation system malfunction and d) Isolation system power failure.
- 1.12.9 The isolation system must also be capable of isolating a whole signal pole due to a signal equipment fault; this facility is to be switchable by pole.
- 1.12.10 The sensors are to be mounted by the most appropriate means, ideally behind the base door if available. The location shall be agreed with the Overseeing Organisation before fitting.
- 1.12.11 The cabling to the sensors is to be run in separate ducts to LV cables, using orange PVC sheathed SWA 2 core 2.5mm cable, traffic signal loop feeder cable.
- 1.12.12 The sensor cable is to be terminated using a CET cable gland or equivalent, with the armouring being taken to Earth.

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- 1.12.13 Sensors are to be IP64 rated for mounting in the structure. The sensor must provide a means of testing the system operation during commissioning and routine maintenance.
- 1.13 **Duct Systems**
- 1.13.1 Duct links between chambers and individual signal poles or equipment cabinets shall provide the appropriate number of ducts to accommodate the number of cables required to service the item. The layout shall be such that any tactile paving area is kept free of inspection chambers.
- 1.13.2 All duct work provided by the Company between Traffic Signal controllers and Traffic Signal poles or other equipment shall form a continuous route.
- 1.13.3 Traffic signal, communication, power and loop detector ducts and duct accessories shall comply with the latest version of BS EN 61386 - 24 and be orange in colour. All ducts, unless otherwise specified, shall be thick walled (5mm) high density polyethylene. The ducts shall be smooth walled (inner and outer) with a nominal internal diameter of 100mm unless otherwise stated and coloured orange with the words "Traffic Signals" printed in white along their length at intervals of not more than one metre. When laid, the wording shall be displayed uppermost. All lengths shall be jointed or sleeved. Spurs to signal poles shall generally be 100mm in diameter.
- 1.13.4 Telecommunication Service Provider's ducts and duct accessories shall comply with BS EN 61386 - 24 and be black in colour. Ducts shall comprise a high density polythene twin walled (inner wall smooth, outer wall corrugated) system with an internal diameter of 100mm and unit lengths of 6.0 metres. Every length shall be supplied with a push-fit coupler.
- 1.13.5 The Mechanical Properties of the ducts shall be that associated with "Normal Duty". For Resistance to Bending, both rigid and pliable ducts are acceptable provided that the ducting requirements of the particular installation are met and that the correct accessories are used. The category for Protection against Ingress shall be a minimum of IP 30 and the Resistance to Chemical Attack classification shall be "With Protection".
- 1.13.6 Yellow PVC marker tape, with the wording "CAUTION ELECTRICITY DUCT BELOW" printed along its full length so as to occupy not less than 75% of its available length and occurring at a minimum of 1.0 metre intervals, shall be laid 250mm above all duct-lines. The tape shall be a minimum of 150mm wide and 0.1mm thick.
- 1.13.7 Where normal cover to communication ducts for traffic signals cannot be obtained, e.g. on structures or due to underground obstructions such as concrete road foundation slabs, 32mm internal diameter galvanised steel pipes may be laid at shallow depth, with couplings and joints complying with the latest Version of BS 1387 Class H, all as directed by the Overseeing Organisation.
- 1.13.8 All service ducts shall be fitted with a draw rope in accordance with Clause 501.8. The rope shall extend at least 3.0 metres from each end of the duct and this length of rope shall be tidily looped and either tied to the draw rope of a parallel duct or secured to a marker block when no adjacent duct is available. In either case, unless ducts terminate at cabinets, mounting posts, columns or main duct chambers, their ends shall be marked with marker blocks or marker posts as detailed in HCD I1. Immediately after laying, ducts shall be sealed with removable split or solid plugs which can accommodate the specified draw rope.
- 1.13.9 A secondary draw cord shall be installed following any cable installation such that a serviceable cord is available at all times.

Appendix 12/5: Traffic Signs – Traffic Signals**1.14 Access Chambers**

- 1.14.1 Access chambers, installed in footpaths and verges, shall comprise proprietary high density polyethylene segmental chambers with pre-formed “knockout” duct accesses. Chambers shall be twin walled, be capable of withstanding a 12.5 tonne wheel load and shall have a 150mm thick Class ST4 concrete surround. Chambers shall typically have a clear opening of 600 mm x 600 mm.
- 1.14.2 Chamber covers and frames shall comply with the requirements of BS EN 124:1994 and be Class B125 in footways and Class D400 in carriageways, hardshoulders and hard standings. Chamber covers for footways shall be manufactured from a high strength polyester composite material and shall be located in a 2.5mm thick galvanized steel frame which will allow height and tilt adjustment.
- 1.14.3 Chamber covers shall provide skid resistance greater than the minimum advisory limits.
- 1.14.4 Frames for chamber covers in footways shall be set in designation (i) cement mortar or a proprietary quick setting mortar of equivalent strength. The use of any quick setting mortar shall be subject to the approval of the Overseeing Organisation prior to use. Frames for chamber covers in the carriageway shall be set in epoxy mortar. All new, adjusted and replaced chamber frames and covers shall be set flush with the surrounding surface in hard landscaped, footway and carriageway areas. In soft verge chamber cover level shall be 25 mm above finished level. The finished thickness of the mortar bed to the frame shall be between 10 and 25 mm. Any additional adjustments beyond this shall be achieved by modifying the chamber structure or by using a frame of a suitable depth in accordance with Clause 507.18 of the Specification.
- 1.14.5 Horizontal and vertical alignment of the ducts shall be such that cables may be pulled directly through the chambers.
- 1.14.6 Ends of ducts shall protrude 25 mm through the inside of the chamber wall.
- 1.14.7 Chamber covers shall be clearly identified by the legend of the Overseeing Organisation such as “GCC-TS” or “SLC-TS” as appropriate. The lettering shall be 25 mm high and shall be embossed on each cover.

1.15 Trench Reinstatements

- 1.15.1 Reinstatements shall be made in accordance with the requirements of this document, Clause 706 of the Specification and those prescribed in the Highway Authorities and Utilities Committee (HAUC) “Specification for the Reinstatement of Openings in Highways” (ISBN 0 11 551143 1). Should there be any conflict then the requirements of this document shall take precedence.
- 1.15.2 The reinstatement method shall be an “All Permanent Reinstatement”. The sub-base, base course and wearing course, or equivalent, shall be reinstated to a permanent standard at the first visit. In all cases the final surface of the reinstatement shall comply with the requirements given in Section S6.4.

1.16 Cables and Routes

- 1.16.1 All traffic signal and paired feeder cables shall conform to BS6346/87.
- 1.16.2 All traffic signal cables for LV and ELV will be orange PVC/SWA multi-core 1.5mm CSA cable.
- 1.16.3 All traffic signal paired feeder cable will be orange PVC/SWA 1.5mm CSA one or two pair cable.

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- 1.16.4 Multi-core and paired feeder Cables should be armoured and the outer sheath colour Orange PVC in accordance with NJUG Volume 1.
- 1.16.5 Cable routes and core allocations for traffic signals and associated equipment to be carried out by the Contractor.
- 1.16.6 Cables shall not be jointed throughout their length from origin to destination.
- 1.16.7 Approximately one metre of spare length for each cable run shall be coiled at the main duct chamber adjacent to the controller, in addition in intermediate chambers addition spare shall be provided where capacity permits.
- 1.16.8 Cable cores/pairs shall be neatly routed within the cabinet and its connection frame and tie-wrapped in looms, with due regard to accessibility of maintainable items.
- 1.16.9 All Spare cores including ELV should not be connected to Earth until Earth Impedance Tests have been completed.
- 1.16.10 All cables shall be run in ducts.
- 1.16.11 Traffic Signal Cable must be separately ducted from Utility, Communication and other Services Cable.
- 1.16.12 Mains cable between the controller and ETP will be black in colour in accordance with NJUG Volume 1 and comprise 3 cores 6mm sq csa SWA cable
- 1.16.13 The mains cable must be installed through ducting running directly from the ETP to the controller and not via the controller access chamber.
- 1.16.14 Cabling between poles will not be acceptable unless prior agreement has been received from the Overseeing Organisation.
- 1.17 **Electrical Termination Pillar (ETP)**
 - 1.17.1 The ETP shall house a double poled lockable fused isolator, fused appropriately which must comply with the latest edition of the IEE wiring regulations.
 - 1.17.2 The base of the ETP shall be sealed with a layer of epoxy resin 6 mm thick which is to be laid on top of a sand base to prevent ingress of gas and moisture into the ETP.
 - 1.17.3 The Contractor shall obtain approval of the proposed type of ETP from the Overseeing Organisation.
- 1.18 **Detection**
 - 1.18.1 All slot cutting shall be designed and equipment installed to meet the latest version of MCH1540 - Specification for the Installation of Detector Loops on Motorways and All Purpose Trunk Roads, MCE0108 – Siting of Inductive Loops for Vehicle Detecting Equipment at Permanent Road Traffic Signals and TR 2512 – Performance Specification for Below Ground Detection Equipment.
 - 1.18.2 MOVA Loops shall be designed and installed to meet the latest Version of MCH1542 – Installation of MOVA.
 - 1.18.3 All loop tails shall be labeled in the nearest loop box to identify the loop identity which must relate the site specific approved drawings. The labels must be marked with a permanent marker.
 - 1.18.4 All loop feeder cable joints to be re-usable to IP68 Cat 1.
 - 1.18.5 All above ground detector units must be installed, configured and aligned in accordance with the manufactures instructions.

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- 1.18.6 Above ground traffic detection will comply with the latest version of TR2505 – Performance Specification for Above Ground Vehicle Detector Systems for use at Permanent Traffic Signal Installations.
- 1.18.7 Kerbside Detectors will comply with the latest version of TR2507 – Performance Specification for Kerbside Detection Systems for Use with Nearside Signals and Demand Units.
- 1.18.8 On-Crossing Detectors will comply with the latest version of TR2506 - Performance Specification for Above Ground On-Crossing Pedestrian Detection System.
- 1.19 **Factory Acceptance Testing (FAT)**
- 1.19.1 The Company will be responsible for the factory acceptance testing of the controller(s) with a representative of the Traffic Signal Contractor, the Contracting Authority and the Overseeing Organisation.
- 1.19.2 The Company will give two weeks notice prior to the FAT to all attendees.
- 1.19.3 The Company shall provide a testing schedule for approval of the Contracting Authority and Overseeing Organisation which shall cover all of the required testing to be undertaken during the FAT. This schedule will be generic and shall cover all modes of operation with a site specific schedule being developed if required.
- 1.20 **Electrical testing**
- 1.20.1 The Contracting Authority / Overseeing Organisation shall be given a minimum of seven days notice before commencement of all electrical tests preceding final site commissioning. These tests shall be witnessed by the Contracting Authority / Overseeing Organisation at their discretion.
- 1.20.2 Electrical Testing is to be carried out by a Traffic Signal Contractor Engineer.
- 1.20.3 Earth Test Certificate to be provided before the Installation is Commissioned Electrical Testing to conform to BS7671 Requirements for electrical installations. IEE Wiring Regulations. Seventeenth edition.
- 1.20.4 The test certificate shall be handed to the Contracting Authority / Overseeing Organisation prior to the commencement of the final site acceptance.
- 1.20.5 Electrical Completion Certificate and Test Results are to be provided before the Installation is Commissioned – BS7671 Regulation 741-01-01. This record shall be handed to the Contracting Authority / Overseeing Organisation at the commencement of the final site acceptance.
- 1.20.6 The Company shall only arrange the final commissioning/acceptance of the site when the installation is complete.
- 1.20.7 The Company shall be responsible for all aspects of achieving a working installation operating to the satisfaction of the Contracting Authority / Overseeing Organisation.
- 1.21 **Completion of the Installation**
- 1.21.1 The Company shall supply 2 copies all the Documentation including a copy for site prior to the Switch On to confirm that the Traffic Signal Site meets all statutory requirements.
- Controller Test Schedule
 - Controller Specification
 - MOVA dataset
 - MOVA Specification
 - Statutory Approvals and copies of letter of acceptance

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- Loop Test Schedule
- Earth Test Certificate
- Electrical Completion Certificate and Test Results (To be provided before the Installation is Commissioned – BS7671 Regulation 741-01-01)
- As Installed Site Layout Diagram
- As built Cable layout / Schedules inclusive of Electrical Isolation cabinets.

1.21.2 Prior to final acceptance of the installation;

- (a) Where redundant traffic signal equipment still remains it must be removed and any old ducts abandoned. Any redundant duct runs must be blocked off at the duct end with expanding foam or similar to the approval of the Overseeing Organisation.
- (b) All redundant equipments shall be recycled or disposed of as per the Environmental Management Plan.

1.22 Final Commissioning and Acceptance

- 1.22.1 The Company shall be responsible for organising the site acceptance testing of Controller(s) and the associated installation with a representative of the Traffic Signal Contractor, the Contracting Authority and the Overseeing Organisation.
- 1.22.2 The Company shall give the Contracting Authority / Overseeing Organisation two weeks notice of switch on of any new traffic signal installation so that the Contracting Authority / Overseeing Organisation can complete its signal inspections and inform the Police and local representatives.
- 1.22.3 The Company shall liaise with the Contracting Authority / Overseeing Organisation with respect to agreeing the methodology for bringing the site into operation.
- 1.22.4 A Completion Certificate shall be furnished by the Company duly made out and briefly describing the completed Works. There will be sufficient space for the Contracting Authority / Overseeing Organisation comments and endorsements. A copy will be available to the Contracting Authority / Overseeing Organisation for their records immediately following completion.
- 1.22.5 Any minor defects and/or omission, which do not prevent the Installation from functioning in a safe and efficient manner, shall be recorded on the Completion Certificate.
- 1.22.6 The Company shall ensure a Traffic Signal Engineer will be in attendance during switch on and final commissioning. The Traffic Signal Engineer will assist the Traffic Signal Installation team if any problems arise during switch-on.
- 1.22.7 The Company will provide a specialist MOVA Engineer to validate and commission the MOVA operation to the satisfaction of the Contracting Authority / Overseeing Organisation.
- 1.22.8 The Company shall give the Contracting Authority and Overseeing Organisation two weeks notice of switch on of any new traffic signal installation so that the Contracting Authority / Overseeing Organisation can complete its signal inspections and inform the relevant organisations such as Police and local representatives.

2 Temporary Traffic Signals

- 2.1 The Company shall note the requirements of Appendix 1/17.

Appendix 12/5: Traffic Signs – Traffic Signals

- 2.2 The use of Portable traffic signals used to control traffic shall comply with Department of Transport Specifications TR2502B Performance Specification for Portable Traffic Signal Control Equipment for Use at Road Works and TR 2405A Performance Specification for Vehicle Detection Equipment for Vehicle Actuated Portable Traffic Signals. In addition TR 2503B Performance Specification for Pedestrian Facilities at Temporary Stand Alone Traffic Signals shall comply where there is a requirement for pedestrians, the latest version of The Traffic Signs Regulations and General Directions, TAL 2/11 Portable Traffic Signals for the Control of Vehicular Traffic and TAL3/11 Signal Controlled Pedestrian Facilities at Portable Traffic Signals and Chapter 8 of the Traffic Signs Manual. Haul route crossings shall be in accordance with Chapter 8 of the Traffic Signs Manual.
- 2.3 The Company shall obtain the prior written consent of the Contracting Authority for multiphase temporary traffic signals.
- 2.4 The Company shall provide to the Contracting Authority a drawing to a scale of 1:500 with the position of the signals indicated by a dot and an arrow from the dot indicating the direction of the lights and a key to symbols used shall be shown. The position of signals shall be accurate to within 2 metres. The proposed stage arrangement, signal timings inclusive of all red periods together with location of the generator shall also be provided.
- 2.5 The Company shall consult and comply with the requirements of the emergency services (Fire, Ambulance and Police). Passenger transport operators shall also be informed if the O&M Works affect any of their routes.
- 3 Controlled and Uncontrolled Crossings**
- 3.1 Replacement of surfaces of controlled and uncontrolled crossings shall match that already existing unless otherwise the subject of a traffic regulation order.
- 4 General Safety**
- 4.1 Live cables may be present in the ducting system and at the pole tops and due care must therefore be taken at all times.
- 4.2 On new installations all primary, secondary signal heads shall be covered with an orange cover, approved by the Overseeing Organisation until the site is brought into service, to prevent any misunderstanding to the motorist.
- 4.3 On all new installations all Pedestrians push button panels or nearside demand units are to be covered with "Pedestrian Crossing Not In Use" sign approved by the Overseeing Organisation, until the site is brought into service.
- 4.4 Particular care to protect the work force and the general public shall be taken where duct chamber lids are removed and/or cables are being installed.
- 4.5 The attention of the Company is brought to the potential danger of gas build-up within duct and chamber systems.
- 4.6 Appropriate equipment and tools, including those recommended by the equipment manufacturer(s), shall be used.
- 4.7 Special care shall be taken to ensure the electrical integrity of any temporary works.
- 5 Controlled Crossings**
- 5.1 As per section 1 above.

Appendix 12/5: Traffic Signs – Traffic Signals**6 Traffic Signal Assessments and Design****6.1 Traffic Signal Modelling**

6.1.1 The Company shall develop Linsig models utilising the latest version of software for the operation and performance all of the proposed traffic signal junctions and signalised roundabouts to assess the Practical Reserve Capacity and queues / delay for individual links. The models shall be based on the specimen design layout drawings.

6.1.2 Linsig models shall include AM, PM and an interpeak periods, the results for each periods are to be issued to the Contracting Authority for approval prior to undertaking Paramics modelling in relation to Appendix F - Procedure for Demonstrating Compliance with the Junction Requirements and Junction Performance Indicators requirements & Appendix G – Contract Junction Compliance Traffic Models and Associated Instructions and Analysis Spreadsheet.

6.2 Traffic Signal Design

6.2.1 All Traffic Signal Designs shall be in compliance with the Scottish Government guidelines, Scotland Transport Cycling by Design 2010, The Design Manual for Roads and Bridges, Transport Scotland Disability Discrimination Act Good Practice Guide for Roads 2009, various National Standards and Advise. It is to be noted that some of standards and advise listed below have within them reference to superseded documents. It is the designer's responsibility to verify and ensure that they are designing to the most current standards.

6.2.2 In addition works shall be carried out in accordance with TA 84/06 Volume 8, Section 1, Part 2 Code of Practice for Traffic Control and Information Systems for All-Purpose Roads and following relevant publications and legislation shall include, but not be limited to the following:

- Construction (Design and Management) Regulations – 2007
- The Traffic Signs (Amendment) (No 2) Regulations and General Directions 2011
- The Zebra, Pelican and Puffin Pedestrian Crossing Regulations and General Directions 1997.
- Design Manual for Roads and Bridges (DMRB)
- Department for Transport (DfT) Specifications (TD),
- Traffic Advisory Leaflets (TAL)
- Local Transport Notes (LTN)
- Puffin Good Practice Guide

6.2.3 The Company shall liaise with the Overseeing Organisations to establish whether or not local design criteria are relevant to the design process. The Company shall if applicable document local requirements and include them within the design for approval.

6.2.4 All designs must have a stage 1, 2, 3 and 4 Road Safety Audit (stages 1 and 2 can be combined for smaller installations). No works may commence until all items raised by the stage 2 safety audit have been addressed or a viable exception approved.

6.2.5 The Company shall provide the Contracting Authority and Overseeing Organisation with traffic signal detailed design drawings, standard details, controller TR2500 forms and MOVA Datasets for all proposed installations.

Appendix 12/5: Traffic Signs – Traffic Signals

6.2.6 Drawings shall be provided as follows inclusive of Key and Notes:

- (i) General Arrangement – to include but not limited to
 - Scale 1:500
 - Stage Arrangement
 - Road Markings
 - Cable Diagram to include Controller, Auxiliary cabinets, link cables for MOVA linking and RS232 communication cables as applicable and detection.
 - MOVA Loop Dimensions Schedule
 - Passive Pole Rating Schedule
 - Pole Numbers
 - Loop References
 - Chamber References
 - Cabinet References
 - Tactile paving
 - Advanced Cycle Stop Lines, if applicable.
 - Detection
 - Traffic Signal Controller and Auxiliary Cabinets
 - Traffic Signal Poles
 - Retention Sockets
- (ii) Traffic Signal Layout – to include but not limited to
 - Scale 1:200
 - Stage Arrangement
 - Road Markings
 - Cable Diagram to include Controller, Auxiliary cabinets, link cables for MOVA linking and RS232 communication cables as applicable and detection
 - Traffic Signal Equipment
 - Passive Pole Rating Schedule.
- (iii) Traffic Signal Ducting, Chambers and Detection Loops - to include but not limited to
 - Scale 1:200
 - All Chambers including Reference
 - Carriageway Loop Boxes including Reference
 - Ducting
 - Retention Sockets
 - Road Markings

Appendix 12/5: Traffic Signs – Traffic Signals

- Loops including Reference
 - Controller
- (iv) Road Markings
- Scale 1:500
 - Road Markings
 - Permanent Traffic Signs required as part of the Traffic Signal Installation
 - Temporary Traffic Signs require as part of the Traffic Signal Installation
- 6.2.7 In addition to the above, Company must provide details on special road surfacing, such as high friction road surfacing, proposed on approaches to stoplines and within controlled crossing areas.
- 6.2.8 All of the above drawings and documents shall be issued to the Contracting Authority and Overseeing Organisation for approval. No works are to commence until FULL traffic signal approval has been obtained.
- 6.2.9 A safety case, including risk assessment/hazard checklists, must be submitted for each design/site. The safety case must include any departure from standards & specifications or use of non-prescribed traffic signs/ road markings and appropriate approvals must be in place for the same. It should also include any CDM, Environmental and DDA related departures and risks. This should be in addition to the independent Road Safety Audit, DDA audits and Independent Audit Review.

Appendix 13/70: Maintenance of High Mast and Other Lighting Incorporating Hoists, Winches and Ropes**1 MAINTENANCE SCHEDULE A**

Six Monthly Intervals

1.1 A.1 Winch

1.1.1 Remove any dirt or foreign matter that may have accumulated on top of winch or on wire ropes and thoroughly clean.

1.1.2 Check oil bath level (check each time winch shall be used).

(i) Examine condition of oil and change it if excessively thick or dirty. (Compare it with fresh oil). Before draining run lantern down and up to heat oil.

(ii) The oil bath level in single double drum winches shall be correct when it shall be at the oil level hole.

(iii) The screw plug shall be removed to determine this and then replaced.

(iv) Oil shall be as recommended in writing by the manufacturer.

1.1.3 All other bearing surfaces of winches have (self-lubricating) Oilite bushes or thrust washers.

(i) Additional lubrication may be added through the winch drum if required when the lantern shall be in the lowered position.

1.1.4 Check security of bolts at end of first year of operation.

1.1.5 Operate power drive through full length of travel of the lantern carriage and ensure that no undue wear shall be evident in the winch mechanism.

(i) The gear cover shall be removed to view the gear teeth.

1.1.6 Cover entire winch with the cover provided removing it only when about to operate winch.

1.2 A.2 Wire Rope

1.2.1 The very limited running use of the ropes coupled with high corrosion resistance shall ensure a long rope life.

(i) Check rope lay on winch and section of rope visible at mast door opening for frays kinks or corrosion.

(v) Check anchorage point of winch rope at compensating pulley (if fitted).

(vi) Check winch rope throughout length for frays kinks or corrosion.

(vii) Check rope anchorage points on winch drum and lantern carriage.

(viii) From the base of the mast observe ropes from lantern carriage in lowered position to mast head for any obvious defects.

1.3 A.3 Compensating Pulley (when fitted)

1.3.1 Check for damage wear or corrosion.

1.3.2 Lubricate if necessary.

N.B During the operation of hoisting lanterns the ropes within the mast have a tendency to twist a little resulting in the compensator turning about 1/2 to 2 turns this untwists on the reverse journey and no harm results.

Appendix 13/70: Maintenance of High Mast and Other Lighting Incorporating Hoists, Winches and Ropes

- 1.4 A.4 Luminaire Carriage
 - 1.4.1 Check guide rollers (where fitted) lubricate and adjust if necessary.
 - 1.4.2 Check interconnecting cables and junction boxes for damage.
 - 1.4.3 Check electricity supply cable anchorage and check physical damage to cable.
 - 1.4.4 Check and tighten if necessary all nuts and bolts.
 - 1.4.5 Clean outer surface of photo-electric cell (where fitted).
- 1.5 A.5 Luminaires
 - 1.5.1 Clean all luminaire bowls and reflectors.
 - 1.5.2 Remove lamps from holders and check contact for arcing.
 - 1.5.3 Check all electrical connections and tighten where necessary.

NB Avoid use of abrasive materials in cleaning.
- 1.6 A.6 General
 - 1.6.1 With luminaires returned to mast head check that all lamps light.
 - 1.6.2 Check that details of rope and cable rigging (now visible in mast base) and lantern carriage docking shall be all correct.
 - 1.6.3 Check foundation bolts tighten nuts where necessary.
- 2 **MAINTENANCE SCHEDULE B**
 - Two Yearly Intervals
 - Maintain as Schedule A with the following additions.
- 2.1 B.1
 - 2.1.1 Test load the wire ropes with the maintenance cradle before maintenance cradle to carry personnel.
 - 2.1.2 Lower lantern carriage uncouple and attach maintenance cradle. Load maintenance cradle with a test load equal to safe working load shown on the safe working load plate on the side of the cradle. Using power drive hoist to head of mast and return to ground level. (This operation may also be used to install the independent safety rope if appropriate.) Remove test load.
- 2.2 B.2
 - 2.2.1 Ascend in cradle check for damaged galvanising paint deterioration and rust over length of mast make good as necessary.
 - 2.2.2 Check head pulleys split pins and the like for wear and corrosion and tighten all nuts and bolts. Pulleys have Oilite bushes which shall not be expected to require attention.
- 2.3 B.3
 - 2.3.1 Wire ropes shall be withdrawn for inspection.

Appendix 28/1: Supplies and Salt Spreading Rate

1 TABLE 1 Salt Stockpiles in Company's Maintenance Compounds

1.1 Details that shall be provided by the Company

Location	Stock level at 1 st October	Minimum stock level prior to 1 st March

2 TABLE 2 Salt Spreading Rates

2.1 Details that shall be provided by the Company

Weather Conditions Road Surface	Air Temperature	Salt Spreading Rate (grams/square metre)

Appendix 28/2: Company's Vehicles and Plant

1 Table 1: Operational Spreading Vehicles

Location	Vehicle Type	Snowplough	Capacity	Number

2 Table 2: Reserve Spreading Vehicles

Location	Vehicle Type	Snowplough	Capacity	Number

3 Table 3: Tractor Loading Shovels

Location	Type and Capacity	Number

Appendix 28/2: Company's Vehicles and Plant

4 Table 4 Other Mechanical Snow Clearance Plant

Location	Type and Capacity	Number

Appendix 30/1: Landscaping: General

Action Number	Sub-Clause Reference	Specification Amendment
1	3001.2	<p>The Company shall give the Contracting Authority at least 48 hours notice of all items in sub-clause 3001.2 as well as for works in or adjacent to the following specific sites of nature conservation or archaeological interest.</p> <ul style="list-style-type: none"> (i) All water courses and otherwise; (ii) All Scheduled Ancient Monuments and other sites of archaeological interest including site identified during the archaeological watching brief; (iii) Sites of Special Scientific Interest; and (iv) Sites designated for their nature conservation interest.
2	3001.13	Pesticides records forms as detailed in Appendix 30/1, detailing information as required in sub-clause 3001.12, shall be submitted to the Overseeing Organisation on a monthly basis.
3	3001.14	The bird nesting period for this Agreement shall be from March 31st to July 31 st inclusive, unless otherwise agreed in writing with SNH.
4	3001.15	<p>Inspection reports on a form as detailed in this Appendix 30/1 shall be submitted to the Contracting Authority for the activities carried out under Clauses 3007, 3009 and 3010 at the following intervals:</p> <ul style="list-style-type: none"> (a) In the case of activities carried out under Clause 3007 and 3010 once per year. (b) In the case of activities carried out under Clause 3009 <ul style="list-style-type: none"> (i) Six times per year in the first year of the Establishment Period; (ii) Four times per year in the second year of the Establishment Period; (iii) Three times per year for the remainder of the Establishment Period.

Appendix 30/1: Landscaping: General

LANDSCAPE WORKS - INSPECTION REPORT	
Date of visit: .. / .. / .. (minimum one record / day)	
Name of Company/Contractor: no:	Company/Contractor's telephone
O&M Works carried out	Locations of O&M Works
Names of operatives on site:	
..... Company observations on damage by others, additional work required or general condition of the works:	
..... Observations of Contracting Authority on standard of workmanship, additional work required or general condition of the works:	
..... This maintenance visit has been satisfactorily completed. SIGNED (for Company) NAME: DATE: .. / .. / .. SIGNED (for Contracting Authority) NAME:..... DATE: .. / .. / ..	

Appendix 30/2: Weed Control

Action Number	Sub-Clause	Specification Amendment
1	3002.1	<p>Weed control for all injurious weed species, including those listed in sub-Clause 3002.1 with the addition of Oil Seed Rape, Rosebay Willowherb and Marestail, shall be carried out throughout the O&M Works at sufficient frequency to restrict their growth and prevent their spread until the end of the Services Period.</p> <p>In locations where effective weed control shall be possible and practicable by other means allowed within this Agreement there shall be a presumption against the use of chemical herbicides.</p>
2	3002.3	<p>Total weed control shall apply to the following locations:</p> <ul style="list-style-type: none"> (i) Bases of road restraint systems; (ii) Around structures, columns, posts and signs; (iii) All paved areas, kerbs, hardstandings, filter drains and gravel areas (including but not limited to gravelled central reservations); and (iv) Otherwise. <p>The Company shall apply herbicides at sufficient frequency to eliminate weed growth throughout the until the end of the Services Period.</p>
3	3002.4	<p>Total weed control by non-residual herbicide shall apply to the following locations:</p> <ul style="list-style-type: none"> (i) All areas to be seeded and all planting beds prior to seeding or planting so as to be in a weed free condition; (ii) All stockpiles of topsoil which shall be maintained in a weed free condition; (iii) All planted beds; and (iv) Otherwise.
4	3002.5	<p>A translocated herbicide approved by the Scottish Environment Protection Agency or their successors for use in or near water shall be used for weed control in all open ditches, lagoons, watercourses and filter drains. Control shall be at sufficient frequency to eliminate weed growth throughout until the end of the Services Period.</p>
5	3002.6	<p>Selective weed control using translocated herbicide shall be applied in all non-hardened verges, central reserves, planted areas and other grassed areas as and when necessary to restrict growth and prevent the spread of broadleaf weed species.</p>

Appendix 30/2: Weed Control

LANDSCAPE WORKS - PESTICIDES RECORD		
Date of visit: .. / .. / .. (minimum one record / day)		
Contract Name:		
Name of Company:		Company's telephone no:
O&M Works carried out	Pesticide used	Locations of O&M Works
Total weed control		
Weed control in any waterbody		
Selective herbicide to areas of grass		
Herbicide to cultivated plant beds		
Total herbicide around individual plants in grass		
Other (state purpose)		
Names of operatives on site: Qualifications of operatives named:		
Supervisor		
Storeman		
Application by		
Signed (for Company)		
Company's observations on damage by others or any incidents: 		

Appendix 30/2: Weed Control

Action Number.	Sub-Clause	Specification Amendment
6	3002.7	<p>Where weed control shall be by spot application translocated herbicide shall be applied as necessary to control weed species listed in Sub Clause 3002.1, and in any case no less than twice a year during periods of active growth until the end of the Services Period at the following locations:</p> <ul style="list-style-type: none"> (i) For control of injurious weeds in grass and wildflower areas; (ii) All woodland and planted areas; (iii) All hedgerow planting areas; and (iv) Otherwise. <p>Spot treatment shall typically be via controlled droplet application of a type appropriate to the herbicide, the species being treated and the location.</p>
7	3002.8	<p>Weed control by hand weeding shall be carried out as necessary, and in any case no less than twice a year until the end of the Services Period at the following locations:</p> <ul style="list-style-type: none"> (i) All woodland and other planting areas where spot application may cause damage; (ii) Hedgerow planting where spot application may cause damage; (iii) Wildflower areas and areas densely populated with desirable broadleaf species where spot application may cause damage; (iv) Within plant protectors and tree/shrub shelters; (v) Around planting stations in existing woodland; and (vi) Otherwise.
8	3002.9	<p>Weed control by cutting shall be carried out as necessary in areas where the extent of growth or type of weed is not effectively controlled by herbicide application or hand weeding.</p>
9	3002.10	<p>The Company shall remove all arisings in accordance with sub-clause 3002.10 from weed control operations that involve hand weeding and cutting.</p>

Part 5: Specification

Appendix 30/3: Control of Rabbits and Deer

Action Number	Sub-Clause	Specification Amendment
1	3003.1	The Company shall carry out rabbit, hare and deer control in all planting and seeding areas as necessary to ensure successful establishment until the end of the Services Period. The Company shall only cut areas of brambles and herbage that shall interfere with the control of rabbits and deer. The arisings shall be used to form habitat piles in locations where they are no likely to become visual intrusive or interfere with access or maintenance. No clearance of brambles or herbage shall be undertaken during the bird nesting season.
2	3003.8	The Company shall ensure effective rabbit control for the duration of the until the end of the Services Period and shall be responsible for contacting adjacent landowners regarding their obligation to control infestations on their own land.
3	3003.9	The Contracting Authority shall request an inspection of the site with a representative of the Company at monthly intervals to ensure effective control has been achieved.
4	3003.12	The Company shall keep planting enclosures free of rabbits, rabbit burrows including exit/entry holes and deer until such time that planting has become fully established and is of sufficient size and maturity so as to be no longer vulnerable to significant damage but not earlier than the end of the Establishment Period.
5	3003.14	The Company shall replace damaged plants annually (towards the end of the planting season); and maintain them until the end of the Services Period. All Works to be undertaken in accordance with the Specification and O&M Works Requirements.

Part 5: Specification

Appendix 30/5: Grass Seeding, Wildflower Seeding and Turfing**Appendix 30/4: Ground Preparation**

Action Number	Sub-Clause	Specification Amendment
1	3004.1	Within areas of proposed planting or seeding, all existing grass and herbaceous vegetation shall be cut, in accordance with sub-clause 3004.1.
2	3004.2	All areas which shall be planted shall be treated with translocated herbicide between 21 and 25 days prior to planting in accordance with sub-clause 3002.4, with the exception of areas to be planted in existing woodland, rock cuttings, areas to be planted in inverted turfs and within areas of undisturbed ground.
3	3004.5	Subsoil in planting areas, excluding areas which shall planted in inverted turfs within areas of undisturbed ground, shall be ripped to a minimum depth of 450 millimetres prior to spreading of topsoil. Areas in existing arable or pasture land which shall planted shall be ripped to a minimum depth of 600 millimetre to ensure the breaking up of any subsoil compaction.
4	3004.6	Spacing between the tine furrows shall be in accordance with sub-clause 3004.6.
5	3004.7	The requirements of sub-clauses 3004.8 - 3004.11 shall apply to all subsoil to be seeded or topsoil spread under the Agreement except where otherwise stated in Appendix 30/4.
6	3004.8	All undesirable material brought to the surface including but not limited to stones, roots, tufts of grass and foreign matter larger than the sizes specified below shall be removed off Site unless otherwise agreed with the Contracting Authority. The size of the stones / debris which shall be removed relates to the proposed vegetation cover, the maximum stone / debris size permitted for each, is as follows : (i) Grass verges and visibility splays: 25 millimetre protruding stone after topsoil has been firmed / rolled; (ii) All other grassland and wildflower grassland: 75 millimetre; (iii) Planted areas except amenity / ornamental shrub planting: 100 millimetre; and (iv) Amenity / ornamental shrub planting: 75 millimetre. The above stone removal shall apply to the full depth of topsoil required for the proposed vegetation cover. The overall stone content by percentage volume shall not be greater than that of the adjacent soils. Stones brought to the surface during final preparation of soils shall be retained on site and used to form habitat piles in locations that are not visually intrusive and shall not interfere with access or the maintenance of the O&M Works Site. All non-organic foreign matter shall be removed off site.

Part 5: Specification

Appendix 30/5: Grass Seeding, Wildflower Seeding and Turfing

Action Number	Sub-Clause	Specification Amendment
1	3005.1	Grass seed shall be sown as per sub-clause 3005.1. Wildflower seed shall be sown in early spring or autumn at the same time as grass unless otherwise recommended by the supplier.
2	3005.2	All areas to be seeded or turfed shall be cultivated as per sub-clause 3005.2, with the exception of rock faces. A 250 millimetre radius shall be left clear of seeding around each new tree and shrub.
3	3005.3	All areas to be seeded with grass shall have fertiliser and or other soil ameliorants incorporated into the upper 50 millimetre of soil at a rate(s) considered necessary for successful establishment. The rate of application and composition of fertilizer and other ameliorants shall be based upon the topsoil test results.
4	3005.4	<p>Grass seed mixes shall be as follows;</p> <ul style="list-style-type: none"> (i) A general purpose grass seed mix shall be used in road verges, embankments and cuttings not planted or where other grassland is required. The seed mix(es) shall provide a rapidly establishing sward to provide an appearance and habitat which reflects adjacent and surrounding grassland communities. The mix(es) shall reflect the diversity of grassland communities along the route as described in the Environmental Assessment Documents; (ii) Wildflower grassland shall be flora and grassland of very low fertility created to enhance the amenity and nature conservation value of the road corridor. The proposed mix(es) shall match the adjacent and surrounding grassland communities of greatest nature conservation value. Short growing grasslands of low fertility in which the growth of wild flowers shall be encouraged. For wildflower grassland mixes the ratio of grass seed to wildflowers shall be 80%:20% respectively. No single species of wildflower shall be less than 10% by number of the wildflower component with the exception of Oxeye Daisy (<i>Leucanthemum vulgare</i>) which, if specified, shall be limited to not more than 3% of the wildflower component.; (iii) Productive grassland shall be sown where grassland is to be returned to agricultural use for pasture. The Company shall consult with relevant landowners with regard to species mixes and sowing density on land to be returned to pasture; (iv) Areas to be returned to arable use shall be seeded with nitrogen fixing species. The Company shall consult with relevant landowners with regard to species mixes and sowing density on land to be returned to arable use; (v) All new woodland and native scrub planting areas shall be seeded with a low-maintenance grass mix capable of suppressing weed growth in planting areas until a full canopy of trees and shrubs has developed.

Appendix 30/5: Grass Seeding, Wildflower Seeding and Turfing

		Consideration shall be given to use of grass and wildflower species which are unpalatable to deer where there is a risk that deer will be attracted to areas close to the scheme roads.
5	Inserted Clause	All seed shall be delivered to the Site in bags sealed by the supplier. A label shall be attached to each bag giving details of species and percentage breakdown. The same details shall be enclosed within each bag. Each bag shall be numbered uniquely and relate to the label and documents within the bag. The documents shall be submitted to the Overseeing Organisation prior to sowing.
6	3005.7	<p>Wildflower mixes shall be of UK native origin selected and procured in accordance with Appendix 1 of 'Cost Effective Landscape: Learning from Nature'</p> <p>The Company shall complete and submit to the Contracting Authority a wildflower seed Provenance Certificate in accordance with the Certification Procedure.</p> <p>Wildflower seed mixes shall contain only species occurring in the National Vegetation Classification category appropriate to the location.</p> <p>Local provenance seed shall be supplied by either harvesting from the approved sites or from nursery propagation to the approval of Scottish Natural Heritage. If nursery propagated seed shall be used the Company shall allow sufficient time in their programme to ensure that the seed is available when required for sowing.</p> <p>All wildflower seed shall be tested by an independent organisation such as the Scottish Agricultural Science Agency (SASA) to verify purity of seed (percentage of seed / inert material), species composition, and percentage germination. The test certificates shall be made available to the Overseeing Organisation for consent prior to sowing.</p> <p>The wildflower seed mixes shall contain a minimum percentage of:</p> <ul style="list-style-type: none"> i) 95% pure seed, not inert material (% by weight); and ii) a percentage of flora rather than grass seed species which matches the percentage of flora species in the surrounding plant communities of greatest nature conservation value. <p>Seeds within the wildflower seed mixes shall have a minimum germination rate of 80%.</p>
7	3005.8	<p>Sowing of seed shall be carried out at the rate specified below: The sowing of seed shall be carried out as soon as practicable in order to benefit soils stabilisation.</p> <p>Grass seed shall be sown at a rate of not less than 20g/m² for verges and side slopes of cuttings and embankments and 15g/m² elsewhere.</p> <p>Wildflower grassland areas shall be sown at a rate of not less than 5g/m²</p>
8	3005.14	Any turf imported shall comply with sub-clause 3005.14 and shall contain a grass and/or herb mixture which reflects adjacent and surrounding grassland communities.

Part 5: Specification

Appendix 30/5: Grass Seeding, Wildflower Seeding and Turfing

9	3005.25	Turf shall be secured using either galvanised wire pins or softwood pegs as per sub-clause 3005.25.
10	3005.26	Newly laid turf laid shall be watered as per sub-clause 3005.26.
13	3005.29	A minimum of two establishment cuts shall be undertaken; with further cuts undertaken as necessary to achieve a coverage as stated in sub-clause 3005.11 and one cut subsequent to the required sward coverage being achieved.
14	3005.30	All areas shall be left clear of grass clippings following each mowing by raking or other suitable method except where grass height is less than 200mm at the time of cutting in which case grass cuttings may be left in situ.

Appendix 30/6: Planting

Action Number	Sub-Clause	Specification Amendment
1	3006.3	Plant stock and sizes shall be as Tables 30/6.1, 30/6.2, 30/6.3 and 30/6.4. Species, varieties and plant spacings shall be in accordance with the O&M Works Requirements.

Table 30/6.1 Extra Heavy Standard and Heavy Standard Rootballed Trees

Type	Girth at 1 metre Above Ground Level (centimetres)	Clear Stems from Ground Level (metres)	Minimum Height from Ground Level (metres)	Maximum Height from Ground Level (metres)
Extra heavy standard	14-20	1.8	4.25	6.0
Heavy standard	12-14	1.8	3.5	4.25
Large rootballed specimens	-	-	1.5	1.75

Table 30/6.2 Feathered Trees, Transplants, Container Grown and Cell Grown Stock

Type	Minimum Age	Minimum Height Above Ground Level	Minimum Container Size
Transplants whips (broadleaves only)	2+1 years	450 millimetres	-
Transplant in tree shelters (broadleaves only)	1+1 years	400 millimetres	-
Container grown evergreens	2+1 years	300 millimetres	2 litres
Feathered Trees	as B.S.	1.5-2.5 metres	-

Table 30/6.3: Cell Grown Stock

Type	Approximate Height (cm)	Minimum Cell Volume (ml)	Minimum Root Collar Diameter (millimetres)
Conifers	20-40	150	5
	20-40	350	8
Broadleaves	40-60	150	6
	40-75	350	8
Holly	20-40	150	7
Shrubs	20-40	150	5

At least 25% of plants shall be supplied in the larger size range. Plants in 35ml cells shall not be more than 3 years old. All other plants shall not be more than 2 years old.

Appendix 30/6: Planting

Table 30/6.4 Shrubs, Conifers, Hedge Plants, Climbers and Ground Cover Plants

Type	Minimum Age	Column A Acceptable Height	Column B Minimum Height for Small/Slow Growing Plants not Readily Available to Sizes Shown in Column A
Bare root/Hedge plants	2+1 years	400-600 millimetres	-
Transplants in shrub shelters	1+1years	400-600 millimetres	-
Container grown shrubs and conifers	2+1 years	450-600 millimetres	300-450 millimetres
Container grown climbers	3 years	600-900 millimetres	400-600 millimetres
Ground cover plants	3 years	300-450 millimetres	150-200 millimetres
Rooted Cuttings	2years	400-600 millimetres	

Action Number	Sub-Clause	Specification Amendment
2	3006.6	The Company shall provide written confirmation that United Kingdom native plant species have been sourced from the highest available preference for selecting plant material contained within Appendix 1 of 'Cost Effective Landscape: Learning from Nature' prior to commencement of planting Works. The Company shall submit Provenance Certificates in accordance with the Certification Procedure accompanied by certification from the supplying nurseries in respect of the provenance of plant material in accordance with the Certification Procedure. Where there is a choice of form or size of plant material, the most local provenance shall be selected.
3	3006.12	Topsoil for backfilling of tree pits may be site won where it is of suitable quality for successful establishment of the newly planted trees. Imported topsoil shall be general purpose grade conforming to BS 3882.
4	3006.13	Where plants shall be pit planted compost shall be incorporated into the soil during pit preparation and backfilling. Where plants shall be notch planted compost and fertiliser at a rate based on the results of the soil tests shall be deposited over planting areas for incorporation into the soil during ground cultivation. Slow release fertilizer with a Nitrogen: Potassium: Phosphorus: Magnesium ratio of 14:8:13:2 shall be incorporated into the backfill of tree pits/planting areas as follows: (i) Standard trees: 20g (ii) Heavy Standard trees: 40g (iii) Extra Heavy Standard trees 100g; and (iv) Ornamental planting beds into the top 75mm of planting bed soil at a rate of 100g per square metre.

Appendix 30/6: Planting

Action Number	Sub-Clause	Specification Amendment
5	3006.14	Compost pH, conductivity and nutrient composition shall be decided in compliance with the Company's O&M Works Quality Plan and associated method statements based on the results of topsoil tests.
6	3006.15	Slow release fertiliser shall be incorporated into backfill, into the top 75 millimetres of planting bed soil, in accordance with sub-clause 3006.15 and at a rate based on the results of the soil tests.
7	3006.16	Root dips shall be applied to all bare root plants and anti-desiccant sprays shall be applied to all conifers at the following times: <ul style="list-style-type: none"> i) At the time of lifting from the nursery ii) On arrival at site iii) Immediately prior to planting
8	3006.17	All bare rooted, rootballed and cell grown stock shall be planted whilst the plants are dormant between the beginning of November and the end of March. All evergreen species shall be planted in either March or November.
9	3006.23	Bare root whips, transplants and cell grown plants may be notch planted into areas of cultivated or existing topsoil of minimum 300 millimetres depth in accordance with methods (i) and (ii) of sub-clause 3006.23 or the inverted turf method in areas of proposed planting in undisturbed ground.
10	3006.24	Pits for whips, transplants and shrubs shall be dug in accordance with sub-clause 3006.24 in locations where topsoil depths are less than 300 millimetres. All container grown plants shall be pit planted. Trenches for hedges shall be dug in locations where there is less than 300 millimetres depth of topsoil. Arisings from planting pits and trenches shall be retained on the O&M Works Site and deposited within proposed landscape earthworks.
11	3006.28	Hedge trenches excavated in accordance with Table 30/1 shall be backfilled with a mixture of 80% topsoil and 20% compost with slow release fertiliser added as required to make up for any nutrient deficiencies identified in the soil test results.
12	3006.29	All areas with spread or existing topsoil shall be cultivated in accordance with sub-clause 3006.29 prior to planting. Soil ameliorants and slow release fertiliser shall be incorporated to make up any nutrient deficiencies identified from the soil test results.
13	3006.30	A 600mm wide strip along all hedgelines except those that have been backfilled shall be cultivated in accordance with sub-clause 3006.30.
14	3006.33	The soil shall be watered to field capacity immediately after planting if there is a risk to plants of water stress or wilting.
17	3006.38	Root barriers shall be required where the clearances required for underground services and drainage infrastructure or the integrity of structures would otherwise be adversely affected by plant roots or where required by the Relevant Authorities.

Part 5: Specification

Appendix 30/6: Planting

Action Number	Sub-Clause	Specification Amendment
18	3006.41	The minimum length of tree stakes for heavy standard and extra heavy standard trees shall be 2 m and the minimum width 75 millimetres. Tree stake sizes for other tree forms shall be in accordance with sub-Clause 3006.41.
19	3006.42	Where planting on a slope stakes may be driven at an angle mid way between the slope and the vertical tree stem.
20	3006.43	Heavy and extra heavy standard trees shall be double staked with the vertical stakes unless planting on a slope where stakes may be driven at an angle mid way between the slope and the vertical tree stem.
21	3006.45	Semi-mature trees shall be planted as shown on Drawing Number K5 to Volume 3 of the MCHW in compliance with the Company's O&M Works Quality Plan and associated method statements and consented to by the Overseeing Organisation.
22	3006.49	All extra heavy standard, heavy standard and standard trees shall be watered to field capacity immediately following planting. All other tree and shrub plants shall be watered to field capacity immediately after planting if there is a risk to plants of water stress or wilting.
23	Addition al Clause	All container grown, cell grown and root balled plants shall be watered to field capacity immediately before planting.
24	3006.52	Plant protectors shall be provided for all two year old transplants, cell grown plants, shrubs and conifers. <ul style="list-style-type: none"> (i) Tree shelters shall be a minimum of 750 millimetres height and 80-120 millimetres diameter. Shrub shelters shall be a minimum of 750 millimetres height and 100-150 millimetres diameter. (ii) Where the species shall be Fagus, base ventilation shall be provided. (iii) Shelters shall be installed with timber stakes and adjustable ties according to the manufacturer's specification. (iv) Stakes shall be a minimum of 1500 millimetres in length.
25	3006.53	All planting shall be watered to field capacity, as required, prior to the application of mulch.
26	3006.54	Mulch shall be applied in compliance with the Company's O&M Works Quality Plan and associated method statements except where slopes shall exceed a gradient of 1 in 2 in accordance with sub-Clause 3006.55, (ii).

Appendix 30/6: Planting

Action Number	Sub-Clause	Specification Amendment												
27	3006.55	<p>Bulbs shall be planted at the following rates per square metre:</p> <table> <tr> <td>Bluebell</td> <td>150</td> </tr> <tr> <td>Crocus</td> <td>100</td> </tr> <tr> <td>Tulip</td> <td>50</td> </tr> <tr> <td>Narcissus (large)</td> <td>40</td> </tr> <tr> <td>Narcissus (medium)</td> <td>60</td> </tr> <tr> <td>Narcissus (small)</td> <td>100</td> </tr> </table> <p>Other species shall be planted at a suitable rate dependant on species in compliance with the Company's O&M Works Quality Plan and associated method statements.</p>	Bluebell	150	Crocus	100	Tulip	50	Narcissus (large)	40	Narcissus (medium)	60	Narcissus (small)	100
Bluebell	150													
Crocus	100													
Tulip	50													
Narcissus (large)	40													
Narcissus (medium)	60													
Narcissus (small)	100													
28	3006.67	Bulbs shall be planted with the base at the depth in accordance with good horticultural practice and in compliance with the Company's O&M Works Quality Plan and associated method statements.												
29	3006.73	Reeds, rushes, marginal and aquatic plants shall be planted around the margins of wet pond drainage features in accordance with the O&M Works Requirements the Company's O&M Works Quality Plan and associated method statements.												
30	3006.77	Excavated material from sub-clause 3006.77 operations shall be spread throughout the planting area.												
31	3006.87	The Company shall replace all plants found to be defective or vandalised annually until the end of the Services Period.												
32	3006.91	All replacement extra heavy standard, heavy standard, standard and rootballed evergreen stock shall be watered to field capacity following planting. All other tree and shrub plants shall be watered to field capacity immediately after planting if there is a risk to plants of water stress or wilting.												
33	3006.92	The Company shall carry out maintenance of new planting in accordance with clauses 3007 and 3009 until the end of the Services Period.												

Appendix 30/7: Grass, Bulbs and Wildflower Maintenance

Action Number	Sub-Clause	Specification Amendment
1	3007.1	All grass and wildflower areas within the boundary of the O&M Works Site shall be maintained in accordance with Clause 3007.
2	3007.5	No cutting shall be carried out within 250 millimetres of unprotected trees and shrubs.
3	3007.17	<p>Low frequency grass cutting shall be undertaken in accordance with sub-Clause 3007.17 in the following areas:</p> <p>(i) A 1.2 metre swathe width measured from the back edge of the carriageway or hard strip. The width of cut shall be increased accordingly where the remaining grass between the 1.2 metre area and any adjacent boundary (such as a wall, fence or planting bed) is less than 2 metres;</p> <p>(ii) Grassed areas within visibility splays;</p> <p>(iii) Where there are footpaths remote from the carriageway edge where grass between the road and footpath receives a low frequency cut, the outside edge of the footpath shall be subject to the same regime for a width of 1m.</p> <p>Additional selective cuts shall be undertaken as necessary to maintain visibility. The areas subject to additional selective cuts shall be extended beyond the minimum area required to maintain visibility in order that they appear naturalistic with smoothly curving edges, avoiding straight lines and abrupt angles.</p>
4	3007.18	All grass areas not cut at medium or low frequency shall be cut at a 'minimal frequency' in accordance with sub-Clauses 3007.18-21.
5	3007.20	Additional selective cuts shall be undertaken if required to maintain visibility of road signs. The areas subject to additional selective cuts shall be extended beyond the minimum area required to maintain visibility in order that they appear naturalistic with smoothly curving edges, avoiding straight lines and abrupt angles.
6	3007.22	All banks and ditches shall be cut in accordance with sub-clause 3007.22. All arisings shall be dispersed over the sward avoiding the blocking of drains and ditches.
7	3007.23	All grass cutting in planting areas shall be cut in accordance with sub-Clause 3007.23. The cutting shall include bramble but exclude naturally regenerated tree and shrub seedlings, the retention of which would be consistent with the overall management objectives for the planting area and in compliance with the Company's O&M Works Quality Plan and associated method statements.
8	3007.26 - 3007.27	All areas seeded with wildflower shall be cut according to the most appropriate regime detailed in sub-clause 3007.26 and according to sub-clause 3007.27. Regime to be in compliance with the Company's O&M Works Quality Plan and associated method statements to suit the wildflower mix.
9	3007.28	The ground shall be scarified only where necessary for wildflower colonisation in compliance with the Company's O&M Works Quality Plan and associated method statements.

Part 5: Specification

Appendix 30/7: Grass, Bulbs and Wildflower Maintenance

Action Number	Sub-Clause	Specification Amendment
10	3007.29	Spot herbicide treatment in accordance with sub-Clause 3007.29 shall be carried out at an appropriate frequency in all wildflower areas to eliminate undesirable broadleaf weed species. Areas of self-seeding broadleaf plants considered to be desirable for nature conservation shall be retained. These areas shall be identified by the Company to the Overseeing Organisation.
11	3007.30	Areas of wildflower seeding that cannot be effectively controlled by chemical means without risk to of damage to wildflowers shall be hand weeded to eliminate undesirable broadleaf weed species.
12	Addition al Clause	All damaged or failed sward shall be reinstated with seed to match the surrounding area.

Appendix 30/10: Maintenance of Established Trees and Shrubs**Appendix 30/8: Watering**

Action Number	Sub-Clause	Specification Amendment
1	3008.6	The Company shall water all planting for the Establishment Period at a frequency necessary to ensure establishment and survival.
2	3008.7	Additional watering in accordance with sub-Clause 3008.7 may be required for all planting and seeding in periods of abnormally dry conditions.

Part 5: Specification

Appendix 30/10: Maintenance of Established Trees and Shrubs**Appendix 30/9: Establishment Maintenance for Planting**

Action Number	Sub-Clause	Specification Amendment
1	3009.1	All planting and planting areas shall be maintained for the Establishment Period in accordance with sub-clauses 3009.2 to 3009.25.
2	3009.4	Tree stakes, tubes, guards and ties that are no longer required shall be offered to the Contracting Authority for re-use. Where the Contracting Authority declines the offer the Company shall dispose of them to a licensed disposal facility.
3	3009.9	Delete sub-Clause 9 and insert: Plant circles shall be defined as the area within 250 millimetres radius of an individual tree or shrub, within which weed control operations shall be carried out.
3	3009.10	Translocated herbicide shall be applied at a frequency as necessary to keep plant circles in all woodland and scrub planting areas weed free, whilst protecting trees and shrubs from the herbicide. Hand weeding shall be undertaken to remove weeds from within tree and shrub shelters and guards.
4	3009.11	Where alternative means of weed control prove ineffective residual herbicide shall be applied at a frequency as necessary to keep plant circles in all woodland and scrub planting areas weed free in accordance with sub-Clause 3009.11.
5	3009.12	Mulch shall be maintained in accordance with sub-clause 3009.12 in amenity / ornamental shrub planting areas.
6	3009.18	Mulch shall be maintained in accordance with sub-clause 3009.18 in all cultivated beds.
7	3009.20	All hedge bases shall be maintained weed free for the duration of the Establishment Period in accordance with sub-clause 3009.20.
8	3009.25	All extra heavy standard and heavy standard trees and rootballed conifer trees shall be inspected and maintained annually in accordance with sub clause 3009.25.
10	Additional Clause	During the first 2 years after planting, hedge plants shall be pruned once each year between 1 st September and 31 st January to encourage formation of a vigorous, compact, uniform hedge. The current year's growth of prominent new shoots shall be reduced in length by one third.

Part 5: Specification

Appendix 30/10: Maintenance of Established Trees and Shrubs

Action No.	Sub-Clause	Specification Amendment
1	3010.1	All established trees and shrubs within the O&M Works Site not maintained under Clause 3009 shall be maintained until the end of the Services Period in accordance with sub-clauses 3010.2 - 3010.71.
2	3010.4	Healthy arisings shall be dealt with in accordance with one or more of items (iv) to (ix) of sub-Clause 3010.4 in compliance with the Company's O&M Works Quality Plan and associated method statements.
4	3010.8	Shrubs grown for coloured stems shall be pruned once every two years in accordance with sub-Clause 3010.8 paragraph (i). Overgrown shrubs to be coppiced back in accordance with sub-Clause 3010.8 paragraph (vii).
5	3010.12	Hedges shall be cut once a year in accordance between September and January.
6	3010.20	If any hedge laying shall be required it shall be undertaken in an appropriate style in order to reflect the adjacent or local appearance.
7	3010.22	Mixed hedgerows shall be laid in an appropriate style in order to reflect the adjacent or local appearance.
8	3010.31	New hedge plants to infill significant gaps in hedges after they have been laid or cut shall be of size, species, and planting density to match the existing hedgerow.
9	3010.45	Tree size categories shall be in compliance with the Company's O&M Works Quality Plan and associated method statements.
10	3010.54	Crown lifting shall be in compliance with the Company's O&M Works Quality Plan and associated method statements.
11	3010.55	Crown thinning shall be in compliance with the Company's O&M Works Quality Plan and associated method statements.
12	3010.56	Crown reduction or reshaping shall be in compliance with the Company's O&M Works Quality Plan and associated method statements.
13	3010.57	Straight felling shall be in compliance with the Company's O&M Works Quality Plan and associated method statements.
14	3010.58	Sectional felling shall be in compliance with the Company's O&M Works Quality Plan and associated method statements.
15	3010.59	Stumps shall be cut as close to the ground as possible or where the tree is growing in a hedge the stump shall be left level with the top of the hedge.
16	3010.60	Stump treatment shall be in compliance with the Company's O&M Works Quality Plan and associated method statements.
17	3010.62	Stump removal shall be in compliance with the Company's O&M Works Quality Plan and associated method statements.
18	3010.63	All arisings shall be disposed of off the O&M Works Site or placed within woodland areas as log piles and or windrows where this is consistent with the management objectives for the woodland and the Company's O&M Works Quality Plan and associated method statements.

Part 5: Specification

Appendix 30/10: Maintenance of Established Trees and Shrubs

Action Number	Sub-Clause	Specification Amendment
19	3010.65	Thinning and coppicing shall be carried out in areas of establishing and maturing woodland in accordance with Table 30/10.1 and where identified as being required by the Company's regular inspections.
20	3010.68	Undesirable scrub species shall be controlled in accordance with Table 30/10.1 and where identified as being required by the Company's regular inspections.
21	3010.69	Undesirable scrub tree and shrub species that shall be controlled shall typically have a stem diameter of 0-75 millimetres and a height of 0.75-2.5 metres.
22	Additional Clause	Undesirable scrub species shall be cut down to 50mm above ground level and plants allowed to re-grow. The Company shall then apply translocated herbicide during the first year of active growth after cutting at a suitable time to maximize the effectiveness of the herbicide.
23	3010.71	O&M Works in accordance with sub-clause 3010.71 shall be carried out in compliance with Table 30/10.1 and the Company's O&M Works Quality Plan and associated method statements.

Part 5: Specification

Appendix 30/11: Management of Waterbodies**Appendix 30/11: Management of Waterbodies**

Action Number	Sub-Clause	Specification Amendment
1	3011.1	The management operations under Clause 3011 shall take place in all waterbodies and open ditches within the O&M Works Site.
2	3011.3	All inlets and outlets that shall be part of the road drainage system within the O&M Works Site shall be inspected in accordance with sub-Clause 3011.3.
3	3011.4	The Company shall eliminate weeds as listed in Clause 3002 from within or adjacent to water bodies.
4	3011.6	Injurious weeds on the banks of water courses and within the O&M Works Site shall be removed by hand in accordance with sub-clause 3002.8.
6	3011.8	Silt shall be removed from waterbodies that are part of the road drainage system as required to maintain their functional requirements in accordance with sub-Clause 3011.8. The Company shall be responsible for consulting with SEPA and any other relevant bodies prior to undertaking any operations affecting a water body.
7	3011.9	All reedbeds and marginal plants shall be inspected twice a year in early February and October in accordance to sub-clause 3011.9.
8	Additional Clause	All marginal aquatic plants shall be maintained by the Company for the duration of the Services Period with any failed or defective plants replaced annually in accordance with Clause 3006.

Appendix 30/12: Special Ecological Measures

Action Number	Sub-Clause	Specification Amendment
1	3012.1	Special ecological measures shall be maintained until the Expiry Date.
2	3012.2	Special ecological measures works shall be carried out in seasons to be agreed with SNH and any other relevant consultees.
3	3012.3	Tunnels, ledges, fencing and underpasses and any other mitigation measures for wildlife shall be designed, located and installed in accordance with the requirements of SNH and any other relevant consultees. If there is any discrepancy between SNH's requirements and Clause 3012, SNH's requirements shall prevail.
		<p>The location and extent of fencing for protected fauna shall be consistent with the requirements of the Environmental Assessment Documents, SNH and any other relevant consultees.</p> <p>All badger and other fencing shall be completed to the approval of the Company's ecological specialist who shall oversee installation. Fencing shall be completed in advance of opening the road to vehicular traffic.</p> <p>Where there is the requirement for badger or otter fencing along the same line as other fence types (e.g a permanent boundary of stock proof fencing or deer fencing) a single fence which combines the specifications and functions of both types of shall be used.</p>
		<p>Badger fencing shall be in accordance with the following specification:</p> <p>Post and mesh fences in accordance with British Standard BS 1722 part 2: 1989 "Specification for rectangular wire mesh and hexagonal wire netting fences" with a rectangular steel wire mesh having maximum openings of 25mm X 50 mm and wires of not less than 3 mm diameter in accordance with British Standard BS 4102: 1990 "Specification for steel wire and wire products for fences" and galvanised to British Standard BS 729: 1971 (1994). "A specification for hot dip galvanised coatings for iron and steel articles".</p> <p>The mesh shall be securely stapled to the posts and (where present) rails of the highway boundary fences installed along the scheme roads. Where the highway boundary fence is post and wire, stobs shall be spaced no more than 1.8 metres apart. The mesh shall extend a minimum of 1.0 metre above ground level and be buried vertically to between 300 millimetres and 500 millimetres below ground and turned at right angles from the bottom of the buried section towards the direction from which badgers are expected to approach for a further 300 millimetres. The return shall consist of a separate roll of mesh attached with clips to the bottom of the vertical mesh. The vertical mesh shall be secured at ground level by a galvanised wire not less than 5 millimetres in diameter and a galvanised barbed wire shall be securely stapled to the posts of the fence 25 millimetres above the top of the mesh. Fixings for attachment to Structures shall use a resin fixed replaceable bolt system.</p>

Appendix 30/12: Special Ecological Measures

Action Number	Sub-Clause	Specification Amendment
		Badger Gates shall be constructed in accordance with the RSPCA publication 'Problems with Badgers?' All badger gates shall incorporate concrete sills to prevent digging or erosion.
		<p>Otter Fencing shall be in accordance with the following specification:</p> <p>Post and mesh fences in accordance with British Standard BS 1722 part 2: 1989 "Specification for rectangular wire mesh and hexagonal wire netting fences" with a rectangular steel wire mesh having maximum openings of 50 millimetres X 100 millimetres and wires of not less than 3 millimetres diameter in accordance with British Standard BS 4102: 1990 "Specification for steel wire and wire products for fences" and galvanised to British Standard BS 729: 1971 (1994). "A specification for hot dip galvanised coatings for iron and steel articles". The mesh shall be securely stapled to the posts and (where present) rails of the highway boundary fences installed along the scheme roads. Where the highway boundary fence is post and wire, stobs shall be spaced no more than 1.8 metres apart. The mesh shall extend a minimum of 1.2 metre above ground level and be buried vertically to a depth of not less than 300 millimetres, or 100 millimetres with a horizontal lap turned at right angles from the bottom of the buried section towards the direction from which otters are expected to approach for a further 300 to 450 millimetres. The return shall consist of a separate roll of mesh attached with clips to the bottom of the vertical mesh. The vertical mesh shall be secured at ground level by a galvanised wire not less than 5 millimetres in diameter and a galvanised barbed wire shall be securely stapled to the posts of the fence 25 millimetres above the top of the mesh. Fixings for attachment to Structures shall use a resin fixed replaceable bolt system.</p>
		<p>Tunnels, ledges and underpasses shall be installed in a manner and at locations recommended by the Company's ecological specialist as follows:</p> <p>Free-draining tunnels with a minimum diameter of 600 millimetres and a gradient not exceeding 1 in 3 shall be provided. The openings of the tunnels under the road shall be within the O&M Works Site. Within the available land and where practicable, a wooden post and 5 rail fence in accordance with drawing H3 of Volume 3 of the MCHW shall be erected not less than 1.5 metres in front of the tunnel openings and shall be angled to meet the posts of the O&M Works boundary fence. The overall length of the fence shall be not less than 4.8 metres. Alternative types of tunnel entrance shall be in accordance with the guidance given in the RSPCA publication "Problems with Badgers?".</p> <p>Bridges, structures and culverts designed to carry water shall incorporate a ledge or platform not less than 150 millimetres above the highest flood level, not less than 600 millimetres wide and allowing headroom of not less than 600 mm over the full width of the ledge or platform. Access ramps with a minimum width of 300 millimetres and a maximum gradient of 1 in 2 from the ledge or platform to the adjacent banks of the watercourse and to the normal water level shall be provided at each end.</p>
4	3012.4	Wildlife grilles shall be designed and located in accordance with the requirements of SNH and any other relevant consultees.

Part 5: Specification

Appendix 30/12: Special Ecological Measures

Action Number	Sub-Clause	Specification Amendment
5	3012.5	In February and October of each year the Company shall inspect all wildlife fencing, gates, tunnels and underpasses and report their condition to the Contracting Authority.
6	3012.6	Reflectors shall be designed and located in accordance with the requirements of SNH and any other relevant consultees.
7	3012.7	Reflectors shall be inspected monthly in accordance with the sub-Clause 3012.7.
8	3012.8	Bat boxes, dormice or bird nesting boxes and roosting perches shall be installed in accordance with the requirements of SNH and any other relevant consultees.
9	3012.9	Bat boxes, dormice or bird nesting boxes and roosting perches shall be inspected and their condition reported to the Contracting Authority in accordance with the requirements of SNH and any other relevant consultees.
10	3012.11	Other habitat creation measures shall be inspected annually and their condition reported to the Contracting Authority. The Company shall consult and comply with the requirements of SNH and any other relevant consultees in respect of Works likely to impact upon or affect any protected species or area.
11	3012.13	The Company shall obtain licenses or use only licensed operatives for all works in the vicinity of protected species.

Appendix 32/1: Emergency Response

1 Emergency Response Time

- 1.1 The response time for attendance at an emergency shall be defined as the time taken from receipt of notification of the emergency by the Company to commencement of appropriate action at the location of the emergency.
- 1.2 Response times shall always be as short as practicable but in any event shall not exceed the maximum times stated below.

Maximum Response Time	
06:00 to 20.00	20.00 to 06.00
1 hour	1½ hours

2 Emergency Response Team and Constructional Plant

- 2.1 The following Constructional Plant with operators shall be available for call out 24 hours a day on every day and shall be able to reach the location of the emergency no later than the maximum response time following receipt of notification of the emergency by the Company.
- 2.2 Pickup trucks 1.5 tonne capacity with towing bracket (equipped with chain saws signs cones lamps and the like cutting equipment temporary patching material ancillary tools and equipment for electrical repairs and isolating supply.)
- 2.3 The following Constructional Plant with operators shall be available for call out 24 hours a day on every day and shall be able to reach the location of the emergency no later than 4 hours after receipt of notification of the emergency by the Company.
- 2.4 Platform wagons with hoist capable of servicing 18 metres mounting height columns with 2.3 metres bracket projection.
- 2.4.1 Lorry mounted cranes (safe working load 1.5 tonne).
- 2.4.2 Suction sweepers with full width brush and channel attachment.
- 2.4.3 Gully emptiers equipped to work either side of vehicle. Vehicles shall also have a high pressure water jetting facility capable of generating 23.8N/mm² at 75 litres/min.
- 2.4.4 16 tonne gross vehicle weight lorries with towing bracket. This vehicle shall be complete with snowplough fittings and hydraulics.
- 2.4.5 Front loading shovels complete with 180° slew back hoe with 4 in 1 bucket and forklift attachment.
- 2.4.6 Brickwork/masonry saws fitted with metal cutting blade.
- 2.4.7 Items 2.3.1 to 2.3.5 inclusive shall be fitted with a communication system in accordance with the other provisions of these O&M Works Requirements.

3 Emergency Equipment

- 3.1 The Company shall have available the following types of equipment specifically to deal with emergencies. The equipment provided shall be stored in the nominated depots for emergency use only:

Appendix 32/1: Emergency Response

- (i) warning and diversion signs cones lamps tape;
 - (ii) temporary pedestrian fencing traffic barrier;
 - (iii) chain saws disc cutter/masonry saws; and
 - (iv) drain rods.
- 3.2 The following equipment shall be available from other sources to react to emergencies temporary concrete safety barrier no later than 24 hours:
- (i) portable floodlights and generator no later than 4 hours.
- 3.3 The Company shall complete the following Table 1 identifying its proposals for the Constructional Plant and equipment that shall be supplied to deal with emergencies. This information shall be included in the Quality System and O&M Works Quality Plan and the Incident Response Plan.

Table 1
Emergency Plant and Equipment Proposals

Type of Plant and Equipment	Location of Depot	Number that shall be available

Appendix 33/1: Structural Investigations Test Requirements**1 Test Requirements****1.1 Types of Tests:****1.1.1 Site Surveys/Tests:**

- i) half cell potential survey;
- ii) cover survey;
- iii) delamination/soundness survey;
- iv) exposing reinforcement;
- v) depth of carbonation;
- vi) resistivity measurement;
- vii) Initial surface absorption;
- viii) ultrasonic pulse velocity survey; and
- ix) borescope or endoscope survey;

1.1.2 Chemical Tests:

- i) acid soluble chloride content;
- ii) water soluble chloride content;
- iii) cement content/sulphate content/mix proportion;
- iv) water/cement ratio;
- v) alkali content; and
- vi) Alkali silica reaction samples;

1.1.3 Physical Tests:

- i) visual examination of cores;
- ii) density and compressive strength;
- iii) permeability;
- iv) aggregate grading;
- v) petrographic examination;
- vi) micro cracking assessment; and
- vii) electron microscope examination.

1.2 Details of Site Tests**1.2.1 Potential Measurements**

- (ii) Half cell measurements shall be taken to areas proposed by the Company and consented to in writing by the Contracting Authority at 500 millimetres x 500 millimetres grid centres.
- (iii) The equipment shall be saturated copper sulphate (or suitable equivalent) half cell placed on the concrete surface and connected via a high-impedance voltmeter to the reinforcement.

Appendix 33/1: Structural Investigations Test Requirements

- (iv) The tests shall be carried out in accordance with American Society for Testing Materials C876-80. Two readings shall be taken at each node of the grid and the mean value used.
- (a) Where the readings differ by more than 20 mV a third reading shall be taken and the mean of the two closest readings used.
- Ambient conditions and concrete surface temperature shall be recorded together with details of the type of half cell and its most recent calibration check.
- (b) Excavation to expose reinforcement for electrical connections shall be made good in accordance with the requirements of Series 1700.
- (c) Where appropriate permanent connections shall be made to the reinforcement to facilitate future monitoring of changes in potential.
- (d) The results shall be presented as a grid of values marked on projected plans or elevations of the areas measured at a scale of 1:50.
- Potential contours shall also be plotted with colour coding at a scale of 1:50 with a contour interval of 50 mV.
- Colour block diagrams shall not be an acceptable alternative to colour contours.

1.2.2 Cover Survey

- (i) Cover surveys shall be carried out using an instrument complying with the requirements of and in the manner described in BS 1881-204:1988 Testing concrete. Recommendations on the use of electromagnetic covermeters.
- (ii) The lowest cover detected in each grid rectangle shall be recorded.

1.2.3 Delamination/Soundness Survey

- (i) Delamination / soundness surveys shall be carried out in the following manner
- (a) A visual survey shall be carried out and concrete defects such as spalling, cracking crazing honeycombing surface deterioration and staining together with patching or remedial O&M Works shall be recorded.
- (e) Parts of the concrete which shall be suspected of being delaminated shall be tested by sounding with a light hammer.
- (b) The affected area shall be recorded and the results presented with the final report.
- (c) Photographic records of typical defects shall be taken for the report.

1.2.4 Exposing Bars

- (i) Reinforcing bars shall be exposed in areas to be proposed by the Company and consented to in writing by the Contracting Authority when the results of the potential tests shall be made available.
- (ii) The cut-out shall not be greater than 100 millimetres diameter.
- (iii) The cover to the bars and the condition of the reinforcement shall be recorded.
- (iv) A photograph shall be taken of each bar and caliper measurements taken to establish the residual cross sectional area.

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- (v) The removal of concrete shall be carried out carefully such that no damage shall be caused to the reinforcement and overbreak shall be minimised.

1.2.5 Carbonation Tests

- (i) Tests for depth of carbonation using a phenolphthalein indicator as detailed in Building Research Establishment Information paper IP/6/81 shall be carried out on core samples drill holes and where concrete shall be broken out either to examine the bars or connect the potential measuring apparatus to the reinforcement.

1.2.6 Resistivity Survey

- (i) Resistivity measurements shall be taken at locations and orientations usually where the half cell potential test has indicated that corrosion of reinforcing steel is most likely.
- (ii) The test procedure shall be similar to that used for measuring soil resistivity using four electrodes temporarily attached to the concrete across which measurements of voltage and current are taken.
- (iii) Details of the proposed testing equipment and method shall be proposed by the Company and consented to in writing by the Contracting Authority prior to commencing the tests.

1.2.7 Initial Surface Absorption

- (i) To be carried out in accordance with BS 1881-5:1970 Testing concrete. Methods of testing hardened concrete for other than strength.

1.2.8 Ultrasonic Pulse Velocity Survey

- (i) Ultrasonic pulse velocity surveys shall be carried out using equipment and procedures complying with BS 1881-203:1986 Testing Concrete; Recommendations for Measurement of Velocity of Ultrasonic Pulses in Concrete.
- (ii) The purpose of this testing is the detection of defects and estimation of the depth of surface cracks using semi-direct or indirect transmission at grid centres not exceeding 150 millimetres.
- (iii) The testing shall be carried out by well-qualified personnel with previous experience in the interpretation of the survey results.
- (iv) A water-soluble non-staining couplant shall be used and subsequently removed by power washing.

1.2.9 Borescope Survey

- (i) A borescope and suitably experienced operative shall be made available on the O&M Works Site to carry out borescope investigation in holes.
- (ii) The borescope shall be of a type and with sufficient length to be suitable for the purpose intended.
- (iii) The borescope shall also be fitted with a measuring graticule and a camera attachment. Photographs shall be taken of typical defects.

1.2.10 Endoscope Survey

- (i) An endoscope and suitably experienced operative shall be made available to carry out an endoscope survey.

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- (ii) The endoscope shall be of a type and with sufficient length of fibrescope to be suitable for the purpose intended.

- (iii) The endoscope shall be fitted with a camera attachment and photographs shall be taken of typical defects.

1.3 Chemical Tests

1.3.1 Chloride content acid and water soluble tests shall be carried out in the following manner:

- (i) Dust samples shall be reinforced from concrete members using a 20 to 25 millimetres diameter drill bit and the dust collected by a method described in TRRL Company Report 32 or other suitable method.
- (ii) Dust samples from the chloride drillings shall be taken at different depths into the concrete and shall be collected and stored in different containers for each depth range clearly labelled with the location depth range date and name of operator.

The depth ranges shall be 0 to 30 millimetres, 30 to 60 millimetres, 60 to 90 millimetres and 90 to 120 millimetres.

Sufficient dust shall be collected at each depth range to enable both acid soluble and water soluble analysis to be carried out.

- (iii) Chloride content shall be determined in accordance with BS 1881-124:1988 Testing Concrete; Methods for Analysis of Hardened Concrete.

Samples from each depth range from each set of drillings shall be analysed for the 'total' chloride content using the acid extraction method.

One sample from the 90 to 120 millimetres depth range for each set of drillings shall be analysed for the 'free' chloride content using the water extraction method.

Where the sample from the 90 to 120 millimetres depth range shall be insufficient or unsuitable the 'free' chloride analysis may be carried out on a sample obtained from one of the other depth ranges from the same set.

- (iv) Results shall be given in terms of chloride ion by % cement content.

The average cement and sulfate content shall be measured from the analysis of 10% of the drilling samples.

The location of the drillings shall be determined when the potential measurement plots are available.

The exact position should be determined to avoid reinforcing steel by locating the steel with a cover meter.

1.3.2 Cement content sulfate content mix proportions water/cement ratio and alkali content shall be determined in accordance with BS 1881-124:1988 Testing Concrete; Methods for Analysis of Hardened Concrete, on Samples Obtained from Cores.

1.3.3 Alkali Silica Reaction Samples

- (i) Cores shall be drilled at locations proposed by the Company and consented to in writing by the Contracting Authority.

The cores shall be 75 millimetres diameter drilled to a depth of 400 millimetres.

Intact cores at least 300 millimetres long are required.

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- (ii) Samples taken from the cores shall be tested for susceptibility of the coarse and fine aggregates to alkali silica reaction.
- (iii) The equivalent sodium oxide content shall also be determined for each core. Petrographic examination shall also be carried out as described in the Appendix and
- (iv) If alkali silica reaction shall be suspected the Company may propose for the written consent of the Contracting Authority that the cores be subject to accelerated expansion tests in accordance with Appendix H of the report on 'The Diagnosis of Alkali Silica Reaction' published by the British Cement Association in 1988 reprinted 1992 (The Palmer Report) measurements to be continued up to 1 year with interim reports at 3 monthly intervals.

1.4 Physical Test**1.4.1 Examination of Cores Density and Compressive Strength**

- (i) Examination of cores density tests and compressive strength tests shall be carried out in accordance with BS 1881-120:1983 Testing concrete. Method for determination of the compressive strength of concrete cores.

Visual examinations are to be carried out on all core samples before preparing the samples for testing.

Density and compressive strength tests are to be carried out on 100 millimetres diameter cores.
- (ii) Permeability shall be determined by means of the capillary absorption test in accordance with BS 1881-5:1970 Testing Concrete; Methods of Testing Hardened Concrete for Other Than Strength, on Samples From Cores.
- (iii) Aggregate Grading shall be determined in accordance with BS 1881-124:1988 Testing Concrete; Methods for Analysis of Hardened Concrete, on Samples Obtained From Cores.
- (iv) Petrographic Examination shall be carried out in the following manner:
 - (a) Petrographic examination shall be carried out in accordance with ASTM C856-77 on sections obtained from 75 millimetres diameter cores.
 - (b) The sections shall be obtained from the cores taken for expansion tests for alkali-silica reaction.
 - (c) Constituent materials shall be identified and a description of the specimen given together with a photograph typically at a magnification of 50X
- (v) Microcracking Assessment shall be carried out in the following manner:
 - (a) Selected core samples shall be cleaned of any extraneous debris and air dried in the laboratory.
 - (b) They shall then be sprayed with a fluorescent penetrant solution (a dispersion of fluorescent particles in an organic liquid).
 - (c) When the excess solution has drained from the surface the core samples shall be viewed under ultra-violet light.

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- (vi) Electron Microscope Examination shall be carried out in the following manner:
- (a) Where examination of a sample for microcracking alkali silica reaction susceptibility petrographic analysis or any other purpose indicates that some form of deleterious reaction may be present in the concrete the Contracting Authority may instruct examination by electron microscope.
 - (b) Where the Contracting Authority requires examination the following procedure shall be adopted.
 - (c) Appropriate pieces of the sample which may take the form of thin sections finely ground sections off cuts or freshly broken surfaces shall be explored with the electron microscope to confirm the presence of the constituents or products of deleterious reactions and to identify them wherever possible.
 - (d) A written report shall be submitted with electron micrographs (typically at a magnification of 3500 to 5000X) and results of analysis of the matrix with the microprobe.

2 Report Requirements**2.1 Interim Reports shall comply with the following**

- 2.1.1 An interim report shall be to be submitted for each part of a structure to be investigated within one week of completion of site testing showing the results of all surveys and tests carried out on the O&M Works Site.
- 2.1.2 Copies of field measurements with suitable explanatory notes shall be adequate.
- (i) Chloride content analysis shall be presented within fourteen days of sampling.
 - (ii) Three copies of each interim report are required.

2.2 Final Reports shall comply with the following:

- 2.2.1 Irrespective of size which shall dictate the number of volumes the Final Report shall be submitted in two sections.
- 2.2.2 Section 1 of the final report shall be to be submitted within three weeks of completion of O&M Works Site work and shall contain the following information where applicable.
- (i) A description of the testing programme and tests carried out a presentation of the results in the form outlined below and a summary of the results.
 - (ii) The results shall be presented as follows plotted to a scale of 1:50 unless otherwise instructed

(A) half cell potential/ cover	(1)	tabular
	(2)	colour coded contour plans/ elevations to indicate chloride content distribution of results with a contour interval of 50mV
(B) delamination/ soundness	(1)	plan/elevation marked with suspect areas
	(2)	colour print of major defects

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(C) petrographic	(1)	colour prints of each section
	(2)	detailed description of section with particular reference or otherwise to alkali silica reaction
(C) ultrasonic pulse	(1)	typical graphs/computer output to demonstrate velocity and interpretation of results
	(2)	plans/elevations/cross sections to show defects detected
(D) electron microscope	(1)	electron micrographs
	(2)	detailed description of section together with results of microprobe analysis
(E) borescope	(1)	developed elevations of internal surface of holes examined
	(2)	enlarged colour prints of typical defects
(F) endoscope	(1)	plans/elevations/cross sections to show location of fibroscope and direction of view for photographs
	(2)	enlarged colour prints of typical defects and other photographs

- (iii) All results shall be presented in tabular form and histograms shall be produced where appropriate.
- (a) Section 2 of the final report shall contain a written discussion and interpretation of the results of the survey and testing with recommendations for remedial work.
- (b) A draft copy of the final report shall be submitted for approval before production of the final report.

2.3 **Addendum Reports shall comply with the following:**

- 2.3.1 The results of the alkali silica reaction expansion test shall be reported on a 3 monthly basis.
- 2.3.2 An Addendum Report shall be produced to cover all the expansion test results.



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Aberdeen Western Peripheral Route / Balmedie - Tipperty

Competition for the Design, Build, Finance and Operation of the
Aberdeen Western Peripheral Route / Balmedie - Tipperty

Volume Five
Schedule 4: O&M Works Requirements
Part 6: Certification

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PART 6 : CERTIFICATION**

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1 Certification Procedure

- 1.1 Where the Company shall execute a Design that is within the scope of the Certification Procedure the Company shall provide to the Contracting Authority certification to cover such Design or Design Element notwithstanding that such subsequent Operations shall be executed by the Company.

Compliance with the procedures shall not relieve the Company of its responsibilities under the terms of this Agreement.

- 1.2 The scope of application of the Certification Procedure shall be:

1.2.1 Design:

- (i) Designs relating to a Contracting Authority Change, unless the Contracting Authority shall decide otherwise in a specific case;
- (ii) Designs for O&M Works that shall exceed an estimated value of:
 - (a) £[REDACTED] for any single intervention other than;
 - (b) £[REDACTED] per kilometre length of carriageway for pavement surfacing renewal works.

1.2.2 All Departures.

- 1.2.3 Road Safety Audits and Trunk Road Cycle Audits in connection with Designs required under paragraph 1.2.1 (i) where the Contracting Authority have not decided to remove the requirement for compliance with the Certification Procedure.

- 1.2.4 Temporary Traffic Management Schemes: such schemes as shall fall within the scope of:

- (i) paragraph 1.2.1 (i); or
- (ii) paragraph 1.2.1 (ii) (b)

1.2.5 Consultation for:

- (i) Design:
 - (a) Liaison Requirements for all Designs;
 - (b) such schemes as fall within the scope of paragraphs 1.2.1; and
- (ii) all other O&M Works Requirements for:
 - (a) The initial O&M Manual submitted in accordance with paragraph 3.11 of Part 1 to these O&M Works Requirements or in relation to changes to the O&M Manual for which there is a requirement to carry out consultation or liaison; and
 - (b) other consultation requirements not related to Design.

- 1.3 The Certification Procedures described in this Part 6 of these O&M Works Requirements cover those parts of the O&M Works that constitute Design together with any activity that relates to specifying Operations and the manner in which they shall be executed. Subject to the other provisions of this Agreement, Design shall cover inter alia the following:

1.3.1 preparation of drawings;

1.3.2 engineering calculations;

1.3.3 reasons for choice of materials (including replacing with the same or similar materials);

-
- 1.3.4 reasons for choice of equipment;
 - 1.3.5 reasons for specifying particular standards;
 - 1.3.6 reasons for extent, scope, methodology, procedure or timing of the O&M Works.
- 1.4 The Certification Procedures described in this Part 6 also covers Operations that shall be incorporated in the O&M Manual in accordance with these O&M Works Requirements.
 - 1.5 Design for new Structures (including temporary Structures) or the strengthening structural repair or partial renewal of existing Structures shall, as a minimum, be in accordance with the requirements of Eurocodes, the DMRB and Transport Scotland Interim Amendments. Prior to the commencement of the design, the Company shall submit a completed Structures Design Statement, including a completed Annex E to Schedule 2: Part 2 Choices and Options table, fully defining the design assumptions and parameters to be used in the design of each Structure.
 - 1.6 Models of certificates are given in Appendix 1. If a specific certificate relevant to a certification requirement has not been specified in these O&M Works Requirements or such specified certificate is not appropriate to a specific certification requirement the Company shall seek the Contracting Authority consent to either select an appropriate certificate from Appendix I or produce an appropriate similar style certificate. The Contracting Authority shall not accept modifications or qualifications to these certificates other than those agreed in writing in advance by the Contracting Authority.
 - 1.7 The Certification Procedure associated with a part of a Design or Design Element shall be deemed to cover all aspects of the part of the Design or Design Element.
 - 1.8 The Company shall maintain and provide to the Contracting Authority a register recording names and original signatures of individuals authorised to carry out the various functions of the Designer(s) and Design Checker(s) set out below. The only person authorised to delegate the various functions of the respective Designer(s) and Design Checker(s) shall be a Director of the respective organisation. The Company shall maintain and provide to the Contracting Authority a register recording name(s) and original signature(s) of the individuals authorised to sign certificates in accordance with this Certification Procedure on behalf of the O&M Works Contractor.
 - 1.9 The Company shall ensure that the Company's Representative:
 - 1.9.1 at all relevant times shall be appointed to carry out the procedures referred to in the Certification Procedure; and
 - 1.9.2 shall at all times comply with the Certification Procedure.
 - 1.10 The Company shall ensure that the checking procedures referred to in the Certification Procedure are complied with by the Company's Representative.
 - 1.11 The Company shall maintain and provide to the Contracting Authority a register recording the current status of all certificates set out below.
 - 1.12 Subject to requirements of this Certification Procedure, construction of any part of the O&M Works or carrying out any other Operation requiring certification shall not commence until the relevant certification required by the Certification Procedure shall have been completed and shall have been acknowledged by the Contracting Authority.
 - 1.13 Design Data, which is the subject of any part of this Certification Procedure, shall not be amended until the relevant certification in respect of such amendment shall have been submitted to the Contracting Authority in accordance with the Certification Procedure.
 - 1.14 Notwithstanding the other provisions of this Agreement, where the value of the O&M
-

Works shall be less than £[REDACTED] the Company shall be entitled to use the Combined Design and Design Check Certificate contained in Appendix 1 in lieu of the other certificates.

- 1.15 This Certification Procedure shall be deemed to cover all aspects of the Traffic Scotland equipment.

2 Design Certificates and Design Check Certificates

- 2.1 Separate Design Certificates and Design Check Certificates shall be required where applicable for parts of the Design or Design Elements including but not limited to:

2.1.1 fencing and environmental barriers;

2.1.2 road restraint systems;

2.1.3 drainage;

2.1.4 earthworks;

(i) earthworks (site clearance);

(ii) earthworks (bulk);

(iii) grouting;

(iv) piling;

2.1.5 road pavements;

2.1.6 road layout;

2.1.7 kerb, footways and paved areas;

2.1.8 signs and road markings;

2.1.9 lighting;

2.1.10 electrical installations;

2.1.11 Structures;

2.1.12 environment and landscaping;

2.1.13 Undertakers and owners of other Apparatus;

2.1.14 Accommodation works; and

2.1.15 Traffic Scotland equipment, including hard landscaping for Traffic Scotland.

Separate Design Certificates and Design Check Certificates shall be required for each Structure Design.

- 2.2 Notwithstanding any other provisions of this Agreement, the Design check for each part of the Design or Design Elements shall be executed by a Design Checker who shall be independent of:

2.2.1 the Designer;

2.2.2 the O&M Works Contractor; and

2.2.3 their associated companies.

- 2.3 The Company shall submit two copies of the details of the proposed Design Checker for approval by the Contracting Authority. The Contracting Authority shall consider the proposed Design Checker and shall issue written approval of or comment on such to the Company.

- 2.4 The requirements for earthworks certification detailed herein shall supersede those of

the DMRB. A Geotechnical Report shall be prepared for all earthworks, foundations and other geotechnical design elements and shall accompany each Earthworks and Structures Design Statement as detailed in Schedule 2: Part 2. The relevant part(s) of the Geotechnical Design Report(s) shall be submitted to accompany each Structures Design Statement and each Earthworks and Structures Design Certificate. The final report(s) shall be submitted prior to submittal of the relevant Construction Certificate(s).

- 2.5 Each Design Certificate submitted by the Company shall be signed by:
- 2.5.1 the Designer;
 - 2.5.2 the O&M Works Contractor; and
 - 2.5.3 the Company.
- 2.6 Each Design Check Certificate submitted by the Company shall be signed by:
- 2.6.1 the Design Checker;
 - 2.6.2 the O&M Works Contractor; and
 - 2.6.3 the Company.
- 2.7 The Company shall submit to the Contracting Authority two copies of each signed certificate, with original signatures, along with a minimum of four hard copies and one pdf copy of all relevant drawings, schedules, appendices and otherwise requiring to accompany each certificate. One copy of each certificate shall be returned to the Company within 7 days of receipt, signed in acknowledgement by the Contracting Authority.
- 2.8 The Company shall provide with each Design Certificate and Design Check Certificate the relevant drawings, schedules and appendices as detailed in paragraph 3.2.6.

3 Final Construction Certificates

3.1 A Final Construction Certificate signed by:

- 3.1.1 the Designer;
- 3.1.2 the O&M Works Contractor; and
- 3.1.3 the Company

shall be provided by the Company on completion of the construction of each certified part of the Design or Design Element as identified in paragraph 2.1.

3.2 Upon Substantial Completion of the O&M Works the Company shall supply a Final Construction Certificate in respect of the whole of the O&M Works in addition to an Interim Construction Certificate in respect of the final month of construction.

3.3 The Company shall submit to the Contracting Authority two copies of each certificate with original signatures. One copy of each certificate shall be returned to the Company within 28 days of receipt signed in acknowledgement by the Contracting Authority.

4 Consultation Certificates

4.1 Where within these O&M Works Requirements, in respect of Design, there shall be a requirement to consult and/or comply with a third party's requirements; the Company shall provide a completed Consultation Certificate to the Contracting Authority. Subject to the other provisions of this Agreement, the Company shall comply with the special requirements relating to third parties which are listed in Part 8 of these O&M Works Requirements. Following consultation, the Company shall provide Consultation Certificates signed by:

- 4.1.1 the Designer;
- 4.1.2 the O&M Works Contractor;
- 4.1.3 the Company; and
- 4.1.4 the relevant third parties.

4.2 Where within these O&M Works Requirements, in respect of matters other than Design, there is a requirement to consult, including seeking agreement through liaison described in paragraph 2.1.1 of Part 9, the Company shall provide a completed O&M Manual Consultation Certificate to the Contracting Authority.

4.3 Following consultation or agreement from liaison, for the purpose of producing or reviewing the O&M Manual, the Company shall provide an O&M Manual Consultation Certificate signed by:

- 4.3.1 The Asset Manager;
- 4.3.2 the Liaison Officer;
- 4.3.3 the O&M Works Contractor;
- 4.3.4 the Company; and
- 4.3.5 each relevant Third Party, when appropriate.

4.4 The Company shall submit to the Contracting Authority two copies of each certificate, with original signatures together with a minimum of four hard copies and one pdf copy of all relevant documentation including drawings, other information and associated correspondence between the Company and the relevant third party. One copy of each certificate shall be returned to the Company within 7 days of receipt, signed in acknowledgement by the Contracting Authority.

4.5 The Company shall not commence any O&M Works which affect the interests of any

relevant third party until this procedure shall have been completed.

- 4.6 If following such consultation, a relevant third party refuses or unreasonably delays in signing the Consultation Certificate the Company may provide to the Contracting Authority:
- 4.6.1 full details of the consultation undertaken with such third party;
 - 4.6.2 full details of the best endeavours the Company has made to obtain the signed Construction Certificate;
 - 4.6.3 details of the Company's reasons and justification for allowing the Company to commence the O&M Works in question without such Consultation Certificate;
- and the Contracting Authority, having considered such information, may at their discretion dispense with the requirement to provide the signed Consultation Certificate in question.
- 4.7 Notwithstanding the other provisions of this Agreement, where there is a requirement to consult there shall be an equivalent requirement to provide a certificate of such consultation to the Contracting Authority in accordance with this Section 4.
- 4.8 Notwithstanding the requirement to consult and comply within these O&M Works Requirements, where, as a result of such consultation or otherwise any part of the Design or Design Element proposed does not meet the requirements of the New Works Requirements it shall remain the responsibility of the Company to Design and construct the New Works in accordance with the Agreement. For the avoidance of doubt, these O&M Works Requirements shall take precedence over any changes that may be proposed by the Company following consultation unless agreed in writing by the Contracting Authority in accordance with this Certification Procedure and the Agreement.

5 Road Safety Audit Certificates

5.1 Safety Audit Team

- 5.1.1 The Company shall submit two copies of the names and curricula vitae of the proposed Safety Audit Team members for approval by the Contracting Authority. The Safety Audit Team shall be independent of:
- (i) the Company;
 - (ii) the O&M Works Contractor;
 - (iii) the Designer(s);
 - (iv) the Design Checker(s); and
 - (v) any of their associated companies.
- 5.1.2 The Contracting Authority shall consider the proposed Safety Audit Team and shall issue written approval of or comment on such to the Company.
- 5.1.3 The Contracting Authority may object to such proposal only for the reason that:
- (i) the proposed Safety Audit Team is not independent of:
 - (a) the Company;
 - (b) the O&M Works Contractor;
 - (c) the Designer(s);
 - (d) the Design Checker(s); and
 - (e) any of their associated companies; or

- (ii) the proposed Safety Audit Team does not have, in the opinion of the Contracting Authority, sufficient training or experience of road safety and accident investigation and prevention appropriate to the Road Safety Audit to be undertaken.
- 5.2 Road Safety Audits shall be carried out in accordance with the requirements of Part 1 of these O&M Works Requirements.
- 5.3 The Company shall submit to the Contracting Authority two copies of the relevant Road Safety Audit Certificates for each stage of the Road Safety Audit procedure with original signatures, together with a minimum of four hard copies and one pdf copy of all relevant documentation including drawings, other information and associated correspondence.
- 5.4 One copy of each certificate shall be returned to the Company within 7 days of receipt signed in acknowledgement of receipt by the Contracting Authority.
- 5.5 The Road Safety Audit Certificates shall be issued on completion of one of the following procedures:
 - 5.5.1 The Designer(s) and Design Checker(s) accepts the Safety Audit Team recommendations; or
 - 5.5.2 The Designer(s) submits alternative solutions/proposals to the Safety Audit Team and these are accepted by the Safety Audit Team; or
 - 5.5.3 The Designer(s) submits alternative solutions/proposals to the Safety Audit Team and because these are not accepted by the Safety Audit Team, submits an Exception Report to the Director for arbitration (as defined in DMRB). In this case the decision of the Director shall be binding on the Company.
- 5.6 Road Safety Audits for Temporary Traffic Management Schemes
 - 5.6.1 The Company shall submit to the Contracting Authority two copies of a Stage 2 Road Safety Audit Certificate for each audited Temporary Traffic Management Scheme with original signatures, together with four copies of all relevant documentation including drawings, other information and associated correspondence not less than ten days before implementation of such Temporary Traffic Management Scheme. One copy of each certificate shall be returned to the Company within 7 days of receipt signed in acknowledgement of receipt by the Contracting Authority.
 - 5.6.2 The Company shall submit to the Contracting Authority two copies of a Stage 3 Road Safety Audit Certificate for each audited temporary traffic management scheme with original signatures, together with four copies of all relevant documentation including drawings, other information and associated correspondence not less than one day after implementation of such temporary traffic management scheme. One copy of each certificate shall be returned to the Company within 7 days of receipt signed in acknowledgement of receipt by the Contracting Authority.

6 Trunk Road Cycle Audit Certificates

- 6.1 Trunk Road Cycle Audits shall be carried out in accordance with the requirements of Part 1 of these O&M Works Requirements.
- 6.2 The Company shall submit to the Contracting Authority two copies of the Stage 2 Trunk Road Cycle Audit Certificates with original signatures, together with a minimum of four hard copies and one pdf copy of all relevant documentation including drawings, other information and associated correspondence. One copy of each certificate shall be

returned to the Company within 7 days of receipt signed in acknowledgement of receipt by the Contracting Authority.

- 6.3 The Trunk Road Cycle Audit Certificates shall be issued on completion of one of the following procedures:
- 6.3.1 The Designer(s) and Design Checker(s) accepts the Cycle Audit Team recommendations; or
- 6.3.2 The Designer(s) submits alternative solutions/proposals to the Cycle Audit Team and these are accepted by the Cycle Audit Team.

7 Departures

- 7.1 The Company shall submit to the Contracting Authority five copies of each Application for Departure from Standards with original signatures, together with a minimum of five hard copies and one pdf copy of all relevant documentation including drawings, other information and associated correspondence. One copy of each Departure from Standards shall be returned to the Company within 7 days of receipt, signed in acknowledgement by the Contracting Authority.
- 7.2 Each Departure submission to the Contracting Authority shall include as a minimum the information detailed below:
- 7.2.1 For Departure applications to Volume 6 of the DMRB (Road Geometry), the Company shall provide the information required on the 'Application for Departure From Standards DMRB Volume 6 (Road Geometry)' Proforma contained in Appendix 1;
- 7.2.2 Departure submission excluding DMRB Volumes 1 to 3 (Structures):
- (i) Description of Departure
1:10,000 location plan; 1:500 detailed plan; design speed of road; a statement of the strategy for the route; description of context including contiguous affected adjacent sections of routes in a 2 to 3 kilometres range; desirable minimum standard; proposed Departure including number of steps from desirable minimum standard; details of other Departures or Relaxations affecting the same or related Design elements and otherwise and reasons for the Departure;
 - (ii) Safety (History of feature)
Performance of Departure features elsewhere; risk assessment including different user category effects;
 - (iii) Compensatory Measures
Proposed adjustment to the Design to mitigate the effects of the Departure including use of upgraded materials such as high skid resistant surfacing; improved signing and lining such as warning signs/ladder markings and otherwise; need for further enforcement measures and need for further statutory measures including the introduction of speed restrictions;
 - (iv) Cost Consequences
A summary of the cost implications of applying the Departure including capital cost effects; increased maintenance costs; increases in vehicle operating costs and accident costs and other user dis-benefits;
 - (v) Environmental Consequences

The effects, if any which the Departure may have on the Environment in terms of human, flora, fauna, soil, water, air, climate, landscape, materials assets, cultural heritage issues and otherwise;

(vi) Structural Integrity

Where applicable supply details of any possible effects the Departure may have in relation to the structural integrity/stability of earthworks, Structures and road pavements;

(vii) Any other relevant information.

7.2.3 Departures DMRB Volumes 1 to 3 (Structures)

The Company shall provide the information required on the 'Application for Departure from Standards DMRB Volumes 1 to 3 (Structures)' Proforma contained in Appendix 1.

- 7.3 Details of any proposed Departure shall be submitted to the Contracting Authority prior to any necessary Stage 2 Road Safety Audit being carried out. In this context the Company's attention is drawn to DMRB Volume 1, Section 0, Part 1, 'The Introduction to the DMRB' paragraph 1.17.
- 7.4 The Overseeing Organisation shall consider the Company's proposed Departure and shall make a formal determination of the proposed Departure by approving or rejecting it. Approval may be conditional or unconditional. Such approval or rejection of a Departure submission shall be at the sole discretion of the Overseeing Organisation.
- 7.5 The Overseeing Organisation staff shall inform the Contracting Authority of the Departure determination.
- 7.6 The Contracting Authority shall inform the Company of the Departure determination. Notwithstanding any other provisions of this Agreement, the Company shall not commence any O&M Works which affect the Design or Design Element of the O&M Works until this procedure is completed.

8 Company Notice of Change

- 8.1 Where the Company proposes to either vary the O&M Works Requirements or the Conceptual Design or the Design in accordance with Clause 35 of the Agreement, full details of the proposal shall be submitted to the Contracting Authority and the procedure set out therein shall be followed.
- 8.2 The Company shall submit to the Contracting Authority two copies of each Proposed Company Change Certificate with original signatures, together with a minimum of four hard copies and one pdf copy of all relevant documentation including drawings, other information and associated correspondence.

9 Temporary O&M Works Certificates

- 9.1 Temporary O&M Works Certificates shall be required for all temporary O&M Works associated with any Structure and for any other temporary O&M Works which have or are required to have a Design input.
- 9.2 The Company shall submit two copies of the Temporary O&M Works Certificate to the Contracting Authority with original signatures together with a minimum of four hard copies and one pdf copy of all relevant drawings and documents. One copy of each Certificate shall be returned to the Company within seven days of receipt, signed in acknowledgement by the Contracting Authority.
- 9.3 Each Temporary O&M Works Certificate submitted by the Company shall be signed by:
- 9.3.1 the Temporary O&M Works Design Checker;

- 9.3.2 the O&M Works Contractor; and
 - 9.3.3 the Company.
- 9.4 Construction for any part of any relevant temporary O&M Works requiring certification shall not commence until this procedure shall have been completed.

10 Traffic Scotland Tests Certificates

- 10.1 Traffic Scotland test certificates shall be required for all Traffic Scotland equipment including, but not limited to:
- 10.1.1 the passive network; and
 - 10.1.2 active equipment.
- 10.2 The Company shall submit two copies of the Traffic Scotland tests certificates to the Contracting Authority with original signatures, together with a minimum of four hard copies and one pdf copy of all relevant documents and drawings. One copy of each Certificate shall be returned to the Company within seven days of receipt, signed in acknowledgement by the Contracting Authority.
- 10.3 Each Traffic Scotland tests certificate submitted by the Company shall be signed by:
- 10.3.1 the Designer;
 - 10.3.2 the O&M Contractor; and
 - 10.3.3 the Company.
- 10.4 The Operation of Traffic Scotland equipment and associated systems shall not commence until the testing and certification process for such shall have been completed satisfactorily as outlined within Part 2 of these O&M Works Requirements.
- 10.5 The Company shall ensure that testing and certification for Traffic Scotland equipment is completed incrementally throughout the Contract Period. The Company shall prepare a testing and certification plan for the approval of the Traffic Scotland Network Operations Manager.
- 10.6 The Company shall carry out the following tests in accordance with Part 2 of these O&M Works Requirements:
- 10.6.1 Pre-Issue Tests;
 - 10.6.2 Stand Alone Site Acceptance Tests;
 - 10.6.3 Pre Commissioning Site Acceptance Tests; and
 - 10.6.4 Commissioning Site Acceptance Tests.
- 10.7 The procedures for the submission of certificates for Traffic Scotland tests certificates shall follow these O&M Works Requirements and the Company's testing and certification plan.
- 10.8 The Equipment Manual (601) and Maintenance Manual (602) provide typical testing and certification procedure for the Traffic Scotland equipment and system. The Transport Scotland Network Operations Manager shall advise the details of testing and certification three months prior to installation of each active equipment type.
- 10.9 The Company shall carry out the required tests for the passive network and active equipment in accordance with these O&M Works Requirements.

11 Provenance Certificates

- 11.1 Provenance Certificates shall be required for all native plant stock required by the

Design.

11.2 Provenance Certificates signed by:

- 11.2.1 the Designer;
- 11.2.2 the landscape Designer; and
- 11.2.3 the Company;

shall be provided by the Company for each batch of plants on delivery to the O&M Works Site.

11.3 The Company shall submit to the Contracting Authority two copies of each Provenance Certificate with original signatures, together with a minimum of four hard copies and one pdf copy of all relevant documents. One copy of each Certificate shall be returned to the Company within seven days of receipt, signed in acknowledgement by the Contracting Authority.

11.4 The Company shall not commence the landscape planting until this procedure shall have been completed.

12 O&M Manual Certificate

The Company shall submit to the Contracting Authority two copies of the O&M Manual Certificate with original signatures, together with a printed 'clean' hard copy and one pdf copy of the O&M Manual. The O&M Manual Certificate shall be signed by:

- 12.1.1 the Asset Manager;
- 12.1.2 the O&M Manual Checker (a role that shall be defined in the Quality Plan);
- 12.1.3 the O&M Works Contractor;
- 12.1.4 the Company;
- 12.1.5 each relevant third party, when appropriate; and
- 12.1.6 one or several of the following persons required to be employed by the Company in these O&M Works Requirements, where these O&M Works Requirements specify the involvement of such persons in the parts of the O&M Manual:
 - (i) Winter Service Manager;
 - (ii) Structures Engineer;
 - (iii) Liaison Officer;
 - (iv) Integrated Road Information System Coordinator;
 - (v) Traffic Scotland equipment's maintenance representative;
 - (vi) traffic safety and control officer; or
 - (vii) qualified landscape architect or other competent person.

12.2 One copy of each certificate shall be returned to the Company within 28 days of receipt signed in acknowledgement by the Contracting Authority.

13 Handback Certificate

13.1 The Company shall submit two copies of the Handback Certificate with original signatures to the Contracting Authority in accordance with Clause 49 of the Agreement.

APPENDIX 1 : CERTIFICATES

CERTIFICATES:

Design Certificate: Structures	DCS O&M
Design Check Certificate: Structures	DCCS O&M
Design Certificate: Earthworks	DCE() O&M
Design Check Certificate: Earthworks	DCCE() O&M
Design Certificate: Road Restraint System	DCB O&M
Design Check Certificate: Road Restraint System	DCCB O&M
Design Certificate: Other Part(s) of the Design or Design Element	DC() O&M
Design Check Certificate: Other Part(s) of the Design or Design Element	DCC() O&M
Design and Design Check Certificate	DC/DCC() O&M
Final Construction Certificate	FCC O&M
Consultation Certificate	CC O&M
O&M Manual Consultation Certificate	MANCC O&M
Road Safety Audit Certificate	RSAC O&M
Stage 2 Road Safety Audit Certificate for Temporary Traffic Management	RSAC(TTM2) O&M
Stage 3 Road Safety Audit Certificate for Temporary Traffic Management	RSAC(TTM3) O&M
Application for Departure from Standards: DMRB Volumes 1, 2 and 3 (Structures)	Proforma
Application for Departure from Standards: DMRB Volume 6 (Road Geometry)	Proforma
Cycle Audit Certificate	CAC O&M
Company Notice of Change Certificate	CNCC O&M
Temporary O&M Works Certificate	TWC O&M
Traffic Scotland Pre Issue Test Certificate	TSPTC O&M
Traffic Scotland Stand Alone Site Acceptance Test Certificate	TSSASATC O&M
Traffic Scotland Pre-Commissioning Site Acceptance Test Certificate	TSPSATC O&M
Traffic Scotland Commissioning Site Acceptance Test Certificate	TSCSATC O&M
Provenance Certificate	PC O&M
O&M Manual Certificate	MAN O&M
Handback Certificate	HBK O&M

DESIGN CERTIFICATE: STRUCTURES

CERTIFICATE NO: DCS O&M.....

1. We hereby certify to the Contracting Authority in respect of the Design of the following part of the Design or Design Element namely

..... (Name of Structure)

that reasonable professional skill and care has been taken by us with a view to securing that the part of the Design or Design Element:

- (i) complies with the O&M Works Requirements;
- (ii) has been designed in accordance with the required Design Basis documents listed and dated below;
- (iii) has been accurately translated into the construction drawings and bar bending schedules bearing the unique numbers listed below; and
- (iv) is not detrimental to the whole Design or Design Element.

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:

DESIGNER (Team Leader for Designer)

Name (Block Capitals): Date:

Signed: Firm.....

O&M WORKS CONTRACTOR (Agent)

Name (Block Capitals): Date:

Signed: Firm:

COMPANY (Director)

Name (Block Capitals): Date:

2. Receipt of this certificate is acknowledged

Signed:

on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

DESIGN CHECK CERTIFICATE: STRUCTURES

CERTIFICATE NO: DCCS O&M.....

1. We hereby certify to the Contracting Authority in respect of the check of the following part of the Design or Design Element namely

..... (Name of Structure)

that reasonable professional skill and care has been taken by us in carrying out the independent check of the part of the Design or Design Element in accordance with the procedures described in the DMRB with a view to securing that the part of the Design or Design Element:

- (i) complies with the O&M Works Requirements;
- (ii) has been checked in accordance with the required Design Basis documents listed and dated below;
- (iii) Has been accurately translated into the construction drawings and bar bending schedules bearing the unique numbers listed below; and
- (iv) is not detrimental to the whole Design or Design Element.

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:

DESIGN CHECKER (Team Leader for Design Checker)

Name (Block Capitals): Date:

Signed: Firm.....

O&M WORKS CONTRACTOR (Agent)

Name (Block Capitals): Date:

Signed: Firm:

COMPANY (Director)

Name (Block Capitals): Date:

2. Receipt of this certificate is acknowledged

Signed:

on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

DESIGN CERTIFICATE: EARTHWORKS

CERTIFICATE NO: DCE ()* O&M.....

1. We hereby certify to the Contracting Authority in respect of the Design of the following part of the Design or Design Element namely

..... (Name of Earthwork's or Earthwork's Element)

that reasonable professional skill and care has been taken by us with a view to securing that the part of the Design or Design Element:

- (i) complies with the O&M Works Requirements;
- (ii) has been designed in accordance with the required Design Basis documents listed and dated below;
- (iii) has been accurately translated into the construction drawings and other Design documents bearing the unique numbers listed below;
- (iv) is not detrimental to the whole Design or Design Element; and
- (v) has been the subject of a Geotechnical Design Report and that the conclusions of that report have been taken into account in the further divided part of the Design or Design Element.

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:

DESIGNER (Team Leader for Designer)

Name (Block Capitals): Date:

Signed: Firm:.....

O&M WORKS CONTRACTOR (Agent)

Name (Block Capitals): Date:

Signed: Firm:

COMPANY (Director)

Name (Block Capitals): Date:

2. Receipt of this certificate is acknowledged

Signed:

on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

* Insert Description of part of Design or Design Element:

Earthworks	(EW)	Piling	(P)
Grouting		(G)	

DESIGN CHECK CERTIFICATE: EARTHWORKS

CERTIFICATE NO: DCCE()* O&M.....

1. We hereby certify to the Contracting Authority in respect of the check of the following part of the Design or Design Element namely

..... (Name of Earthworks or Earthworks Element)

that reasonable professional skill and care has been taken by us in carrying out the independent check of the Design or Design Element (including the interpretative geotechnical report referred to in (iv) below) with a view to securing that the part of the Design or Design Element:

- (i) complies with the O&M Works Requirements;
- (ii) has been checked in accordance with the required Design Basis documents listed and dated below;
- (iii) has been accurately translated into the construction drawings and other Design documents bearing the unique numbers listed below;
- (iv) is not detrimental to the whole Design or Design Element; and
- (v) has been the subject of a Geotechnical Design Report and that the conclusions of that report have been taken into account in the further divided part of the Design or Design Element.

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:
DESIGN CHECKER (Team Leader for the Design Checker)

Name (Block Capitals): Date:

Signed: Firm:.....
O&M WORKS CONTRACTOR (Agent)

Name (Block Capitals): Date:

Signed: Firm:
COMPANY (Director)

Name (Block Capitals): Date:

2. Receipt of this certificate is acknowledged

Signed:
on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

* Insert Description of part of Design or Design Element:
Earthworks (EW) Piling (P)
Grouting Works (G)

DESIGN CERTIFICATE: ROAD RESTRAINT SYSTEM

CERTIFICATE NO: DCB O&M.....

- 1. We hereby certify to the Contracting Authority in respect of the Design of the following part of the Design or Design Element namely

..... (Name of part of road restraint system or road restraint system Element)

that reasonable professional skill and care has been taken by us with a view to securing that the part of the Design or Design Element:

- (i) complies with the O&M Works Requirements;
- (ii) has been accurately translated into the construction drawings and other Design documents bearing the unique numbers listed below;
- (iii) is not detrimental to the whole Design or Design Element; and
- (iv) that all aspects of the further divided part of the Design or Design Element of the road restraint systems on this Agreement have been developed by the use of a risk assessment approach.

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:

DESIGNER (Team Leader for the Designer)

Name (Block Capitals): Date:

Signed: Firm:.....

O&M WORKS CONTRACTOR (Agent)

Name (Block Capitals): Date:

Signed: Firm:

COMPANY (Director)

Name (Block Capitals): Date:

- 2. Receipt of this certificate is acknowledged

Signed:

on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

DESIGN CHECK CERTIFICATE: ROAD RESTRAINT SYSTEMS

CERTIFICATE NO: DCCB O&M.....

1. We hereby certify to the Contracting Authority in respect of the check of the following part of the Design or Design Element namely

..... (Name of part of road restraint system or road restraint system element)

that reasonable professional skill and care has been taken by us in carrying out the independent check of the Design or Design with a view to securing that the part of the Design or Design Element:

- (i) complies with the O&M Works Requirements;
- (ii) has been accurately translated into the construction drawings and other Design documents bearing the unique numbers listed below;
- (iii) is not detrimental to the whole Design or Design Element; and
- (iv) that all aspects of the further divided part of the Design or Design Element of the road restraint systems on this Agreement have been developed by the use of a risk assessment approach.

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:

DESIGN CHECKER (Team Leader for the Design Checker)

Name (Block Capitals): Date:

Signed: Firm.....

O&M WORKS CONTRACTOR (Agent)

Name (Block Capitals): Date:

Signed: Firm:

COMPANY (Director)

Name (Block Capitals): Date:

2. Receipt of this certificate is acknowledged

Signed:

on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

DESIGN CERTIFICATE: OTHER PART(S) OF THE DESIGN OR DESIGN ELEMENT

CERTIFICATE NO: DC()* O&M.....

1. We hereby certify to the Contracting Authority in respect of the Design of the following part of the Design or Design Element namely

..... (Name of part of the Design or Design Element)

that reasonable professional skill and care has been taken by us with a view to securing that the part of the Design or Design Element:

- (i) complies with the O&M Works Requirements;
- (ii) has been accurately translated into the construction drawings and other Design documents bearing the unique numbers listed below; and
- (iii) is not detrimental to the whole Design or Design Element.

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:
DESIGNER (Team Leader for the Designer)

Name (Block Capitals): Date:

Signed: Firm.....
O&M WORKS CONTRACTOR (Agent)

Name (Block Capitals): Date:

Signed: Firm:
COMPANY (Director)

Name (Block Capitals): Date:

2. Receipt of this certificate is acknowledged

Signed:
on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

* Insert Description of part of Design or Design Element:

Fencing and Environmental Barriers	(F)	Electrical Installation	(I)
Drainage	(D)	Communication Systems	(C)
Road Pavements	(P)	Environmental and Landscape	(E)
Road Layout	(R)	Undertakers	(U)
Kerb, Footways and Paved Areas	(K)	Private Apparatus Owners	(O)
Signs and Road Markings	(S)	Accommodation Works	(A)
Lighting	(L)		

DESIGN CHECK CERTIFICATE: OTHER PART(S) OF THE DESIGN OR DESIGN ELEMENT

CERTIFICATE NO: DCC()* O&M.....

1. We hereby certify to the Contracting Authority in respect of the check of the following part of the Design or Design Element namely

..... (Name of Design Element)

that reasonable professional skill and care has been taken by us in carrying out the independent check of the part of the Design or Design Element with a view to securing that the part of the Design or Design Element:

- (i) complies with the O&M Works Requirements;
- (ii) has been accurately translated into the construction drawings and other Design documents bearing the unique numbers listed below; and

(iii) is not detrimental to the whole Design or Design Element.

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:

DESIGN CHECKER (Team Leader for the Design Checker)

Name (Block Capitals): Date:

Signed: Firm.....

O&M WORKS CONTRACTOR (Agent)

Name (Block Capitals): Date:

Signed: Firm:

COMPANY (Director)

Name (Block Capitals): Date:

2. Receipt of this certificate is acknowledged

Signed:

on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

* Insert Description of part of Design or Design Element:

Fencing and Environmental Barriers	(F)	Electrical Installation	(I)
Drainage	(D)	Communication Systems	(C)
Road Pavements	(P)	Environmental and Landscape	(E)
Road Layout	(R)	Undertakers	(U)
Kerb, Footways and Paved Areas	(K)	Private Apparatus Owners	(O)
Signs and Road Markings	(S)	Accommodation Works	(A)
Lighting	(L)		

DESIGN AND DESIGN CHECK CERTIFICATE:

CERTIFICATE NO: DC/DCC()* O&M.....

1. We hereby certify to the Contracting Authority in respect of the Design and Design check of the following part of the Design or Design Element namely
..... (Name of Design Element)

that reasonable professional skill and care has been taken by us with a view to securing that the part of the Design or Design Element:

- (i) complies with the O&M Works Requirements;
- (ii) has been designed and checked in accordance with the required Design Basis documents listed and dated below
- (iii) has been accurately translated into the construction drawings and other Design documents bearing the unique numbers listed below;
- (iv) is not detrimental to the whole Design or Design Element;
- (v) where applicable to earthworks, has been the subject of a Geotechnical Design Report and that the conclusions of that report have been taken into account in the further divided part of the Design or Design Element; and
- (vi) where applicable to road restraint systems, that all aspects of the further divided part of the Design or Design Element of the road restraint systems on this Agreement have been developed by the use of a risk assessment approach.

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:
DESIGNER (Team Leader for the Designer)

Name (Block Capitals): Date:

Signed: Firm:
DESIGN CHECKER (Team Leader for the Design Checker)

Name (Block Capitals): Date:

Signed: Firm:
O&M WORKS CONTRACTOR (Agent)

Name (Block Capitals): Date:

Signed: Firm:
COMPANY (Director)

Name (Block Capitals): Date:

2. Receipt of this certificate is acknowledged
Signed:
on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

* Insert Description of part of Design or Design Element:

Fencing and Environmental Barriers	(F)	Electrical Installation	(I)
Drainage	(D)	Communication Systems	(C)
Road Pavements	(P)	Environmental and Landscape	(E)
Road Layout	(R)	Undertakers	(U)
Kerb, Footways and Paved Areas	(K)	Private Apparatus Owners	(O)
Signs and Road Markings	(S)	Accommodation Works	(A)
Lighting	(L)		

FINAL CONSTRUCTION CERTIFICATE

CERTIFICATE NO: FCC O&M.....

- 1. We hereby certify to the Contracting Authority that we have supervised with reasonable professional skill and care the construction and completion of the Design or Design Element namely:

..... (Name of Design or Design Element)

with a view to securing that it has been constructed in accordance with the requirements of the Design.

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:

DESIGNER (Team Leader for the Designer)

Name (Block Capitals): Date:

Signed: Firm:

O&M WORKS CONTRACTOR (Agent)

Name (Block Capitals): Date:

Signed: Firm:

COMPANY (Director)

Name (Block Capitals): Date:

- 2. Receipt of this certificate is acknowledged

Signed:

on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

CONSULTATION CERTIFICATE

CERTIFICATE NUMBER: CC O&M.....

Consultation with..... (Name of Consultee)

1. We hereby certify to the Contracting Authority in respect of:

..... (Name of part of Design or Design Element)

that we have consulted with (Name of Consultee)
and have ascertained that they have no objections to the part of Design or Design Element as described on the documents listed in Part 2 below.

We further certify that the above named part of the Design or Design Element complies with the O&M Requirements and or the requirements for the Contracting Authority acceptance of any change to or non-compliance with the O&M Requirements has been brought to the attention of the consultee named below and is included in the documents listed in Part 2 below

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:

DESIGNER (Team Leader for Designer)

Name (Block Capitals): Date:

Signed: Firm:

O&M WORKS CONTRACTOR (Agent)

Name (Block Capitals): Date:

Signed: Firm:

COMPANY (Director)

Name (Block Capitals): Date:

2. LIST OF DOCUMENTS

3. DECLARATION BY (Name of Consultee)

On behalf ofI confirm that:

- (i) consultations referred to above have been completed;
- (ii) (Name of Consultee) has no objection to the Design or Design Element as described on the documents listed in Part 2 above; and
- (iii) the documents listed in Part 2 above meet our overall requirements and that the Company remains responsible for ensuring the Design or Design Element complies with the O&M Requirements and the Agreement.

Date:

Signed:

Name (Block Capitals):

(duly authorised to sign on behalf of) (Name of Consultee)

4. Receipt of this certificate is acknowledged

Signed:

on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

O&M MANUAL CONSULTATION CERTIFICATE

CERTIFICATE NUMBER: MANCC O&M.....

Consultation with..... (Name of Consultee)

1. We hereby certify to the Contracting Authority in respect of:

..... (Name of part of O&M Manual)

that we have consulted with (Name of Consultee) and have ascertained that they have no objections to the content of the part(s) of the O&M Manual as described in the documents listed in Part 2 below.

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:

ASSET MANAGER

Name (Block Capitals): Date:

Signed: Firm:

LIAISON OFFICER

Name (Block Capitals): Date:

Signed: Firm:

O&M WORKS CONTRACTOR (Agent or Operational Manager, if appropriate)

Name (Block Capitals): Date:

Signed: Firm:

COMPANY'S REPRESENTATIVE

Name (Block Capitals): Date:

2. LIST DOCUMENTS AND AMENDMENTS TO THE DOCUMENTS (attached)

3. DECLARATION BY (Name of Consultee)

On behalf of I confirm that:

- (iv) consultations referred to above have been completed;
- (v) (Name of Consultee) has no objection to the content of the O&M Manual as described in the list of amendments in Part 2 above; and
- (vi) the documents listed in Part 2 above meet our overall requirements.

Date:

Signed:

Name (Block Capitals):

(duly authorised to sign on behalf of) (Name of Consultee)

4. Receipt of this certificate is acknowledged

Signed:

on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

ROAD SAFETY AUDIT CERTIFICATE

CERTIFICATE NUMBER: RSAC O&M.....

This certificate refers to the Stage.....** Road Safety Audit applicable to zone of interest number

- 1. We hereby certify to the Contracting Authority that all the safety issues raised in the audit report have been addressed by:
 - (i)* incorporating all / some* of the recommendations of the audit report in the Design or Design Element (Reference:**);
and*
 - (ii)* adopting alternative solutions that have been agreed with the Safety Audit Team and have been incorporated in the Design or Design Element (Reference:**);
and*
 - (iii)* incorporating in the Design or Design Element the decision of the arbitrator (as defined in the DMRB) with respect to the issues detailed in the Exception Report (Reference:**).

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:
DESIGNER (Team Leader for the Designer)

Name (Block Capitals): Date:

Signed: Firm:
O&M WORKS CONTRACTOR (Agent)

Name (Block Capitals): Date:

Signed: Firm:
COMPANY (Director)

Name (Block Capitals): Date:

- 2. Receipt of this certificate is acknowledged

Signed:

on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

* delete as appropriate
 ** Insert appropriate references
 *** Insert report and/or associated correspondence references and report item numbers

STAGE 2 ROAD SAFETY AUDIT CERTIFICATE FOR TEMPORARY TRAFFIC MANAGEMENT SCHEMES

CERTIFICATE NUMBER: RSAC(TTM2) O&M.....

This Certificate refers to the Stage 2 Road Safety Audit of the Temporary Traffic Management Scheme(s)* referred to on Drawing Number(s)**

- 1 We hereby certify to the Contracting Authority that all the safety issues raised in the audit report have been addressed by:
 - (i)* incorporating all / some* of the recommendations of the audit report in the Design or Design Element (Reference:***);
and*
 - (ii)* adopting alternative solutions that have been agreed with the Safety Audit Team and have been incorporated in the Design or Design Element (Reference:***);
and*
 - (iii)* incorporating in the Design or Design Element the decision of the arbitrator (as defined in the DMRB) with respect to the issues detailed in the Exception Report (Reference:***).

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:

DESIGNER (Team Leader for the Designer)

Name (Block Capitals): Date:

Signed: Firm:

O&M WORKS CONTRACTOR (Agent)

Name (Block Capitals): Date:

Signed: Firm:

COMPANY (Director)

Name (Block Capitals): Date:

- 2 Receipt of this certificate is acknowledged

Signed:

on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

* delete as appropriate

** Insert appropriate references

*** Insert report and/or associated correspondence references and report item numbers

STAGE 3 ROAD SAFETY AUDIT CERTIFICATE FOR TEMPORARY TRAFFIC MANAGEMENT SCHEMES

CERTIFICATE NUMBER: RSAC(TTM3) O&M.....

This Certificate refers to the Stage 3 Road Safety Audit of the Temporary Traffic Management Scheme(s) referred to on Drawing Number(s)**

- 1 We hereby certify to the Contracting Authority that all the safety issues raised in the audit report have been addressed by:
 - (i)* incorporating all / some* of the recommendations of the audit report in the Design or Design Element (Reference:**);
and*
 - (ii)* adopting alternative solutions that have been agreed with the Safety Audit Team and have been incorporated in the Design or Design Element (Reference:**);
and*
 - (iii)* incorporating in the Design or Design Element the decision of the arbitrator (as defined in the DMRB) with respect to the issues detailed in the Exception Report (Reference:**).

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:

DESIGNER (Team Leader for the Designer)

Name (Block Capitals): Date:

Signed: Firm:

O&M WORKS CONTRACTOR (Agent)

Name (Block Capitals): Date:

Signed: Firm:

COMPANY (Director)

Name (Block Capitals): Date:

- 2 Receipt of this certificate is acknowledged

Signed:

on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

* delete as appropriate

** Insert appropriate references

*** Insert report and/or associated correspondence references and report item numbers

APPLICATION FOR DEPARTURE FROM STANDARDS DMRB VOLUMES 1, 2 AND 3 (STRUCTURES) PROFORMA

DEPARTURE FROM STANDARDS

Name of Project:

(Bridges and other Highway Structures)

Name of Bridge or Structure:

Structure Reference Number:

APPLICANT:

PROJECT TITLE:

DEPARTURE NUMBER:

STRUCTURE REFERENCE:

SUBMISSION DATE:

1. List of Supporting Documentation:

Standards:

Drawings:

Other:

2. Description of Proposed Departure:

(Include details of DMRB Standards and Clause numbers which are being departed from)

3. Designer/Assessor Justification:

(Include reasons why existing DMRB Standards are inappropriate)

4. Cost Implications

(Include an estimate of cost savings to the Contracting Authority as well as the effect on future maintenance costs)

4.1 Construction Costs:

4.2 Maintenance Costs:

DEPARTURE FROM STANDARDS	Name of Project
(Bridges and other Highway Structures)	Name of Bridge or Structure
	Structure Reference Number

5. Applicant Design Team Leader Declaration:

I declare that reasonable professional skill and care have been exercised in the preparation of this Application for Departure from Standards submission.

Signed:

Name:

Date:

6. Transport Scotland Bridges Branch Comments and Recommendation:

Signed:

Name:

Date:

7. Transport Scotland Chief Bridges Engineer Recommendation:

The above Application for Departure from Standards is Approved/Rejected

Signed:

Name:

Date:

APPLICATION FOR DEPARTURE FROM STANDARDS DMRB VOLUME 6 (ROAD GEOMETRY) PROFORMA

APPLICANT:

PROJECT TITLE:

DEPARTURE NUMBER:

PROJECT DETAILS	
General description of project	
Route Strategy	
Road Category and Type	
Proposed Carriageway Cross Section	
Design Speed Proposed	
Future Traffic Flows and Composition	

DESCRIPTION OF DEPARTURE	
Location and Chainage	
Departure Type	
DMRB Reference	
Required Standard	
Standard Provided	
Associated Departures or Relaxations	
Drawing Numbers	

APPLICANT:

PROJECT TITLE:

DEPARTURE NUMBER:

JUSTIFICATION	
Detailed Justification	
Safety Implications	
Structural Integrity	

ESSENTIAL COMPENSATORY MEASURES	
Compensatory Measures	

CYCLE AUDIT CERTIFICATE

CERTIFICATE NUMBER: CAC O&M.....

This certificate refers to the Stage 2 Cycle Audit

1 We hereby certify to the Contracting Authority that all the issues raised in the audit report have been addressed by:

(i)* incorporating all / some* of the recommendations of the audit report in the Design;
and*

(ii)* adopting alternative solutions that have been agreed with the audit team and have been incorporated in the Design.

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:

DESIGNER (Team Leader for the Designer)

Name (Block Capitals): Date:

Signed: Firm:

O&M WORKS CONTRACTOR (Agent)

Name (Block Capitals): Date:

Signed: Firm:

COMPANY (Director)

Name (Block Capitals): Date:

2. Receipt of this certificate is acknowledged

Signed:

on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

* Insert report and/or associated correspondence references and report item numbers

COMPANY NOTICE OF CHANGE CERTIFICATE

CERTIFICATE NUMBER: CNCC O&M.....

1. The following Company Change is proposed under Clause 35 of this Agreement to vary the O&M Works Requirements / Conceptual Design / Design* as detailed in the accompanying documents bearing the unique numbers listed below:

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in the Agreement.

Signed:

Firm:

COMPANY (Director)

Name (Block Capitals):

Date:

* delete as appropriate

TEMPORARY O&M WORKS CERTIFICATE

CERTIFICATE NUMBER: TWC O&M.....

1. We hereby certify to the Contracting Authority that the preparation of the Design of the temporary O&M Works comprising

..... (Description of temporary O&M Works)

has been carried out with reasonable professional skill and care with a view to securing that:

- (i) it has been designed in accordance with the following standards; and
- (ii) the Design has been successfully translated into temporary O&M Works drawings bearing the unique numbers:

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement.

Signed: Firm:
O&M WORKS CONTRACTOR (Agent)

Name (Block Capitals): Date:

Signed: Firm:
COMPANY (Director)

Name (Block Capitals): Date:

We have carried out an independent check of the O&M Works Contractor's proposals with reasonable professional skill and care with a view to securing that they are satisfactory for the proper discharge of his responsibilities under this Agreement for the safety of the said parts of the O&M Works and without detriment to the O&M Works.

Signed: Firm:
TEMPORARY O&M WORKS CHECKER (Team Leader for the temporary O&M Works Checker)

Name (Block Capitals): Date:.....

2. Receipt of this certificate is acknowledged

Signed:
on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

TRAFFIC SCOTLAND PRE-ISSUE TEST CERTIFICATE

CERTIFICATE NUMBER: TSPTC O&M.....

1 We hereby certify to the Contracting Authority in respect of:

..... (Name of part of Design or Design Element)

that we have witnessed and accept the pre issue tests to confirm that the new Traffic Scotland equipment complies with the requirements of the Design as described in this Agreement, drawings and instation and site equipment certificates listed in Part 2 below.

We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in the Agreement.

Signed:

Firm:

DESIGNER (Team Leader for the Designer)

Name (Block Capitals):

Date:

Signed:

Firm:

NEW WORKS CONTRACTOR (Agent)

Name (Block Capitals):

Date:

Signed:

Firm:

COMPANY (Director)

Name (Block Capitals):

Date:

2 LIST OF DOCUMENTATION, DRAWINGS AND CERTIFICATES

3 Receipt of this certificate is acknowledged

Signed:

on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals):

Date:

TRAFFIC SCOTLAND STAND ALONE SITE ACCEPTANCE TESTS CERTIFICATE
CERTIFICATE NUMBER: TSSASATC O&M.....

1 We hereby certify to the Contracting Authority in respect of :

..... (Name of part of Design or Design Element)

that we have carried out stand alone site acceptance tests to confirm that the new Traffic Scotland equipment complies with the requirements of the Design as described in this Agreement, drawings and instation and site equipment certificates listed in Part 2 below. We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in the Agreement.

Signed: Firm:
DESIGNER (Team Leader for the Designer)
Name (Block Capitals): Date:

Signed: Firm:
NEW WORKS CONTRACTOR (Agent)
Name (Block Capitals): Date:

Signed: Firm:
COMPANY (Director)
Name (Block Capitals): Date:

2 LIST OF DOCUMENTATION, DRAWINGS AND CERTIFICATES

3 Receipt of this certificate is acknowledged

Signed:
on behalf of the CONTRACTING AUTHORITY
Name (Block Capitals): Date:

TRAFFIC SCOTLAND PRE-COMMISSIONING SITE ACCEPTANCE TESTS CERTIFICATE
CERTIFICATE NUMBER: TSPSATC O&M.....

1 We hereby certify to the Contracting Authority in respect of:

..... (Name of part of Design or Design Element)

that we have carried out pre-commissioning site acceptance tests to confirm that the new Traffic Scotland equipment complies with the requirements of the Design as described in the Agreement, drawings and instation and site equipment certificates listed in Part 2 below. We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in the Agreement.

Signed: Firm:
DESIGNER (Team Leader for the Designer)
Name (Block Capitals): Date:

Signed: Firm:
NEW WORKS CONTRACTOR (Agent)
Name (Block Capitals): Date:

Signed: Firm:
COMPANY (Director)
Name (Block Capitals): Date:

2 LIST OF DOCUMENTATION, DRAWINGS AND CERTIFICATES

3 Receipt of this certificate is acknowledged

Signed:
on behalf of the CONTRACTING AUTHORITY
Name (Block Capitals): Date:

TRAFFIC SCOTLAND COMMISSIONING SITE ACCEPTANCE TESTS CERTIFICATE
CERTIFICATE NUMBER: TSCSATC O&M.....

1 We hereby certify to the Contracting Authority in respect of:
..... (Name of part of Design or Design Element)

that we have carried out commissioning site acceptance tests to confirm that the new Traffic Scotland equipment complies with the requirements of the Design as described in the Agreement, drawings and instation and site equipment certificates listed in Part 2 below. We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in the Agreement.

Signed: Firm:
DESIGNER (Team Leader for the Designer)
Name (Block Capitals): Date:

Signed: Firm:
NEW WORKS CONTRACTOR (Agent)
Name (Block Capitals): Date:

Signed: Firm:
COMPANY (Director)
Name (Block Capitals): Date:

2 LIST OF DOCUMENTATION, DRAWINGS AND CERTIFICATES

3 Receipt of this certificate is acknowledged

Signed:
on behalf of the CONTRACTING AUTHORITY
Name (Block Capitals): Date:

PROVENANCE CERTIFICATE

CERTIFICATE NO: PC O&M.....

1 We hereby certify that the provenance/origin of the United Kingdom native plant stock incorporated in the O&M Works are as identified in the Plant Schedule contained in Annex 1 of this Certificate.

We agree that the words and phrases, herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement, including Cost Effective Landscape: Learning from Nature (Scottish Executive Publication February 1998).

Signed:	Firm:
DESIGNER (Team Leader for Designer)	
Name (Block Capitals):	Date:
Signed:	Firm:
LANDSCAPE DESIGNER (Team Leader for Landscape Designer)	
Name (Block Capitals):	Date:
Signed:	Firm:
COMPANY (Director)	
Name (Block Capitals):	Date:

2 Receipt of this Certificate is acknowledged

Signed:	
on behalf of the CONTRACTING AUTHORITY	
Name (Block Capitals):	Date:

ANNEX 1 TO PROVENANCE CERTIFICATE

CERTIFICATE NO: PC O&M.....

BOTANICAL NAME	QUANTITY	FORM/AGE	HEIGHT (CM)	ZONE OF PROVENANCE AND LOCATION	APPROXIMATE DATE PROPAGATION MATERIAL COLLECTED	NURSERY OR NURSERIES AT WHICH THE PLANTS HAVE BEEN GROWN

O&M MANUAL CERTIFICATE

Sheet 1 of 2

CERTIFICATE NUMBER: MAN()* O&M.....

1. We hereby certify to the Contracting Authority in respect of the check of the following part(s) of the O&M Manual namely

..... (Name(s) of Design Element) *

that reasonable professional skill and care has been taken by us in carrying out the independent check of the part of the O&M Manual with a view to securing that the part of the O&M Manual:

- (i) complies with the O&M Works Requirements;
- (ii) has been accurately translated into the procedural requirements and other text, flowcharts, graphics, drawings and other operations and maintenance documents bearing the unique numbers listed below;

and

(iii) is not detrimental to delivery of the whole of the O&M Works Requirements.

(a) We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement:

Signed: Firm:

ASSET MANAGER

Name (Block Capitals): Date:

Signed: Firm:

O&M MANUAL CHECKER

Name (Block Capitals): Date:

Signed: Firm.....

O&M WORKS CONTRACTOR (Agent or Operational Manager, if appropriate)

Name (Block Capitals): Date:

Signed: Firm:

COMPANY'S REPRESENTATIVE

Name (Block Capitals): Date:

* Insert Description of part of O&M Manual:

Maintenance Management Plan	(M)	Winter Service Plan	(W)
Emergency Response Plan	(E)	Incident Support Service Plan	(I)
Landscape Development Plan	(L)	Structures	(S)
Traffic Scotland's equipment	(T)	Liaison Procedures	(P)
		Other, in which case, specify:	(O)

continued over/

CERTIFICATE NUMBER: MAN()* O&M.....

(b) We additionally agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in this Agreement for those parts of the O&M Manual within our discipline / role (the relevant persons for this certificate shall sign below):

Signed: Firm:
STRUCTURES MANAGER

Name (Block Capitals): Date:

Signed: Firm:
WINTER SERVICE MANAGER (Operational Manager)

Name (Block Capitals): Date:

Signed: Firm:.....
TRAFFIC SAFETY AND CONTROL OFFICER

Name (Block Capitals): Date:

Signed: Firm:
LIAISON OFFICER

Name (Block Capitals): Date:

Signed: Firm.....
INTEGRATED ROAD INFORMATION SYSTEM COORDINATOR

Name (Block Capitals): Date:

Signed: Firm:
TRAFFIC SCOTLAND EQUIPMENT'S MAINTENANCE REPRESENTATIVE

Name (Block Capitals): Date:

Signed: Firm:
LANDSCAPE ARCHITECT (or other approved person)

Name (Block Capitals): Date:

2. Receipt of this certificate is acknowledged

Signed:
on behalf of the CONTRACTING AUTHORITY

Name (Block Capitals): Date:

HANDBACK CERTIFICATE

CERTIFICATE NUMBER: HBK O&M.....

1. We hereby certify to the Contracting Authority that the Renewal Works comprising:

.....
.....
.....

(Description of New Works)

have achieved final completion in accordance with this Agreement and that all Design, Design Check and Construction Certificates in respect of the Renewal Works have been issued and that hereafter until the Expiry Date the Handback Assets shall satisfy the Handback Requirements.

2. We agree that the words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in the Agreement.

Signed:

Firm:

COMPANY'S REPRESENTATIVE

Name (Block Capitals):

Date:



Aberdeen Western Peripheral Route / Balmedie-Tipperty
AWPR / B-T Managing Agent, Aberdeen Business Centre,
Willowbank House, Willowbank Road, Aberdeen AB11 6YG

Tel: **01224 332322** | Fax: **01224 322 361**
Email: **enquiries@awpr.co.uk** | Web: **www.awpr.co.uk**

Working in partnership



Aberdeen Western Peripheral Route / Balmedie - Tippetty

Competition for the Design, Build, Finance and Operation of the
Aberdeen Western Peripheral Route / Balmedie - Tippetty

Volume Five
Schedule 4: O&M Works Requirements
Part 7: Reports, Information and Records

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SCHEDULE 4**O&M WORKS REQUIREMENTS****CONTENTS**

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PART 2: ROUTINE MAINTENANCE

PART 3: HANDBACK

PART 4: DESIGN AND CONSTRUCTION CRITERIA

PART 5: SPECIFICATION

PART 6: CERTIFICATION

PART 7: REPORTS, INFORMATION AND RECORDS

PART 8: THIRD PARTIES

PART 9: LIAISON PROCEDURES

PART 10: ACCESS ROAD SERVICES

PART 11: RESTRICTED SERVICES

SCHEDULE 4: O&M WORKS REQUIREMENTS
PART 7: REPORTS, INFORMATION AND RECORDS

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1. Reports

1.1. General

1.1.1. Required Reports

The Company shall submit to the Contracting Authority the reports specified in such number and at the times required by this Agreement. When there is a conflict between the requirements of this Part 7 of these O&M Works Requirements and a requirement stated elsewhere in this Agreement, the latter shall take precedence.

1.1.2. Form

Such reports shall be in such form as reasonably required by the Contracting Authority, or where a report is required to be submitted periodically, in the same form as such report was previously submitted until otherwise required by the Contracting Authority.

1.1.3. Further Information

The Company shall at any time and from time to time at its own cost provide to the Contracting Authority such further information with respect to the Operations or otherwise as the Contracting Authority may reasonably require.

1.1.4. Objections to Reports

- (i) If the Contracting Authority considers that any report either has not been compiled in accordance with the provisions of this Agreement or has been based on erroneous information or data, then within 20 Business Days of receipt, the Contracting Authority may serve a notice to that effect on the Company.
- (ii) If any such objection has not been resolved to the satisfaction of the Contracting Authority within 14 days after the service of a notice as detailed in paragraph 1.1.4(i), then the Contracting Authority may refer the matter to the Dispute Resolution Procedure.

1.1.5. Revisions to Reports

- (i) If either the resolution (whether by agreement or determination under the Dispute Resolution Procedure) of any objection made pursuant to paragraph 1.1.4 (i) or the correction of any calculation pursuant to Schedule 6 requires any revision or adjustment to any report, then the Company shall as soon as practicable issue revised versions of each affected report and such revised report shall for the purposes of this Agreement take the place of the original report.

1.2. Weekly Reports

1.2.1. The Company shall issue to the Contracting Authority 2 copies of a weekly report to arrive no later than 12.00 noon on the Thursday of each week during the Contract Period. The weekly report shall be in a format consented to in writing by the Contracting Authority and shall include, but not be limited to, the following:

- (i) weekly programme of intent and notification of carriageway occupations for the following week as detailed on the Roadworks Information Form A shown in Appendix 1;
- (ii) details of all carriageway occupations actually occurring in the week preceding as detailed on the Roadworks Information Form B shown in Appendix 1; and

- (iii) details of submitted planning applications under consideration and the current status.

1.3. Monthly Reports

1.3.1. Within five Business Days after the end of each calendar month which falls within the Contract Period, the Company shall provide to the Contracting Authority two copies of a report (the "Monthly Report"), in a format to be approved by the Contracting Authority, containing the following information:

- (i) a review of all relevant aspects of the Operations (other than the New Works), including without limitation:
 - (a) all actual or potential departures from the O&M Works Requirements;
 - (b) From the issuing of the first Permit to Use, actual lane Availability Failures during such month, including details of the length, day, start time and duration of the lane Availability Failure. This information shall be provided for each day of lane Availability Failure. Details of the interpolations to derive lane Availability Failure charges from Schedule 6 shall also be provided;
 - (c) during the Restricted Services Period only, actual Lane Occupations during such month, including details of the length, day, start time, duration and purpose of the Lane Occupations highlighting any for which the Company is seeking confirmation by the Contracting Authority of their classification as Agreed Lane Occupations or Exempt Lane Occupations. This information shall be provided for each day of Lane Occupations. Details of the interpolations to derive Lane Occupation charges in accordance with the requirements of Schedule 6 shall also be provided;
 - (d) any Restricted Services Failures in the relevant Payment Month;
 - (e) any Service Shortfalls in the relevant Payment Month from the issuing of the relevant Permit to Use;
 - (f) any Restricted Services Lane Availability Failures in the relevant Payment Month;
 - (g) all grounds for a substantial dispute which have occurred or may reasonably be foreseen as likely to occur; and
 - (h) the proposed measures to be taken by the Company to overcome departures as referred to at (a) or to resolve grounds for a dispute as referred to at (g);
- (ii) any lane Availability Failure or Lane Occupation, as appropriate, anticipated for the following month;
- (iii) a summary report on all accidents or incidents including closures for snow on the O&M Works Site during such month including all accidents on which a report has previously been made.
- (iv) an account of the number and type of complaints and claims received from Users and others in respect of the O&M Works Site and the conduct of Operations;
- (v) the record of any hazard notices and observations resulting from inspections issued and details as per Section 1.8 of Part 2 of these O&M Works Requirements;

- (vi) the monthly trunk road incident support report described at Section 32 of Part 1 to these O&M Works Requirements;
- (vii) the monthly liaison report described in Section 3 to Part 9 of these O&M Works Requirements;
- (viii) the monthly report described in paragraph 7.1.3 of Appendix J to Part 1 of the O&M Works Requirements;

1.4. Annual Reports

1.4.1. As soon as reasonably practicable and in any event not later than 28 days following the end of each Payment Year, the Company shall provide to the Contracting Authority five copies of a report (the "Annual Report") in respect of such Payment Year containing the following information:

- (i) a statement showing any adjustments to the Monthly Reports in accordance with paragraph 1.3;
- (ii) actual lane Availability Failure during the Payment Year; and
- (iii) actual Service Shortfalls during the Payment Year.

During the Restricted Services Period only:

- (i) the total Lane Occupations for the Payment Year after adjustment for Agreed Lane Occupations or Exempt Lane Occupations confirmed by the Contracting Authority;
- (ii) the total Agreed Lane Occupations or Exempt Lane Occupations confirmed by the Contracting Authority for the Payment Year;
- (iii) actual Restricted Services Failures and Restricted Services Failure Deductions for the Payment Year; and
- (iv) actual Restricted Services Availability Failures in the Payment Year.

1.4.2. As soon as reasonably practicable and in any event not later than 28 days following the end of each Payment Year the Company shall publish a report (distinct from the Annual Report) on the performance of the New Roads (the "Brief Annual Report") which shall include inter alia:

- (i) brief information covering the safety and environmental performance of the O&M Works Site in the previous Payment Year, including a description of any safety and environmental improvements carried out;
- (ii) statistics of personal injury accidents;
- (iii) the Company's own performance targets for the maintenance and operation of the O&M Works Site (response times for maintenance, availability of equipment, etc) and achievements against those targets during the previous Payment Year;
- (iv) information on planned lane Availability Failures during the next 12 months;
- (v) names, telephone numbers and addresses of relevant persons employed by the Company;
- (vi) programme of detailed inspections for the next year;
- (vii) programme of road pavement surveys for the next year;
- (viii) a review of winter maintenance for the previous year and details of proposed improvements;

-
- (ix) the Annual Landscape Report, in the Contract Year immediately following the Establishment Period and thereafter;
 - (x) changes to the O&M Manual; and
 - (xi) such other information as may reasonably be required by the Contracting Authority.
- 1.4.3. The Company shall provide a copy of the Brief Annual Report:
- (i) on publication to the Contracting Authority and to all Relevant Authorities; and
 - (ii) free of charge and promptly upon request to any interested party and Users.
- 1.4.4. The Contracting Authority and/or the Scottish Ministers may incorporate all or any part of the Annual Report or the Brief Annual Report in any annual or other report published by them.
- 1.5. Accident Reports
- 1.5.1. Within 24 hours of any incident which involves a fatality the Company shall submit to the Contracting Authority a report (an "Accident Report"). The Company shall thereafter promptly report to the Contracting Authority any additional details of such accident or its causes which become known to it. The Accident Report shall contain the following information:
- (i) location (with plan);
 - (ii) brief description of circumstances including photographs;
 - (iii) casualties and vehicles involved;
 - (iv) potential road contributory factors (if any); and
 - (v) other relevant information i.e. weather, roadworks.
- 2. Records**
- 2.1. Required Records
- 2.1.1. The Company shall produce, maintain and update all records required by this Agreement including without limitation those set out below.
- 2.1.2. The Contracting Authority shall within 60 days after the Effective Date deliver up to the Company the existing records of the Contracting Authority in respect of the O&M Works Site. The Company shall retain such records in safe storage at its own costs and such records shall thereafter be treated for all purposes as though they were records referred to in paragraph 2.1.1.
- 2.2. Audit
- The records referred to in paragraph 2.1 shall be kept in good order and in such form as to be capable of audit (including by electronic means) by the Contracting Authority. The Company shall make such records available for inspection (on receipt of reasonable notice) by the Contracting Authority at all times during normal working hours on Business Days in accordance with Clause 74.
- 2.3. Copies
- 2.3.1. The Company shall provide at its own cost a copy of any records requested by the Contracting Authority at the place where the records are kept and within
-

the time period for delivery of the records required by the Contracting Authority, including such records retained under paragraph 2.4.4.

2.4. Retention of Records

- 2.4.1. All records referred to in paragraph 2.1 shall be retained in accordance with Schedule 18 to the Project Agreement.
- 2.4.2. Where the period for the retention of any records has expired, then the Company shall notify the Contracting Authority as to what it intends to do with such records in accordance with Schedule 18 of the Project Agreement.
- 2.4.3. Upon the Expiry Date the Company shall at its own cost provide to the Contracting Authority in the manner and at the location as the Contracting Authority shall specify all such records as are referred to in paragraph 2.1 which were in existence at the Expiry Date (or, where those records are required by statute to remain with the Company, copies thereof) or such part of such records as the Contracting Authority may by notice to the Company specify. The Contracting Authority shall make available to the Company all the records the Company delivers up pursuant to this paragraph 2.4.3 subject to reasonable notice.
- 2.4.4. The Company shall retain in safe storage for a period of not less than 6 years following the Expiry Date all such records as are referred to in paragraph 2.4.3 which the Contracting Authority do not require to be delivered up to them. The costs of retaining those records in safe storage shall be as specified in Schedule 18 of the Project Agreement.

2.5. Computer Records

- 2.5.1. To the extent that the records of the Company shall be created or maintained on a computer or other electronic storage device, then the Company shall meet with and adhere to the requirements of the Contracting Authority for a procedure for back-up and off-site storage for copies of such records.
- 2.5.2. The Company shall maintain the records in a storage facility which shall ensure that all the records are maintained in a good condition without degradation for the specified retention periods.

3. Not Used**4. Accounts**

- 4.1. The Company shall provide to the Contracting Authority as soon as they shall have been finalised but no later than 180 days after the end of each financial year a copy of the audited accounts of the Company and, if appropriate, consolidated accounts of the Company and its subsidiaries in respect of that period (prepared in accordance with the Companies Act 1985), together with copies of all related directors' and auditors' reports in accordance with Clause 74 of this Agreement.
- 4.2. If at any time after the provision to the Contracting Authority of the documents referred to in paragraphs 1.2, 1.3 and 1.4 the Contracting Authority notifies the Company of any matter which gives concern and which arises in connection with anything in such documents, the Company shall instruct its auditors to prepare as soon as is reasonably practicable a report on that matter, giving such further information, amplification or explanation as is reasonable having regard to the contents of the Contracting Authority's notification; and the Company shall provide the Contracting Authority with a copy of that report within 7 days of the Company receiving it from its auditors.

5. Progress Meetings

- 5.1. The Company shall convene a meeting each month in an office local to the O&M Works Site with the Contracting Authority on a date to be agreed in writing by the Contracting Authority which shall in any case be no later than the 20th working day of each month to review the monthly report for that month and any other matters related to this Agreement.
- 5.2. The Company shall convene an annual meeting in an office local to the O&M Works Site with the Contracting Authority on a date to be agreed in writing by the Contracting Authority which shall in any case be no later than the last working day of May each year to review the annual report for the previous Annual Period and any other matters related to this Agreement.
- 5.3. The Company shall prepare draft minutes of the monthly and annual meetings and shall issue these to the Contracting Authority for written consent within 5 days following each meeting. The Company shall amend the draft minutes to reflect any comments made in writing by the Contracting Authority and shall issue the minutes to the Contracting Authority within 5 days of receipt of any comments by the Contracting Authority.

Appendix 1 Roadworks Information Forms



Aberdeen Western Peripheral Route / Balmedie-Tipperty
AWPR / B-T Managing Agent, Aberdeen Business Centre,
Willowbank House, Willowbank Road, Aberdeen AB11 6YG

Tel: **01224 332322** | Fax: **01224 322 361**
Email: [**enquiries@awpr.co.uk**](mailto:enquiries@awpr.co.uk) | Web: [**www.awpr.co.uk**](http://www.awpr.co.uk)

Working in partnership



Aberdeen Western Peripheral Route / Balmedie - Tippetty

Competition for the Design, Build, Finance and Operation of the
Aberdeen Western Peripheral Route / Balmedie - Tippetty

Volume Five

Schedule 4: O&M Works Requirements

Part 8: Third Parties

709/ACP/600

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SCHEDULE 4: O&M WORKS REQUIREMENTS
PART 8: THIRD PARTIES

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1. General

- 1.1 The Company shall comply with the requirements of a Relevant Authority / third party detailed in this Part 8 of these O&M Works Requirements.
- 1.2 Where within this Agreement there is a requirement to consult with a Relevant Authority / third party the Company shall identify the Relevant Authority / third party and comply with their requirements whether or not such requirements or the Relevant Authority / third party are identified within this Part 8 of these O&M Works Requirements.
- 1.3 Where as a consequence of consultation with a Relevant Authority / third party a requirement is specified which contradicts any other requirement of this Agreement, the Company shall discuss such with the Contracting Authority and where appropriate shall introduce a Company Change in accordance with Clause 35.
- 1.4 The Company shall consult with those Relevant Authorities / third parties detailed in this Part 8 of these O&M Works Requirements as appropriate, and shall where reasonable take account of comments received.
- 1.5 Reference to those Relevant Authorities or third parties within this Part 8 of these O&M Works Requirements shall mean these Relevant Authorities or third parties or their successor(s).
- 1.6 The Company shall take all necessary measures to avoid causing damage to Apparatus. The Company shall make its own detailed inquiries of the Relevant Authorities and third parties and shall satisfy itself as to the existence of the exact position of any such Apparatus and the depth, size and gradient thereof.
- 1.7 The Company shall provide Consultation Certificates in accordance with the Certification Procedure.
- 1.8 The terms “works” and “Works” in Appendix 1 shall be taken to mean the O&M Works whenever the context is relevant.
- 1.9 The term “Company” in Appendix 1 shall be taken to mean the Relevant Authority unless the context indicates otherwise.

2. Relevant Authorities / Third Parties

- 2.1 Subject to paragraph 1.2 above the special requirements of certain Relevant Authorities / third parties have been reproduced in a form provided by them.
- 2.2 Where necessary, the Company shall establish with the Relevant Authority / third party the definition of terms within each of the special requirements as applicable to the O&M Works.
- 2.3 Without prejudice certain terms have been related to the definitions given in this Agreement. Where this has been done the terms are detailed at the start of each of the special requirements.

APPENDIX 1

Appendix 1A - Special Requirements in Relation to Working on Trafficked Highways

The terminology used in these special requirements shall have the meanings assigned to them as detailed in this section with the following amendments:

“Contractor” means the Company as defined in the Agreement; and

“Contract” means the Agreement

These Special Requirements relate to the North East Trunk Road Network.

Furthermore, these Special Requirements relate to the incumbent (April 2013) 3G Operating Company. Contact details for the succeeding Operating Company will be provided following the award of the Transport Scotland 4G Operations and Maintenance Contract for the North East network.

Conditions and general requirements for Applicants wishing to carry out works on the North East Scotland Trunk Road Network.

All traffic management must be in strict accordance with the Traffic Signs Manual - Chapter 8 and BEAR Scotland Ltd will only deal with the applicant. The following points must be adhered to when making application and whilst occupying a slot on the network:

- (a) Applicants **must** notify ‘Traffic Scotland’ 15 minutes prior to placing the first cone on the network and again when all Traffic Management is lifted by telephoning **0141 287 9283**.
- (b) Signs must be erected of an appropriate size to display the name and telephone number of the organisation undertaking the works.
- (c) All traffic management must be in strict accordance with TSM Chapter 8.
- (d) All vehicles must comply with clause 2.2.1 of the Traffic Signs Manual (TSM) - Chapter 8 volume 1 (1991).
- (e) All site personnel must wear approved high visibility clothing as per Clause 1.4 of TSM Chapter 8.
- (f) All traffic management equipment must be kept in clean and proper order throughout the duration of the works.
- (g) Two hourly checks are required on all traffic management works. These must be undertaken and recorded for all works including overnight works. Checks must be carried out and recorded.
- (h) The attached network access form must be completed in full. The following information must accompany the completed form.
 - (i) Method statement for the works
 - (ii) Traffic management layout drawing
 - (iii) Contact names and addresses for the works including night-time cover.
- (i) BEAR Scotland Ltd and Her Majesty’s Constabularies reserve the right to remove or have removed any traffic management works, if safe to do so, should exceptional circumstances arise, e.g., a road traffic accident.
- (j) The BEAR Scotland Ltd network is subject to restricted working hours on certain sections. These will be detailed if applicable. It is the responsibility of

the applicant to seek clarification of any restrictions that may apply before commencing work.

- (k) Central reserve signs for any dual carriageway or motorway must be established using the Mobile Lane Closure technique as detailed in Volume 8 Section 4 of the DMRB (ref. TD49/97). This process must be strictly adhered to.
- (l) Works of type A will be subject to discussions with the local Police prior to a slot on the network being allocated.
- (m) BEAR Scotland Ltd will have the final decision on allocation of slots on the network. **This decision is non-negotiable.**
- (n) A minimum notice period of four weeks is required for works of one-week duration or less. A six-week minimum notice will be required for works over a one-week period. This does not affect the Statutory Undertakers Emergency powers.
- (o) Requests that involve emergency works/repairs will be treated on their individual merits.
- (p) For works that require a Temporary Traffic Regulation Order i.e. road closure, speed limit and contraflow a minimum notice period of twelve weeks will be required to allow for consultation with relevant parties i.e. Bus Companies, Local Authorities, Police, etc.

Any queries please contact:

The Traffic Officer
BEAR Scotland Ltd
6A Dryden Road
Bilston Glen
Loanhead
Midlothian
EH20 9TY
Telephone: 0845 413 0200

NETWORK ACCESS FORM

ORIGINATOR OF WORKS :	
TRAFFIC MANAGEMENT CONTRACTOR :	
CONTRACTOR FOR THE WORKS :	
ADDRESS :	HEAD OFFICE TEL:
	SITE CONTACT TEL:
Route No.	
Location	
Date(s) From:	
To:	
Time(s)* From:	
To:	
Closure Type**	
Lanes Closed***	
Section 1.01 <i>Speed Limit on Road/ Proposed Speed Limit</i>	
Brief Description of Works	
Method Statement	
Temporary Traffic Management Proposals (Attach plan where appropriate)	
Consultation with local authorities, police etc	
Is Traffic Order Required? (If yes approval is conditional)	
Expected Delay****	

NOTES

Access will ONLY be granted on condition that Traffic Scotland is informed by telephone (0141 287 9283) 15 minutes prior to the first cone being placed on the network when all traffic management has been lifted.

* Time Restrictions may apply

** A, B, or C

*** L1, L2, L3, slip lane, hardshoulder, lay-by, verge, footway

**** To be completed by the Traffic Officer

BEAR Scotland Ltd Response

Approved Yes/No

Signed

Date

Before completing this form please read the conditions and general requirements for applicants wishing to carry out works on the trunk road network.

Form to be completed in full and returned to:

The Traffic Officer
BEAR Scotland Ltd
6A Dryden Road
Bilston Glen
Loanhead
Midlothian
EH20 9TY

Telephone: 0845 413 0200

CLOSURE TYPE A, B OR C

TYPE A: are those systems, which are allowed to remain in operation in all traffic flows and visibility conditions. They include all systems involving contraflows and other works of long duration.

TYPE B: are those systems which are allowed to remain in operation when the traffic demand is less than the available carriageway capacity when the System is in place and there is good visibility. If the work cannot be completed within the allocated time for completion, then, either the Traffic Management System is to be removed and normal traffic conditions reinstated, or additional signing and lamps to the standard of a TYPE A Traffic Management System is to be installed.

TYPE C: similar to TYPE B but the majority of traffic signs required are vehicle mounted. They are carried out when traffic flows permit, in good visibility and generally in daylight although night time systems are permissible. They include continuous mobile operations as well as those, which involve movement and periodic stops of short duration.

NOTIFICATION/APPLICATION FOR INSTALLATION OF PORTABLE TRAFFIC SIGNALS**CONDITIONS**

1. At least SEVEN WORKING DAYS NOTICE SHALL BE GIVEN for all works other than emergency and urgent works. For emergency and urgent works, e.g., when circumstances arise which could result in immediate danger to the public or serious damage to the road), this notice must be sent WITHIN TWO HOURS of work starting.
2. Wherever signal control is to be used at a works site, which contains or is near a JUNCTION two scaled plans showing the proposed temporary site layout must accompany this application. It is a STATUTORY REQUIREMENT for the Roads Authority to issue WRITTEN site approval BEFORE signals are installed, in these instances.
3. The signal equipment and traffic signs must satisfy fully all the requirements set out in the Traffic Signs Regulations and General Directions 2002, and all other relevant regulations, directions and technical memoranda.
4. Procedures, layouts and operations shall be in accordance with the "Safety at Street Works and Road Works – A Code of Practice" and "Traffic Signs Manual – Chapter 8".

5. The mode of operation of the signals shall be "Vehicle Actuation" to the Department of Transport's booklet "An introduction to the Use of Traffic Actuated Portable Traffic Signals" (the pink booklet), unless otherwise agreed by the Roads Authority in writing.
6. If an external supply of electricity is required for the operation of the signals a separate application must be made to Scottish and Southern Energy and to the Area Engineer (lighting section) for such a supply.
7. All apparatus whether hired or owned by the user will be subject to a "beck and call" maintenance contract. The user must establish a safe working method of traffic control within 2 hours of the notification of a fault or defect.
8. The apparatus must be inspected and tested before delivery to site and the user must satisfy the Roads Authority and Police that the equipment meets all the necessary requirements and that a competent person has made the pre-delivery check.

Further copies of this form may be obtained from:

The Traffic Officer
BEAR Scotland Ltd
6A Dryden Road
Bilston Glen
Loanhead
Midlothian
EH20 9TY

Telephone: 0845 413 0200

NOTIFICATION / APPLICATION FOR INSTALLATION OF PORTABLE TRAFFIC SIGNALS

SIGNALS MUST BE VEHICLE ACTUATED UNLESS OTHERWISE AGREED WITH BEAR SCOTLAND LTD

To:	BEAR Scotland Ltd. 6A Dryden Road Bilston Glen Loanhead Midlothian EH20 9TY	(Please note there is a statutory requirement to notify BEAR Scotland Ltd. of all portable signal installations and it is necessary to obtain approval in writing for those sites, which contain or are near a junction)
-----	--	--

1. I (name of applicant).....
 on behalf of (state firm, address and phone no.).....

Give notice of intention to place and operate portable traffic signals at (state location)

In accordance with the overleaf conditions. The intended dates of operations are:-

2. Start date and time Will signals be operational at all times YES/NO
 Finish date and time If no please state times of operation.....

3. **BEAR Scotland Ltd must be notified within 48 hours of signals being removed from the carriageway.**

4. List below two named employees and the signal hire company contacts, (at least one of whom shall be available at any time), who are in the first instance, to be called out at any time by the Police or by BEAR Scotland Ltd to rectify signals which are not working or not working properly.

Named Contacts:-

NAME	CONTACT ADDRESS and TELEPHONE No
(a) (Employee).....	Day Night
(b) (Employee).....	Day Night
(c) (Signal Company)	Day Night

I agree to meet all costs which are incurred by BEAR Scotland Ltd in respect of the connection, operation and disconnection of the signals and in respect of giving emergency attention in the event that the "named contacts" cannot be reached or are unable to rectify any fault within 2 hours of the first notification that the signals or associated signing are faulty.

Address where invoices to be sent if different from above:-

.....

Signed Date On behalf of

Traffic Management Requirements

Where work is carried out on or adjacent to a road open to vehicles, all vehicles and mobile plant operating on or adjacent to that road in the execution of the operations shall be painted in a conspicuous colour as described hereafter:

- (i) All vehicles used in mobile lane closures as defined in Section 6 “Type C Works” in Chapter 8 of the Traffic Signs Manual shall be painted in non-reflectorised yellow (Colour No. 355 to BS381 C or similar). Similarly all vehicles engaged in Operations within unprotected trafficked lanes for example, setting up major traffic management layouts such as tapers and contraflows) on dual carriageways and other high speed roads shall be painted non-reflectorised yellow.
- (ii) All other vehicles undertaking Operations shall be generally light in colour preferably but not necessarily non-reflectorised yellow and/or provide, over the full width and height of the vehicle which is exposed to approaching vehicles, conspicuous markings and signs to define clearly that the vehicle is a roadworks vehicle.
- (iii) Vehicles shall have a sign board reading “Highway Maintenance” (to Diagram 740A of Schedule 12 Part V of the Traffic Signs Regulations and General Directions 1994) fixed at the rear. The lettering shall be 150 millimetres “x height” except that for light vans and cars it shall be the largest “x height” that can be accommodated out of the following heights: 37.5, 50, 62.5 or 100 millimetres. The lettering shall be block capital letters from the alphabet described in the Traffic Signs Regulations and General Directions 2002 Schedule 13 Part II on a yellow non-reflectorised background in accordance with BS 381, Colour No. 355. In addition all purpose vehicles and plant shall be provided with either roof mounted light bars or at least two amber flashing beacons and light vans and cars shall be provided with a roof mounted amber flashing distinctive lamp.
- (iv) All warning lamps shall be switched on when the vehicle or plant is manoeuvring into or out of the location of the Operations, operating at low speed on the carriageway or hard shoulder open to vehicles or standing on a carriageway or hard shoulder open to vehicles.

Weekly Programme of Intent

Weekly Programme of Intent – The Contractor shall by **1200hrs** each following day, provide the Operating Company’s Traffic officer with a detailed summary of Traffic Management Installation which have been in use on the Contract on each day, in the format attached.

Daily Record of Traffic Installations

Daily Record of Traffic Installations – The Contractor shall by **1200hrs** each following day, provide the Operating Company’s Traffic Officer with a detailed summary of Traffic Management Installations which have been used in the Contract on each day, in the format attached.

Appendix 1B - Special Requirements in Relation to the Scottish Government Agriculture Food and Rural Communities Directorate

The terminology used in these special requirements shall have the meanings assigned to them as detailed in this section with the following amendments:

“Contractor” means the Company as defined in the Agreement; and

“Contract” means the Agreement; and

“Engineer” means the Contracting Authority.

1. Special requirements in relation to the Scottish Government Agriculture Food and Rural Communities Directorate are as follows:

Before commencing any work over any portion of the Site the Contractor shall confirm with Scottish Government Representative, details of any restrictions relating to the prevention of the spread of animal, plant and/or poultry diseases which may for the time being be in force relating to the Site and any surrounding land and/or access ways to which the Contractor or any sub-contractor employed by him may have to seek to gain entry for the purpose of the Works. The Scottish Government Representative, can be contacted at the following point:

Address:	The Scottish Government Agriculture Food and Rural Communities Directorate (AFRC) Thainstone Court Inverurie Aberdeenshire AB51 5YA Tel: 01467 626222 Fax: 01467 626217 Email: SGRPID.thainstone@scotland.gsi.gov.uk
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2. The Contractor shall ensure that his employees or the employees of any sub-contractor employed by him shall avoid all contact with livestock on or adjacent to the Site and keep strictly to any route which has been agreed with any owner/occupier of land affected by the Works at all times.
3. Where it is necessary for the purpose of the Works to enter land on which livestock are or may be kept the Contractor shall take all precautions to prevent any livestock penetration from adjacent land onto such land and/or contact between any livestock on that land and other livestock from adjacent land.
4. Where it is necessary for the purpose of the Works to enter land which is or has recently been occupied by livestock, the Contractor shall provide at each entry or exit to such land, appropriate arrangements for disinfecting all footwear and vehicles upon entry or exit from such land to the satisfaction of the Engineer. He shall ensure that all footwear and vehicles are cleansed of all dirt and mud before disinfecting with a clean disinfectant, regularly replenished at the correct dilution and which carries a valid citation on the label certifying approval by Scottish Government Agriculture Food and Rural Communities Directorate.

-
5. The Contractor shall not enter buildings occupied or used by livestock for the purpose of the Works without the express written consent of the owner/occupier. When such entry is necessary, rubber boots and protective over garments of an appropriate type shall be worn at all times which shall be disinfected upon the entry and exit from such buildings in accordance with the instructions given at paragraph 4 above.
 6. Notwithstanding any other provisions within the Contract the Contractor shall take all necessary precautions to ensure that streams, ditches and water troughs are not polluted as a result of carrying out of the Works and that ditches and drainage outfalls are adequately protected from damage pollution and/or silting to the satisfaction of the Engineer.
 7. The Contractor shall ensure that litter and/or debris resulting from the Works is not left or allowed to accumulate on or adjacent to the Site in areas accessible to livestock. The Contractor shall particularly make every effort to remove discarded foodstuffs remaining from human consumption - these may carry infectious agents harmful to livestock.
 8. The Contractor shall ensure that all gates are kept closed and appropriately secured and shall make every effort to avoid damage to fences, hedges, trees and walls in order to prevent livestock from straying. Where such damage does occur the Contractor shall take immediate action to secure any resulting breach from the penetration and/or escape of livestock and immediately thereafter notify the Engineer who shall consult the owner/occupier as appropriate.
 9. In addition to the above requirements the Contractor shall take all necessary precautions to protect farmers' stock herds against the risk/spread of Brucellosis. Such precautions shall include, but not be limited to, the provision by the Contractor at each entry or exit to such land, appropriate arrangements for disinfecting all footwear and vehicles upon entry or exit from such land to the satisfaction of the Engineer. He shall ensure that all footwear and vehicles are cleansed of all dirt and mud before disinfecting with a clean disinfectant, regularly replenished at the correct dilution and which carries a valid citation on the label certifying approval by Scottish Government Agriculture Food and Rural Communities Directorate.
 10. The Contractor shall strictly comply with any restrictions and/or precautions relating to the movement of soil which may be requested by the Scottish Government Agriculture Food and Rural Communities Directorate in the interest of restricting the spread of crop diseases, such as (but not restricted to):
 - (i) Rhizomania (affecting beet)
 - (ii) Red Core Disease (affecting strawberries)
 - (iii) Wart Disease (affecting potatoes)
 - (iv) Verticillium Wilt (affecting hops)
 - (v) Cyst Nematodes (affecting potatoes/beet)
 11. The Contractor shall strictly comply with any restrictions and/or precautions relating to the movement of soil which may be requested by the Scottish Government Agriculture Food and Rural Communities Directorate in the interests of preventing the spread of the following plant species:
 - (i) Japanese Knotweed
 - (ii) Giant Hogweed

In particular any soil or other such arising contaminated with or suspected of being contaminated with the rhizomes and/or roots of these species SHALL NOT be spread to areas currently free of these plants but shall be disposed of
-

as directed by the Scottish Government Agriculture Food and Rural Communities Directorate Representative.

- 12 The Contractor shall strictly comply with the Plant Health Order 2012 relating to the import and movement of ash seeds, plants and trees in order to prevent further spread of Chalara dieback of ash (*Chalara fraxinea*).

13 With regard to livestock diseases these include but are not restricted to :

1. Foot and Mouth Disease
2. Newcastle Disease (Fowl Pest)
3. Swine Fever
4. Swine Vesicular Disease

Should an outbreak of any of the above highly infectious diseases occur in the area the Contractor and/or any sub-contractor employed by him shall not enter further upon any land and shall immediately inform the Engineer and request instructions. The Engineer shall consult with and seek instructions immediately from the Scottish Government Agriculture Food and Rural Communities Directorate Representative.

14 Carcase Burial Pits

- (i) Such pits contain the remains of animals which have been slaughtered for the purposes of containing certain diseases (particularly Foot and Mouth, but occasionally Anthrax). Unauthorised exhumation of such carcasses is illegal. Where there is prior knowledge that Carcase Burial Pits may exist in the area of the Works the Scottish Government Agriculture Food and Rural Communities Directorate Representative may be able to offer assistance in their location. However, if during the course of the Works a Carcase Burial Pit is encountered by the Contractor or any sub-contractor employed by him all work shall cease at that location and the Contractor shall appropriately secure that area of the Site against access and immediately inform the Engineer and request instructions. The Engineer shall consult with and seek instructions immediately from the Scottish Government Agriculture Food and Rural Communities Directorate Representative.

Compliance with the above requirements shall not relieve the Contractor of any of his obligations under the Contract.

Appendix 1C - Special Requirements in relation to Scottish Natural Heritage

The terminology used in these special requirements shall have the meanings assigned to them as detailed in this section with the following amendments:

“Contractor” means the Company as defined in the Agreement.

9. Special requirements in relation to Scottish Natural Heritage are as follows:

- (i) The Contractor shall take cognisance of the environmental importance of any area affected by the investigation and shall comply with all relevant legislation.
 - (a) The Contractor shall consult with Scottish Natural Heritage if any operation affects a statutory protected area, including but not restricted to, The River Dee Special Area of Conservation (SAC) and Corby, Lily and Bishops Lochs Site of Special Scientific Interest (SSSI).
 - (b) The Contractor shall consult with Scottish Natural Heritage if any operation affects a statutory protected species. Where protected species are affected by the Works, the Contractor shall prepare and submit a Protected Species Licence Application, to include a mitigation strategy in advance to Scottish Natural Heritage which shall be agreed before such operations proceed.
 - (c) The Contractor shall provide the findings of pre-construction ecological surveys to Scottish Natural Heritage as part of on-going consultations.
 - (d) The Contractor shall consult with Scottish Natural Heritage before and during works affecting The River Dee SAC and Corby, Lily and Bishops Lochs SSSI, and maintain written records of such consultations. Scottish Natural Heritage shall be informed of planned works a minimum of 7 days prior to commencing works within the SAC. Fence lines to secure and mark the boundary of the works adjacent to and within the SAC shall be inspected and agreed with SNH in advance of works commencing.

The Contractor shall meet all other requirements of the appropriate regulating body in respect of water quality, air quality and noise emissions.

Address: Scottish Natural Heritage

Fodderty Way

Dingwall Business Park

Dingwall

IV15 9XB

Tel: 01349 865333

- (ii) The Contractor shall liaise with the Ecologist appointed by SNH and inform the Contracting Authority a minimum of 7 days prior to commencing Works in any environmentally sensitive areas as identified at the start of the contract.

Appendix 1D - Special Requirements in relation to Historic Scotland**1. Undiscovered remains**

Under principles and procedures agreed between Historic Scotland (HS) and the Contracting Authority responsibility for the main programme of archaeological mitigation work (i.e. archaeological excavation and recording) along the route of any trunk road scheme lies with the Contracting Authority through Historic Scotland. Archaeological evaluation and mitigation works are planned to be completed by the start of construction; however undiscovered archaeological remains may still be present. The Company shall be aware that such undiscovered remains may be present and be revealed in the course of works. In such circumstances the Company shall ensure that procedures are in place to draw upon the services of an appropriately qualified Archaeological Contractor to liaise with Historic Scotland and to advise on and oversee necessary protection and mitigation measures.

2. Control of Ancillary Works

- (a) Where not already assessed within the Environmental Statements for the Schemes, the Company shall engage an appropriately qualified Archaeological Contractor to advise on the location, outwith the road line, of all Constructional Plant and temporary Works including borrow pits, spoil heaps, surplus soil disposal areas, haul roads, work camps, material storage areas. These may be on areas of land out-with the locations fully studied during the scheme assessment process.
 - (b) The Archaeological Contractor shall have access to all Archaeological Reports on the Study Area prepared as part of the Environmental Assessment process. For works out-with the boundaries of the Study Area he shall undertake sufficient Desk Based Research and Fieldwork to identify the location, significance and extent of all sites of archaeological interest in the wider search area.
 - (c) The Company shall make full use of the above information and the advice of his Archaeological Contractor to plan the works in accordance with current Government policy for the protection of the archaeological heritage. In general Works shall be planned to avoid significant archaeological features.
 - (d) Currently no Scheduled Monument Consent is required. Should Works out-with the areas addressed in the Environmental Statements be required, prior to Works of any type within the boundary of any Scheduled Areas or Scheduled Ancient Monuments. Any application for Scheduled Monument Consent shall include a detailed specification for any proposed fieldwork mitigation. If Scheduled Monument Consent is granted, no Works may take place until Historic Scotland has approved the results of the fieldwork mitigation. Early contact with Historic Scotland is vital if works of any kind are proposed or suggested within, or within 50m of the boundary of, any Scheduled Monuments or Scheduled Areas.
 - (e) For areas which the Archaeological Contractor research suggests may be archaeologically sensitive but the full potential remains uncertain, prior archaeological evaluation may be required to identify appropriate mitigation.
 - (f) Where it has been determined that archaeological site(s) should be preserved but they lie so close to any proposed Works that they may be at risk from inadvertent damage, the Company, using the advice of his Archaeological Contractor, shall arrange for temporary fencing to be erected around the site(s) prior to works commencing. If any Scheduled Monuments or Areas are involved, Historic Scotland's prior written agreement must be sought on the area to be fenced. No Works of any nature will be permitted within these fenced-off areas.
-

- (g) For any Works requiring Planning Permission, the Company shall submit to the planning authority, as part of his planning application, a statement of his archaeological assessment of the area, the implications of his development upon it and the details of any archaeological mitigation proposed.

3. Design and Mitigation: Methodologies

The Design and mitigation shall be in accordance with current good practice guidelines within Scotland including, but not limited to, the following:

- (h) Association for Environmental Archaeology 1995 Environmental Archaeology and Archaeological Evaluations, Working Paper No. 2;
- (i) Brown, D., 2007 Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation, Archaeological Archives Forum;
- (j) English Heritage, 2010 Waterlogged Wood: Guidelines on the Recording, Sampling, Conservation and Curation of Waterlogged Wood;
- (k) English Heritage, 2011 Environmental Archaeology a guide to the theory and practice of methods, from sampling and recovery to post-excavation, 2nd Edition;
- (l) Faegri, K. et al, 1989 Textbook of Pollen Analysis, 4th edition;
- (m) Garratt-Frost, S., 1992 The Law and Burial Archaeology, IfA Technical Paper No. 11;
- (n) Hall, A., 1995 Environmental archaeology and archaeological evaluations: Recommendations concerning the environmental archaeology component of archaeological evaluations in England, Working Paper 2, Association for Environmental Archaeology;
- (o) Historic Scotland, 1996, Project Design, Implementation and Archiving (Historic Scotland Archaeological Procedure Paper 2);
- (p) Historic Scotland, 1997, The Treatment of Human Remains in Archaeology (Historic Scotland Operational Policy Paper 5) Reprinted and Amended 2006;
- (q) Institute for Archaeologists, 1994, Standard and Guidance for archaeological field evaluation, Revised 2008;
- (r) Institute for Archaeologists, 1994, Standard and Guidance for an archaeological watching brief, Revised 2008;
- (s) Institute for Archaeologists, 1995 Standard and Guidance for archaeological excavation, Revised 2008;
- (t) Institute for Archaeologists, 2001 Standard and Guidance for the collection, documentation, conservation and research of archaeological material, Revised 2008;
- (u) Institute for Archaeologists, 2009 Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives;
- (v) Mays, S., Brickley, M., and Dodwell N., 2004, Human Bones from Archaeological Sites: Guidelines for producing assessment documents and analytical reports;
- (w) McKinley, J.I., and Roberts, C., 1993 Excavation and post-excavation treatment of cremated and inhumed human remains, IfA Technical Paper No. 13;
- (x) Richards, J.C., Richards, J., and Robinson, D., (Eds), 2000, Digital Archives from Excavation and Fieldwork: Guide to Good Practice (Second Edition), Archaeology Data Service;

-
- (y) Royal Commission on the Ancient and Historical Monuments of Scotland, 1996a, Guidelines for Archiving of Archaeological Projects, ISSN 1352-1098;
 - (z) Royal Commission on the Ancient and Historical Monuments of Scotland, 1996b, Guidelines for Archiving of Archaeological Projects;
 - (aa) Scottish Government 2008 Treasure Trove in Scotland – a code of practice;
 - (bb) Society of Museum Archaeologists, 1993 Selection, Retention and Dispersal of Archaeological Collections: Guidelines for use in England, Wales and Northern Ireland;
 - (cc) Society of Museum Archaeologists, 1995 Towards an Accessible Archaeological Archive, The Transfer of Archaeological Archives to Museums: Guidelines for use in England, Northern Ireland, Scotland and Wales;
 - (dd) Walker, K., 1990 Guidelines for the Preparation of Excavation Archives for Long-term Storage, UKIC.

Appendix 1E - Special Requirements in Relation to the Scottish Environment Protection Agency

The terminology used in these special requirements shall have the meanings assigned to them as detailed in this section with the following amendments:

“Contractor” means the Company as defined in the Agreement.

Special Requirements in Relation to the Scottish Environment Protection Agency (SEPA) are as follows:-

1. The Contractor shall comply with the Water Environment (Controlled Activities) (Scotland) Regulations 2011.

The Control of Pollution Act 1974 (COPA 1974) which controlled discharges of poisonous, noxious or polluting substances and trade and sewage effluents to controlled waters in Scotland, was replaced by the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR), which came into force in March 2011 (superseding CAR 2005 which came into force in 2006).

It is important to undertake early consultation with SEPA to discuss any proposals for engineering activities, point source discharges, abstractions or impoundments in or near the water environment as it is an offence under the 2011 Regulations to carry out the majority of these controlled activities without a CAR authorisation.

Further details are provided in the Practical Guide on CAR via the web link below:

http://www.sepa.org.uk/water/water_regulation.aspx

SEPA Contact Name: [REDACTED]

Address:
Inverdee House

Baxter Street
Torry
Aberdeen

AB11 9QA

Tel: 01224 266600

Telephone: [REDACTED]

Email [REDACTED]

Appendix 1F - Special Requirements in Relation to Scottish Water

The terminology used in these Special Requirements shall have the meanings assigned to them as detailed in this section with the following amendments:

“Contractor” means the Company as defined in the Agreement; and

“Contract” means the Agreement.

1.1 Special requirements in relation to Scottish Water are as follows:

1.2.1 Scottish Water Authority supplies water and sewerage services.

In these Special Requirements the following terms shall have the meanings assigned to them:

'Authority' means the Roads Authority (RA) initiating the roads development.

'Undertaker' means **Scottish Water (SW)**.

'Undertaker's Representative' means the staff of the Scottish Water or its authorised representatives and/or agents.

1.2.2 The Contractor shall be assumed to be appointed by the Roads Authority (or Transport Authority) for the purposes of designing, constructing and/or managing the roads/transport scheme).

1.2.3 Before commencing any work or moving heavy plant or equipment over any portion of the Site the Contractor shall confirm details of all underground plant within the New Works Site.

1.2.4 At all times the contractor shall consider potential risks to SW apparatus and shall take measures to protect such apparatus, in line with best industry practice.

1.2.5 Before commencing any work involving the movement of heavy plant or equipment over any portion of a site, the Contractor shall confirm details of all underground plant within the site belonging to SW with the appropriate SW representative for the area and service involved. If necessary, trial holes shall be excavated to confirm position of SW apparatus. NB Trial holes shall only be done with the expressed permission of Scottish Water.

1.2.6 Where such details show a conflict between SW pipes or plant and the Contractor's works, the Contractor shall give Scottish Water at least two weeks notice of the date on which it is intended to commence such work or movement of plant and equipment in order that the presence of buried plant can be confirmed and indicated by markers.

1.2.7 The Contractor's method statement and safe system of work shall state clearly what measures are to be used to avoid damaging Scottish Water's apparatus and these shall be submitted to SW for consideration. The Contractor shall ensure that SW's plant is protected from damage, but if any damage should occur then SW shall be notified immediately.

1.2.8 The Contractor shall ensure that all method statements and risk assessments that are done which impact on SW apparatus are site specific, appropriate and comply with Scottish Water's Standards and Procedures. The Contractor shall submit completed method statements and risk assessments to SW for

information and comment and shall comply with SW's Distribution, Operations and Maintenance Strategy (DOMS) procedures.

- 1.2.9 Any damage to Scottish Water's apparatus shall be reported immediately to Scottish Water using the SW Call Centre number 0845 601 8855.
- 1.2.10 All costs due to damage to SW apparatus shall be charged to the third party that caused the damage. Costs charged may include any operational costs that were incurred by SW in order to mitigate loss of service and inconvenience to SW customers and hence these costs may be significant.
- 1.2.11 The following specific requirements must also be adhered to:
- (i) All surface apparatus within the site belonging to Scottish Water including manhole covers, toby covers, valve covers, gratings etc shall be identified on site in advance of the works commencing.
 - (ii) On completion of the works the contractor shall again identify the apparatus and check it is still accessible and functional and shall take immediate remedial action if that is not the case.
 - (iii) The level of covers shall be adjusted to suit the new scheme. Alternatively covers shall be replaced or renewed as appropriate to suit the new roads scheme.
 - (iv) Before any work is carried out in the vicinity of pipelines trial holes shall be carefully excavated by hand as required to confirm the position of the pipe.
 - (v) Assistance in tracing SW apparatus can normally be arranged by SW's local representative, who shall be contacted before any trial holes are excavated.
 - (vi) Allow, in general, at least 300 millimetres clearance horizontally and vertically round Scottish Water's pipes in order to allow future repair and maintenance work to be made to the pipe.
 - (vii) The Contractor shall provide appropriate consolidation on reinstatement in order to reduce the effect of subsidence on SW apparatus.
 - (viii) Mechanical excavation shall not be used at the vicinity of SW apparatus. Machinery working can be used but only if agreed by SW. (see SW document "Working in the Vicinity of a Live Main").
 - (ix) Fencing may be required at specific points to exclude access by mechanical plant except at designated crossing points where suitable protection to the main shall be provided. Bridging works may be required at pipe crossings.
 - (x) SW shall be consulted before a decision is made to use explosives within 400m of a water main.
 - (xi) Once exposed, a water main will be treated with the utmost care to prevent damage from any source. It shall be supported as necessary at all stages of excavation and back filling, to the satisfaction of SW. Only short lengths shall be exposed at any time with only one joint being exposed.
 - (xii) In the event of a marker being disturbed for any reason, it shall not be replaced other than in the exact position and to its former depth, unless

- the repositioning is carried out at the discretion and under the supervision of SW's representative.
- (xiii) Written permission shall be obtained from Scottish Water before water is obtained from the Public Supply and in particular the use of fire hydrants is permitted but only if a Scottish Water licensed standpipe is used.
 - (xiv) Scottish Water shall be consulted before any piling is carried out within 15 metres of a water main. Any piling works adjacent to SW apparatus shall be carried out to the recommendations of BS 5228-2:2009 and to SW local requirements. Scottish Water reserves the right not to accept any piling works (or other works) that may pose an unacceptable risk to SW apparatus.
 - (xv) Damage to a water main however slight, and even if only to the coating of a pipe, shall be reported immediately to the Undertaker and work suspended and men withdrawn as appropriate until an opportunity to assess the extent of any repair necessary is given.
 - (xvi) If traffic is required to cross over a water main on site then the crossing arrangements shall be designed by the contractor and submitted to SW for consideration and acceptance. Such arrangements shall be designed so as to limit loading and settlement on the pipe and to limit risk of damage to the asset to acceptable levels. To avoid doubt, it should be noted that the final responsibility for the crossing point design lies with the contractor.
 - (xvii) Water mains are normally laid at between 750 millimetres and 1500 millimetres cover but larger mains often cannot follow minor variations in the ground contours readily and may be shallower or deeper than this.
 - (xviii) Sewer pipe depths can vary from 750mm to over ten metres and present significant risks. The primary risks relate to
 - a) Falling from heights due to deep manholes.
 - b) Noxious fumes and gases within the sewer system
 - (xix) Under no circumstances must anyone enter a sewer on site and manhole covers should not be removed unless under SW's strict control arrangements.
 - (xx) No work shall be done to the sewer or system without the expressed permission of Scottish Water by means of the issue of an Access Transfer Certificate.
 - (xxi) Directional drilling or any other type of non-open cut installation of services shall not take place near Scottish Water plant or mains without written permission being given.
 - (xxii) Where other apparatus or services are to be laid alongside a water main, a minimum separating distance shall be agreed on site. All trenches crossing the line of a water main shall be kept as near a right angle to the axis of the main as possible (i.e. shortest possible crossing).
 - (xxiii) As part of the DOMS procedures and as part of the contractor's method statement, contingency arrangements may be required on site to cover the possibility of a SW asset being rendered inoperable by the contractor. Contingency arrangements should include
 - a) Contact names and details
 - b) Contingency options
 - c) Emergency procedures
-

- (xxiv) Where it is necessary to lay new apparatus across and above a water main an appropriate distance shall be left between the bottom of the new apparatus and the top of the main. This shall be agreed with SW
- (xxv) Where apparatus shall pass below a water main the trench shall be excavated by hand. Care will be taken so as to avoid undermining the water main (or sewer) and proposals shall be submitted by the contractor and agreed with SW
- a) 48 hours notice of intention to back-fill under, over or adjacent to a water main shall be given to SW who then may arrange a representative to advise as to the suitability and consolidation of back-fill material over the pipeline.
 - b) Backfill material shall be suitable excavated or imported inert material. Material shall be agreed with SW.

1.2.12 The following tree planting requirements must also be adhered to:

- (i) Before tree planting is carried out near mains approval shall be obtained from Scottish Water.
- (ii) The consent to plant trees will indicate what areas may be planted and also the type of trees.
- (iii) The only hardwood plants which cannot be planted directly across the water main are hedge plants such as Quickthorn, Blackthorn, etc. and these shall only be planted where a hedge is necessary either for screening purposes or to indicate a field boundary. Poplar and Willow trees shall not be planted within 10m of a water main.
- (iv) The following trees and those of similar size (be either deciduous or evergreen) shall not be planted within 6m of a water main or sewer e.g. Ash, Beech, most Conifers, Elm, Horse Chestnut, Lime, Maple, Oak, Sycamore. Apple and Pear trees also come under this category.
- (v) Raspberries, Gooseberries and Blackcurrant may be planted close to a water main or sewer but a 4m strip (1.5m each side of the water main) shall be left clear at all times.
- (vi) Dwarf Apple Stocks may be planted to within 3m of a water main or sewer.
- (vii) In cases where screening is required, the following are shallow-rooting and may be planted close to the mains or sewer:
 - a. Blackthorn, Broom, Cotoneaster, Elder, Hazel, Laurel, Privet, Quickthorn, Snowberry and most ornamental shrubs.
- (viii) Christmas Trees (Picca Abies) may be planted to within 3m of the main or sewer. However, permission is given on the strict understanding that the Christmas Trees are clear felled at intervals not exceeding seven years.
- (ix) Before any landscaping is carried out near water mains approval shall be obtained from Scottish water.
- (x) Any consent to landscape will indicate the maximum and minimum depth of earth allowed to be added or subtracted to the overburden over the length of the pipe within which this applies. No heavy plant shall be used on or around the pipe without the express permission of SW in case of structural damage.

- (xi) However, no landscaping over the length of the pipe and the indicated width on the consent will be allowed that would affect SW's ability to reach the pipe in the event of an emergency.

1.2.13 The following other requirements must also be adhered to:

- (i) The Contractor shall not allow material to enter the sewerage system or discharge to the sewerage system without the express permission of Scottish Water.
- (ii) In the event of any damage whatsoever to Water or Sewerage apparatus the Contractor shall immediately inform CUSTOMER SERVICES AT SCOTTISH WATER 55 BUCKSTONE TERRACE EDINBURGH EH10 6XH. TELEPHONE: 0845 601 8855. FAX: 0131 445 5040. (Ask for Service Request Desk).
- (iii) The contractor should liaise with one or more of the following:-
- a) Service Relocation team at 0141 355 5590 (For all NRSWA major Works projects in the first instance.
 - b) Scottish Water's local staff
 - c) SW Asset Delivery staff
 - d) Other SW employees as appropriate.

Appendix 1G - Special Requirements in Relation to Aberdeenshire Council – Planning Department

The terminology used in these special requirements shall have the meanings assigned to them as detailed in this section with the following amendments:

“Contractor” means the Company as defined in the Agreement.

1.1 Special requirements in relation to Aberdeenshire Council Planning Department are as follows:

1.1.1 The Contractor is required to comply with the special requirements of the following Planning and Environmental Departments, which should be contacted 7 days prior to commencement of the contract with full details of the proposed Works. Formartine Area

Contact	[REDACTED], Area Planning Officer
Administrative Base	45 Bridge Street, Ellon, AB41 9AA
Telephone	01358-726429
Fax	01358-726450
Area Office Surgeries	Towie House, Turriff - Wednesday (every 3 weeks) 13.45 pm - 16.15 pm
Email	fo.planapps@aberdeenshire.gov.uk

Garioch Area

Contact	[REDACTED], Area Planning Officer
Administrative Base	Gordon House, Blackhall Road, Inverurie, AB51 3WA
Telephone	01467-628576
Fax	01467-628469
Email	ga.planapps@aberdeenshire.gov.uk

Kincardine & Mearns Area

Contact	[REDACTED], Area Planning Officer
Administrative Base	Viewmount, Arduthie Road, Stonehaven, AB39 2DQ
Telephone	01569-768300
Fax	01569-766549
Email	km.planapps@aberdeenshire.gov.uk

Appendix 1H - Special Requirements in Relation to Aberdeen City Council – Planning Department

The terminology used in these special requirements shall have the meanings assigned to them as detailed in this section with the following amendments:

“Contractor” means the Company as defined in the Agreement.

1.1 Special requirements in relation to Aberdeen City Council Planning Department are as follows:

1.1.1 The Contractor is required to comply with the special requirements of the Roads Department which should be contacted 7 days prior to commencement of the contract with full details of the proposed Works:

Development Management

Enterprise, Planning and Infrastructure
Aberdeen City Council
Business Hub 4
Marischal College
Broad Street
Aberdeen
AB10 1AB
Phone: 01224 523470
Fax: 01224 523180
Email: pi@aberdeencity.gov.uk

Appendix 1I – NOT USED

Appendix 1J - Special Requirements in Relation to British Telecommunications Plc

The terminology used in these special requirements shall have the meanings assigned to them as detailed in this section with the following amendments:

“Contractor” means the Company as defined in the Agreement; and

“Contract” means the Agreement.

Special requirements in relation to British Telecommunications Plc are as follows:

12. In this Special Requirement the following terms shall have these meanings assigned to them:

- a. **‘Company’** means British Telecommunications Plc (“**BT**”).
- b. **‘Company Representative’** means the staff of BT, or its authorised representatives or Agents.
- c. **‘Apparatus’** means all boxes, cabinets, poles and plant including any associated cabling and/or ducting owned by BT.
 - (i) All works in the public highway are subject to the New Roads and Street Works Act 1991, and the Promoter of the work is legally responsible to bear the cost of safeguarding Apparatus. The “highway” includes carriageway, verges, footpaths, etc.
 - (ii) Before commencing any work, or moving of heavy plant or equipment over any portion of the site the contractor shall confirm details of the Apparatus, owned, leased or rented by the Company, within the site with the Company Representative, who can be contacted as detailed in para.(xi).

Apparatus maps are also available at www.bt.com/btplant. Please contact 0800 169 3849 for a user ID and password to access the system.

- (iii) Where such details show that the works or the movement of plant or equipment may endanger the Apparatus, the Contractor must give the Company Representative at least 7 days notice of the date on which it is intended to commence such works or the movement of plant or equipment in order that the presence of any sub-surface Apparatus can be indicated by markers to be supplied by the Company and placed by the Contractor under supervision of the Company Representative. The Contractor shall ensure that all Apparatus, particularly surface running cable, is adequately protected from damage and the Company Representative shall approve such protective measures. In the event of a Company marker being disturbed for any reason it shall not be replaced other than in the exact position and to its former depth unless the repositioning is carried out at the direction and under the supervision of the Company Representative.
- (iv) In the event of a Company marker being disturbed for any reason it shall not be replaced other than in the exact position and to its former depth unless the

repositioning is carried out at the direction and under the supervision of the Company Representative.

- (v) The Contractor shall take particular care in relation to the protection of Apparatus, where such Apparatus includes the presence within the site of optical fibre and/or co-axial cabling. The Contractor shall make every effort to avoid the disturbance of the Company's network which, if damaged, can prove costly to reinstate. The Contractor shall make every effort to avoid the disturbance of Apparatus more than is absolutely necessary for the completion of the works in accordance with the Contract.
- (vi) When excavating, or backfilling around Apparatus, the Company Representative shall be given adequate notice, which should be not less than 7 days, of the Contractor's intentions in order that he may supervise the works. The Contractor should note that the normal depth of cover for Apparatus and ducts is as follows :-
- (e) in footways 350 millimetres, which is to be maintained
 - (f) in carriageways 600 millimetres, which is to be maintained.
- Where the 350/600 millimetres depth of cover cannot be maintained the Contractor shall carry out the instructions of the Company Representative for the protection of the Apparatus. Where the required depth of cover cannot be maintained over cabling, such cables may have to be diverted.
- (vii) All excavation adjacent to Apparatus is to be carried out by hand until the exact extent and/or location of Apparatus is known. Mechanical borers and/or excavators shall not be used within 1.0 metres of Apparatus or 2.0 metres of any pole without the supervisory presence of a Company Representative. To prevent any movement of Apparatus during excavation, complete shuttering shall be used as directed by the Company Representative if:
- (a) excavation is deeper than the depth of cover of adjacent Apparatus;
 - (b) excavation is within 1.0 metres of Apparatus in stable soil; or
 - (c) excavation is within 5.0 metres of Apparatus in unstable soil.
- If for completion of the works the Contractor intends using any of the following:
1. pile driving equipment within 10.0 metres of Apparatus;
 2. explosives within 20.0 metres of Apparatus; or
 3. laser equipment within 10.0 metres of Apparatus
- the Contractor shall advise the Company Representative, in writing, in order that any special protective measures for the Apparatus affected may be arranged.
- (viii) All Company manhole, joint box and/or other access points and chambers within the site shall be kept clear and unobstructed. Access for vehicles, winches, cable drums and/or any further equipment required by the Company for the maintenance of its Apparatus must be maintained at all reasonable times. The Contractor should particularly note the footway type chambers are not specified

for carriageway loading and will need to be adequately protected and/or demolished and rebuilt under supervision of a Company Representative where such chambers are likely to be placed at risk, either temporarily or permanently, from the movement of plant and/or equipment on the site. The Company Representative shall be given reasonable access to all Apparatus and chambers when required. Where BT installs Apparatus during the works this new Apparatus shall be treated as existing Apparatus for the purpose of these Special Requirements.

- (ix) For Frame and Covers that necessitate a change in level please contact the local office. If you wish to provide recessed frames and covers they will have to be supplied by the Company's agreed supplier. The Contractor must be prepared to supply and install such frames and covers in future, and must supply names of who will be liable for future maintenance.

- (x) In the event of any damage whatsoever to Apparatus the Contractor must immediately inform BT and report the occurrence as follows :

Call BT fault reporting on **0800 800 154**

WARNING

Entry into all BT underground structures is prohibited to all unauthorised personnel.

- (xi) For free on site assistance prior to commencement of works :

Tel : 0800 0232023

Fax : 020 8326 4050

E-mail : dbyd@bt.com

Seven working days notice is required.

(Office hours: Monday to Friday 08:00 to 17:00)

Compliance with the above requirements does not relieve the Contractor of any of his obligations under the Contract.

Appendix 1K - Special Requirements in Relation to Scotland Gas Networks Ltd – Distribution and Transmission

The terminology used in these special requirements shall have the meanings assigned to them as detailed in this section with the following amendments:

“Contractor” means the Company as defined in the Agreement;

“Contract” means the Agreement; and

“Engineer” means the Contracting Authority.

1.1 Special requirements in relation to Scotland Gas Networks Ltd are as follows:

1.1.1 In these Special Requirements the following terms shall have the meanings assigned to them:

‘Company’ means Scotland Gas Networks Ltd.

‘Company Representative’ means the staff of Scotland Gas Networks Ltd or its Authorised Representatives and Agents.

‘Apparatus’ means all surface or sub-surface equipment and plant including any gas pipeline(s), main and/or service owned, leased or rented by Scotland Gas Networks Ltd.

1.1.2 Before commencing any work or moving heavy plant or equipment over any portion of the Site the Contractor shall confirm details of any Distribution and/or Transmission Apparatus within the Site with the Company Representative, who can be contacted at the following point:

Address: [REDACTED]
Scotland Gas Networks Ltd
95 Kilbirnie Street Glasgow
G5 8JD

E-mail: [REDACTED]

Telephone: [REDACTED]

or for on-site location of plant:

Moleseye (was Susiephone) 0800 800 333

1.1.3 Where such details show that the work or the movement of plant or equipment on the Site may endanger any Apparatus, the Contractor shall give the Company Representative at least 7 days written notice of the date on which it is intended to commence such Works or the movement of plant and equipment in order that the presence of any sub-surface Apparatus can be indicated by markers to be supplied by the Company and placed by the Contractor under the supervision of the Company Representative. The Contractor shall ensure that all Apparatus is adequately protected from damage and such protective measures shall be to the satisfaction of the Company Representative.

1.1.4 In the event of a Company marker being disturbed for any reason it shall not be replaced other than in the exact position and to its former depth unless the repositioning is carried out at the direction and under the supervision of the Company Representative.

1.1.5 The Contractor shall carry out all works in connection with the Contract with reference to the requirements of the following publications:

- (i) Institute of Gas Engineers: IGE / SR / 18 Part 1 (1990), Communication 1947 - 'Safe Working in the vicinity of Gas Pipelines, Mains and Associated Installation' (Part 1: 'Operating at Pressures in Excess of 2 Bar').

Health and Safety Executive (HSE): HS (G) 47 - 'Avoiding danger from underground services'.

Scotland Gas Networks Ltd Specification: T/SP/SSW2 - 'Code of Practice for Safe Working in The Vicinity of Scotland Gas Networks Ltd Transmission Pipelines and Associated Installations Operating at Pressures in Excess of 7 Bar'.

In addition to the above document, the following Special Requirements shall apply to the road construction works within the vicinity of the Transmission network;

1. Planned diversions to SGN apparatus are based on the Specimen Design for the new road.
2. No variations from the specimen design of the new road at interface points with existing or proposed SGN apparatus shall be permitted without the prior written agreement of SGN Ltd.
2. The order of works for the SGN diversions shall be only as prescribed by SGN and shall not be subject to any outside interference.
3. 24 hour access to SGN apparatus and installations shall be maintained by the roads contractor at all times throughout the road construction works.
4. Any works associated with the new road, not covered by the Specimen Design, which impact upon SGN apparatus shall be subject to the conditions of this document, the relevant roads legislation, and the conditions outlined above.

Scotland Gas Networks Ltd Cathodic Protection Policy T/PL/ECP1.

1.1.6 The Contractor shall avoid the disturbance of Apparatus more than is absolutely necessary for the completion of the Works in accordance with the Contract. In particular 'Thrust Blocks' and other such support shall NOT be disturbed without the specific written approval of the Company Representative. The Contractor should particularly note that large diameter Gas pipelines may either be:

- (g) High Pressure pipelines frequently operating at pressures exceeding 7 bar; or
- (h) Low, Medium and Intermediate pressure local distribution mains below 7 bar.

For differing reasons either type poses a considerable hazard to safety if damaged. The Contractor shall also note that smaller Gas distribution pipes may be of yellow plastic, cast iron, steel or other such material and that unless specifically known to the contrary any such services encountered during the course of the Works should be assumed to be Gas pipelines and treated as such in

- accordance with these Special Requirements until positively identified otherwise and the Engineer so notified in writing.
- 1.1.7 No vehicle plant or machinery shall cross, stand, operate or travel within 3.0m of any Apparatus particularly gas pipelines except as approved by the Company Representative. The Contractor shall agree his methods of working near any Apparatus with the Company Representative and ensure that any Apparatus is adequately protected from damage by the use of wooden sleeper tracks or reinforced concrete rafts at crossing points as appropriate. Temporary fencing of adequate strength shall be erected to regulate the movement of vehicles plant and machinery in the vicinity of Apparatus. All such protective measures shall be to the satisfaction of the Company Representative.
- 1.1.8 Where for the purposes of completing the Works in accordance with the Contract it is necessary to lay a new service across an existing Gas pipeline whether above or below, a minimum clearance of 600 millimetres shall be left between the outside of the Gas pipeline and the new service to be installed. Under no circumstances shall a new service be laid parallel above or below a gas pipeline. Hydraulic or other form of pressure testing of any new services shall not be permitted within 6.0 metres of any Gas pipeline unless precautions have been taken involving the use of pre-installation tested pipeline having a design factor of 0.3 for a distance of 6.0 metres either side of the Gas pipeline and/or such additional precautions including but not limited to sleeving barriers and the like as the Company Representative may require in consultation with the Engineer.
- 1.1.9 The Contractor shall particularly note that Gas pipelines and other Apparatus of the Company are usually cathodically protected to Scotland Gas Networks Ltd Policy T/PL/ECP1. The Company will require interaction tests to be carried out to determine whether its own system will be adversely affected by any new service and/or its protective measures. Any work requiring the removal modification and/or movement of Apparatus shall only be carried out by the staff of the Company and/or its authorised contractors and Agents. In the event that any cathodic protection posts and/or associated Apparatus require to be removed replaced and/or moved for the purposes of the Works the Contractor shall give not less than seven days' written notice of the requirement to the Company.
- 1.1.10 When excavating or backfilling around Apparatus, the Company Representative shall be given not less than 3 days written notice, of the Contractor's intentions in order that he may supervise the Works.
- 1.1.11 Backfilling shall be in 150 millimetres layers, or as may otherwise be directed, consolidated layer by layer to the satisfaction of the Company Representative. Fill shall be free from flints, stones and carbonaceous material. Where slabbing reduces such depth, clean sand filling shall be used.
- 1.1.12 All excavation adjacent to Apparatus is to be carried out by hand until the exact extent and/or location of Apparatus is known. The Contractor shall note the following:
- (i) Mechanical borers shall not be used within 15 metres of Apparatus; and
 - (ii) Hand held power assisted tools shall not be used within 1.5 metres of Apparatus without the supervisory presence of a Company Representative.
- 1.1.13 To prevent any movement of Apparatus during excavation, complete shuttering shall be used as directed by the Engineer if:

- (i) Excavation is deeper than the depth of cover of adjacent Apparatus;
- (ii) Excavation is within 3.0 metres of Apparatus in stable soil; and
- (iii) Excavation is within 6.0 metres of Apparatus in unstable soil.

Where excavation results in the exposing of Gas pipelines or other Apparatus, protective timber cladding shall be applied to the Gas Pipelines or Apparatus to the satisfaction of the Company Representative and shall be maintained until such excavation is reinstated and backfilled.

1.1.14 If for the completion of the Works the Contractor intends using any of the following:

- (i) Pile driving equipment within 15.0 metres of Apparatus (or such greater distance as may be required to ensure that the MAXIMUM peak particle velocity as measured at the Apparatus does NOT exceed 25 millimetres per second);
- (ii) Explosives within:
 - (a) 400.0 metres of exposed Apparatus; or
 - (b) 100.0 metres of buried Apparatus.
- (iii) Hot Works welding and the like within 15.0 metres of Apparatus; and
- (iv) Hydraulic testing within 6.0 metres of Apparatus.

The Contractor shall advise the Company Representative, giving at least 7 days written notice, in order that any special protective measures for the Apparatus affected may be arranged. The Contractor SHALL NOT proceed with the use of any of the above without the written consent of the Company Representative.

- (iii) All Apparatus manholes and/or other access points and chambers within the Site shall be kept clear and unobstructed. Access for vehicles, winches and/or any further equipment required by the Company for the maintenance of its Apparatus, shall be maintained at all reasonable times and unless otherwise agreed in writing by the Company representative a clearance of 6.0 metres shall be allowed for such access.
- (iv) The covers to Apparatus manholes and/or other access points and chambers shall only be lifted under the direct supervision of the Company Representative. No employee of the Contractor or of any sub-contractor employed by the Contractor shall enter any chamber and/or Apparatus of the Company unless under the supervision of the Company Representative and in any case not before a gas check as specified by the Company Representative has been carried out in the presence of the Company Representative and such checks have shown it to be safe to enter the chamber and/or Apparatus. The Company Representative shall be given reasonable access to all Apparatus and chambers when required.
- (v) In the event of any damage whatsoever even of a minor nature to Apparatus particularly to Gas pipeline coatings and/or test leads the Contractor shall immediately inform the Engineer and report the occurrence by contacting the Company Representative. The Company Representative will arrange for repairs to be carried out.

2. Emergency Action

- 2.1.1 The following actions shall be taken by the Contractor in the event of a gas leak in any Apparatus:
- (i) Evacuate all personnel from the vicinity of the pipeline damage or leak.
 - (ii) Remove and/or extinguish all sources of ignition for a distance of at least 200 metres in all directions from the location of the leak. This precaution shall include a ban on the use of any electrical equipment falling within this limit.
 - (iii) IMMEDIATELY inform the Company, the Engineer and (if required) the Emergency services in that order.

THE EMERGENCY TELEPHONE NUMBER OF THE COMPANY IS:

0800 111 999

- (iv) Secure the area from the approach of all employee traffic and/or the general public.
- (v) Render every assistance to the Emergency Services and/or the Company as shall be requested for the purposes of mitigating damage arising from the leak and/or for the purposes of securing public safety.
- (vi) DO NOT ATTEMPT TO SEAL ANY LEAK OF GAS AT THE POINT OF DAMAGE
- (vii) Compliance with the above requirements shall not relieve the Contractor of any of his obligations under the Contract

Appendix 1L - Special Requirements in Relation to Scottish and Southern Energy – Distribution and Transmission

All works subject to SSE terms and conditions and charging methodology, landowner / legal consents from third parties and the following;

HSE Documents:

- HSG47 Avoiding danger from underground services
- GS6 - Avoiding danger from overhead power line

Appendix 1M - Special Requirements in Relation to Network Rail

The terminology used in these special requirements shall have the meanings assigned to them as detailed in this section with the following amendments:

“Contractor” means the Company as defined in the Agreement; and

“Contract” means the Agreement.

Introduction

The railway is a particularly hazardous environment. The danger from train movements, overhead power lines, buried cables and electrified rails at ground level must not be underestimated. The Industry's safety policy and safety management systems require the enhancement of some society legislation and the following Special Requirements in relation to Network Rail indicate areas where the legislative requirements are strengthened.

These requirements apply to all types of work on Network Rail land i.e. surveying, inspection, construction and maintenance.

1. Definitions

In these Special Requirements, the following terms shall have the meanings assigned to them:

- a. **‘Contractor’** means any person or company to whom a contract for the whole (or any part) of the Works is let and for whom the Other Party is the Contracting Authority.
- b. **‘Isolation’** means planned arrangements for the predetermined period for the interruption of traction electricity between defined locations.
- c. **‘Network Rail Company Standards’** means a standards document issued by Network Rail for its own use (as amended by Network Rail from time to time) in relation to the railway as a whole which applies to the performance of the Works.
- d. **‘Network Rail’s Representative’** means a person duly authorised to act on Network Rail’s behalf.
- e. **‘Other Party’** means a party which has contractual obligations to Network Rail under a works agreement in respect of the design, construction and maintenance of a bridge over or under the railway Infrastructure.
- f. **‘Possession’** means planned safety arrangements which control or prevent the normal movement of rail traffic on the Railway Infrastructure between defined locations and for a pre-determined period.
- g. **‘Railway’** means the Railway Infrastructure, Network Rail’s activities in carrying out the operation, maintenance and replacement of the Railway Infrastructure, and traffic on the Railway Infrastructure.
- h. **‘Railway Infrastructure’** means Network Rail’s Infrastructure and operational track.
- i. **‘Safety Personnel’** means the personnel required to implement safe working practices on or about the Railway Infrastructure.

- j. **'Service'** means electricity cables, gas pipes, water pipes (including piped sewage), other pipelines or signalling telecommunication plant cables and equipment irrespective of owner.
- k. **'Temporary Speed Restriction'** means a planned restriction on the speed of rail traffic between defined locations for a specific period of time.
- l. **'The Works'** means the design and construction, and where the Other Party is obliged to carry it out, the maintenance of a bridge over or under the Railway Infrastructure and all tasks incidental thereto.
- m. **'Work Site'** means any lands or other places, on, or under, in or through which the works are to be executed.

2. Access

2.1 Written Authority

Before any activity is undertaken in connection with the Works requiring access to land in the ownership of Network Rail, written authority shall be obtained from Network Rail's Representative for access to such land including the conditions under which such access will be granted.

2.2 Procedures for Safe Access to Railway Property

Robust procedures must be established and maintained to ensure safe access for all persons to land in the ownership of Network Rail in connection with the Works and such procedures must be submitted to Networks Rail's Representative for written approval prior to access being granted.

2.3 Trespass

No person shall be permitted to access land in the ownership of Network Rail beyond the agreed limits of the Works Site or access route for the duration of the Works.

2.4 Crossing the Railway Tracks

No person shall cross or convey constructional plant and/or materials across or along any railway track unless special arrangements are made and written consent obtained from Network Rail.

Where public rights of way exist over occupation and/or accommodation level crossings and/or bridges, these crossings shall only be used in the way that they are intended to be used by the public unless special arrangements are made and written

Only in very exceptional circumstances will the provision of a temporary level crossing be permitted. Where Network Rail is prepared to accept the provision of a temporary level crossing for constructional traffic and/or public use sufficient time must be allowed for obtaining the appropriate approvals and the period of notice required by Network Rail for making the necessary arrangements for carrying out the work.

3. Risk Management

3.1 Robust Procedures for Safe Access and for Safe Working Practices

Systems, procedures and working practices that avoid risk to the Railway arising from the Works and that protect those persons involved in the execution of the Works from risks arising from the Railway must be developed and implemented in conjunction with the Contractor's Health and Safety Plan, as defined in the Construction (Design and Management) Regulations 2007 (as amended from time to time). These shall be submitted to Network Rail's Representative for written approval prior to the Works being undertaken.

Specific training (i.e. Personal Track Safety Training) and competency requirements apply to persons who work on the Railway Infrastructure or require access on or near the line. The training and competence requirements of the Works must be agreed in writing with Network Rail's Representative before access is allowed.

3.2 Services

A full survey must be undertaken to ascertain the location and nature of all services within the Works Site or access route(s). All necessary protective measure must be incorporated and implemented to the satisfaction of the Network Rail's Representative.

The degree of existing protection provided to Services on or about the Railway Infrastructure can vary. Therefore Services must not be interfered with or moved unless authorised by Network Rail's Representative.

Additional precautions must be taken by the Contractor to establish the existence, position and location of any buried Services which may be present before any excavation, or the driving of objects into the ground, is undertaken. All necessary precautions shall be taken by the Contractor to avoid damaging buried Services when excavating, surcharging and driving object into the ground.

Should any unknown or unexpected Service be discovered or uncovered during the Works, the works in the vicinity of the Service must stop, ownership must be established, Network Rail and the owner of the Service must be informed and appropriate precautions for protection must be taken prior to recommencing the works.

Any service not diverted must be supported, maintained, protected as necessary and kept in working order in its existing location.

Where temporary or permanent service diversions are necessary a method and routing specification must be agreed with Network Rail's Representative. The service provided shall be maintained at all times unless otherwise agreed with Network Rail's Representative.

Any equipment (Cable Avoiding Tools (CATS) for example) utilised to establish the position of buried Services must be of a type approved by Network Rail for use on the Railway Infrastructure.

3.3 Use of explosives

Explosives must not be used on or about the Railway Infrastructure without the prior written agreement of Network Rail. Evidence of full compliance with all current legislation relating to the acquisition, storage, keeping and use of explosives must be provided.

3.4 Protection to Railway Equipment

Special protection to prevent damage to the tracks, signal and telecommunication equipment and all other railway equipment and contamination of track ballast during the execution of the Works shall be

designed, constructed, maintained and removed on completion of the Works or as otherwise directed by Network Rail's Representative.

3.5 Confined Spaces

A considerable number of confined spaces exist on or about the Railway Infrastructure. In carrying out the Works all Contracting Authority's and contractor's personnel must fully comply with the requirements of the Confined Spaces Regulations 1997 and the associated Approved Code of Practice.

4. Programming of the Works

4.1 Possessions, Isolations and Temporary Speed Restrictions

The use of Possessions, Isolations and Temporary Speed Restrictions should be avoided to minimise disruption to railway traffic. If the need for Possessions, Isolations and Temporary Speed Restrictions cannot be avoided then they shall only be carried out on dates and at times agreed in writing by Network Rail's Representative.

The notice periods for booking of Possessions, Isolations and Temporary Speed Restrictions are dependant upon the duration and location of the Works. At the earliest opportunity advice should be sought from Network Rail's Representative as to the requirements for booking Possessions, Isolations and Temporary Speed Restrictions.

4.2 Initial Programme

An initial programme for the Works must identify the key construction activities timing constraints and indicate when Possessions, Isolations and Temporary Speed Restrictions are being sought.

4.3 Programme Development

The programme shall be developed taking account of comments from Network Rail's Representative and must be reviewed from time to time as required.

Network Rail may cancel or alter the dates and times of any agreed Possessions, Isolations and Temporary Speed Restrictions at short notice, if this proves necessary because of the overriding operational requirements of the Railway. If this occurs alternative arrangements will be made as soon as the situation permits.

5. Method Statements

Method Statements must include a comprehensive step-by-step account of how the relevant part of the Works will be executed (incorporating where necessary maintenance and subsequent removal) including:

- Working times
- Access routes and location plan
- Plant usage and backup (including equipment and operator certificates)
- Superintendence, inspection and monitoring arrangements
- Temporary works

and as appropriate supported by:

- Design statements
- Drawings and cross sections
- Site and Ground Investigation reports including geotechnical interpretive reports
- Calculations
- Settlement, noise, vibration predictions
- Design check certificates
- Risk mitigation measures
- Storage, movement and clearance of materials and equipment
- Temporary or permanent diversion of services
- Earthing and bonding arrangements near electrified equipment
- Use of Surveying equipment

Method statements for works to be carried out in Possessions, Isolations and Temporary Speed Restrictions must also include a detailed programme for each work item, which must identify critical path activities and include contingency planning i.e. standby plant and equipment etc.

Method statements must be submitted for full consideration, comment and/or approval by Network Rail's Representative in sufficient time to allow for comments to be incorporated and revised proposals to be resubmitted as necessary.

6. **Site Management**

6.1 **Site Representation**

At the request of Network Rail, the Contractor or the Other Party must appoint a full time senior representative at the Work Site during the course of the Works.

6.2 **Training**

Prior to the commencement of and during the Works, familiarisation training and briefings shall be given to everyone who has access to the Works Site. Records of training and briefings are to be retained on the Works Site for inspection. Certain activities carried out during the Works may require railway specific training. These activities shall be identified and notified to the Contractor by Network Rail's Representative when the initial programme of works is submitted.

6.3 **Contact Names and telephone numbers**

Prior to commencement of works on the Works Site Network Rail's Representative must be provided with a list of names and telephone numbers for personnel responsible for organising remedial action in the event of an emergency on the Work Site when the Works Site is unattended.

6.4 **Accommodation for Network Rail's Representative**

Serviced accommodation for the use of Network Rail's Representative shall be provided in line with the requirements of and to the satisfaction of Network Rail.

6.5 Advertisements

Advertisements must not be displayed on or about land in the ownership of Network Rail without the prior written consent of Network Rail.

6.6 Working Time

The Railway (Safety Critical Work) Regulations 1994, and the supporting guidance documents, place strict limitations upon the hours that can be worked by persons who undertake Safety Critical Work as defined by the regulations. During the Works contractors who have employees carrying out Safety Critical Work must be able to demonstrate compliance with the regulations.

6.7 Knowledge and Understanding of English

Supervisory staff on the Works must have sufficient knowledge of English (both spoken and written) to understand and relay safety information, instructions and training to all personnel.

6.8 Alcohol and Drugs

All personnel engaged in the Works must comply with Network Rail's current Policy on Alcohol and Drugs. A copy of this will be provided by Network Rail's Representative.

6.9 Clothing and Personnel Protective Equipment

All persons engaged in the Works must wear high visibility clothing of an approved colour, type and design (including retroreflective strips) acceptable to Network Rail. The personnel protective clothing must be worn correctly and kept in a clean condition.

6.10 Removal of Contractor's Employees

Network Rail may object to and require the immediate removal from the Works Site of any person thereon who in the opinion of Network Rail's Representative is not in a fit condition to carry out their duties, or is liable to endanger their own health and safety or that of others. Such persons will not be permitted further access to the Works Site without the written agreement of Network Rail's Representative.

6.11 Registers and Certificates

All registers, site diaries and certificates relevant to the Works must be available for inspection by Network Rail at the Works Site or other locations agreed with Network Rail's Representative.

6.12 Screens, Hoardings and Lights

Temporary screens, hoardings, guard rails, barriers, fans, protective sheeting, fencing, etc, necessary to ensure the safety and protection of the Railway, the Works and all persons in the vicinity of the Works shall be designed, constructed, maintained and modified as appropriate and removed when no longer required in accordance with agreed method statements and shall not effect signal sighting, places of safety or affect or impair the vision of train drivers.

6.13 Notifications of Accidents to Network Rail

All accidents and occurrences causing damage to property or potentially affecting the safe working of the Railway; together with all Reportable Injuries and Dangerous Occurrences as defined in the Reporting of Injuries, Diseases

and Dangerous Occurrences Regulations 1995 (as amended from time to time) must be reported to Network Rail.

Details of all such events shall be recorded in a format agreed with Network Rail's Representative and a copy sent to Network Rail within 24 hours of any such event.

6.14 Storage and Clearance of plant equipment and materials

All plant equipment and materials shall be kept safe and secure when not in use and shall be located as to avoid opportunity for trespass and vandalism on or directed against the Railway or land in the ownership of Network Rail.

7. Working Methods near the Railway

7.1 Use of Plant and Equipment Adjacent to the Railway Infrastructure

No construction plant, equipment or materials shall be used or handled in such a manner that in the event of mishandling or failure they come within a vertical plane 3.0 meters from the nearest edge of the nearest rail on which trains may run or, on a station platform, within 3.0 meters of the platform edge unless previously proposed in a method statement which has been accepted by Network Rail's Representative. (refer to paragraph 8.3.1)

7.2 Stability of Track

Excavation near the Railway Infrastructure shall be in accordance with agreed method statements and not commence until all measures required to monitor and maintain the stability of the track and/or structure have been implemented and Network Rail's Representative has indicated that there is no further objection to proceeding with the excavation work.

7.3 Emergency Action

A detailed procedure for dealing with emergencies relating to the Work Site shall be produced in consultation with Network Rail's Representative. This procedure shall be accepted in writing by Network Rail before work starts and shall be reviewed and updated as circumstances vary. Key actions shall be set out on a poster to be prominently displayed in locations to be agreed with Network Rail's Representative. These must include the method of stopping trains in the event of an incident that could affect the safety of trains and/or persons and, in the case of an electrified line, how to arrange to have the current switched off.

All staff and operatives shall be made fully conversant with this procedure. Auditable checks should be undertaken at intervals agreed with Network Rail's Representative to monitor this understanding and evidence thereof shall be maintained on site and available for inspection by Network Rail's Representative.

7.4 Rail Traffic during a Possession or Isolation

During a possession it may be necessary for engineers, trains and/or on-track machines to pass through the Work Site by prior arrangement. This will necessitate the temporary clearance of the railway track and cessation of those activities that could affect their passage or the safety of personnel on or near the line.

8. Electrified Railways

8.1 Electric Traction Equipment

Attention is drawn to the presence in some areas of electric traction equipment associated with either overhead line equipment above and at track level and/or third or fourth conductor rails at track level. Either system carries a potentially lethal electric current and the close proximity to this equipment can cause death or severe injury.

Warning notices acceptable to Network Rail shall be erected in prominent positions agreed by Network Rail's Representative.

All requirements as advised by Network Rail as to the earthing and bonding (or electrical segregation) of metalwork and foil covered sheet materials shall be complied with.

8.2 Robust Procedures for Safe Access and Safe Working Procedures

Further robust procedures (in addition to those referred to in paragraph 2.2) shall be established and maintained to ensure safe access for all persons to the Railway Infrastructure and safe working practices where the Railway Infrastructure is electrified. These procedures must be submitted to Network Rail's Representative for written approval prior to the Works being undertaken.

8.3 Precautions

Electric traction equipment is charged at high voltage and unless Isolation and permit to work arrangements are in force shall be treated as being live at all times and the following precautions shall be observed:

8.3.1 Overhead Line Equipment

Work shall not be carried out, cranes or other plant erected, operated and/or dismantled or materials stored within the prohibited space which is that space within a radius of 3.0 metres of the live overhead equipment together with anywhere vertically above this space.

The figure of 3.0 metres used in determining the prohibited space shall be increased by the length of any tool, equipment and/or material being handled. However, work on the track, platforms, walkways and the like below the overhead equipment is permitted without special precautions provided that tools, equipment and/or materials are not at any time raised above head height.

Long objects, which shall include but not limited to, pipes, scaffolds, poles ladders and/or long handled tools or any object of such length that if carried vertically could infringe on the prohibited space shall be carried horizontally below head height.

Electrically conductive surveying equipment shall not be used within 3.0 metres of any overhead line equipment or any rail.

Any disturbance of or any attachment to any equipment forming part of the electric traction system shall only be carried out with the full consent of Network Rail.

8.3.2 Third or Fourth Rail Electrification

Work in the vicinity of the third or fourth rail electrification will involve the provision of special protection or isolations to the equipment.

Electrically conductive surveying equipment shall not be used within 3.0 metres of any rail inducing electrified third rail.

8.4 Protective Screens

At the sole discretion of Network Rail's Representative it may be appropriate for protective screens adjacent to overhead line equipment or third/fourth rail electrification to be provided to enable certain works to continue without Isolations being required.

8.5 Crash Decks

At the sole discretion of Network Rail's Representative it may be appropriate for crash decks to be provided to enable certain works to be carried out above the Railway without Possessions and/or Isolations being required.

8.6 Temporary Access Structures

At the sole discretion of Network Rail's Representative it may be appropriate for a temporary access structure above the overhead line equipment to be provided to permit continued working without Isolations being required.

8.7 Erection and Removal of Screens and Platforms

Erection, inspection, maintenance and removal of screening and/or platforms and/or access structures shall be carried out under the protection of Isolations and Possessions unless otherwise agreed by Network Rail.

Appendix 1N - Special Requirements in Relation to Cable & Wireless Worldwide

The terminology used in these special requirements shall have the meanings assigned to them as detailed in this section with the following amendments:

“Contractor” means the Company as defined in the Agreement; and

“Contract” means the Agreement.

“Company” means Cable & Wireless Worldwide

Special requirements in relation to Cable & Wireless Worldwide are as follows:

1. Introduction

This document sets out the procedure that will apply when Other Parties intend or are undertaking works in the vicinity of Cable & Wireless Worldwide apparatus.

2. Purpose of Document

This document provides a means by which the Cable & Wireless Worldwide specific special requirements relating to their apparatus regardless of it being situated in the public highway / road, private street, land or any other areas is made aware to Other Parties.

3. Scope

This document will be presented to Other Parties or Contractors to encourage those undertaking works within the vicinity of Cable & Wireless Worldwide apparatus to refer to and comply with. This is in order to protect where necessary the Cable & Wireless Worldwide apparatus and to avoid damage to the apparatus and loss of service.

A National Joint Utilities Group (NJUG) document NJUG 9 titled “Recommendations for the Exchange of Records of Apparatus between Utilities” provides useful reference material.

It should be noted that, where appropriate, additional information on avoiding danger from underground apparatus is contained within the HSG47 guidance book titled “Avoiding Danger from Underground Services.”

4. Cable & Wireless Worldwide Network and Apparatus

Damage to Cable & Wireless Worldwide apparatus is extremely disruptive and can be expensive to repair, especially where long lengths of cable have to be replaced.

In order to maintain the network integrity and minimise disruption to service, it is essential that disturbances are absolutely minimal. When working within the vicinity of Cable & Wireless Worldwide apparatus, extreme care is necessary in order to avoid costly repairs. The Other Parties / Contractor shall make every effort to ensure that disturbance of Cable & Wireless UK apparatus is no more than is absolutely necessary for the completion of the works in accordance with their contract. It should be noted that

it is an offence to interfere with Cable & Wireless Worldwide apparatus without first contacting the company for advice.

5. Plant Records

It is the responsibility of the Other Parties undertaking works which may affect Cable & Wireless Worldwide apparatus to obtain all relevant Cable & Wireless Worldwide plant records from our agent Atkins Global prior to works commencing. This may be done by contacting the Atkins Global Plant Enquiries Team listed in section 19.

Plant records for such enquiries will generally be provided within 10 working days of receipt and in compliance with the New Roads and Street Works Act 1991 [NRSWA] requirements.

6. Definitions

The following definitions are applicable in this document:

1. "Apparatus" means all surface or sub-surface equipment and plant used by Cable & Wireless UK including any associated cables or ducts owned, leased or rented by Cable & Wireless Worldwide.
2. "Cable" means any polythene or other sheath containing optical fibres or metallic conductors.
3. "Depth of cover" means the depth from the surface to the topmost barrel of the duct nest, in the case of ducts encased in concrete, to the top of the concrete, and in the case of directly buried cable, the top of the cable.
4. "Jointing chamber" means any manhole, surface box or other chamber giving access to Cable & Wireless Worldwide apparatus or their network.
5. "Utility" means an organisation licensed to provide gas, water, electricity, Cable TV or telecommunications services.
6. "Developer" means an organisation licensed to develop industrial/residential premises or given licence to connect to utility apparatus.
7. "Contractor" means the individual, firm or company contracted to undertake the work for a Utility or Other Parties.
8. "Other Parties" means the Utilities, Highway Authorities, Developers, Street Authority (Roads Authority - Scotland).
9. "Site" means the location of, or in the vicinity of, the various works.

7. Requirements

Prior to commencing any work or moving heavy plant or equipment over any portion of the site, the Other Parties or Contractor shall notify Cable & Wireless Worldwide of their intentions. This may be done by contacting Cable & Wireless Worldwide, contact listed in section 19.

Upon receipt of this notification, Cable & Wireless Worldwide will identify if their apparatus is affected. If any Cable & Wireless Worldwide apparatus is affected by the works then they will arrange for the necessary records and confirm details of Cable &

Wireless Worldwide apparatus and network operated within the affected area or adjacent to the proposed work site.

7.1 Location of Plant

It is the responsibility of the Other Parties or Contractors to undertake adequate plant location procedures. These may include searches for metallic cables which must be performed by actively inducing a signal in a cable conductor via a transmitter. A passive search is not considered sufficient.

Before applying a tracing signal to the Cable & Wireless Worldwide apparatus, the Other Parties or Contractors shall seek confirmation from Atkins Global that the Cable & Wireless Worldwide apparatus will not suffer any disruption to its networks normal workings as a result of the nature of the signal being induced.

7.2 Trial Excavations

Optic fibre cables are very susceptible to damage from excavation tools. They are not electrically conductive and cannot be located by radio induction methods. Once an approximate location is known, the exact location must be ascertained by means of hand dug pilot holes.

Where the work to be carried out by the Other Party or Contractor involves excavation in the vicinity of our clients' apparatus, the Other Party or Contractor shall, by trial excavation at his own expense, determine the exact location and depth of the Cable & Wireless Worldwide apparatus.

All excavations adjacent to the Cable & Wireless Worldwide apparatus are to be carried out by hand until the extent and /or location of the apparatus is known.

All excavation work shall be executed in accordance with the current issue of Health and Safety series booklet HSG47, Avoiding danger from underground services.

8. Depths of Cover

The Other Party or Contractor should note that the minimum depths of cover for Cable & Wireless Worldwide apparatus which shall be maintained together with specified separation requirements. Where the minimum depths of cover specified by Cable & Wireless Worldwide cannot be maintained, the Other Party or Contractor shall at their own expense, carry out the instructions of Cable & Wireless Worldwide requirements for the protection or diversion of their apparatus.

The Other Party or Contractor should have particular regard to the possibility of encountering Cable & Wireless Worldwide apparatus (including ducts and cables), at depths of cover other than that reported.

Surface cables (such as cables on bridges or walls) which are liable to be placed in danger from the Other Parties or Contractors works shall be protected, at the Other Parties expense, as directed by the Cable & Wireless Worldwide representative.

9. Separation

Reference should be made to HSG47 to ensure that adequate separation is achieved. The following details outline the specific requirements of Cable & Wireless Worldwide and capture the HSG47 requirements:-

9.1 High Voltage Cables

High voltage single core cables of 1000 V and above shall have a minimum clearance from Company Apparatus of 500 millimetres.

High voltage multi-core cables of 1000 V and above shall have a minimum clearance from Company Apparatus of 350 millimetres.

In exceptional circumstances where the above clearances cannot be maintained, the separating distance may be reduced to a minimum of 175 millimetres. In such circumstances, concrete, of a quality as directed by the Company Representative, must be inserted to completely fill the space between the High Voltage cable and the Company Apparatus, in accordance with the requirements of the Company Representative. Any further services must have a minimum clearance of 250 millimetres from the concrete.

9.2 Low Voltage Cables

Low voltage cables of less than 1000 V shall have a minimum clearance from Company Apparatus of 180 millimetres. In exceptional circumstances where the above clearance cannot be maintained, the separating distance may be reduced to a minimum of 75 millimetres.

In such circumstances, concrete, of a quality as directed by the Company Representative, must be inserted to completely fill the space between the services, in accordance with the requirements of the Company Representative. Any further services must have a minimum clearance of 250 millimetres from the concrete.

9.3 Ancillary Electrical Apparatus

Lamp posts, traffic posts and other such ancillary electrical apparatus shall have a minimum clearance of 150 millimetres from underground Company Apparatus and 600 millimetres clearance from above ground Company Apparatus.

9.4 High pressure gas mains and other Undertakers plant/equipment

High pressure gas mains shall have a minimum clearance of 450 millimetres from Company Apparatus. All other undertakers' plant and equipment, when running in parallel with Company Apparatus, shall have a minimum clearance of 200 millimetres. Where gas mains cross Company Apparatus, the minimum clearance shall be 200 millimetres. All other undertakers' plant and equipment, when running across Company Apparatus, shall have a minimum clearance of 100 millimetres. NJUG Volume 1, Guidelines on the positioning and colour coding of underground utilities' apparatus refers.

9.5 Other Undertakers plant

Other undertakers' plant and equipment which runs in parallel with Company Apparatus shall have a minimum clearance of 200 millimetres. All other undertakers' plant and equipment when running across Company Apparatus, shall have a minimum clearance of 100 millimetres.

9.6 Tramways

Each separating distance shall be individually agreed with the Company Representative.

10. Jointing Chambers

10.1 Protection

Footway type jointing chambers are not designed to withstand carriageway loadings.

Where such chambers are liable to be placed at risk, either temporarily or permanently, from vehicular traffic or from the movement of plant and/or equipment, they will need to be adequately protected. Alternatively, they may have to be demolished and rebuilt to carriageway standards, at the Other Parties or Contractors expense under supervision of Cable & Wireless Worldwide representative.

All Cable & Wireless Worldwide jointing chambers and / or other access points shall be kept clear and unobstructed. Access for vehicles, winches, cable drums and / or any further equipment required by Cable & Wireless Worldwide for the maintenance of its apparatus, must be maintained at all reasonable times.

10.2 Access

The covers to Cable & Wireless Worldwide jointing chambers and / or apparatus shall only be lifted by means of the appropriate keys and under the direct supervision of a Cable & Wireless Worldwide representative. Other Parties or Contractors shall not enter any Cable & Wireless Worldwide jointing chamber and / or apparatus unless under the supervision of a Cable & Wireless Worldwide representative and in any case not before the mandatory gas test has been carried out in the presence of Cable & Wireless Worldwide representative and such checks have shown it to be safe to enter the Cable & Wireless Worldwide chamber and / or apparatus. The Other Parties or Contractors shall be given reasonable access to Cable & Wireless Worldwide apparatus and chambers when required.

11. Notification Periods

Where the Other Parties or Contractors works or the movement of plant or equipment may endanger Cable & Wireless Worldwide apparatus, the Other Party or Contractor shall give the Cable & Wireless Worldwide agent Atkins Global at least 7 working days notice in writing of the intended date to commence operations.

No excavation should be made without first consulting the relevant Cable & Wireless UK apparatus layout drawings, which will be made available from the Cable & Wireless UK agent Atkins Global on request and allowing 28 working days for processing the relevant drawings. However, should this not be possible, direct contact should be made

to the Atkins Global Bristol Plant Enquiries Team as soon as possible to assess the situation.

When excavating, moving or backfilling (including use of Foamed Concrete for Reinstatements – FCR) around Cable & Wireless Worldwide apparatus, Atkins Global (as agent for Cable & Wireless Worldwide) shall be given adequate prior written notice of the Other Parties or Contractors intentions, in order that the works may be adequately supervised. Such notice shall not be less than 3 working days.

12. **Excavation and Backfill**

All excavations adjacent to Cable & Wireless Worldwide apparatus are to be carried out by hand until the extent and or location of the Cable & Wireless Worldwide apparatus is known.

Use of mechanical borers and / or excavators shall not be used without the supervisory presence of a Cable & Wireless Worldwide representative or a given exemption.

Shuttering of the excavation or support to Cable & Wireless Worldwide apparatus, at the Other Parties or Contractors expense, shall be used as directed by the Cable & Wireless Worldwide representative.

At least 7 working days notice must be given to Cable & Wireless Worldwide in order that any special protective measures may be required to protect Cable & Wireless Worldwide apparatus, at the Other Parties or Contractors expense, when equipment such as pile driving, explosives, laser cutting high powered RF equipment or RF test gear, is to be used in conjunction with the works.

Other Parties or Contractors are advised to refer to the National Joint Utilities Group [NJUG] 4 Document which outlines the identification of small buried mains and services.

13. **Foam Concrete**

If foam concrete is being used as the backfill material, it shall not be used either above or within 500 millimetres of any Company Apparatus. A suitable material in accordance with the specification for the Reinstatement of Openings in Highways shall be substituted.

14. **Attendance of Company Representative**

If a situation requires the attendance on site of a Cable & Wireless Worldwide representative for a continuous period of more than 6 hours, suitable facilities shall be provided by the Other Party or Contractor, at their expense, to meet the office and ablution requirements. If a situation arises that requires urgent attention Cable & Wireless Worldwide will endeavour to attend site within 2 hours for all other occasions arising, 24 hours.

15. **Damage Reports**

In the event of any damage whatsoever occurring to our Cable & Wireless Worldwide apparatus, the Other Party or Contractor shall immediately inform Cable & Wireless Worldwide by contacting Julia Burgoyne, (for contact details please refer to section 19).

All relevant costs of any subsequent repair and / or removal of the Cable & Wireless Worldwide apparatus shall be charged to the Other Party or Contractor, irrespective of who affects the repair.

The above requirements do not relieve the Other Party or Contractor of any of their obligations under their contract.

16. References

The following reference materials relate to this document:

Document Number	Document Title
Volume B	Generic Documents for Tendered and Period Contract Works for C&W.
ISBN 0 10 542291 6	New Roads and Street Works Act 1991
0 7176 1744 0	HSG47 Avoiding Danger from Underground Services
NJUG 4	The Identification of Small Buried Mains and Services
NJUG 7	Recommended Positioning of Utilities' Apparatus for New Works on New Developments and in Existing Streets
NJUG 9	Recommendations for the Exchange of Records of Apparatus Between Utilities
ISBN 0-11- 552546-7	Code of Practice for Recording of Underground Apparatus in Streets (010503)

17. Document History

Issue Status	Summary of Changes from Previous Version	Date
5	Major revision to incorporate omitted items from client's document SOE 4461 Issue 7	January 2003
Issue 6	Change doc reference from NRSWS to OSM	March 2002

18. Office Address Details

Glasgow Office Cable & Wireless Worldwide Pavillion 1 1 – 2 Berkeley Square 99 Berkeley Street	Manchester Office Cable & Wireless Worldwide Unit M Atlas Business Park Wythenshawe
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Glasgow G3 7HR	Manchester M22 5RR
Bristol Office Cable & Wireless Worldwide Unit 1, Tamar Road St Philips Bristol BS2 0TY	

19. Street Works Team Contacts for Cable & Wireless Worldwide

Function	Name	Job Title	Address	Phone	Mobile	Fax	Email Address
Co-ordination	[REDACTED]	NRSA Legislation Officer	n/a	[REDACTED]	[REDACTED]	n/a	[REDACTED]
BCM – Business Continuity Management	Complain ts Team	Complaints Analyst	n/a	0800 048 1411	n/a	n/a	complaintsteam@cw.com
Liability Claims	[REDACTED]	Major Incident Resolution Coordinator	Bristol Office (see above)	[REDACTED]	[REDACTED]	n/a	[REDACTED]
Diversionary Works	[REDACTED]	Diversionary Works Project Controller	Manchester Office (see above)	[REDACTED]	n/a	n/a	[REDACTED]
Emergencies (24 Hour) Faults and Defects	CMC	Customer Management Centre	n/a	08456 021585	n/a	n/a	n/a
Plant Enquiries - Cable & Wireless Inc. Thus Plc, (formerly Scottish Telecom), Your Comms (formerly Norweb), Energis & Mercury Communications	Plant Enquiries Team	n/a	Atkins Global PO Box 290 500 Aztec West, Almondsbury, Bristol, BS32 4RZ	01454 662881	n/a	01454 66333 0	Osm.Enquiries@atkinsglobal.com

Appendix 10 – NOT USED

Appendix 1P - Not Used

Appendix 1Q - NOT USED

Appendix 1R – NOT USED

Appendix 1S – NOT USED

Appendix 1T - Special Requirements in Relation to Trafficmaster

Terminology used in these special requirements shall have the meanings assigned to them as follows:

“Contractor” means the Company as defined in the Agreement; and

“Contract” means the Agreement

“Overseeing Organisation” means

1.) In these Special Requirements, the following terms shall have the Meanings assigned to them:

- a.) ‘Company’ means Trafficmaster Ltd
- b.) ‘Company’s Representative’ means the Infrastructure Maintenance Manager or Designated Staff of the said ‘Company’ defined at 1.a of these Special Requirements or its’ Authorised Representatives and/or Agents.
- c.) ‘Apparatus’ means all surface or sub-surface equipment and plant including any associated cabling and/or ducting owned, leased or rented by the said ‘Company’ defined at 1.a of these Special Requirements.

2.) Before commencing any work or moving heavy plant or equipment over any portion of the site, the contractor shall confirm details of the Apparatus within the site with the Company’s Representative, who can be contacted at the following offices:

ADDRESS	TELEPHONE NUMBER	FAX NUMBER
[REDACTED]	[REDACTED]	01234 759145
[REDACTED] Infrastructure Maintenance Team Trafficmaster Ltd University Way Cranfield Beds MK43 0TR	[REDACTED]	

3.) Where such details show that the works or the movement of plant or equipment may endanger any Apparatus the Contractor shall give the Company’s Representative at least two months written notice, detailing how the works will affect apparatus, of the date on which it is intended to commence such works or the movement of plant or equipment in order that the presence of any sub-surface Apparatus, particularly surface running cabling, is adequately

protected from damage and such protective measures shall be to the satisfaction of the Company's Representative.

- 4.) In the event of a Company marker being disturbed for any reason it shall not be replaced other than in the exact position and to its former depth unless the repositioning is carried out at the direction and under the supervision of the Company's Representative.

-
- 5.) The Contractor shall take particular care in relation to the protection of the Apparatus, where such Apparatus includes the presence of cameras and equipment boxes. The Contractor should particularly note that damage to such Apparatus is extremely disruptive to the Company network and costly to reinstate. The Contractor shall make every effort to avoid the disturbance of Apparatus more than is absolutely necessary for the completion of the works in accordance with the contract.
 - 6.) In the event that the planned works will result in a need for Apparatus to be removed, the Contractor must provide the Company with at least one month's notice in order to prepare the Apparatus for removal by the Company's Representative. In each case details of the planned works, including time scales, must be submitted to the Company in order to minimise disruption of the Company network.
 - 7.) When excavating, moving or backfilling around Apparatus, the Company's Representative shall be given adequate written notice, which shall not be less than one week, of the Contractor's intentions in order that he may supervise the works. The Contractor should note that the normal depth of cover for Apparatus and ducts is as follows:
 - a.) In carriageways 600 mm, which is to be maintained.
 - b.) In footways 450mm, which is to be maintained.

Where the 600/450 mm depth of cover cannot be maintained the Contractor shall carry out the instructions of the Company's Representative for the protection of Apparatus and such actions that follow from the Company's Representative's instruction shall be supervised by the Company's Representative. Where the required depth of cover cannot be maintained over cabling, such cables as are affected shall be enclosed and protected in UPVC ducts to be supplied by the Company as directed by the Company's representative.

With regard to excavation in the vicinity of any Apparatus and ducts the Contractor shall have particular regard to the possibility of reduced cover and the encountering of Apparatus and ducts of cover less than that given at a.) and b.) above.

- 8.) All excavation adjacent to Apparatus shall be carried out by hand until the exact extent and/or location of Apparatus is known. Mechanical borers and/or excavators shall not be used within 1.0 metres of Apparatus without the supervisory presence of the Company's Representative. To prevent any movement of Apparatus during excavation, complete shuttering shall be used as directed by the Company's Representative if:
 - a.) Excavation is deeper than the depth of cover of adjacent Apparatus.
 - b.) Excavation is within 1.0 metres of Apparatus in stable soil.
 - c.) Excavation is within 5.0 metres of Apparatus in unstable soil.

If the after the completion of the works the Contractor intends to use any of the following:

-
- i.) Pile driving equipment within 10.0 metres of Apparatus.
 - ii.) Explosives within 20.0 metres of Apparatus.
 - iii.) Laser equipment within 10.0 metres of Apparatus.

the Contractor shall advise the Company's Representative, giving at least two weeks' notice, in order that any special protective measures for the Apparatus affected may be arranged.

- 9.) The covers to Company Apparatus shall only be opened by means of appropriate keys obtained from the Company's Representative and under the direct supervision of the Company's Representative. No employee of the Contractor or any sub-contractor employed by the Contractor shall enter any Apparatus of the Company unless under the supervision of the Company's Representative. The Company's Representative shall be given reasonable access to all Apparatus and Chambers when required.
- 10.) In the event of any damage whatsoever to the Apparatus, the Contractor shall immediately inform the Company, the Contracting Authority and (if required) the Emergency Services.
- 11.) Compliance with the above requirements shall not relieve the Contractor of any of his obligations under the contract.

Appendix 1U - Special Requirements in Relation to BP

Refer to the third party Agreement with BP and the following document:

CONDITIONS AND RESTRICTIONS FOR WORK ACTIVITIES IN CLOSE PROXIMITY
TO BP PIPELINES (July 2009)

Appendix 1V - Special Requirements in Relation to Shell

Refer to the third party Agreement with Shell and the following document:

CONDITIONS AND RESTRICTIONS FOR WORK ACTIVITIES IN CLOSE PROXIMITY TO BP
and SHELL PIPELINES May 2005



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**SCHEDULE 4 : O&M WORKS REQUIREMENTS
PART 9 : LIAISON PROCEDURES**

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1. General Principles

- 1.1. Where under these O&M Works Requirements there is a requirement to liaise, a Liaison Procedure shall be developed by the Company.
- 1.2. The following principles shall be reflected in any such Liaison Procedures:
 - 1.2.1. there shall be full consultation and co-operation between the involved parties so far as possible;
 - 1.2.2. matters shall be prepared on a joint basis so far as possible;
 - 1.2.3. each party shall be given a reasonable opportunity to consider matters, and where information is supplied it shall include, or be accompanied by, sufficient explanatory or other material to enable the information to be properly considered; and
 - 1.2.4. so far as practical, points arising shall be discussed immediately between those concerned so that where in any Liaison Procedures there is reference to any material being sent for comment, this shall be a reference to the final form of material the substance of which has previously been discussed between the parties.
- 1.3. The Liaison Procedures shall be kept under review.
- 1.4. Where a particular Liaison Procedure involves the Company and the Contracting Authority and either Party is dissatisfied with the operation of such Liaison Procedure and/or considers that it should be amended in any way, the following provisions shall apply:
 - 1.4.1. the Parties shall discuss in good faith the reason for such dissatisfaction and endeavour to agree amendments to the Liaison Procedure;
 - 1.4.2. if such dissatisfaction is not resolved the matter shall be referred to counsel for the Contracting Authority and counsel for the Company who shall be asked to produce joint advice;
 - 1.4.3. where the Parties are still unable to resolve the matter giving such consideration to such joint advice the matter should be referred to the Dispute Resolution Procedure and the provisions of Schedule 7 shall apply.

2. O&M Works

- 2.1. The Liaison Procedures shall be developed in accordance with these O&M Works Requirements and shall include, but shall not be limited to:
 - 2.1.1. agreement by the Company and the Contracting Authority and, as appropriate, with the Police and other emergency services, Undertakers, Relevant Authorities, North East Management Unit and other organisations responsible for roads adjoining the O&M Works Site, the public and interest groups, event organisers, others responsible for activities within the O&M Works Site, public transport operators and Traffic Scotland Control Centre (TSCC);
 - 2.1.2. provision for periodic meetings between the persons and persons representing the organisations referred to in paragraph 2.1.1 above to discuss issues affecting traffic management;
 - 2.1.3. establish procedures with the persons referred to in paragraph 2.1.1 above for the imposition of temporary speed limits or lane restrictions to accommodate poor visibility, adverse weather conditions, incidents and accidents;

-
- 2.1.4. establish procedures for the handling of any Emergency, including without limitation access procedures and routes for the emergency services (Police, fire and ambulance);
 - 2.1.5. provision, if necessary, for the issuance of any licence or consent necessary for the Company or any person for which it is responsible to stop on the O&M Works Site in accordance with this Agreement.
 - 2.1.6. provision by the Company of a responsible person for each section of the O&M Roads which may be affected by the Operations, who shall liaise with both the Contracting Authority and the other persons referred to in paragraph 2.1.1 above in accordance with these Liaison Procedures, all under the general direction of the Liaison Officer; and
 - 2.1.7. provision by the Company for liaison with the public in accordance with the requirements of Section 12 to Part 1 of these O&M Works Requirements.

3. Liaison Officer

- 3.1. The Company shall appoint a Liaison Officer throughout the O&M Works who shall be suitably qualified.
 - 3.2. The Liaison Officer shall manage the liaison and coordination of the requirement referred to in this Part 9 to Schedule 4 of the O&M Works Requirements and for such other responsibilities described elsewhere in these O&M Works Requirements.
 - 3.3. The person appointed as Liaison Officer shall be subject to the written consent of the Scottish Ministers.
 - 3.4. The Company shall provide the contact name and telephone number of the Liaison Officer to all public bodies and local residents.
 - 3.5. Notification shall be given, and public advertisements made, in all circumstances where disruption or concern shall be likely to be caused, including, but not limited to, the commencement of any O&M Works, notable changes in working routines, the introduction of new traffic management systems (whether temporary or permanent), noisy operations and out-of-hours working. All adjacent land owners and tenants shall be notified prior to works commencing in their vicinity.
 - 3.6. Duties of the Liaison Officer shall include, but shall not be limited to:
 - 3.6.1. responsibility for establishing, developing and maintaining liaison arrangements and protocols as required to ensure the obligations of the Company under this Agreement are being fulfilled;
 - 3.6.2. responsibility for ensuring that the Company undertakes all appropriate consultation and liaison to assist the Scottish Ministers in complying with their community planning obligations as set out in Part 2 of the Local Government in Scotland Act 2003;
 - 3.6.3. representing or ensuring representation by other appropriate members of the Company's staff at all liaison meetings with organisations listed in paragraph 2.1.1;
 - 3.6.4. ensuring that the minutes of all liaison meetings called by the Company shall be prepared and copies issued to the Contracting Authority within 5 Business Days of the meeting taking place;
 - 3.6.5. ensuring that the issues arising from the liaison meetings shall be managed in accordance with the requirements of this Agreement and that any actions required from the Company shall be completed within the agreed or required timescales;
-

- 3.6.6. establishing liaison arrangements with any other organisations relevant to the Operations where required; and
- 3.6.7. providing a monthly report to the Contracting Authority not later than the 15th day of each calendar month throughout the Service Period listing:
 - (i) liaison meetings held;
 - (ii) issues arising from such liaison meetings;
 - (iii) actions taken or to be taken arising from such liaison meetings; and
 - (iv) action plans agreed between the Company and any consultee.
- 3.7. The Company shall ensure that a written record shall be maintained of all consultation, liaison and co-ordination.



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SCHEDULE 4: O&M WORKS REQUIREMENTS
PART 10: ACCESS ROAD LEVEL OF SERVICE

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1. Requirements

- 1.1. Notwithstanding the other provisions of the O&M Works Requirements, the Company shall provide the Access Road Level of Service on O&M Roads identified as being subject to an Access Road Level of Service in Schedule 19 in accordance with the requirements of this Part 10.
- 1.2. The objective of the Access Road Level of Service shall be to maintain a safe and environmentally acceptable environment on the Access Roads within the O&M Works Site which remain as part of the O&M Works Site after the Full Service Commencement Date.
- 1.3. The Company, as a minimum, shall provide Access Road Level of Service in accordance with Good Industry Practice. The O&M Works Requirements shall be deemed to be either equivalent to or better than Good Industry Practice in that context.
- 1.4. The Company shall implement such processes and procedures for records, reporting and information requirements as shall be required to ensure the effective delivery of the Access Road Level of Service and compliance with this Part 10 and the other provisions of this Agreement.
- 1.5. The Access Road Level of Service shall as a minimum include:
 - 1.5.1. Winter Service at an appropriate level to provide adjacent landowners and occupiers with vehicular access to and from the public road network during periods of snow when the public road and the route from the Access Road to the public road are open to traffic. Provision of grit bins and maintenance of grit supplies in the bins during the Winter Service Period.
 - 1.5.2. A level of Routine Maintenance that enables compliance with paragraph 1.2 and comprises periodic inspection, repair of defects and maintenance of road drainage systems in order to reduce the likelihood of flooding occurring.
 - 1.5.3. Prevention of nuisance to adjoining landowners by flooding and ensuring that polluted effluent from the clearing of road drainage shall not be directed indiscriminately into watercourses.
 - 1.5.4. The Company shall erect flood warning signs where the amount of water lying on the Access Road: represents a hazard to users of the Access Road or is interrupting the free flow of traffic.
 - 1.5.5. Periodic patching, repair, strengthening and reconstruction as necessary to maintain the integrity of the Access Roads and their associated verges, drainage and earthworks;
- 1.6. All defects on Access Roads shall be categorised as Category 2 Defects.
- 1.7. All Access Roads including Structures associated with Access Roads which are not also associated with the Trunk Road network shall be free from defects of a nature that require rectifying within a period of 1 year at the date any Access Road becomes the responsibility of a Third Party. Structures associated with the Access Roads which are also associated with the Trunk Road network shall be subject to the requirements set out in other parts of Schedule 4.



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**SCHEDULE 4 : O&M WORKS REQUIREMENTS
PART 11 : RESTRICTED SERVICES**

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1. Requirements

- 1.1. The Company shall provide the Restricted Services included at Appendix A in accordance with the requirements of this Part 11.
 - 1.2. The objectives of the Restricted Services shall be:
 - 1.2.1. to maintain a safe and environmentally acceptable environment on the O&M Works Site for Users, employees, staff, other persons and adjacent landowners and occupiers; and
 - 1.2.2. to protect the medium and long term integrity of existing assets within the O&M Works Site that shall remain as part of the O&M Works Site after the Full Service Commencement Date.
 - 1.3. The Company, as a minimum, shall provide Restricted Services in accordance with Good Industry Practice. The O&M Works Requirements shall be deemed to be either equivalent to or better than Good Industry Practice in that context.
 - 1.4. The Company shall implement such processes and procedures for records, reporting and information requirements as shall be required to ensure the effective delivery of the Restricted Services and compliance with this Part 11 and the other provisions of this Agreement. This shall include implementation, management and use of the Integrated Roads Information System in relation to the Restricted Services Roads; the Customer Contact Service and Network Operations Services.
 - 1.5. The Restricted Services shall as a minimum include:
 - 1.5.1. Winter Service;
 - 1.5.2. a level of Routine Maintenance that enables compliance with paragraph 1.2;
 - 1.5.3. such of the O&M Works Requirements in Parts 5 to 9, inclusive, of these O&M Works Requirements as are necessary to enable compliance with this Part 11 and the other provisions of this Agreement;
 - 1.5.4. abnormal indivisible load routing (Section 16 of Part 1); and
 - 1.5.5. planning applications (Section 24 of Part 1).
 - 1.6. The Restricted Services referred to in Section 1.5 shall include the activities from Parts 1 and 2 of these O&M Works Requirements defined in Appendix A.
 - 1.7. During Restricted Services, the Company shall carry out all inspections, surveys and investigations as defined by this Schedule 4: O&M Works Requirements. This shall include but not be limited to Safety Patrols, Safety Inspections, detailed inspections and investigatory works, Night Time Safety Patrols, General Inspections, Principal Inspections, Special Inspections, Scour Inspections and Lamp Scout Inspections at the frequency intervals provided within Schedule 4 O&M Works Requirements.
 - 1.8. In addition, the Restricted Services referred to in paragraph 1.5. shall exclude the following activities from Parts 1 and 2 of these O&M Works Requirements:
 - 1.8.1. signing (Section 29 of Part 1);
 - 1.8.2. dealing with Category 2 Defects (Section 1 of Part 2) other than removal of Graffiti.
 - 1.9. All Roads subject to Restricted Services including Structures associated with Roads subject to Restricted Services shall be free from defects of a nature that require rectifying within a period of 1 year at the date any Road subject to Restricted Services becomes the responsibility of a Third Party.
 - 1.10. The Restricted Services shall also include the maintenance and service requirements of Safety Cameras as described in Schedule 2, Part 4 Appendix 1/27.
-

Appendix A - Restricted Services Requirements

RESTRICTED SERVICES REQUIREMENTS

<u>Activity</u>	<u>O&M Works Requirements compliance</u>	<u>Cat 1 Defect Repairs only</u>
Part 1 of the O&M Works Requirements:		
Defined posts (S.3)	✓	
O&M Manual (S.3)	✓	
Provision of Records and Information (S.4)	✓	
TTMS (S.6)	✓	
Community Relationships and Public Liaison (S12)	✓	
Integrated Roads Information System (S.15)	✓	
Abnormal Indivisible Load Routeing (S.16)	✓	
Incident Response (S.17)	✓	
Defects and Damage (S.21), excluding Cat 2 Defects	✓	
Planning Applications (S.23)	✓	
Delegation of Statutory Functions (S.24)	✓	
Customer Contact Service (S.25)	✓	
Correspondence Enquiries and Complaints (S.27)	✓	
Maintenance Management Plan (S.27)	✓	
Electrical Energy(S.29)	✓	
Third Party Claims (S.30)	✓	
Part 2 of the O&M Works Requirements:		
RMMS, Safety Inspections & Patrols and Night Inspections (S.1) and including those referred to in paragraph 1.7 of this Part.	✓	
Carriageway, Non Motorised User Facilities, Covers, Gratings, Frames and Boxes & Kerbs, Edgings and Pre-formed Channels (S.2.1-S.2.4)		✓
Removal of Graffiti (S2.2)	✓	
Drainage, including cleansing (S.2.5- S.8; S.2.12; S.2.13)		✓
Flooding (S.2.14) & Ditches (S.2.9), including drainage flow obstructions		✓
Embankments and Cuttings (S.2.16)		✓
Sweeping & Cleansing of Roads, including litter (S.2.18)	✓	
Removal of Dead Animals (S.2.19)	✓	
Road Restraint Systems (Pedestrian and Vehicular) (S.2.20)		✓
Fencing , Walls, Screens and Noise Barriers (S.2.21)		✓

<u>Activity</u>	<u>O&M Works Requirements compliance</u>	<u>Cat 1 Defect Repairs only</u>
Road Studs & Road Markings (S.2.22 & 2.23)		✓
Cleaning signs (S.2.24)	✓	
Signs repairs (S.2.24)		✓
Traffic signals – lenses cleaning (S.2.25)	✓	
Traffic signal maintenance, including lamp failures (S.2.25)		✓
Road lighting maintenance, including lamp failures (S.2.26)		✓
Removal of Graffiti (S.2.28)	✓	
Node Markers (S.2.29)	✓	
Winter Service – Operations and Management (S.3)	✓	
Superficial Structures Inspections (S.5.4.2)	✓	
Road Safety and Traffic Management (S.7)	✓	
Landscape Maintenance, mowing (S.8.1)	✓	
Landscape Maintenance, including trees, hedges (S.8.1; S.8.2)		✓



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