M8 M73 M74 MOTORWAY IMPROVEMENTS

DBFO AGREEMENT

Schedule 2 - New Works Requirements

Part 2: Specific Requirements

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SCHEDULE 2 - NEW WORKS REQUIREMENTS

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1.1 General

1.1.1 Design Speeds

(i) The Design speeds to be adopted for the purpose of alignment Design shall be as shown in Table 1 of Appendix D.

1.1.2 Design Standards

(i) Notwithstanding the other provisions of this Agreement, the Design of all new roads as described in Table 1 of Appendix D with the exception of Accommodation Works Access Tracks shall be in accordance with the DMRB.

(ii) The Design shall be subject to the written acknowledgement of receipt by the Scottish Ministers as required by the Certification Procedure.

(iii) No affected part of the New Works shall commence until the appropriate Certification Procedures have been completed.

(iv) The Company shall consult and comply with the requirements of:

(a) Glasgow City Council;

(b) North Lanarkshire Council; or

(c) South Lanarkshire Council, as appropriate;

in connection with the Design for the Side Roads, as described in Table 1 of Appendix D.

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

1.1.3 Cross Sections

(i) Carriageway dimensions shall be as described in Table 1 of Appendix D.

(ii) Changes in cross section between existing roads and the cross-section requirements of new roads as described in Table 1 of Appendix D shall be effected smoothly over a length sufficient for road Users to naturally follow the alignment of the lane lines ahead and to negotiate and adjust position relative to vehicles in adjacent lanes.

1.1.4 Horizontal Alignment

(i) Subject to the other requirements of this Agreement the horizontal road geometry Design shall comply with the relevant design speed as described in Table 1 of Appendix D.

(ii) The Design shall ensure that the horizontal alignment for all Motorways, All Purpose Roads, Side Roads, Accommodation Works Access Tracks, New Access Roads / Tracks, New Means of Access, footways and cycle tracks and otherwise shall extend as a minimum to the Reference Points described in Table 1 and Table 2 of Appendix D and shown on the Reference Drawings and

shall tie-in with the existing road network at or beyond these Reference Points.

1.1.5 Vertical Alignment

(i) Subject to the other requirements of this Agreement the vertical road geometry Design shall comply with the relevant Design speed described in Table 1 of Appendix D.

(ii) The Design shall ensure that the vertical alignment for all Motorways, All Purpose Roads, Side Roads, Accommodation Works Access Tracks, New Access Roads / Tracks, New Means of Access, footways and cycletracks and otherwise shall extend as a minimum to the Reference Points described in Table 1 and Table 2 of Appendix D and shown on the Reference Drawings and shall tie-in with the existing road network at or beyond these Reference Points.

1.1.6 Side Roads

(i) The Design of Side Roads shall be in accordance with DMRB, Appendix D and the requirements of:

(a) Glasgow City Council);

(b) North Lanarkshire Council; and/or

(c) South Lanarkshire Council;

as appropriate.

(ii) Where short lengths of Side Roads form part of the New Works, unless otherwise described in Appendix D, the minimum cross section shall be equivalent to that of the existing road, with a minimum verge width of 2.5 metres.

1.1.7 New Access Roads/Tracks and Accommodation Works Access Tracks

(i) The Design of all New Access Roads/Tracks as described in Table 1 of Appendix D, and Accommodation Works Access Tracks, shall be a minimum of 3.5 metres wide and incorporate horizontal radii sufficient to accommodate any turning movement from a UK Freight Transport Association Design Articulated Vehicle (1998) (16.48 metres long to form the junction with the adjacent carriageway except where otherwise specified in clause 1.1.8 (iii) (e).

(ii) New Access Roads/Tracks, as described in Table 1 of Appendix D, and Accommodation Works Access Tracks shall include maximum vertical gradients of 8%. Where New Access Roads/Tracks as identified in Appendix D, and Accommodation Works Access Tracks shall be used by Non Motorised Users, , the maximum gradients identified in paragraph 1.8.2 shall be applied.

(iii) New Access Roads/Tracks shall also be provided, as required, to give access to settlement, attenuation and storage ponds and otherwise in accordance with Section 1.5.

(iv) All new field accesses shall comply with TD41 and meet layout 1 dimension requirements.

1.1.8 New Means of Accesses

(i) Notwithstanding the other provisions of this Agreement the provision of New Means of Access shall be in accordance with Table 3 of Appendix D.

(ii) With the exception of access at Reference Points F25 to F24, F24 to F22 and F22 to F23 the Design shall ensure that:

(a) a longitudinal gradient of between 2.5% and 4% shall be provided on all accesses over a minimum length of 6 metres from either the adjacent or reference carriageway edge;

(b) all accesses shall be a minimum of 3.5 metres wide and shall incorporate a 1 metre minimum verge width on each side of the access;

(c) where a new access is replacing an existing access, the width of new accesses and verges shall not be less than the existing widths;

(d) accesses shall extend from the edge of either the adjacent or reference carriageway for a minimum length of 10 metres or to either the adjacent or reference road boundary, whichever shall be the greater; and

(e) accesses shall incorporate 10 metre radii from either the adjacent or reference carriageway, with no splays provided.

(f) The accesses shall be formed in concrete access construction in accordance with paragraph 1.7.5(ii).

(iii) At the New Means of Access at Reference Points F25 to F24, F24 to F22 and F22 to F23, the Design shall ensure that:

(a) a longitudinal gradient of between 2.5% and 4% shall be provided on all accesses over a minimum length of 6 metres from either the adjacent or reference carriageway edge;

(b) all accesses shall be a minimum of 6 metres wide and shall incorporate a 1 metre minimum verge width on each side of the access;

(c) accesses shall extend from the edge of either the adjacent or reference carriageway for a minimum length of 10 metres or to either the adjacent or reference road boundary, whichever shall be the greater; and

(d) accesses shall incorporate 15 metre radii from either the adjacent or reference carriageway, with no splays provided.

(e) The Design shall include horizontal radii and curve widening to accommodate a UK Freight Transport Association Design Articulated Vehicle (1998) and extended “Dennison’ trailer (minimum 15.65 metres long).

(f) Accesses shall also be provided in accordance with section 1.5 to connect new roads to New Access

Roads/Tracks for maintenance access to settlement, attenuation and storage ponds and otherwise.

(g) The Design for accesses shall include pavement requirements as described in paragraph 1.7.5.

1.1.9 Junction Design

(i) The Design for junctions between roads including, but not limited to, those described in Table 1 of Appendix D and all accesses including, but not limited to, agricultural accesses and other roads controlled by Relevant Authorities shall be in accordance with the DMRB.

(ii) Junctions shall have sufficient capacity to satisfy the junction performance criteria specified in Appendix F and Appendix G.

(iii) Notwithstanding the requirements of paragraph 1.1.9 (ii), junctions shall be designed and operated to minimise future delay and disruption to road Users.

(iv) Existing traffic movements shall be maintained and provision made to link the existing and new road infrastructures.

(v) Grade Separated Junctions

(a) Notwithstanding the requirements of paragraph 1.1.9 (ii), the Design of grade separated junctions shall as a minimum provide the geometric parameters described in Table 4 to Appendix D.

(vi) Roundabouts and Priority Junctions

(a) M8 Junction 8, Baillieston

- A signalised roundabout shall be provided at the junction of the A8 Glasgow and Edinburgh Road with the A89 Coatbridge Road and Rhindhouse Road.
- A roundabout shall be provided at the junction of the A89 Coatbridge Road and the A8 APR.
- A signalised junction shall be provided at the intersection of the A752 Gartcosh Road and Langmuir Road with the A89 Coatbridge Road.

(b) M8 Junction 7A, Shawhead Junction

- A signalised junction shall be provided at the junction of the A725 with the A8 APR Shawhead Westbound Slip Road and North Road.
- A signalised junction shall be provided at the junction of the A725 and A725 North Road with the A8 APR Shawhead Eastbound Slip Road.
- A signalised junction shall be provided at the junction of the A725 North Road and Whifflet Street with Hagmill Road and Kirkshaws Road.

(c) M8 Junction 7, Eurocentral Junction

- A roundabout shall be provided at the junction of the Eastbound A8 APR with the Eurocentral Eastbound M8 Diverge Slip Road, the Eurocentral Overbridge and the Orchard Farm Pool East SUDS Pond Access Track.
- A signalised roundabout shall be provided at the junction of the Westbound A8 APR with the Eurocentral Westbound M8 Merge Slip Road, the Eurocentral Overbridge, Townhead Avenue and Shawfoot Road.

(d) M8 Junction 6A, Chapelhall Junction

- A partially signalised roundabout shall be provided at the junction of the Eastbound A8 APR with the Chapelhall Eastbound M8 Diverge Slip Road, the Chapelhall Junction Link Road and the Chapelhall Junction to Bo'ness Road North Link Road.
- A partially signalised roundabout shall be provided at the junction of the Westbound A8 APR with the Chapelhall Westbound M8 Merge Slip Road, the Chapelhall Junction Link Road and the Chapelhall Junction to Bo'ness Road South Link Road.
- A roundabout shall be provided at the junction of Bo'ness Road with the Chapelhall Junction to Bo'ness Road North Link Road, Woodhall Mill Road and the BioCity Scotland Access Road.
- A roundabout shall be provided at the junction of Bo'ness Road with the Chapelhall Junction to Bo'ness Road South Link Road, McNeil Drive and Rowantree Avenue.

(e) M8 Junction 6, 'Newhouse'

- A roundabout shall be provided at the junction of the Newhouse Eastbound A8 APR diverge slip road with the A73 Bellside Road, the Newhouse Eastbound A8 APR merge slip road, the Newhouse Westbound A8 APR diverge slip road and the Newhouse Westbound A8 APR merge slip road.

(f) M74 Junction 3A, 'Daldowie'

- A roundabout shall be provided at the junction of the Daldowie overbridge link road and the A74 Hamilton Road
- A signalised junction will be provided at the junction of the Southbound M74 Junction 3A diverge and the Junction 3A to M73 interchange link
- A signalised junction will be provided at the

junction of the Daldowie Crematorium access with the M74 Northbound diverge and merge slips at Daldowie junction.

(g) M74 Junction 5, 'Raith'

- A signalised roundabout will be provided at the junctions of; Bellshill Road, M74 Northbound Merge Slip, M74 Southbound Diverge Slip, A725 Northbound Merge Slip, A725 Southbound Diverge Slip, Strathclyde Country Park Access, M74 Southbound Merge
- A signalised junction will be provided at the junction of the A725 Northbound Diverge slip, Bellshill Road and access to the Industrial Estate.
- A signalised junction will be provided at the junction of Bellshill Road and Bothwell / Hamilton Road

1.1.10 Police Observation Platforms

(i) A police observation platform shall be provided on each carriageway of the New M8 Motorway between Baillieston and Newhouse.

(ii) A further police observation platform shall be provided on the southbound carriageway of the M73 between Baillieston and Maryville.

(iii) The existing police observation platform on the southbound M74 by junction 4 Maryville, will be retained.

(iv) The Company shall consult and comply with the requirements of Police Scotland in respect to location and layout of such police observation platforms.

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

(v) Police observation platforms shall conform with TA66/95 Type 2 or Type 3.

1.1.11 Maintenance Crossover Points

(i) The Design shall include maintenance crossover points on the M8, M73 and M74 at locations to permit, as required, the transfer of two Lanes of traffic from one carriageway to the other in contraflow at a Design speed of 85 kph.

(ii) The Company shall consult and comply with the requirements of Transport Scotland Trunk Road and Bus Operations in respect of locations.

1.1.12 Lay-bys

(i) The Design shall include 4 No. lay-bys on Bo'Ness Road (reference points E37 to E38)

(ii) The Design shall include 3 No. bus lay-bys on the A8 by Swinton

Roundabout consisting of:

(a) 1 No. eastbound (west of Swinton Roundabout, (reference points B1 to B2)

(b) 2 No. westbound; east of Swinton Roundabout on the A8, (reference points B3 to B4) and West of Swinton Roundabout (reference points B2 to B1).

(iii) The Design shall include 2 No. bus lay-bys on Bellshill Road (reference points E74 to E71)

(iv) The Design of all bus lay-bys shall be in accordance with TD 69/07. Figure 5/1.

1.1.13 Closure of existing Roads, Junctions, Accesses and Otherwise

(i) Where closure of existing roads, junctions, accesses and otherwise shall be required by the Design, the Design shall include, but shall not be limited to, the removal of existing hard materials and other features followed by reinstatement in materials and levels to match the adjacent existing verge, with the inclusion of suitable drainage.

(ii) The Design shall ensure that fencing and gates, associated with the closure of existing roads, junctions and accesses, are provided as appropriate to compliment the requirements of Appendix 1/15 to Part 4 of these New Works Requirements.

1.1.14 Carriageway Tie-ins

(i) The Design shall allow for the safe transition between new and existing carriageways.

(ii) The tie-in Design shall be unique for the location with particular reference to road widths, design speed, alignment curvature and sight distances together with road markings, surface texture, signing and any other relevant Design criteria.

(iii) Tie-ins to existing roads shall have verge widths as described in Table 1 of Appendix D to a point 10 metres from the limit shown on the Reference Drawings and thereafter the width shall taper linearly to the existing verge width.

(iv) The Design for the carriageway at tie–ins to existing shall ensure a smooth horizontal and vertical alignment.

(v) Where necessary the carriageway shall incorporate a taper of 1 in 20 to tie into the existing Side Road at the limit of the new Side Road construction.

1.1.15 Visibility Envelopes

(i) The Design for visibility envelopes shall ensure that they have a layout and suitable surface to permit cyclic maintenance cutting of grass or other vegetation.

(ii) Visibility envelopes shall not be obstructed by proposed or existing bridges, signing, landscaping and otherwise.

1.1.16 Turning Areas

(i) The Design shall include for turning areas at the ends of any New Access Roads/Tracks to any settlement, attenuation and storage ponds and otherwise.

(ii) Turning areas pavement shall be designed to the same standard as the adjacent road.

1.1.17 New Footpaths and Cycle Tracks

(i) The Design shall incorporate provision for the use of either existing or new roads and new footways and cycle tracks as described in Table 2 to Appendix D by non motorised users. This shall include signing, dropped kerbing, road markings and otherwise.

(ii) Footways, footpaths and combined footway / cycletracks in the New Works shall be designed in accordance with "Transport Scotland, Disability Discrimination Act Good Practice Guide for Roads" and shall take into account mitigation measures in Environmental Assessment Documents

(iii) The Company shall apply the principles of Secured by Design (ACPO) to the design of temporary and permanent footpaths, cycle paths and underpasses.

The Company shall consult and comply with the requirements of:

(a) Police Scotland Crime Prevention Design Advisor with regards to the provision.

(b) Glasgow City Council;

(c) North Lanarkshire Council; and

(d) South Lanarkshire Council;

as appropriate, in connection with the above sub-clause.

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

(iv) Combined footway / cycletracks shall also be designed in accordance with TD90 of the DMRB and "Cycling by Design" 2010, Transport Scotland.

1.1.18 A723 Carfin Holytown Dualling

(i) The Company shall make appropriate provision for the proposed A723 Carfin Holytown Dualling project in the design, construction and completion of the New Works.

(ii) The Company shall consult and comply with the requirements of North Lanarkshire Council in connection with the above sub-clause.

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

1.2 Site Clearance

1.2.1 Site Clearance

(i) The Company shall consult and comply with the requirements of:

(a) Transport Scotland, Trunk Road and Bus Operations;

in connection with Motorway and All Purpose Roads associated site clearance and with the requirements of:

(b) Glasgow City Council;

(c) North Lanarkshire Council; and/or

(d) South Lanarkshire Council;

as appropriate, in connection with Side Road associated site clearance.

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

(ii) The Company shall ensure that any trees and vegetation which shall be required to be felled to accommodate the Design shall be felled and disposed of with the exception of those required to fulfil the environmental, landscape and ecology requirements.

(iii) The Design shall include the removal of those buildings and Structures as described in Appendix 2/1 to Part 4 of these New Works Requirements, including but not limited to:

(a) the bridge structure carrying the existing A8 Glasgow and Edinburgh Road eastbound over the M73 northbound to M8 westbound slip road lying to the west of Baillieston Interchange (Transport Scotland structure ref; M8S 8-8 50)

(b) the bridge structure carrying the existing A8 Glasgow and Edinburgh Road westbound over the M73 northbound to M8 westbound slip road lying to the west of Baillieston Interchange (Transport Scotland structure ref: M8S 8-8 40)

(c) the overbridge structure carrying the access road from Bredisholm Road over the existing A8 from Bargeddie to the east of Baillieston Interchange (Transport Scotland structure ref: A8-100)

(d) the brick farmhouse steading and associated out buildings at Braehead Farm

(e) the brick structure at Shawhead Junction, if not removed as part of advance works

(f) the overbridge structure carrying the B7070 North Road over the southbound A725 (Transport Scotland structure ref: A725-260)

(g) the brick structure on the west side of Woodhall Mill Road adjacent to the A8

(h) the overbridge structure carrying the B799 Bo'ness Road over the existing A8 (Transport Scotland structure ref: A8-30)

(i) the overbridge structure carrying the Ellismuir Farm access road over the M73 (Transport Scotland structure ref: M73-1-2 70)

(j) the overbridge structure carrying the Bothwell park Farm access road over the M74, North of Junction 5, Raith. (Transport Scotland structure ref: M74-5-4 17)

(k) the 5 motorway gantries on the Eastbound M8 between reference points A1 and A5

(l) the 6 motorway gantries on the southbound M73 between reference points A17 and A23

(m) the 4 motorway gantries on the northbound M73 between reference points A25 and A17

(n) the motorway gantry on the southbound M73 to M74 northbound interchange link

(o) the motorway gantry on the northbound M74 to northbound M73 interchange link

(p) the 6 motorway gantries on the southbound M74 between reference points A26 and A40

(q) the 8 motorway gantries on the northbound M74 between reference points A40 and A26

(r) Barn structure at Orchard Farm.

1.2.2 General Site Clearance

(i) All existing roads, tracks, hard standing areas, kerbs, gullies, road lighting columns, electrical installation infrastructure, barriers, signage, existing Traffic Scotland Equipment and otherwise, made redundant as a result of the New Works, shall be removed to their full depth of construction, and the former location graded to appropriate levels and reinstated with subsoil and topsoil, to allow for planting or seeding to be undertaken in accordance with the landscape design.

(ii) Kerbs, gullies, lamp posts, barriers, signage and otherwise, made redundant as a result of the New Works, and which are not located within landscaped areas shall be removed to their full depth of construction, and the former location reinstated in accordance with the Specification.

1.3 Fencing and Environmental Barriers

1.3.1 General

(i) Notwithstanding any other provision of this Agreement all defective and damaged parts of any existing or temporary boundary fencing shall be immediately repaired to ensure that the New Works Site shall be stock proof and until such time as any walling, permanent fencing, Accommodation Works and accesses shall be completed.

(ii) Watergates on fencing shall be provided at all watercourse locations where stock proof fencing shall be provided.

(iii) The Design for all gates at accesses shall allow for the gates to open away from the carriageway only.

(iv) Prior to works commencing in any area, a fence shall be erected to delineate the boundary of the New Works Site in that area.

(v) Notwithstanding the other provisions of this Agreement, the Company will undertake a risk assessment on all fencing provision to confirm that this is appropriate to the location and adjacent land use and the fencing constructed should be as a minimum dependant on the characteristics of each specific area of construction. Where any conflict is identified with these New Works Requirements this shall be reported to the Scottish Ministers.

(vi) The Company shall consult and comply with the requirements of Transport Scotland in connection with the provision of anti-glare screens.

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

1.3.2 Temporary Fencing, Gates and Otherwise

(i) The Company shall consult and comply with each relevant landowner and tenant/occupier prior to work commencing on the New Works Site regarding the lengths of the New Works Site boundary which shall be required to have temporary stockproof fencing erected if the Company chooses this option.

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

(iii) The position of all gates and animal accesses shall also be agreed with each landowner and tenant/occupier at any particular location prior to work commencing at such location.

(iv) The temporary fencing shall be either type 1 or 3 as shown on Drawings H1 and H2 in Volume 3 of the MCHW or as otherwise agreed by the landowner and tenant/occupier.

(v) Where temporary or permanent gates are to be locked, the Company shall provide and install the locks. Two sets of keys for each lock shall be provided to the Scottish Ministers

1.3.3 Permanent Fencing, Walling, Gates and Otherwise

(i) The Design shall include Motorway fencing, to be provided and constructed on both sides of all Motorways as described in Table 1 of Appendix D.

The Motorway fence shall terminate at the end of each Motorway slip road adjacent to the GIVE WAY line, or equivalent, and shall be timber post and 5 rail as described in Drawing H3 in Volume 3 of the MCHW as a minimum. Where existing motorway boundary fence is replaced as part of the New Works, the fence provided as part of the New Works shall be of equal provision to the existing fence as a minimum. The motorway boundary fence, shall tie into existing fencing, temporary fencing or fencing as required by Appendix 1/15 to Part 4 of these New Works Requirements as appropriate.

(ii) Notwithstanding the requirements of paragraph 1.3.3(i), permanent fencing, walling, gates and otherwise shall be provided and constructed on both sides of all roads, as described in Table 1 of Appendix D, or as otherwise required by Appendix 1/15 to Part 4 of these New Works Requirements.

(iii) Outwith those fences, walls, gates and otherwise described in paragraphs 1.3.3(i) and 1.3.3(ii) and those required by Appendix 1/15 to Part 4 of these New Works Requirements, permanent fencing, gates and otherwise shall be provided in the Design at the following locations and tied into adjacent fencing where appropriate:

(a) where storage, attenuation or settlement ponds or otherwise shall be formed as part of the drainage measures, a risk assessment shall be carried out by the Company to determine an appropriate form of fence to be designed, constructed and completed and access provided via a lockable gate which shall be as a minimum 3.6 metre wide as shown on Drawing H17 in Volume 3 of the MCHW.

Consideration shall be given to the movement of wildlife to and from the storage, attenuation or settlement pond or otherwise when considering the form of fencing;

(b) at any gaps in the boundary fencing, along the full length of the New Works, not described elsewhere in these New Works Requirements, this fencing shall be timber post and 5 as a minimum wire unless required otherwise to match adjacent sections of fencing;

(c) between the road boundary fence and bridge parapets adjacent to the Motorway or All Purpose Roads a timber post and five rail fence as shown on Drawing H3 in Volume 3 of the MCHW as a minimum; and

(d) between the road boundary fence and bridge parapets remote to the Motorway or All Purpose Roads a timber post and five rail fence as shown on Drawing H3 in Volume 3 of the MCHW as a minimum; and

(iv) The Company shall consult and comply with the requirements of Transport Scotland in connection with all permanent fencing, walls, gates, fencing in environmentally sensitive areas, and otherwise to be constructed outwith those described in Appendix 1/15 to Part 4 of these New Works Requirements.

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

(v) Unless otherwise stated, permanent fencing shall be a minimum of 3 metres from the final earthworks limits other than in areas where earthworks slopes shall be graded out for return to agriculture. No subsurface elements shall extend beyond the permanent LMA boundary.

(vi) Where permanent fencing is required to delineate the extent of a

Motorway / Trunk Road or associated Slip Road, the line of the fence shall be parallel to and set back one metre from the extents of the land required permanently for the New Works unless otherwise agreed with the Scottish Ministers. Where permanent fencing is required to indicate the boundary of a Side Road, access road, track or the like, the fence shall be erected on the extents of the land required permanently for the New Works.

(vii) The location of fencing in the Design shall ensure a smooth and flowing vertical and horizontal alignment.

(viii) Where permanent fencing shall be indicated in the Design along the boundary of the Land Made Available by the Scottish Ministers for the New Works, the fence shall be set parallel to the boundary with the fence posts contiguous to the boundary and with the fence within the Land Made Available by the Scottish Ministers for the New Works.

(ix) Where fencing as required by Appendix 1/15 of Part 4 of this Schedule 2 is provided at the boundary of the Land Made Available by the Scottish Ministers for the New Works the requirements of paragraph 1.3.4 (viii) shall be adjusted as necessary to allow maintenance of each fence and of the land within the Sites.

(x) Notwithstanding any other provisions of this Agreement, the Company shall ensure that the line of the permanent fence shall be set out in such location as shall have been agreed by the Scottish Ministers prior to any fencing works having commenced.

(xi) The location and erection of any fencing works in environmentally sensitive areas shall be agreed with the Scottish Ministers before such works have commenced.

(xii) The Design shall include provision for those items of permanent fencing and gates identified within Appendix O.

1.3.4 Fencing for Wildlife

(i) Rabbit Fencing

In addition to the areas described elsewhere in these New Works Requirements, where the Company considers that planting areas are likely to be damaged by rabbits, such areas shall be enclosed by permanent fencing in accordance with sub-clauses 306.4(i), 306.5(i) and 306.6 of the Specification.

(ii) Deer Fencing

In addition to the areas described elsewhere in these New Works Requirements, where the Company considers that deer proof fencing is required to reduce the risk of motor vehicle collisions or to prevent damage to planting areas, such fencing shall be installed.

(iii) The Design shall ensure that fencing shall be provided adjacent to wildlife tunnels, underpasses and ledges to guide mammals to the tunnel, underpass and ledge entrance.

The Company shall consult and comply with the requirements of Scottish Natural Heritage with regard to the design, location and

extent of fencing for protected species.

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

(iv) Fencing for wildlife shall included but not be limited to:

(a) badgers; and

(b) otters

1.3.5 Noise Fences and Barriers

(i) The Design shall ensure that noise fences and barriers shall be constructed as soon as practicably possible after commencement of the New Works to assist in mitigating construction impacts.

(ii) The Company shall consult and comply with Transport Scotland with regard to the location of proposed noise fences and barriers.

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

(iii) Notwithstanding the other requirements of this Agreement, as a minimum, noise fences and barriers shall be provided as described in Appendix E at suitable locations to maximise the acoustic mitigating effects in terms of reducing noise to the adjacent locations, including garden areas and the living space of houses.

(iv) The design of environmental barriers shall be undertaken by the Company in accordance with the Barrier Assessment Framework set out in HA 65 of the DMRB.

(v) Notwithstanding the requirements elsewhere in these New Works Requirements, the Company shall employ a landscape architect or architect to advise on the design of environmental barriers

(vi) The environmental barrier design shall take into account, as a minimum, durability, weathering, the extent to which materials are resistant to vandalism and graffiti, and the long term maintenance of the environmental barriers.

(vii) The design shall ensure that the environmental barriers are integrated physically and visually with other infrastructure for the Motorway including Gantries, signs, lighting columns, bridge parapets, retaining walls, Traffic Scotland Equipment **(TSE),** restraint systems, CCTV cameras and equipment.

(viii) The design of environmental barriers shall

(a) as far as practicable, minimise adverse visual impacts for surrounding properties and outdoor receptors (footpaths, bridlepaths, cycle routes, local roads and areas used for outdoor recreation);

(b) reflect / enhance the local landscape character either side of the carriageway;

(c) provide the road user with varied and interesting views where possible, in particular avoiding long, monotonous stretches of barrier;

(d) assist in screening views of the road and traffic from nearby visual receptors; and

(e) enhance the local environment through the use of a sympathetic form, colour and texture.

(ix) Where localised dips in ground level occur, a continuous barrier top height shall be maintained and the void beneath in-filled with earthworks.

(x) The Design shall ensure the provision of gates, located at appropriate points within barriers, at intervals not exceeding 200 metres. The gates shall be provided to allow access for routine maintenance of the New Works and associated features and landscaping and also to allow escape routes for members of the public in the event of an incident on the adjacent carriageway. Approximately 2.0 square metres of approved hard standing shall be provided at the front and rear of each gate in order to prevent growth of vegetation and to aid identification of access points/escape routes. Escape routes shall be appropriately signed.

(xi) Concrete or plastic noise barriers shall not be acceptable.

(xii) Except where otherwise specified in these New Works Requirements, close-boarded timber noise barrier fencing shall only be acceptable if it meets the following criteria:

(a) It shall generally not exceed 2.0 metres in height. Where screening height in excess of 2.0 metres is required to achieve noise mitigation, timber barrier fencing shall be used in combination with false cuttings;

(b) Metal fence posts shall not be acceptable unless they are hidden on both sides to give the appearance of an uninterrupted timber face across posts and panels, unless otherwise agreed with the Scottish Ministers;

(c) Vertical timber boards shall extend the full height of the barrier. Horizontal joints between vertical boards or panels with vertical boarding shall not be acceptable.

(xiii) Subject to minimum verge widths, the Design shall ensure that environmental barriers are sited as close to the edge of carriageway of the New Motorway as possible so as to maximise their performance, taking account of all other requirements including, but not limited to:

(a) Required minimum verge widths, sight lines and other relevant standards and requirements;

(b) the need to reduce the visual ‘canyon’ effect where long stretches of environmental barrier are close to the road edge;

(c) other requirements (such as lighting and signing, utilities, geotechnical constraints, and the like).

(xiv) Transitions between barriers of different heights and the ends of barriers and the ground shall slope at a gradient not steeper than one in two. Vertical stepped changes in barrier height and vertical barrier ends shall not be acceptable;

1.4 Road Restraint Systems (Vehicular and Pedestrian)

1.4.1 The Company shall consult and comply with the requirements of:

(i) Glasgow City Council,

(ii) North Lanarkshire Council,

(iii) South Lanarkshire Council, or

(iv) The Scottish Ministers Trunk Road South West Management Unit and South East Management Unit;

as appropriate, with regard to all road restraint systems on Side Roads, and connections/transitions to any existing road restraint systems on Side Roads.

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

1.4.2 The Company will provide, within their Design a compliant Vehicle Restraint System (VRS) in accordance with TD 19/06.

1.4.3 In addition to undertaking design and a vehicle restraint risk assessment in accordance with the criteria for the provision of safety barriers, parapets, guardrails and the like as set out in TD 19 of the DMRB, the Company shall carry out a further risk assessment to determine any areas, within the design, where additional safety barriers, vehicle and pedestrian parapets, pedestrian guardrails, and the like are required.

1.4.4 Unless protected by a VRS, sign posts, lighting columns and the like shall be designated passively safe so as to require no protection in accordance with TD19. Where passively safe sign posts, lighting columns and the like are used they shall conform to testing as detailed in BS EN 12767:2007. Where additional hazards exist in tandem with any sign posts, lighting columns and the like a VRS shall be required in accordance with the Design. In such circumstances any sign posts, lighting columns and the like placed behind the VRS, out-with the VRS working width, may be designated as not passively safe.

1.4.5 Where reinforced soil Structures or other Structures utilising precast soil retaining panels shall be provided in the Design adjacent to the carriageway, the fixing of road restraint systems directly to these precast panels shall not be permitted in the Design.

1.4.6 Road restraint systems in the Design shall be designed, constructed and completed to ensure that a smooth and flowing vertical and horizontal alignment shall be achieved on the arrival to, and the departure from, any Structure.

1.4.7 TD19 of the DMRB states that working width shall be described by the Design Organisation. For the purposes of this Agreement, Design Organisation in this context shall be the Designer.

1.4.8 Notwithstanding the requirements of TD19 of the DMRB, any road restraint

system incorporated in the Design shall have an impact severity level of either A or B as described in Table 3 of BS EN 1317-2 together with the relevant test report results to demonstrate that the appropriate index values have been achieved.

1.4.9 Where the Company's Design for the New works requires the provision of a vehicle restraint system, or the removal of an existing vehicle restraint system, within the central reserve of Motorways as defined in Table 1 of Appendix D, a VRS shall be provided and shall have a containment level of H1 or greater..

1.4.10 At any new central reserve maintenance crossovers the central reserve vehicle restraint systems shall be removable. The removal of the VRSs shall not be detrimental to the effectiveness of the adjacent sections of the vehicle restraint systems.

1.4.11 Unless noted otherwise, gaps of less than 100 metres in the verge vehicle restraint systems shall be infilled with a similar type of vehicle restraint system to the adjacent lengths.

1.4.12 Where hard standings result in a gap in a VRS, a VRS shall be provided at the back of the hard standing and overlapped so as to remove the risk of vehicles passing through the gap.

1.4.13 Pedestrian guardrails shall be provided at appropriate locations and, in particular, at locations where a footpath, access path or hard standing is adjacent to an embankment drop and at corner radii and pedestrian crossing points at traffic signal controlled junctions.

1.5 Drainage and Service Ducts

1.5.1 The Company shall consult and comply with the requirements of the Scottish Environment Protection Agency ("**SEPA**") to obtain the necessary licences, approvals and otherwise to enable the Design, construction and completion of the New Works and with respect to complying with the requirements of the Water Environment (Controlled Activities) Regulations 2005 ("**CAR**").

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

The Company shall also provide a copy of the relevant licences, registrations and otherwise as required under CAR to the Scottish Ministers prior to commencement of the relevant New Works.

1.5.2 Drainage

(i) The Design shall ensure that the continued and uninterrupted flow of all watercourses is maintained throughout the construction of the New Works.

(ii) Notwithstanding any other provisions of this Agreement, the Company shall, prior to the commencement of the New Works, give 10 days written notification to SEPA) of the intended date for the commencement of the New Works.

(iii) The Company shall consult and comply with the requirements of SEPA with respect to the Design including, but not limited to, drainage outfalls, culverts, all works on inland waters and pollution control.

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

(iv) The Company shall not discharge water from the New Works Site on either a temporary or permanent basis until it has consulted and complied with the requirements of all interested parties including, but not limited to:

(a) SEPA;

(b) Scottish Natural Heritage (**SNH**);

(c) Scottish Water;

(d) Transport Scotland

(e) The Scottish Ministers Trunk Road South West Management Unit and South East Management Unit;

(f) Glasgow City Council;

(g) North Lanarkshire Council;

(h) South Lanarkshire Council;

as appropriate within their respective boundaries.

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

(v) The Company shall consult and comply with the requirements of:

(a) Glasgow City Council;

(b) North Lanarkshire Council;

(c) South Lanarkshire Council;

(d) Transport Scotland;

(e) The Scottish Ministers Trunk Road South West Management Unit and South East Management Unit;

(f) Scottish Water.

as appropriate, with respect to the connection of proposed drainage to the existing drainage network and the existing road drainage network within their respective boundaries.

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

1.5.3 General Requirements.

(i) The Design shall take account of the Construction Industry Research and Information Association (CIRIA) Report C697 “The SUDS Manual”.

(ii) The Design shall ensure that on all unkerbed roads, with the exception of Accommodation Works Access Tracks, surface water drainage and ground water drainage shall be in accordance with Drawing B1 and B15, Type X, to Volume 3 of the MCHW.

(iii) The Design shall ensure that drainage on footways, footpaths, cycle tracks, combined footways/cycletracks, Accommodation Works Access Tracks, New Access Roads/Tracks, New Means of Access and otherwise shall remove surface water and sub-surface water to at least 450 millimetres below finished track/path levels.

(iv) The minimum pipe diameter for all drainage systems in the Design shall be 150 millimetres except for cross carriageway drainage where the minimum diameter shall be 300 millimetres.

(v) The Design shall ensure accessibility for inspection and maintenance. All drainage systems shall have adequate facilities for rodding.

Rodding eyes shall not be used on pipes larger than 150 millimetres diameter.

The maximum distance between access points on lengths of pipe shall be 90 metres.

Access chambers shall have a diameter not less than 1050 millimetres. Chamber diameters and depths and the use of step irons, rungs and ladders shall conform to the requirements given in Table NA22 of BS EN 752:2008 if not detailed within the HCD.

The plan area of all manholes and catchpits which shall be required in the Design shall not be permitted within the road pavement of any roads.

(vi) Pipe flow velocities shall not be less than 0.75 metres per second at any point nor greater than 2.5 metres per second at pipe discharge points.

(vii) All pipes under carriageways less than 1.2 metres below the finished road level (measured from the finished road level to the soffit of the pipe) shall be encased in concrete of minimum thickness 150 millimetres.

(viii) Drainage in the Design shall be provided to intercept water, field drains and slope drains and otherwise at the top of cuttings, on cutting berms, at the bottom of embankments and in the verges.

Where the road is in cutting, less than two metres below original ground level, drainage at the top of the cutting may be omitted.

Where the road is on embankment, less than two metres above original ground level, drainage at the bottom of the embankment may be omitted and drainage provided in the road verge so that the soffit of the pipe shall be a minimum of 300 millimetres below the original ground level.

Subsurface drainage shall be provided within the central reserve and verges of all new Motorways, All Purpose Roads and Side Roads wherever the road is to be lower than the adjacent ground.

Notwithstanding the above, the soffit of the subsurface drain shall be located at a minimum depth of 300 millimetres below formation, or where a capping layer is to be adopted in the Design, at a minimum depth of 300 millimetres below sub-formation.

Details of cut-off ditches shall be in accordance with paragraph 1.6.

(ix) Where land drains are encountered in the construction of the New Works such drains shall be intercepted and connected to an outfall via a drainage system.

The Company shall record and photograph the position of each land drain when intercepted, provide this information to the Scottish Ministers and include in the As Built Drawings.

The Company shall consult and comply with the requirements of all landowners and tenants/occupiers in respect of land drain connections. The landowner and tenant/occupier shall be permitted to inspect severed land drains and their connections prior to backfilling.

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

(x) Side slopes shall be drained where egress of groundwater is encountered, or is likely to be encountered.

(xi) The Design shall ensure that drainage is provided in areas where there is potential for erosion or ponding which would be detrimental to the safe operation of the carriageway and/or long term stability of the New Works.

(xii) The Design shall allow for the proper treatment of all surface water and road runoff within the limits of the New Works Site.

(xiii) The Company shall take due regard and make allowance in the Design, construction and completion of the works for the areas throughout the New Works Site and adjacent areas which are susceptible to flooding to avoid inconvenience to adjacent landowners and tenants/occupiers. No increase in flood risk in the vicinity of the New Works Site shall be permitted.

(xiv) The Company shall monitor ground conditions to ensure effective functioning of all field drainage.

(xv) The use of surface water concrete open channels, fin drains and narrow filter drains shall not be permitted in the Design.

(xvi) The use of linear drainage channels shall not be permitted in the design of the New Works.

(xvii) The Design shall ensure that where filter drains in the road verge and central reserve are designed to intercept surface run-off, the top surface of the filter material shall be between 25 millimetres and 50 millimetres below the adjacent finished verge or carriageway level.

The exposed stone shall be 75 millimetres nominal size ‘Type B’ crushed rock (gravel shall not be permitted) for a depth of 300 millimetres. This filter material shall extend to the carriageway edge.

(xviii) Where filter drains shall be remote from the carriageway edge the top surface of the filter material shall extend to finished ground

level.

(xix) The Design shall ensure that new manhole or catchpit covers which shall be required in the Design, shall not be permitted within the road pavement of all roads described in Table 1 of Appendix D.

(xx) The Design shall ensure that all gully, catchpit and manhole grates, covers and frames shall comply with BS EN 124 with the following provisos:

(a) Class A15 shall not be permitted;

(b) Class D400 shall be used as a minimum standard for ironwork located within the carriageway or areas accessible to vehicular loading; and

(c) Gullies shall be of the trapped type, in-situ cast to Drawing F13 of Volume 3 of the MCHW, and shall have a double triangular, non-rock grating and frame with clear opening 434 x 434 millimetres bedded in mortar.

(xxi) The Design shall ensure that all kerbed roads have a positive drainage system such as gullies.

(xxii) Where gullies are used in the Design, double gullies or additional combinations of gullies shall be provided at sag points.

(xxiii) Subject to the other provisions of this Agreement all surface water drainage in the Design shall be designed in accordance with the Modified Rational Method.

(xxiv) The Design shall ensure that for all surface water drainage networks associated with the new Raith Underpass and approach roads Carrier Drains and Filter Drains shall be checked against a 1 in 30 year storm to ensure that surcharging does exceed the cover level of inspection chambers.

1.5.4 Existing Drainage

(i) All existing drainage pipework within one metre of carriageway formation level which shall become redundant as part of the New Works, shall either be excavated and removed from the New Works Site or grouted up.

(ii) All existing drainage pipework over one metre below formation level and greater than 375 millimetres in diameter, which shall become redundant as part of the New Works shall be completely infilled with pulverised fuel ash cement grout or equivalent.

(iii) The Company shall maintain all existing foul and surface water drainage or suitable temporary drainage until the permanent drainage for the New Works is installed and functioning in accordance with other provisions of these New Works Requirements.

(iv) Ground profiles shall at all times be maintained to shed surface water efficiently and directly into the nearest drain and to prevent penetration of water into or below existing pavements.

(v) Where any existing drainage shall be incorporated within the New Works as part of the Design, the Company shall consult and

comply with the requirements of all interested parties including, but not limited to:

(a) SEPA;

(b) Glasgow City Council;

(c) North Lanarkshire Council;

(d) South Lanarkshire Council; and

(e) Transport Scotland;

to demonstrate that the existing drainage shall fulfil the Design requirements.

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

1.5.5 Drainage Outfalls

(i) The Design shall ensure that discharge of the drainage system does not adversely affect downstream pipes, culverts, watercourses, fish farms, static water bodies, reed beds and otherwise.

Where the Design incorporates a connection to an existing drainage system, it shall be controlled or attenuated to ensure that there shall be no adverse effect on downstream pipes, culverts, watercourses, fish farms, static water bodies, reed beds and otherwise.

The Design shall allow for the upgrading of existing drainage systems which may be required as a result of such connections.

(ii) Outfalls to watercourses in the Design shall incorporate measures between the end of the pipe and the watercourse to dissipate and reduce the velocity of the discharge.

The Design of such measures shall prevent erosion and scour and shall sustain grass or aquatic vegetation.

(iii) No new drainage outfalls shall be permitted in the Design to the Monkland Canal either directly or indirectly.

1.5.6 Drainage Culverts

(i) A culvert shall mean a cross carriageway drain servicing an open drainage system and such culvert Design shall have a minimum diameter of 900 millimetres.

(ii) All culverts shall be designed in accordance with CIRIA Report C689 “Culvert Design and Operation Guide” (2001) except that all culverts Design shall be for the 1 in 100 years flood peak discharge flow of the watercourse.

The Design for the culvert shall accommodate this flow in free flow conditions with zero afflux and shall be designed to convey the 1 in 200 year return period flow without causing significant backing up or afflux immediately upstream.

Notwithstanding the other provisions of this Agreement, the Design for all culverts shall also be in accordance with the Design Guidance Booklet: "Rivers crossings and Migratory Fish" – A Consultation Paper, produced by the Scottish Executive (April 2000).

All culvert Design shall encourage use by wildlife such that all fish species and mammals associated with the watercourse may pass freely through the culvert.

Culverts shall be designed to operate under sub-critical, free flow conditions.

Bends, steps, changes in culvert slope and cross section shall not be permitted in the Design.

(iii) The Design shall ensure that, where an existing culvert shall be replaced or extended, the new culvert shall be no less in dimensions and capacity than the existing culvert.

(iv) All new culverts shall have a formed concrete headwall at both the inlet and outlet.

All culvert headwalls shall be located a minimum of 2.0 metres beyond the back of the adjacent road verge.

Headwalls in the Design shall be designed as Structures.

(v) The Design shall ensure that measures shall be taken at watercourses to prevent livestock entering all culverts.

(vi) The Company shall undertake a risk assessment to determine the provision or otherwise of trash screens and security screens at culverts.

(vii) Culverts, where mammal ledges are required to be provided as part of the Design, shall be designed as Structures in accordance with Section 2.

The ledges shall be positioned not lower than 150 millimetres above the 1 in 25 year flood level and shall provide a minimum 600 millimetres headroom.

(viii) The Company shall consult and comply with the requirements of:

(a) Glasgow City Council;

(b) North Lanarkshire Council; or

(c) South Lanarkshire Council; as appropriate,

(d) SEPA; and

(e) Transport Scotland

with regards to providing trash screens and security screens at culverts.

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

(ix) Multi-pipe culvert systems shall not be permitted in the Design.

(x) The Design shall ensure that the invert and sides of all

watercourses at the inlets and outlets of culverts over a minimum length of 5 metres shall be protected from scour and erosion.

Cascades and erosion protection on all watercourses shall be constructed in natural stone matching the colour, finish and features of watercourses within and adjacent to the New works Site, or otherwise agreed with SEPA.

(xi) The Design shall ensure that provision shall be made to facilitate safe access to each culvert inlet and outlet for inspection and maintenance purposes.

1.5.7 Pollution Control and Flood Prevention

(i) The Company shall take all reasonable precautions and comply with all Laws, including SEPA requirements, in conjunction with the water environment, including:

(a) any interference with the supply to or abstraction from such sources;

(b) silting;

(c) erosion of their beds or banks; and

(d) 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.

(ii) The Company shall consult and comply with the requirements of:

(a) SEPA;

(b) Glasgow City Council;

(c) North Lanarkshire Council; or

(d) South Lanarkshire Council; as appropriate

(e) Transport Scotland

with respect to the Design including, but not limited to flood prevention.

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

(iii) Notwithstanding any other provisions of this Agreement, all new outfalls incorporating surface water runoff from road pavements shall be provided with a shut down system to facilitate dealing with accidental spillages. A shut down facility shall be provided both before the inlet and after the outlet of the associated new settlement, attenuation or storage ponds.

(iv) The Design shall ensure that the runoff from any road, as described in Table 1 to Appendix D, does not increase the risk of flooding downstream of the point of discharge.

The Design shall include a detailed flood risk assessment and shall include any recommendations of such assessment.

(v) The Design shall ensure that the drainage system shall include

sufficient attenuation of road drainage to reduce flows from the new road drainage system during a 1 in 100 year rainfall event (+20 per cent for climate change) to the equivalent greenfield run-off from a one in two year rainfall event in accordance with the Scottish Road Network Climate Change Study 2005 for all outfalls to all watercourses.

(vi) All storage ponds, retention basins, swales, overflow trenches and otherwise shall be sized as in accordance with CIRIA Report C697 "The SUDS Manual" in order to allow settlement for pollution removal purposes.

(vii) The Design shall ensure that all settlement, attenuation and storage ponds and otherwise shall take into account ground water levels and shall be designed to have permanent water below the outlet level.

(viii) The Design shall ensure that all settlement, attenuation and storage ponds and otherwise shall include provision to prevent accidental release of hydrocarbons into the receiving watercourse including a baffle or similar in accordance with DMRB 33/06.

(ix) The Design shall ensure that all settlement, attenuation and storage ponds and otherwise shall have natural shaped outlines which are in keeping with the surrounding landscape, in accordance with the environment, landscape and ecology section.

The Design shall ensure that access to all settlement, attenuation and storage ponds and otherwise shall be provided for maintenance purposes either on New Access Roads/Tracks constructed specifically for this purpose or through use of New Means of Access or otherwise and shall incorporate suitable turning areas for maintenance vehicles.

(x) The Design shall ensure that access to all settlement, attenuation and storage ponds and otherwise shall extend to aquatic benches and the inlet and outlet infrastructure, and to the base of the pond via a ramp for maintenance access.

(xi) The Design shall ensure that where New Access Roads/Tracks are being constructed specifically to give access to settlement, attenuation and storage ponds and otherwise, these shall be formed in unsurfaced access construction in accordance with paragraph 1.7.4 (iii).

(xii) The Design shall ensure that where it is proposed to make use of either footways/cycletracks or, New Means of Access and otherwise as described in Table 1 of Appendix D for the purpose of access to settlement, attenuation and storage ponds and otherwise, the relevant sections of either footways/cycletracks or Accommodation Works Access Tracks, New Means of Access and otherwise shall be widened to a minimum of 3 metres and constructed to the minimum same standard as the footway/cycletracks or New Means of Access and otherwise.

(xiii) The Design shall include measures including but not limited to gates with locks, removable bollards, fences and otherwise to deter use of any maintenance access routes by unauthorised vehicles and non motorised users.

The Company shall consult and comply with the requirements of Transport Scotland Trunk and Bus Operations with respect to measures to prevent unauthorised use of maintenance access routes and safety at settlement, attenuation or storage ponds and otherwise.

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

1.5.8 Watercourse Diversions

(i) The Company shall consult and comply with the requirements of:

(a) SNH; and

(b) SEPA;

and comply with the Water Environment (Controlled Activity)(Scotland) Regulations 2005 with respect to the Design for watercourse diversions.

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

(ii) The Design shall include for the diversion of watercourses as described in the Watercourse Notices included in Schedule 9.

(iii) Other than those watercourses described in the Watercourse Notices included in Schedule 9, existing watercourses, whether flowing or dry shall continue on their existing alignment.

The Design shall ensure that all watercourses shall be taken under the Project Roads in culverts, or in Structures.

1.5.9 Service Ducts

(i) The Company shall consult and comply with the requirements of Statutory Undertakers and owners of Private Apparatus and other relevant parties with regard to the provision of service ducts for the use of, or the future use of, any Statutory Undertakers and owners of Private Apparatus and other relevant parties, including but not limited to, the following:

(a) Scottish Water;

(b) Scottish Power;

(c) Scotland Gas Networks;

(d) British Telecommunications;

(e) Cable and Wireless;

(f) Virgin Media; and

(g) Traffic Master.

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

(ii) The Design shall ensure that service ducts have a metal foil strip laid above them to aid their future location and shall be provided with 45 degree bends and extensions at each end to provide entry at a depth of 0.5 metres below finished ground level terminating a minimum of 0.5 metres outwith the edge of the carriageway.

Empty ducts shall include draw wires or cords and plugs.

(iii) The Design shall ensure that ducts which do not terminate in a draw chamber shall have 0.3 x 0.3 metres referenced concrete marker slabs placed directly above the duct ends.

(iv) A set of spare twin transverse 100 millimetre internal diameter smooth bore rigid style ducts shall be provided across all Motorway slip roads at the back of nosings.

(v) The Design shall include spare transverse ducts beneath each road connecting to each roundabout within 10 meters of the approach to the roundabout, as follows:

(a) 2 x 100 millimetres diameter telecom ducts; and

(b) 2 x 150 millimetres diameter power supply ducts.

1.5.10 Particular Requirements for Existing Underpasses

(i) The Design shall include provision for surface water drainage at each end of all existing underpasses to intercept run-off from the adjacent areas to prevent water ingress into the existing underpass.

1.5.11 Pumping Stations

(i) Where the Design incorporates a pumped drainage system specifically for the new Raith Underpass this shall comply with the requirements of this section 1.5.11.

(ii) Pumping station design shall take account of BD78/99 – Chapter 7 (DMRB, Volume 2, Section 2, Part 9) and CIRIA Report 121, 'Design of low-lift pumping stations'.

(iii) Pumping stations shall prevent flooding from the surface water drainage network and shall cater for all events up to and including the 1 in 30yr plus climate change.

(iv) The design flow rate shall be between 80% and 105% of the pumpset 'best efficiency point' (BEP). The minimum standby capacity shall be equivalent to one third of the design flow rate.

(v) Maintenance access shall include a 'permanently-in-place' pump removal facility. All lifting equipment shall comply with the Lifting Operations and Lifting Equipment Regulations and Provision and Use of Work Equipment Regulations.

(vi) An auxiliary or stand-by power supply (capable of full operation of the pumping station) shall be provided together with an advance warning system. This shall be integrated with a means of diverting traffic along alternative routes in the event of a power failure or some other complete failure of the pumping station.

1.5.12 Flood Protection

(i) The Design shall include a detailed flood risk assessment and shall comply with any recommendations of such assessment.

(ii) Flood protection and compensatory storage shall be provided where the Works encroach on the functional floodplain of main rivers where the functional floodplain is as defined in Scottish Planning Policy (SPP)

(iii) Flood defences shall include appropriate freeboard including allowance for climate change, modelling inaccuracies, settlement, and erosion.

(iv) Maintenance access shall be provided for flood defences and compensatory storage areas.

1.5.13 The Monklands Canal Pipeline is maintained by Transport Scotland on behalf of the Scottish Ministers. The Company shall consult and comply with the requirements of Transport Scotland Trunk Road and Bus Operations in relation to the Monklands Canal Pipeline and the design, construction and completion of the New Works.

1.6 Earthworks

1.6.1 General

(i) The geotechnical design for earthworks shall comply with:

(a) the principles and application rules of BS EN 1997-1 and the accompanying UK National Annex, as modified and supplemented by these New Works Requirements;

(b) the requirements of the DMRB, where they do not conflict with the above; and

(c) relevant Non-Contradictory Complementary Information.

(ii) The Company shall carry out a risk assessment as part of the earthworks design in order to minimise any risk to the general public, pedestrians, cyclists and any other road users resulting from the design, construction and completion of the New Works.

(iii) The Company shall take all necessary measures to prevent rock or other debris from falling onto the carriageway.

(iv) The Company shall take all necessary measures to obviate any adverse effects on the surrounding area and to prevent flooding and/or pollution.

(v) The Company shall develop an earthworks strategy to demonstrate the effective management of the earthworks balance.

(vi) Any proprietary ground improvement methods and systems that shall be provided by the Company in the design, execution and completion of the New Works shall be provided in accordance with the manufacturer's written guidance. The Company shall undertake in-situ trials and testing to demonstrate that the desired performance can be achieved. The type, extent and frequency of in-situ testing shall be specified by the Designer.

(vii) The Company shall remove, and where possible recycle into the New Works, all redundant areas of existing road pavement from within the New Works Site.

(viii) All earthworks shall be subject to landform design of the New Works as specified in Section 6 of these New works Requirements except that any design necessary to ensure short-term and long-term stability shall take precedence.

(ix) In areas where topsoil depths greater than 150 millimetres are proposed, the Company shall carry out stability assessments and

take all necessary measures to ensure topsoil stability.

(x) The Company shall design earthworks slopes including strengthened earthworks to avoid the need for hard facings.

(xi) Gabions and crib walling shall not be permitted in any part of the design of the New Works. The Company shall consult and comply with Transport Scotland regarding proposals for necessary works to existing gabions or crib walling.

(xii) The Company shall provide lined cut-off drainage at the limits of all earthworks subject to the provisions of Section.1.5.

(xiii) The Company shall keep excavations for earthworks and structures free from groundwater and surface water and undertake every reasonable means to ensure that formation is protected from inclement weather. The Company shall remove and replace all materials damaged by water or trafficking at formation level with well compacted suitable granular fill prior to upfilling or before foundation construction.

(xiv) Certificates shall be provided by the Company to confirm that any geosynthetics / geotextiles used in the New Works shall have a minimum operational life span of 120 years.

(xv) Excavated materials shall be assessed by the Company for suitability for re-use as Acceptable Earthworks Materials as defined in the MCHW. The use of lime or cement treatments shall be considered where possible to render excavated materials suitable for reuse in the New Works.

(xvi) Prior to commencement of any earthworks in the vicinity of any railway, the Company shall consult and comply with the requirements of Network Rail and / or any other relevant railway undertaker. The Company shall provide Consultation Certificates in accordance with the Certification Procedure in respect of this requirement.

(xvii) The Company shall prepare an Earthworks Design Statement in the format given in Appendix M, covering the basis of the design of each earthworks element, including stability analyses and designs of cuttings in soil, rock and made ground, highway loadings, groundwater assessments and slope drainage design, (including the use of in-slope raking drains as well as slope surface drainage, crest, berm and toe drainage), any slope reinforcement design, embankment stability assessments, construction over soft ground and peat, earthworks suitability for re-use assessments and the like. The design statements shall be provided to accompany each Certificate for the relevant earthworks element issued in accordance with the Certification Procedure. The Company shall not reduce the Geotechnical Category of any Earthworks or Structure without approval of the Scottish Ministers.

1.6.2 Ground Investigation Report

The Company shall ensure that the Designer prepares a Ground Investigation Report (“GIR”) as defined in the DMRB for the scheme in accordance with BS EN 1997-2, which may be subdivided and arranged as appropriate. The first GIRs shall be submitted with accompanying

documentation within two months of the Commencement Date. Further revised GIRs, updated to take account of any supplementary ground investigations or other relevant additional information, shall be issued at appropriate intervals as the execution of the New Works proceeds. The final GIRs shall be submitted prior to submittal of the relevant Final Construction Certificate(s).

1.6.3 Geotechnical Design Report

(i) The Company shall ensure that the Designer shall prepare a Geotechnical Design Report as defined in the DMRB for all earthworks, foundations or other geotechnical design elements of the scheme in accordance with BS EN 1997-1, which may be subdivided and arranged as appropriate. The report(s) shall be updated to take account of any supplementary ground investigations or other relevant additional information as the New Works proceed.

(ii) The 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.

(iii) The relevant part(s) of the Geotechnical Design Report(s) shall be submitted to accompany each Earthworks and 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).

1.6.4 Geotechnical Feedback Report

Within three months of the completion of construction, the Company shall submit a Geotechnical Feedback Report as defined in the DMRB in the format given in Appendix F of HD22 of the DMRB. The contents of the report shall include, but not be limited to, the following:

(i) geotechnical records for foundations;

(ii) geological records;

(iii) ground investigation and inspection records obtained during the construction phase and summary of any divergences from the assumed ground conditions as presented in Structures Design Statements and Earthworks Design Statements;

(iv) groundwater level monitoring and quality records;

(v) ground movement monitoring records;

(vi) piling and embedded retaining wall construction records;

(vii) as-built location and geometry of all completed works including any temporary works left in-situ with permission of the Scottish Ministers;

(viii) construction records for all Structures, Earthworks and ground improvement techniques;

(ix) construction records for all treatment of underground mine workings and unrecorded mine entries;

(x) all integrity test results;

(xi) all strength measurement test results on materials (concrete cylinder / cube, etc.) for Permanent Works and Temporary Works left in-situ with permission of the Scottish Ministers; and

(xii) all non-conformance reports and completed close out documentation.

1.6.5 Mine workings and Subsurface Voids

(i) The Company shall carry out an assessment of mining in relation to the design of the New Works. Any requirements for mitigation in the design of the New Works (including remedial works such as grouting) shall be identified in the relevant Structures Design Statements and Earthworks Design Statements. A report on the mining assessment, together with any design recommendations and / or proposals for remedial works shall be submitted to the Scottish Ministers prior to construction of the relevant part of the New Works.

(ii) Where the design or construction of the New Works requires works which intersect, disturb or enter any mine workings or subsurface voids, the Company shall consult and comply with requirements, as necessary, of:

(a) Glasgow City Council;

(b) North Lanarkshire Council;

(c) South Lanarkshire Council;

(d) The Coal Authority; and

(e) SEPA;

as appropriate, within their respective boundaries.

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

(iii) The design, construction and completion of any grouting works and measures to stabilise disused mine workings subsurface voids mine entries and openings shall conform to the Code of Construction Practice together with the following:

(a) the DMRB;

(b) Appendix 6/11 to the Specification;

(c) CIRIA Special Publication 32 Construction Over Abandoned Mine Workings, Healy PR and Head JM;

(d) The National Coal Board Publication The Treatment of Disused Mineshafts and Adits, NCB Mining Department, 1982;

(e) Requirements of the Coal Authority (including measures to control gas migration); and

(f) the BRE publication Stabilising mine workings with pfa grouts: Environmental code of practice, 2006.

(iv) The Company shall consult and comply with the requirements of SEPA with regard to the design, execution and completion of grouting works, which are regulated under the Water Environment (Controlled Activities) (Scotland) Regulations 2005. The use of PFA for mine grouting, where applicable, shall be in accordance with

Section 4. The design for grouting works shall minimise the mobilisation of contaminated groundwater as far as reasonably practicable. Any contaminated groundwater brought to the surface by such operations shall be subject to appropriate treatment and disposal.

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

(v) Where a disused mineshaft is located beneath, or within influencing distance of earthworks, a reinforced concrete cap, designed to accommodate the imposed loadings, shall be constructed at competent rockhead or where this is impractical, to a suitable and stable horizon.

(vi) Any mineshaft which is either open or becomes open during the course of the New Works shall, as a matter of urgency, and as soon as becomes reasonably practicable, be completely filled in with suitable materials. Once filled, a reinforced concrete cap as described above shall be constructed.

(vii) Grouting works to treat abandoned mine workings and sub-surface voids and measures to stabilise mine entries shall be designed to ensure complete containment within the Land Made Available by the Scottish Ministers for the New Works and that no land or properties outside the Land Made Available are affected by the New Works by the Scottish Ministers for the New Works.

(viii) The Design, construction and completion of any grouting works shall include control measures such as barriers, lined cut-off ditches and settlement ponds at each grout location. The control measures shall intercept run-off, contain grout spillage and ensure that any impact of grouting of mineworkings on the quality of local watercourses, drains and shallow groundwater shall be prevented. Sediment that shall be collected in, ditches or ponds shall be removed and transported off-site at sufficient intervals to prevent over-filling of run-off containment measures.

(ix) In areas being treated by grouting of mine workings and subsurface voids, boreholes at 25 metre intervals along and across the area to be grouted, shall be designated groundwater monitoring holes.

During grouting operations, water levels shall be recorded regularly throughout the day as a control, but at not less than three times spread evenly throughout the day.

Results shall be made available to the Scottish Ministers daily.

On completion of the grouting operations in the area, these holes shall be backfilled with grout.

1.6.6 Soil Cuttings

(i) The tops and bottoms of all cuttings in soil shall be rounded to a minimum radius of two metres over a length of one metre or, where space does not permit, to the maximum radius possible, proposals for which shall be submitted to the Scottish Ministers for agreement.

(ii) Permanent drainage channels shall be constructed at the crest of all cuttings, subject to the provisions of Section 1.5 with the exception

of areas where the existing ground profile ensures that water, which would otherwise be intercepted by a drainage channel, is directed away from the crest of the cutting and the slope forming materials. All drainage channels constructed at the crest shall be designed and constructed so as not to allow water into the slope forming materials thereby reducing the stability of the cut slope. All crest channels shall be lined. Paving slabs shall not be permitted as a lining for erosion control.

(iii) The design of all soil cuttings shall incorporate appropriate in-slope drainage. It should be noted that very shallow and artesian groundwater conditions may be encountered in areas of the New Works Site.

(iv) The Company shall demonstrate consideration of adequate slope drainage in his design in the Earthworks Design Statement referred to above.

(v) Slope drainage shall not be used to ensure long term stability of soil cut slopes. Slope drainage shall be used as an additional measure to improve long term stability. Long term stability shall be ensured by other design considerations.

(vi) Where soil cuttings require a mid-slope berm for stability and drainage control purposes, the berm shall be a minimum of three metres wide and be accessible for maintenance.

(vii) (viii) Where environmental bunds are constructed on the top of cutting slopes, the toe of the environmental bund shall be offset from the crest of the slope by a minimum of three metres.

(viii) All cuttings shall be constructed within the Land Made Available by the Scottish Ministers for the New Works. Where space does not permit a slope angle with adequate stability, alternative stabilisation measures shall be considered.

(ix) Where soil nails are proposed, they shall be designed using DMRB HA68/94 Volume 4 Section 1 and CIRIA C637: Soil Nailing – Best Practice Guidance (design approach 1-2). Soil nail head design shall take account of Geoguide 7 (GEO Civil Engineering and Development Department, Hong Kong Government) for recessed soil nail head details. The following requirements apply to soil nail design and execution:

(a) the presence of deep-seated failure surfaces in the control of overall soil nail length shall be considered;

(b) in determining critical design surfaces and bond lengths, unfactored parameters with a minimum existing factor of safety = 1.0 shall be used;

(c) the soil nail head assembly head size requirements shall be determined using DMRB HA68/94; Volume 4, Section one Appendix E/3(a). Concrete head pads shall be used in line with Figure A3.3 of CIRIA C637 with recessed soil nail heads as shown in Figure 5.11 of Geoguide 7. All soil nailed slopes shall be finished so that they are capable of supporting vegetation. Erosion control netting shall be used connected

to the soil nail heads on the surface to prevent erosion between the soil nail heads prior to vegetation establishment;

(d) flexible facings (without a properly designed and dimensioned soil nail head) shall not be allowed; and

(e) durability of soil nail bars and soil corrosivity shall be assessed in line with guidance included within CIRIA C637.

1.6.7 Rock Cuttings

(i) Rock cuttings shall be designed and constructed to provide safe and sustainable rock slopes, minimising instability and the requirement for future maintenance and minimising environmental impact.

(ii) Design and construction of rock cuttings shall be in accordance with Hoek and Bray, Rock Slope Engineering as well as details and advice given in The Rock Engineering Guide to Good Practice for Road Rock Slope Excavation (unpublished TRL Report August 2000).

(iii) The design and construction of rock excavation works shall minimise the requirement for the provision of any permanent means of rock control or containment, such as rockfall netting, rock catch fences and barriers either on the rock face or verge, and the use of strengthening or support (rock dowels or bolts), concrete buttresses, shotcrete and the like. However, ongoing stability and protection of the public shall take precedence for temporary control and permanent long term performance. The design and construction of the New Works shall include all rock slope stabilisation measures required to ensure that the rock slope is stable and remains stable for its full design life, taking into account weathering and degradation.

(iv) Any excavation techniques adopted shall not compromise the stability of the rock slopes, or lead to increased risk to the road infrastructure or to the general public for the design life of the road. Excavation techniques (including blasting where permitted - see Section 1.6.8) shall allow for the formation of the appropriately designed drainage ditches and rock trap ditches. Where controlled blasting techniques are used, the blasting design shall prevent bulk blasting damage to the final face of the rock slope, in particular but not limited to at the toe of the finished rock slope.

(v) The design shall include rockhead berms formed at the contact between sound rock and overlying materials. This is defined as the boundary between material that can be directly excavated using standard machines (such as back-actors) and material that needs to be broken before excavation (for instance, by way of ripping or blasting).

(vi) The design of rockhead berms shall take into account all geological factors which could lead to instability in the rock at the edge of the bench and / or in the overlying material. All rockhead benches shall have a minimum effective bench width of 3.0 metres, after excavation.

(vii) Rockhead berms shall include for berm drainage channels to collect and control any seepage from the cut face.

(viii) The Company shall ensure that the Designer shall have an engineering geologist on site to record rock faces exposed during execution and to assess the requirement for any rock stabilisation measures to address specific conditions encountered that differ to those assumed at the design stage. Full details of these elements of the works shall be included within the Geotechnical Feedback Report described in Section 1.6.4

1.6.8 Existing Natural and Constructed Slopes (including Rock Cuttings)

(i) The Company shall ensure that the stability of any existing natural or constructed slope (including rock cutting) impacted by or impacting on the New Works shall not:

(a) adversely affect the long-term stability or safety of the New Works; and / or

(b) be adversely affected by the design, execution and completion of the New Works.

(ii) The design, construction and completion of the New Works shall be undertaken to ensure that the existing slopes are at least as stable in the long term as the current conditions at any given location.

(iii) Where the design of the New Works incorporates, impinges upon, modifies or extends any such slope, or part of any such slope, the requirements for that slope shall be as for new slopes or cuttings.

1.6.9 Temporary Works Adjacent to Sections of Live Carriageway

(i) The Company shall ensure the stability of sections of live carriageway, footpath, railway line, pipeline, structures, buildings and the like adjacent to any temporary works slopes. The Company shall demonstrate stability of live sections of carriageway, footpath, railway line, pipeline, structures, buildings and the like for the duration of any adjacent temporary works slopes by means of appropriate surface movement monitoring.

1.6.10 Embankments

(i) The tops and bottoms of all embankments in soil shall be rounded to a minimum radius of two metres over a length of one metre or, where space does not permit, to the maximum radius possible, proposals for which shall be submitted to the Scottish Ministers for agreement.

(ii) Where an embankment is constructed on any existing slope, the existing surface shall be benched. The maximum height of the bench shall be 500 millimetres.

(iii) Topsoil and pockets of soft-soil and loose rock shall be removed from beneath embankments, except where alternative measures in accordance with the New Works Requirements and Specification are proposed in the design of the New Works.

(iv) Where any areas of old watercourses (infilled or otherwise) occur under a section of new embankment they shall be excavated and replaced with a well compacted suitable granular fill.

(v) The Company shall take measures to ensure that the settlement of embankments shall be substantially complete before the road

pavement shall be constructed.

1.6.11 Blasting

(i) Blasting shall only be permitted with the prior written approval of the Scottish Ministers, which shall not be unreasonably withheld.

(ii) All blasting activities shall meet the requirements of the Environmental Statement and Appendix 1/9 to the Specification.

(iii) The Company shall consult and comply with:

(a) Glasgow City Council;

(b) North Lanarkshire Council;

(c) South Lanarkshire Council;

(d) the Scottish Ministers Trunk Road South West Management Unit and South East Management Unit;

(e) SNH; and

(f) Network Rail

as appropriate, before being permitted approval for blasting within or adjacent their respective boundaries. The Company shall provide Consultation Certificates in accordance with the Certification Procedure in respect of this requirement.

(iv) A detailed blasting assessment report shall be submitted to the Scottish Ministers a minimum of 21 days prior to any blasting taking place for all features within influencing distance of the production blasts, including precondition surveys of:

(a) all adjacent buildings and retaining walls,

(b) railways,

(c) highways structures

(d) utilities and services

(e) water tunnels and the like

(f) embankments

(g) slopes, including rock, soil and fill,

(v) Contents of the blasting assessment report shall include, as a minimum, geology, mining, hydrology, relevant ground investigation details, layout of proposed blasting zones, overview of sensitive receivers and calculations shall be provided to show limiting vibrations (peak particle velocity and peak particle acceleration) air-overpressures and anticipated maximum charge–weights per delay allowed for all of the above listed sensitive receivers. The influencing distance of the blast shall be determined as part of the report.

(vi) The Company shall carry out trial blasts utilising their proposed blasting plan, to demonstrate the Company's ability to satisfy the requirements for both blasting vibration and rock cutting stability at the location of each rock cutting, and to determine relevant blasting constants and parameters for production blast design, prior to production blasts. The blasting trials shall follow the

recommendations of Research Report 53 “Ground Vibration caused by Civil Engineering Works”, published by the UK Transport Research Laboratory in 1986, ISBN 0266-5247. Method statements shall be produced by the Company detailing, but not limited to, trials to be carried out together with monitoring, testing and records to be made and requirements for inspection and logging of formations and cut faces on completion of excavation.

(vii) A minimum of three vibrographs shall be used to record ground vibration and air overpressure, with a minimum of one vibrograph at each location of either infrastructure or property that could be affected by the blasting.

(viii) The Company shall use the results to ensure that production blasts do not exceed the required vibration and air overpressure limits. Method statements shall be produced detailing but not limited to control of flyrock and overbreak, controlled blasting requirements and permitted stage heights.

(ix) The blast designs and execution of the blasting works shall be undertaken using references and regulations including, but not limited to, The Quarries Regulation (1999); BS5607, 1998 Code of Practice for the Safe Use of Explosives;- Environmental Protection Act 1990; BS6472:1992; BS 7385-1:1990, BS 7385-2:1993 Scottish Executive Department Planning Advice Note 50 (PAN 50) Annex D, Part 3LR1094 (Pre-split Blasting for Highway Rock Excavation, 1983) and SR 817 (Device for measuring Drill rod and Drill Hole Orientation, 1984), published by the UK Transport Research Laboratory. The use of pre-spilt blasting for control, damage to the rock mass as well as stability shall be considered, with due cognisance of the final appearance of the rock slope face.

(x) A post-blasting operations condition survey shall be undertaken of all features covered in the blasting assessment report and the results provided to the Scottish Ministers in accordance with the Certification Procedure.

(xi) The Company shall liaise with land and property owners and occupiers, as appropriate, adjacent to the New Works and take all necessary measures to minimise disturbance or intrusion to the general public and to prevent surprise or alarm being caused to the public and livestock during the execution of the New Works.

(xii) The Company shall remedy any defects in the New Works or damage to adjacent properties or features caused by the blasting operations, as determined by the Scottish Ministers.

1.6.12 Rock Excavation by Chemical Means

(i) The use of chemical non-explosive rock splitting agents or rapid expansion techniques shall be permitted to break out massive and competent rock horizons, combined with mechanical excavation as required, subject to the implementation of an adequate risk management system.

1.6.13 Topsoil

(i) The Company shall ensure that topsoil handling and storage shall be undertaken in accordance with the Specification and the

following:

(a) Where the Company identifies topsoil from a particular source that shall be intended to be re-spread in a specified location within the New Works, the Company shall stockpile the topsoil separately and mark the storage location on a plan.

(b) Stockpiled vegetation and upper soil horizons shall be stored separately from lower soil horizons.

(c) Soil stockpiles shall not be placed over the rooting zone of mature trees, in areas where existing trees / habitats may be damaged or where surface run-off may cause pollution.

(d) Soil stockpiles shall be located away from any watercourses.

(ii) Topsoil depths in the New Works shall be as follows:

(a) where sowing grass seed the depth shall be a minimum of 100 millimetres;

(b) in areas to be planted with trees and shrubs, with the exception of rock cuts, the depth shall be a minimum of 300 millimetres; and,

(c) in areas of land to be returned to agriculture, topsoil depth shall be a minimum of 400 millimetres.

(iii) In areas to be seeded with a combined mix of grass and wildflowers existing topsoil shall be removed prior to seeding. No topsoil shall be spread in areas to be seeded with a combined mix of grass and wildflowers except in areas of proprietary soil retention matting.

1.6.14 Existing Monitoring Wells at M74 Junction 5 Raith

The Company shall be responsible for the management and maintenance of the existing wells and ground monitoring installations at M74 Junction 5 Raith as detailed on drawing M8/C/0600/001

The Company shall de-commission all existing wells and ground water monitoring installations as part of the New Works and subject to the requirements of SEPA for any ongoing monitoring. The Company shall consult and comply with SEPA and SNH with regards to the requirements for maintenance, de-commissioning and post PTU monitoring.

1.7 Road Pavement

1.7.1 General

(i) The road pavement Design for roads as described in Table 1 of Appendix D, other than Accommodation Works Access Tracks, New Access Roads/Tracks, New Means of Access and otherwise, shall be in accordance with the requirements of the DMRB and the Highways Agency Interim Advice Note 73/06 (Draft HD 25).

(ii) The Design shall include the assessment of traffic for the purpose of pavement Design for all new Motorways, new Slip Roads, new All Purpose Roads, new Roundabouts and new Side Roads forming

part of the Network Roads as described in Table 1 of Appendix D.

(iii) The Design Traffic (msa) for new Side Roads forming part of the Third Party Roads shall be as stated in Table 1.7.1 Road Design Traffic below.

Table 1.7.1 Road Design Traffic

Road Name	Road Located between Points (refer to Note 1)	Commercial Vehicles* at Year of opening (2017) *cv/day/carriageway	Commercial Vehicles 2027	Design traffic (msa)
Roundabouts – Third Party Roads				
Newhouse Roundabout	D10	2536	3462	103.3
Daldowie Roundabout	D11	1692	3283	68.7

Road Name	Road Located between Points (refer to Note 1)	Commercial Vehicles* at Year of opening (2017) *cv/day/carriageway	Commercial Vehicles 2027	Design traffic (msa)
Side Roads – Third Party Roads				
Rhindhouse Road	E1 to E2	100	150	1.5
A89 Coatbridge Road Eastbound	E3 to E4	1438	1743	54.5
A89 Coatbridge Road Westbound	E4 to E3	886	723	34.0
A89 Coatbridge Road Eastbound west of junction	E5 to E6	1438	1743	54.5
A89 Coatbridge Road Eastbound east of junction	E5 to E6	407	643	16.3
A752 Langmuir Road and Gartcosh Road north of junction	E7 to E8	758	1568	31.4
A752 Langmuir Road and Gartcosh Road south of junction	E7 to E8	1527	2449	62.8

Road Name	Road Located between Points (refer to Note 1)	Commercial Vehicles* at Year of opening (2017) *cv/day/carriageway	Commercial Vehicles 2027	Design traffic (msa)
Side Roads – Third Party Roads				
A725 Whifflet Street	E9 to E10	1620	2032	61.5
Kirkshaws Road	E10 to E11	1172	1699	47.7
Hagmill Road	E10 to E12	181	182	7.4
Mackinnon Mills Access	E13 to E14	160	240	3.5
Mayfield Place	E15 to E16	160	240	3.5
North Road	E21 to E22	709	2375	43.6
Shawfoot Road	E80 to E26	18	25	0.8
Townhead Avenue Southbound	E27 to E28	1520	1624	57.4
Townhead Avenue Northbound	E28 to E27	1052	1426	40.1
Woodhall Mill Road	E33 to E34	516	1143	31.4
Bo'Ness Road	E35 to E36	565	1339	34.6
Bo'Ness Road	E37 to E38	600	1679	36.6
McNeil Drive	E41 to E42	239	260	10.0

Road Name	Road Located between Points (refer to Note 1)	Commercial Vehicles* at Year of opening (2017) *cv/day/carriageway	Commercial Vehicles 2027	Design traffic (msa)
Side Roads – Third Party Roads				
Rowantree Avenue Eastbound	E43 to E44	158	289	6.2
Rowantree Avenue Westbound	E44 to E43	411	687	16.3
Bo'ness Road	E45 to E46	929	2171	38.5
A73 Bellside Road Southbound	E47 to E48	1319	1827	48.8
A73 Bellside Road Northbound	E48 to E47	979	1368	38.1
A73 Bellside Road Southbound	E49 to E50	2034	2859	75.7
A73 Bellside Road Northbound	E50 to E49	1658	2637	62.1
Calderpark Terrace	E51 to E52	30	27	1.3
A74 Hamilton Road Eastbound	E53 to E54	826	1159	31.4
A74 Hamilton Road Westbound	E54 to E53	892	1242	35.8
A74 Hamilton Road Eastbound	E55 to E56	1278	2881	49.0
A74 Hamilton Road Westbound	E56 to E55	871	1646	34.9
A721 Daldowie Southbound	E57 to E58	945	1619	36.2
A721 Daldowie Northbound	E58 to E57	1419	2940	54.7
DaldowieOverbridge Southbound	E58 to E59	751	1422	30.4

Road Name	Road Located between Points (refer to Note 1)	Commercial Vehicles* at Year of opening (2017) *cv/day/carriageway	Commercial Vehicles 2027	Design traffic (msa)
Side Roads – Third Party Roads				
DaldowieOverbridge Northbound	E59 to E58	626	811	26.3
Access to Daldowie Crematorium	E59 to E60	126	124	5.3
Access to Kilmallie House	E61 to E62	100	150	1.5
Network Rail Access	E63 to E64	100	150	1.5
Access from Access to Kilmallie House	E65 to E66	100	150	1.5
Access to StrathclydeCountryPark	E67 to E68	57	58	2.2
Access from Bellshill Road	E71 to E72	160	240	3.5
Access to Bellshill Road	E73 to E74	160	240	3.5
Hamilton Road	E75 to E76	160	240	3.5
Old Bothwell Road	E77 to E78	160	240	3.5

Note 1: Reference Points are as shown on the Reference Drawings as described in Appendix 0/4 to Part 4 of Schedule 2.

Note 2: Where the company proposes to incorporate existing pavement in the Design for new Side Roads the Company shall as a minimum renew the surface course for all new Side Roads. The new surface course shall be constructed in accordance with the requirements of Section 1.7.1 and 1.7.4.

Where it is determined that the renewal of the surface course will not achieve the minimum design requirements defined in Table 1.7.1, the Company shall reconstruct the affected sections of carriageway such that the requirements of Table 1.7.1 are met.

(iv) Subject to the other provisions of this Agreement, the Company shall consult and comply with the requirements of:

(a) Glasgow City Council;

(b) North Lanarkshire Council; and

(c) South Lanarkshire Council, as appropriate

in connection with the pavement Design for all carriageway tie-ins that extend outwith the Reference Points described in Table 1 of Appendix D for Side Roads.

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

(v) Notwithstanding the pavement Design:

(a) at roundabouts, the traffic flows used in the pavement Design on the circulatory carriageway and all arms for 50 metres from the Give Way line or up to the limits of the New Works Site shall be taken as 125 per cent of the most onerous traffic flow of the adjacent arms; and

(b) at junctions the traffic flows used in the pavement Design for the major road shall be used in the pavement Design for the minor road up to the corner radii tangent points on the minor road.

(vi) The Design shall ensure that the road pavement shall extend transversely over the entire width of the carriageway and longitudinally between the Reference Points of all roads as described in Table 1 of Appendix D.

(vii) Porous asphalt surface courses shall not be permitted in the Design.

(viii) Rolling crowns, as noted in DMRB HD33/06 paragraph 2.3, shall not be permitted in the New Works.

(ix) Vertical joints between existing and new construction shall be painted with a polymer modified bond coat to Clause 920 of the Specification. The positioning of these joints within the wheel track zones shall be avoided although in areas where this is not viable, then appropriate strengthening measures shall be taken to ensure that the risk of reflective cracking is prevented. The joints shall be chamfered at 60 to 70 degrees where possible in order to aid the compaction of the adjoining new material.

(x) The new surface course on all sections of the motorways and trunk roads carriageways shall be constructed using an echelon paving technique. One longitudinal joint will be permitted in the new surface course on each carriageway.

(xi) A bond coat will be applied between all new bound pavement layers as well as between any of the existing layers and the overlay layer. The bond coat will be a polymer modified bond coat to Clause 920 of the Specification. Where the overlying layer is required to be a thin surface course, the bond coat shall be appropriate to the requirements of the manufacturer of the system in question.

1.7.2 Specific Requirements for new Motorways, new Slip Roads, new All Purpose Roads, new Roundabouts and new Side Roads forming part of the Network Roads as referenced in Table 1 of Appendix D.

(i) The Design shall ensure that surface course for all new Motorways, new Slip Roads, new All Purpose Roads, new Roundabouts and

new Side Roads forming part of the .Network Roads as referenced in Table 1 of Appendix D, shall be a Transport Scotland approved polymer modified binder based thin surface course to Clause 942 of the Specification or TS2010 as introduced by Transport Scotland Interim Amendment Number 35.

(ii) The thin surface course system shall have road/tyre noise levels to level 2, as defined in Clause 942.8 of the Specification and Table NG9/30 of Volume 2 of the MCHW.

(iii) The Company may adopt alternative pavement Design standards to those contained in the DMRB and the Highways Agency Interim Advice Note 73/06, and alternative material specifications for all pavement materials other than the thin surface course system.

(iv) Notwithstanding the foregoing the use of rigid pavement construction shall not be permitted in the Design except for continuously reinforced concrete pavement (CRCP) which shall only be permitted in the Design if it is overlaid with a surface course in accordance with Paragraph 1.7.2 (i).

(v) Notwithstanding any other provisions of this Agreement the minimum PSV of chippings or of coarse aggregate in unchipped surfaces for the Design shall be 60.

(vi) Notwithstanding the above the use of HRA surface course shall be permitted on roundabouts on the circulatory carriageway and all arms for 50 metres from the Give Way line or up to the limits of the New Works site.

1.7.3 Not Used .

1.7.4 Specific Requirements for Side Road Pavements forming part of the Third Party Roads

(i) The Side Road pavement Design for all Third Party Roads as described in Table 1 of Appendix D within the Council boundary shall be designed for a 40-year Design life in accordance with the DMRB.

(ii) The Side Road pavement Design shall ensure that where the pavement of any of the existing roads affected by the New Works shall be incorporated, its residual life shall be assessed and the total pavement construction shall provide a Design life equivalent to that for new pavements in accordance with the DMRB.

(iii) The use of the Analytical Approach Design Method outlined in HD26 of the DMRB shall not be permitted in the Side Road pavement Design when standard Designs and standard materials as defined in HD26 of the DMRB are used in the Design.

(iv) In respect of Figure 2.1 of HD26 of the DMRB and notwithstanding any other provision of this Agreement, the Side Road pavement Design thickness of combined bituminous layer shall be inclusive of the full thickness of the chosen surface course material.

(v) In respect of Figure 2.1 of HD26 of the DMRB and notwithstanding any other provision of this Agreement, the Side Road pavement Design shall ensure that the binder course and base course shall perform in conjunction with the chosen surface course.

(vi) The Company shall consult and comply with:

(a) Glasgow City Council;

(b) North Lanarkshire Council; or

(c) South Lanarkshire Council; as appropriate

with regard to the Pavement Design for any Side Road pavement Design.

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

(vii) The Side Road pavement Design shall ensure that all flexible pavement shall incorporate a binder course which shall be at least 60 millimetres thick.

(viii) The Company's choice of binder course material shall be compatible with the choice of surface course material.

(ix) In all cases where asphaltic material shall be used in the Side Road pavement Design it shall be to BS 594987 & BS EN 13108/BS PD 6691.

(x) In addition, asphaltic material in the Side Road pavement shall be a 'preferred' mix as identified in BS 594987.

(xi) The existing surface course(s) shall be removed prior to the placement of the new bituminous material.

(xii) Paragraph 7.23 of HD30 of the DMRB shall be deleted and replaced with the following:

(xiii) "If Heavy Duty Macadam (HDM) or Dense Bitumen Macadam with 50 penetration grade binder (DBM50) or High Modulus Base Material with 35 penetration grade binder (HMB35) shall be used in the Design, then some reduction in overlay thickness shall be possible. This shall be calculated by applying a maximum 5 percent reduction to the total thickness of base and binder course materials which would be required when using Dense Bitumen Macadam (DBM) or Hot Rolled Asphalt (HRA) base and binder course materials to give the total thickness of base and binder course materials required. Allowance should be made for any deterioration or any other deficiencies. The Side Road pavement Design shall incorporate between each asphaltic pavement layer and the overlying surface course system, a polymer modified bond coat to Clause 920 to Volume 1 of the MCHW, applied as manufacturers' recommendations. Where the overlying layer shall be a thin surface course system the bond coat shall be appropriate to the requirements of the manufacturer of the system in question.

(xiv) The use of rigid, rigid composite and flexible composite pavement construction shall not be permitted in the Design.

(xv) The Design shall ensure that, where the pavement incorporates any existing pavement, concrete overlays shall not be permitted.

(xvi) The requirements of the Highways Agency Interim Advice Note 73/06 Rev 1 (2009) to maintain continuity of drainage of the pavement foundation and to provide a down slope route from the sub-base to the subsurface drain shall apply in the Design.

(xvii) The Design shall ensure that all lanes of the carriageway(s) and, where applicable, hard strips, hard shoulders, lay-bys, bus lay-bys and maintenance crossing points for all roads described in Table 1 of Appendix D shall be sufficient to carry the Design traffic in the left hand lane of the relevant carriageway.

(xviii) Where full depth pavement construction shall be provided in the Design it shall have a minimum thickness of 450 millimetres.

(xix) Vertical joints between existing and new construction shall be painted with a polymer modified bond coat to Clause 920 of the Specification. The positioning of these joints within the wheel track zones shall be avoided although in areas where this is not viable, then appropriate strengthening measures shall be taken to ensure that the risk of reflective cracking is prevented. The joints shall be chamfered at 60 to 70 degrees where possible in order to aid the compaction of the adjoining new material.

(xx) Temporary running shall not be permitted on planed surfaces.

(xxi) A bond coat will be applied between all new bound pavement layers as well as between any of the existing layers and the overlay layer. The bond coat will be a polymer modified bond coat to Clause 920 of the Specification. Where the overlying layer is required to be a thin surface course, the bond coat shall be appropriate to the requirements of the manufacturer of the system in question.

(xxii) Where a regulating material is required then this shall be stone mastic asphalt complying with Clause 937 or base or binder course asphalt concrete complying with Clause 929 or hot rolled asphalt complying with Clause 943.

(xxiii) The Company shall ensure that directional drilling is undertaken where drains, services and the like are required to cross existing and new carriageways in the New Works. Open carriageway trenching will not be permitted without prior agreement from the Scottish Ministers.

(xxiv) Notwithstanding any other provisions of this Agreement the minimum PSV of chippings or of coarse aggregate in unchipped surfaces for the Design shall be 55.

(xxv) The use of HMB35 material as per HD26 of the DMRB does not require a Departure from Standard to be granted by the Overseeing Organisation.

(xxvi) Where HMB35 material shall be used as a base course in the pavement design then the corresponding binder course forming part of such design shall be HMB35 material.

1.7.5 Road pavement for New Access Road/Tracks and Accommodation Works Access Tracks shall be in accordance with sub-clause (i) or (ii) below. The required pavement construction shall be determined through the Consult and Comply procedure with the relevant third party.

(i) Bituminous surfaced access construction shall comprise:

(a) 300 millimetres thick type 1 sub-base to Clause 803 of the Specification;

(b) 100 millimetres thick AC20 dense bin 40/60 rec to Clause 906 of the Specification; and

(c) 50 millimetres thick Close Graded Bitumen Macadam to Clause 912 of the Specification.

(ii) Concrete access construction shall comprise:

(a) 300 millimetres thick type 1 sub-base to Clause 803 of the Specification; and

(b) 150 millimetres thick concrete to BS 8500-1:2006 & BS 8500-2;2006, designate PAV2, with minimum strength C28/35, freeze-thaw resistance (air entrained concrete) and comply with exposure requirement of XF4 (high water saturation with de-icing agent). The expansion joints at 40 metres centres and contraction joints at 4 metres centres (see Drawing Numbers C1, C2 and C3 to Volume 3 of the MCHW). The surface finish shall be tamped or brushed.

(iii) Unsurfaced construction for access to settlement, attenuation and storage ponds and otherwise shall comprise:

(a) 300 millimetres minimum thick capping material class 6F1, 6F2 or 6F3 to Clause 613 of the Specification; and

(b) 150 millimetres thick type 1 sub-base to Clause 803 to Volume 1 of the MCHW, sealed with rolled/vibrated crushed rock fines.

1.8 Kerbs, Footways, Paved Areas, Lay-bys and Bus Stops

1.8.1 Kerbing

(i) Kerbing shall be provided in the Design for all roads as described in Table 1 of Appendix D together with the following:

(a) all turning areas;

(b) all lay-bys and bus lay-bys;

(c) all non motorised Users crossings; and

(d) Police observation platforms.

(e) ITS maintenance hardstanding areas

(ii) Where a footway is adjacent to a carriageway or within 2 metres of a carriageway, the carriageway kerbing shall be half battered. At all other locations where kerbing is required, splay kerbing shall be used unless otherwise specified. Precast concrete flat top kerbing shall be used to edge the footway in the absence of a carriageway kerb.

(iii) Dropped kerbs shall be provided at all non motorised Users crossings and shall be suitable for pedestrians with prams and disabled using a wheelchair. The Company shall consult and comply with the requirements of;

(a) Glasgow City Council;

(b) North Lanarkshire Council; and

(c) South Lanarkshire Council, as appropriate

with regard to all detail for the provision of dropped kerb arrangements for Side Roads.

1.8.2 Footways, Footpaths and Combined Footways/cycletracks

(i) Notwithstanding the other requirements of this Agreement, the Design for footways, footpaths and combined footway/cycletracks shall comprise:

(a) 150 millimetres of type 1 sub-base to Clause 903 of the Specification;

(b) 50 millimetres dense macadam binder course to Clause 906 of the Specification; and

(c) 25 millimetres rolled asphalt surface course to Clause 909 of the Specification.

Prior to compaction of surface course, 6 millimetre or 10 millimetre white limestone chippings shall be applied at a rate of 1 kilogram per square metre.

(ii) Footways, footpaths and combined footway/cycletracks shall include but shall not be limited to those described in Table 2 of Appendix D and elsewhere in these New Works Requirements.

Allowance shall be made in the Design to accommodate widths and tie-ins and any other features affecting the width and otherwise of the footways, footpaths and combined footway/cycletracks.

Where possible, footways and cycle tracks shall be outwith the road edge.

(iii) Footways, footpaths and combined footway/cycletracks in the Design shall be constrained by pre-cast concrete kerbing and edging.

(iv) Footways, footpaths and combined footway/cycletracks in the Design shall have a maximum crossfall of 2.5 percent and longitudinal gradients shall make due allowance for their intended use and shall not exceed 6 percent.

(v) Footways, footpaths and combined footway/cycletracks in the Design shall tie-in to existing footways, footpaths and combined footway/cycletracks at all interfaces and extremities of existing footways, footpaths and combined footway/cycletracks respectively.

(vi) The asphaltic layers of footways, footpaths and combined footway/cycletracks shall be machine laid.

(vii) All footways, footpaths and combined footway/cycletracks in the Design shall incorporate sufficient drainage to ensure that they shall be kept free from standing water.

(viii) Immediately prior to the laying of type 1 sub-base the formation shall be treated with an application of weedkiller.

(ix) The Design shall include tactile paving slabs over the full width of footways, footpaths and combined footway/cycletracks at road crossings and shall incorporate pedestrian barriers to encourage crossing of roads at designated crossing points.

(x) Notwithstanding the requirements of 1.8.2(i) to 1.8.2(xi) inclusive,

combined footway/cycletracks shall be designed in accordance with TA90 of the DMRB and "Cycling by Design" 2010, Scottish Executive.

(xi) The Company shall consult and comply with the requirements of Sustrans with regard to the Design for kerbing, crossing points and access points from adjacent roads on combined footway/cycletracks and otherwise forming part of the National Cycle routes in the vicinity of the New Works Site.

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

1.8.3 Paved Areas

(i) Pedestrian refuge islands shall be of flexible construction in accordance with paragraph 1.8.2(i).

(ii) Deflection islands less than 20 square metres in area shall be of flexible construction in accordance with paragraph 1.8.2(i).

(iii) Deflection islands larger than 20 square metres in area, the outer circumference to roundabouts and roundabout entry and exit roads shall have their outer edge (i.e. behind the kerb) paved with 80 millimetres deep concrete paviours to a width of 0.7 metres and this paving shall extend to the limit of the radii of the roundabouts and roundabout entry and exit roads.

(iv) Roundabout central islands shall have 80 millimetre deep concrete paviours to a width of 2.0 metres. The Design shall include chevron block paviours as per diagram 515.2 of the Traffic Signs Regulations and General Directions 2002.

(v) The central reserve on new Motorways shall consist of red coloured 20mm single size chippings, to a minimum depth of 100mm and shall incorporate a vegetation repressing membrane.

1.8.4 Hard Landscaping Requirements for Traffic Scotland Equipment

(i) The Company shall provide hard landscaping around each TSE site or group of sites, lighting control pillars and traffic signal control pillars. The typical layout for hard landscaping at these locations is shown in the NDX Drawings as listed in Appendix 0/4 to the Specification in Schedule 2, part 3.

(ii) Hard landscaping shall comprise but shall not be limited to access paths and steps, pedestrian handrails and vehicle hard standings and any necessary structures and retaining walls. The hard landscaping shall ensure safe use of and maintenance of all equipment

(iii) Paving around each TSE site shall be standardised but detailed to suit each equipment site.

(iv) The Company shall ensure that the hard landscaping for each site enables future maintenance works to be undertaken without presenting a hazard to maintenance personnel or damage to adjacent slopes or landscaping.

(v) Where more than one item of equipment is located at the site the paving shall be installed to create an integrated site preventing the

need for soft landscaping maintenance to be undertaken within the grouping of equipment.

(vi) Paths and steps shall be provided from the location where maintenance personnel will park their vehicle to the paving around the equipment without any detrimental effect on the operation of the network and the need for traffic management. Paths and steps shall have a minimum clear width of one metre. The combined length of the path and steps shall be a maximum of 50 metres unless otherwise agreed by the Scottish Ministers.

(vii) A vehicle hard standing shall be provided at the edge of the carriageway at each TSE Gantry Site identified on Reference Drawing M8/C/REF/027 to enable maintenance personnel to park and access their vehicle safely off the carriageway. The vehicle hard standing surface shall be concrete cellular grassed paving except for areas where pedestrians may walk, such as access to ERTs. A typical layout is shown on NDX drawing number 1072 as listed in Appendix 0/4 to the Specification in Schedule 2, part 3.

(viii) Retaining walls shall be permitted as required to enable the installation of an equipment site and any associated hard landscaping.

(ix) A paved area of not less than two square metres shall be provided to give a working area in front of each Traffic Equipment Distribution Pillar ("TEDP") and TP.

(x) Where practicable, emergency telephones shall be co-located with vehicle hard standing associated with the Gantry Sites. A typical co-location layout is shown on NDX drawing number 1049 as listed in Appendix 0/4 to the Specification in Schedule 2, part 3. At emergency telephone sites that are not co-located with a Gantry Site's vehicle hard standing, paving shall be provided between the edge of the hard shoulder or hard strip and the emergency telephone. Access to all emergency telephones shall comply with the Disability Discrimination Act Good Practice Guide for Roads (Transport Scotland).

(xi) Hard landscaping shall include, as necessary, pedestrian handrails to prevent any user or maintenance personnel falling.

1.9 Traffic Signs, Road Markings and Studs

1.9.1 General

(i) The Design, construction and completion of traffic signs, road markings and studs shall be in accordance with:

(a) the Traffic Signs Regulations and General Directions 2002;

(b) The Traffic Sign Manual (The Stationary Office Ltd, 2006)

(c) The DMRB; and

(d) Local Transport Note 1/94.

(ii) With particular regards to X-height the Company shall comply with the requirements of *The Design and Use of Directional Information Signs: Local Transport Note 1/94, Appendix D.* Where considering a reduction in X-height, the Company shall be required to gain written approval of the Scottish Ministers for such a proposal, including where site space is limited or where there are special amenity considerations.

(iii) The Company shall consult and comply with the requirements of;

(a) Transport Scotland Network Management Division;

(b) with regard to all detail for the provision of traffic signs, road markings and studs for Motorways, including junction numbering on Motorways, and with the requirements of;

(c) Glasgow City Council;

(d) North Lanarkshire Council; and

(e) South Lanarkshire Council, as appropriate

with regard to all detail for the provision of traffic signs and road markings for Side Roads.

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

(iv) The Company shall consult and comply with the requirements of:

(a) Transport Scotland Network Management Division;

(b) Glasgow City Council;

(c) North Lanarkshire Council; and

(d) South Lanarkshire Council;

as appropriate, with regard to maintaining existing sign information during construction of the New Works.

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

(v) The Company shall allow at least 12 weeks for the making and publication of any amendments to the existing local authority traffic orders required as a part of the Design.

(vi) Tourist facilities shall be signed from the Motorway in accordance with the Scottish Office Development Department Circular 27/1995 and the “Trunk Road and Motorway Tourist Sign Posting Policy”

May 1998 published by Scottish Office Development Department.

(vii) New traffic sign faces, poles and foundations shall be provided in the Design for all roads described in Table 1 of Appendix D.

(viii) All permanent traffic sign faces shall be designed in accordance with BS EN 12899-1 and shall be constructed from microprismatic retroreflective material, in accordance with the requirements of BS 8408, with dew resistant coatings.

(ix) Traffic signs manufactured using a proprietary planking system shall not be permitted in the Design.

(x) The Design shall ensure that where traffic signs require to be illuminated as described in Column 2 of Schedule 17 of the Traffic Signs Regulations and General Directions 2002, they shall be either externally or internally illuminated, with the exception of traffic bollards which shall be internally illuminated where possible.

(xi) All bollards and signs in the Design that shall require to be lit shall be switched via the road lighting system as described in Section 1.10 below.

(xii) "New Road Layout Ahead" signs shall be provided on all approaches to the New Works Site immediately prior to opening any roads to traffic as described in Table 1 of Appendix D.

(xiii) The signs and associated posts shall be removed by the Company after six months following the issue of the appropriate Permit to Use.

(xiv) The signing Design shall include signs appropriate to cycle routes. Cycle markings shall also be required in the Design at appropriate locations on combined footway/cycletracks.

The Company shall consult and comply with the requirements of:

(a) Glasgow City Council;

(b) North Lanarkshire Council; and

(c) South Lanarkshire Council, as appropriate

with regard to the signing and marking of cycle facilities.

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

(xv) The Design shall ensure that all signs within 50 metres of existing and/or proposed systems of road lighting shall be illuminated.

(xvi) The Design shall ensure that chevron signing shall be provided at all roundabouts in addition to the requirements of 1.8.3 (iv).

(xvii) The Company shall amend/replace all existing signs within and up to a distance of 100 metres beyond the New Works Site and where required as a result of comments made by the Road Safety Auditor to ensure their compliance with the new road layout, revision of the route numbers, and revision of the junction names and numbers.

(xviii) The Design shall include the provision of advance direction signing and "No Entry" signs to ensure that there is no confusion to Users between merge and diverge slip roads at junctions.

(xix) Where the area and/or height of the sign face is such that

determination of the required support size and spacing is outwith the scope of the nomograms in the Traffic Signs Manual, the support system shall be treated as a Structure with regard to its Design and to the requirement for provision of Design and Check Certificates in accordance with the Certification Procedure.

(xx) The power supply for illuminated traffic signs shall be procured, commissioned and provided by the Company for both Motorway signing and for Side Road signs.

(xxi) Separate circuits shall be provided for the signs of Side Roads within the local authority boundaries for Side Roads and for Motorways. The traffic signs Design shall ensure that power to signs and circuits are provided for signs and that any feeder pillars required are located within the relevant Scottish Ministers and local authority boundaries. The locations for the feeder pillars shall be selected to allow safe and easy access for future maintenance purposes.

The Company shall consult and comply with:

(a) Glasgow City Council;

(b) North Lanarkshire Council; and

(c) South Lanarkshire Council, as appropriate

with regard to the provision, location and lighting of traffic signs on Side Roads.

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

(xxii) Existing signs on redundant stretches of road shall be relocated to the appropriate verge, where suitable, or replaced by new signs where required by the Design.

(xxiii) The traffic sign Design shall ensure that all posts shall be hot-dipped galvanised as defined in BS EN 40-5 Annex A.

1.9.2 Scheme Information and Publicity Sign Boards

(i) The Company shall provide and erect scheme information boards to the detail in Appendix 1/21 to Part 3 of these New Works Requirements including but not limited to the approaches to the New Works Site on the Existing M8 Eastbound (East of Junction 10), Existing M73 South, Existing M8 Westbound (West of Newhouse), Existing M74 South, Existing M74 North, Existing A725 North (South of M74 Junction 5 Raith) and Existing A725 South (North of Orbiston Junction),

The signs and associated posts shall be removed by the Company after six months following the issue of the appropriate Permit to Use.

(ii) The Company shall provide and display information on five publicity boards at locations to be agreed by the Scottish Ministers, pertaining to the scope of the works and their progress.

The Company shall provide and display information on not less than three existing community boards at locations to be agreed by the Scottish Ministers, pertaining to the scope of the works and their

progress. The progress information shall be updated on a monthly basis throughout the period for the construction of the New Works.

The publicity board shall consist of a weather tight board which shall be suitable for displaying a minimum of four A3 size pages.

The publicity board shall be removed upon the Final Completion.

(iii) The exact location for the information and publicity boards shall be agreed by the Scottish Ministers, but the publicity boards shall be situated on or adjacent to existing footways or their diversions to enable the public to read them in safety.

1.9.3 Traffic Bollards

(i) Internally illuminated bollards shall be provided on the approaching corners of splitter and deflection islands to highlight their presence for traffic entering and leaving illuminated junctions.

1.9.4 Marker Posts

(i) The Company shall remove the existing distance marker posts on the m8, M73 and M74 and replace with new marker posts at intervals of 100 metres.

(ii) The Company shall consult and comply with the requirements of the Scottish Ministers and Transport Scotland Trunk Road and Bus Operations with regard to the exact location of the new distance marker posts and the detail of the location information to be displayed on the new distance marker posts.

1.9.5 Road Markings

(i) The Design shall ensure that all road markings shall be 'extruded' thermoplastic material.

(ii) Notwithstanding the other requirements of this Agreement, where kerbs shall be provided in the Design, continuous white edge lines shall also be provided, except at Roundabouts.

(iii) Any transitions in the offsets of white lines to be provided on the roads described in Table 1 of Appendix D and existing carriageways shall be applied at a rate of 1:100.

(iv) On the low side of carriageways, gaps shall be provided at adequate, regular intervals in the raised rib road markings for drainage purposes.

(v) The Design shall ensure that all Side Road markings are replaced or remarked as appropriate throughout the period stated in Clause 12.1.4 when less than 70 per cent remains due to wear, or where the luminance factor shall be less than 45 per cent, as estimated by visual inspection or measurement.

Notwithstanding the above requirement, replacement of worn or otherwise defective road markings shall be carried out when the criteria set out in TD 26 of the DMRB have been determined as being met or exceeded either by visual inspection or test.

(vi) Notwithstanding the other requirements of this Agreement, the Design shall ensure that all Side Road road markings shall be renewed during the last 12 months of the period stated in Clause

12.1.4 by remarking with sprayed thermoplastic material.

1.9.6 Road Studs

(i) The Company shall consult and comply with the requirements of:

(a) Glasgow City Council;

(b) North Lanarkshire Council; and

(c) South Lanarkshire Council, as appropriate

with regard to the provision of road studs on Side Roads.

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

(ii) The Company shall consult and comply with the requirements of Transport Scotland Trunk Road and Bus Operations regarding the locations for the CHART node and section markers.

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

(iii) The Company shall provide the necessary CHART link and section node markers within the New Works to enable suitably co-ordinated Scottish Executive Roads Information System (SERIS) survey information to be recorded.

1.9.7 Traffic Signals

1.9.7.1 General

(i) The Company shall consult and comply with the requirements of

(a) Glasgow City Council;

(b) North Lanarkshire Council

(c) South Lanarkshire Council

(d) The Scottish Ministers Trunk Road South West Management Unit and South East Management Unit

(e) Transport Scotland

as appropriate with regards to the layout, installation and testing of:

(a) traffic signals

(b) pedestrian crossings

(c) combined pedestrian / cycle crossing installations.

within their respective boundaries. The design requirements for traffic signals are presented in Appendix 12/5 to the Specification.

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

(ii) The Company shall consult with the parties listed in Section 1.9.7.1 to identify the traffic signal systems currently in use and to ensure that any traffic signal and Urban Traffic Control (“UTC”) or Outstation Monitoring Unit (“OMU”) equipment to be installed shall be compatible with these existing systems.

(iii) The Company shall design, supply, install and commission all traffic signal equipment, UTC and OMU equipment and related ancillary

items. All traffic signal UTC and OMU equipment supplied by the Company shall be Urban Traffic Management and Control ("UTMC") compatible.

(iv) The Company shall be responsible for the provision of the power supply associated with the traffic signal equipment.

(v) Full requirements for the design of traffic signals are detailed in Appendix 12/5 to the Specification and the design shall include, but not be limited to, the following:-

(a) Detailed drawings at 1:500 scale for each traffic signal controlled junction, signalised pedestrian crossing and signalised pedestrian / cycle crossing;

(b) TR2500A Configuration Forms and.

(c) MOVA Datasets (as applicable).

(vi) The design shall provide pedestrian crossings and facilities for cyclists at traffic signal installations in accordance with the requirements of 2 and 5of Appendix D. Controlled crossings shall be designed (without limitation) in accordance with the Transport Scotland Disability Discrimination Act Good Practice Guide for Roads (Transport Scotland). Puffin crossings and toucan crossings shall be used.

(vii) The design of traffic signal installations shall ensure integrated operation with the existing UTC, Remote Monitoring system(s) operated by the Scottish Ministers and the relevant local authorities, where applicable, within their respective boundaries. The design shall allow the equipment to be monitored remotely. The traffic signals shall be controlled using fixed-time plans ,UTC / Split Cycle Offset Optimisation Technique ("SCOOT") or MOVA based adaptive traffic control strategies to ensure that the traffic signals operate at their optimum efficiency and can adapt to changes in traffic demand and changes in operation that may be implemented. The Company shall consult and comply with Transport Scotland and relevant local authority in this regard.

(viii) The Company shall prepare fixed time plans, SCOOT plans, MOVA Datasets, OMU Configurations and TR2500 forms to the satisfaction of the Scottish Ministers. The Company shall configure accordingly within the UTC / SCOOT database or Remote Monitoring System ("RMS").

(ix) The Company shall undertake on-street validation and fine-tuning of the signals / systems to the satisfaction of the Scottish Ministers. The Company shall provide appropriate certification, to the satisfaction of the Scottish Ministers, recording the validation measurements and parameters used in the initial system configuration.

(x) The Company shall be responsible for setting up all MOVA, UTC / SCOOT system databases and their configuration to the satisfaction of the Scottish Ministers. This shall include but not be limited to Outstation Transmission Unit ("OTU") data, controller data, SCOOT network data, SCOOT link data, plan data, timetable data and MOVA data All data shall be submitted to the Scottish Ministers for

approval prior to being configured in the respective systems. The Company shall provide Configuration Forms to the Scottish Ministers at least 9 months prior to the Company's proposed installation date to allow adequate time for the Scottish Ministers to review the UTC system information accordingly.

1.9.7.2 Below ground Traffic Signal Equipment

(i) The Company shall supply and install proprietary traffic signal pole retention sockets. The Company's proposed pole retention system shall be subject to the approval of the Scottish Ministers. Traffic Signal Poles shall be installed in a 360 degree cast iron swivel duct foot bend retention socket. Retention sockets shall be modular in construction and shall be manufactured from ductile iron to BS2789 500-7(GGG50-Din 1693). A bottom cable entry bend must have a rotation through 360 degrees to permit cable access from any direction.

(ii) The Company shall be responsible for the design of the detection system and the provision of all associated below ground detection equipment. Where inductance loops are used, the Company shall supply and install Carriageway Loop Boxes (CLB's) and the detection loop feeder ducts. These ducts shall carry the loop feeder cables from the traffic controller cabinets to the appropriate chamber at the location of the traffic detection loops provided to facilitate the operation of the traffic signals. Loop feeder cables shall not be installed by slot cutting into the carriageway.

1.9.7.3 Power Supply and Termination

(i) The Company shall be responsible for the design, supply and installation of all the equipment cabinets required for the traffic signal equipment, including any related UTC, MOVA equipment, and their associated power supplies. The Company shall also arrange for the provision of an independent power supply to the electrical termination pillars to all traffic signal equipment with the Electricity Supply Company.

(ii) The power termination pillars shall be located adjacent to the traffic signal controller cabinet and at the back of the footway. They shall be capable of remote isolation.

1.9.7.4 Communications Supply

(i) The Company shall design, supply and install the communications system and associated cabinetry for the traffic signal equipment and MOVA, UTC equipment. The Company shall consult and comply with the Transport Scotland and relevant local authority with regard to the proposed communications solution and compatibility with the existing systems' telecommunications.

(ii) The Company shall liaise with the relevant Service Providers as necessary with regards to the provision of communications.

(iii) Communications cabinets, if required shall be located adjacent to the traffic signal controller cabinet at the heel of the footway where possible.

1.9.7.5 Duct System

(i) All cabling shall be fully ducted and provided with inspection chambers and pole retention sockets such that cable can be installed or removed. Drawn bends shall not be incorporated in the duct runs without the prior approval of the Scottish Ministers. All carriageway crossings for traffic signal cables shall incorporate 100 millimetre internal diameter ducts and shall terminate to the inspection chambers, which shall be installed within adjacent footpaths or verges.

(ii) The Company shall design, supply and install the traffic signal duct network. Traffic signal ducting shall be provided in accordance with Appendix 12/5 to the Specification.

(iii) Where inductance loops are used, this shall include the supply and installation of detection loop feeder ducts to carry loop feeder cables from the traffic controller cabinets to an appropriate chamber, sited at the location of any traffic detection loops required for the operation of the traffic signals. Loop feeder cables shall be ducted and shall not be installed by slot cutting into the carriageway. Loop feeder cables may share any traffic signal ducting provided and with agreement, communication ducting, where there is a direct and continuous route.

(iv) Where electrical mains cable is to be installed, they shall be installed in separate ducting and not share traffic signal chambers.

(v) All completed duct routes shall be tested by drawing through an appropriate mandrel. The Company shall supply a mandrel test certificate for each duct length prior to the commencement of cable installation. Following cable installation, a replacement draw cord shall be installed so that a serviceable cord is available at all times.

1.9.7.6 Duct Access Chambers

(i) The Company shall design, supply and install duct access chambers for the traffic signal ducts, the communication ducts, the power supply ducts and the loop feeder ducts. Traffic signal ducting shall be provided in accordance with Appendix 12/5 to the Specification These access chambers shall be the appropriate size for the number of ducts / cables and also for the depth of installation of the ducts (i.e. road crossings shall be a minimum of 600 millimetres by 600 millimetres due to the depth of the road crossing). The Company shall consult and comply with the requirements of the Transport Scotland and where appropriate, the relevant local authority in this regard.

(ii) The Company shall ensure provision of duct access chambers for the relevant communication Service Provider's communication ducts. The Company shall liaise with the relevant communication Service Provider to arrange the installation of such chambers.

(iii) The design of the Works shall include access chambers at the following general locations:

(a) at every change in the horizontal and vertical direction of the ducts;

(b) at every junction of ducts;

(c) at every traffic signal controller;

(d) at the end of each duct run; and

(e) at each end of each road crossing

(iv) The chamber spacing shall be no greater than 40 metres in any direction.

(v) The use of combined access chambers for the traffic signals ducts, the communication ducts, and the power supply ducts shall not be permitted. Loop feeder ducts may use communications chambers and traffic signal chambers.

(vi) Ducts and duct access chambers employed to accommodate cabling for traffic signals and associated works shall not be employed for any other use. For the avoidance of doubt, this shall include lighting and the like.

(vii) Where the design requires new ducted cables within the existing footways, the Company shall where possible use existing duct chambers. The Company shall carefully break into the chamber making the minimum size of hole necessary to install the duct. The duct shall be bedded and the interior surfaces and exterior render made good using designation one mortar.

1.9.7.7 Above-ground traffic and pedestrian signal equipment, detection equipment, electrical equipment and associated items, and the communications Service Provider cabinets.

(i) The Company shall supply, install and commission all above-ground traffic signal equipment, detection equipment, electrical equipment, isolation equipment and associated items, and the communications Service Provider cabinets required by the design.

(ii) Above-ground traffic signal equipment shall include, but not be limited to, poles, LED signal heads, LED pedestrian heads/nearside unts, LED cyclist heads/ nearside units, push button equipment, tactile cone units and audible units.

(iii) Traffic detection shall include, but not be limited to, above-ground detectors, VA, SA, SDE, SCOOT / MOVA loop detection and hurry-call loop detection.

(iv) Electrical equipment and associated items shall include, but not be limited to, controllers, auxiliary cabinets, electrical termination pillars, traffic signal cables, power supply cabling, communications cabling, etc.

(v) The Company shall be responsible for all traffic management associated with the traffic signal works specified in this Section 1.9.7.

1.9.7.8 Urban Traffic Control Equipment

(i) The Company shall supply, install and commission all UTC equipment including outstation transmission units, control units, adaptive control detection and communications equipment and other equipment required by the design.

(ii) The Company shall allow for the communication equipment, configuration and testing as required for the traffic signal equipment linking to existing remote monitoring or UTC systems. The Company shall provide certification, to the satisfaction of the Scottish Ministers, recording completed and successful test data to ensure the in-station and outstation data compatibility. This shall include the interface with the in-station system and the communications from the outstation to in-station equipment.

(iii) UTC equipment shall include, but not be limited to, control system outstations, communications equipment, loop / above ground detection, feeder cable, loop / above ground sensors and detectors, and specialist detection equipment.

(iv) Adaptive control systems shall be used to maximise the efficiency of the traffic signal operation.

(v) The Company shall consult and comply with the requirements of the Transport Scotland with regard to the specification and type of Traffic Signal Controller to be procured.

1.9.7.9 Traffic Signal Posts

(i) All traffic signal posts provided on New Slip Roads, New Public Transport Links and Trunk Roads, shall be passively safe in accordance with Volume 2 part 2 TA 89/08 of the DMRB.

(ii) Traffic signal posts on Local Authority Roads shall be passively safe unless otherwise agreed with the relevant local authority as part of the consult and comply process.

1.9.7.10 Traffic Signs on Overhead Traffic Signal Gantries

(i) The Company shall design all sign faces on the Gantry to minimise the overall dimension of the sign face.

(ii) The Company shall provide a power distribution system for illumination of static signs on Gantries where illumination is required. The power network shall originate from the Combined Equipment Cabinet ("**CEC**") at a Gantry Site and shall be a separate circuit from the TSE power network.

(iii) The Company shall install all electrical distribution cables required for illumination of advance direction signs on Gantries within a cable management system from the Termination Pillar ("**TP**") to the luminaire. The termination at the luminaire shall be undertaken prior to the Gantry being installed on Site and the cable shall be protected during installation.

(iv) Traffic signs mounted on overhead Gantries shall be illuminated where required by column two of Schedule 17 of the *Traffic Signs Regulations and General Directions 2002*.

(v) Where traffic signs mounted on overhead Gantries require to be illuminated, the external light source shall be mounted to the overhead Gantry superstructure and shall illuminate the sign from the superstructure upwards. Downward lighting of the sign legends shall not be permitted.

(vi) The Company shall consult and comply with the requirements of the Transport Scotland with regard to the fabrication or specification

details of the external light source and shall not commence construction of the external light source until approval has been granted by the Scottish Ministers.

(vii) The Company shall remove all reference to “City Centre M74” from all gantry mounted signs on the M74 between reference points A26 and A27 and replace with a signage strategy consistent with the M74 between Fullarton Road and Kingston Junctions.

1.10 Road Lighting and Electrical Works

1.10.1 General

(i) The Company shall provide road lighting and electrical designs which satisfy the requirements of this Section of the New Works Requirements and the associated Specification referenced as Part 4 of the New Works Requirements.

The road lighting and electrical works designs shall provide for the alteration of any existing road lighting and electrical works together with provision of new road lighting and electrical works.

The ongoing requirement for road lighting shall be assessed by the Company in accordance with DMRB standard TA 49/07 taking account of the whole life costs of a proposed road lighting scheme and its environmental impact set against the resultant saving in personal injury accidents.

The Company shall carry out a detailed appraisal, including a comprehensive design selection and extents evaluation process of all proposed new and existing lighting arrangements, identified for replacement, removal, or modification as part of the design, construction and completion of the Works.

The appraisal shall include and detail the safety, environmental, integration, accessibility and economic benefits of the proposed new and replacement road lighting and electrical schemes. This shall include road lighting and electrical assets at locations where the Company has identified existing road lighting that may be removed and not replaced. The resulting Project Appraisal Report and accompanying support documentation shall include a comprehensive appraisal of the benefits and disbenefits associated with each route and identify proposals for:

(a) New Motorways, New Slip Roads and the New A725 All Purpose Road.

(b) New All Purpose Roads other than those noted above.

(c) Individual local authority roads including New Side Roads and New Roundabouts and junctions.

(d) Existing Transport Scotland and Local Authority maintained Road Network included within the identified scheme extents not included above.

The Company shall consult and comply with regard to the lighting design within the respective boundaries identified below:

(e) Transport Scotland with respect to the Motorway and Trunk Road Network ;

(f) Local Authorities with respect to those roads not included in 1.10.1 (i) (e):

(i) Glasgow City Council;

(ii) North Lanarkshire Council; or

(iii) South Lanarkshire Council; as appropriate

Table 1.10.3 of this Section recommends a road lighting classification for each road description identified as requiring new and replacement road lighting within the scheme extents. The Company will provide a detailed explanation of the design selection and extents evaluation undertaken which shall be assessed in accordance with DMRB TD 34/07 complying with BS5489:2013, BS EN13201, CIE 115: 2010, and Scottish Government guidance note "Controlling Light Pollution And Reducing Lighting Energy Consumption".

At locations as identified by the Company where existing road lighting installation can be removed and not replaced as part of the Works, the TA 49/07 process, including supplementary requirements and guidance to the DMRB shall be applied in order to verify the decision and further consultation undertaken with the above identified Overseeing Organisations to establish the implementation strategy to be applied in advance of the proposed removal of the road Lighting including the establishment of stakeholder communications and safety monitoring plans.

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

(ii) Unless protected by a Vehicle Restraint System (VRS) lighting columns shall be designated Passive Safe or otherwise located so as to require no protection in accordance with TD 19/06 of the DMRB unless agreed otherwise with the Overseeing Organisation. Where passive safe columns are used they shall conform to the requirements of BS EN12767 in terms of passive classification and electrical disconnection. For all new installations lighting columns, whether passively safe or not, shall be continuous taper and be manufactured from aluminium. The column root shall be protected by an inner and outer polymer thermally bonded sheath to a height of 250 millimetres above the finished ground level.

(iii) 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.

(iv) The columns shall have flush fitting weatherproof single access doors, and 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 these New Works requirements each column access door shall have two locks using a

triangular type key. The number of column door keys supplied shall be ten per cent of the number of columns erected subject to a minimum of three keys. All column access door keys shall be manufactured from the same material as the column and be of an adequate size for physical handling.

(v) On completion of the installation, all door locking components shall be coated with an application of suitable corrosion inhibitor grease providing lubrication and protection from seizure and general deterioration.

(vi) Where outreach brackets are required by the lighting design, these shall be integral to the column and of not greater than 1.0 metre outreach, at zero degrees inclination.

(vii) Lighting columns shall be root mounted except where mounted on structures or where the ground conditions do not allow the full column installation depth as detailed by the manufacturers data sheets to be achieved. Where root mounted columns can not be used, the Company shall consult and comply with Transport Scotland to develop an alternative arrangement.

(viii) 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.

(ix) Where flange plate columns are required they shall be set vertically on the foundation bases prepared for them. To ensure the column is set vertically, compatible metal shims shall be used if required. Once the nut and exposed bolt tightening has been completed to the torque level specified in the Design, they shall be coated with protective paste and tape. All fixings shall be compatible with the column material.

(x) Where the column flange is not in accordance with BS EN 40-2 the Company shall liaise with the Overseeing Organisation 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.

(xi) Where wall brackets and associated service boxes are installed they shall, where applicable, match existing items.

(xii) All non-passively safe lighting columns shall be manufactured from aluminium in accordance with the requirements of BS EN 40. Where columns are designed as passively safe the columns shall be designed and constructed from aluminium in accordance with BS EN 12767.

(xiii) New lighting column base compartments, cableways, and compartment doors shall comply with the requirements of BS 5649 part 5.

(xiv) All columns shall have a non-hygroscopic back-board, not less than 15 millimetres thick and of a sufficient size to accept the selected cut-out and control equipment, positioned in the base compartment opposite the access door. The back-board shall be securely fixed to the inside of the column. All fixings used for the attachment of

equipment and components to this back-board shall be of stainless steel.

(xv) All removable access doors shall be interchangeable with access doors of similar columns without the need for adjustment.

(xvi) Lighting columns and access doors shall be permanently earth bonded, via an earth link cable of the flexible braid type, and secured to earthing terminals fitted on both the column and its access door as defined by the column manufacturer. The terminations shall be distinctly and durably marked with a compatible metal label bearing the wording “Safety Electrical Connection – Do Not Remove”.

(xvii) 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 four millimetres and be long enough to allow the column access door to be rested completely on the ground when removed.

(xviii) 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 150 millimetres by 75 millimetres with the lower edge of the slot 600 millimetres below ground level. The cable entry slot shall be free from irregularities and burrs.

(xix) Each column shall be fitted with an eight millimetre (minimum) diameter earth terminal complete with two plain washers, 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.

(xx) Typical column mounting heights are as follows:

12/15 metres for high speed dual carriageways and Motorways;

10/12 metres for Slip Roads and traffic routes; and

5/6 metres for residential / side roads.

(xxi) Dedicated separate feeder pillars shall be provided for the lighting of:

(a) New Motorways, New Slip Roads and the New A725 All Purpose Road.

(b) New All Purpose Roads other than those noted above.

(c) Individual authority roads including New Side Roads and New Roundabouts,

(d) Relighting or modified lighting on existing Motorways and other roads.

(xxii) The feeder pillars shall unless otherwise agreed with the Overseeing Organisation have as a minimum cabinet specification as below:

(a) Fabricated five millimetre stainless steel;

(b) Backboard 18 millimetre fully treated ply;

(c) Approximate weight 110 kilograms (pillar only);

(d) Lifting bolts supplied;

(e) Stainless steel hinges;

(f) Tamperproof wedge type locks

(g) Hasp and staple lock;

(h) Doors fully sealed;

(i) Detachable root section; and

(j) Anti-vandal Paint to be used- colour to be confirmed

(xxiii) The feeder pillars shall have an IP rating of IP 54 and shall unless otherwise agreed with the Overseeing Organisation have as a minimum the following electrical and control equipment in a pre-wired panel as a minimum:

(a) Suitably rated SP&N or TP&N isolator;

(b) Suitable MCB distribution enclosure;

(c) Adjustable thermostat set to five degrees celsius;

(d) 60 watt 300 millimetre tube heater;

(e) 10 amp SP light switch;

(f) LED lamp

(g) 13 amp 230 volt mains socket protected by a 30mA RCD (max output to be 6A);

(h) Main brass earth bonding stud complete with bonding to pillar body and doors

(xxiv) The feeder pillars and circuits for lighting installations shall be located within the boundaries of the relevant authority.

(xxv) The locations of the feeder pillars shall allow safe and easy access for future maintenance. A hard standing area shall be allowed for in front of the feeder pillar to facilitate ease of maintenance.

(xxvi) The Company shall arrange for all Distribution Network Operator (DNO) works to be undertaken. Where the Company needs to organise a new / transfer of an existing DNO connection then the individual metering requirements are to be clarified in advance of the ordering of works.

(xxvii) The Company shall consult and comply with all requirements of the Overseeing Organisation in terms of the equipment to be installed and construction methods utilised in advance of undertaking their detailed design selection and extents evaluation and ensure that their design and supporting documentation and calculations meet with the requirements of the Overseeing Organisation. Following completion of the works, Operating and Maintenance documents including; as-built drawings, compliance test records and electrical tests and completions certificates must be forwarded to the appropriate Overseeing Organisation prior to the road lighting works being accepted.

(xxviii) Should distribution equipment within a feeder pillar be made live prior to the lighting installation, a suitable 'Permit to Work' system shall be put in place to ensure that all recommended safety precautions are adhered to and hazards identified.

(xxix) Single phase supplies shall be utilised unless otherwise agreed in writing with the Overseeing Organisation responsible for the intended location (where a three phase supply to feeder pillars has been installed by the DNO all outgoing supplies via the electrical distribution board to all lighting circuits shall be single phase).

(xxx) All electrical works for new installations shall comply with IET Wiring Regulations 17th Edition: BS 7671:2008 Incorporating Amendment No1: 2011 and the Electricity at Work Regulations 1989.

(xxxi) The electrical installation shall be tested in accordance with IET Wiring Regulations 17th Edition: BS 7671:2008 Incorporating Amendment No1: 2011 and copies of the completed certificates shall be forwarded to the Overseeing Organisation within seven working days of the tests being undertaken.

(xxxii) Unless otherwise agreed with the Overseeing Organisation preference shall always be given to designs incorporating LED based lamps. Other high efficiency light sources may be optionally proposed for specific situations. The lighting design of the New Works shall utilise full cut-off luminaires with a minimum of G4 Classification.

(xxxiii) Luminaires using electronic ballasts shall use lamps of not greater than 250Watt, however LED based luminaires have no similar restriction allowing LED luminaires rated as equivalent to 400Watt to be used. All luminaires shall be supplied with DALI compatible, enabled and accredited electronic control gear or LED driver, and shall be suitable for operation over the input voltage range of 210-250 volts. Electronic control gear or LED drivers shall incorporate over-temperature protection and have a power factor no less than unity. Prior to delivery of any luminaire using electronic control gear or LED driver, the Company shall provide the Overseeing Organisation with a statement of compatibility from the supplier, detailing and confirming that the electronic control gear or LED driver being supplied is capable of operating over the temperature and voltage range to which it will be exposed in use within the luminaire housing and that the lamp and control gear or LED driver are fully compatible with each other. All luminaires shall be compatible with Transport Scotland's Intelligent Lighting Control System ("ILCS") – refer to clause 1.10.3.

(xxxiv) All new luminaires shall have an Ingress Protection rating of no less than IP 66 for the control gear, or LED driver, and lamp compartments. All glazed luminaires shall utilise toughened glass.

(xxxv) All new road lighting installations shall be wired in XLPE insulated and sheathed material with steel wire armouring. The maximum size of cable shall be 25mm sq. 3 core. All cables shall be installed in purple duct.

(xxxvi) The electrical supply between the cut-out within the column and the luminaire shall be via a 2.5mm sq. 3 core Blue Arctic Grade flexible cable.

(xxxvii) The internal bending radius for cables shall not be less than 12 times the external diameter of the cable, or less than the radius recommended by the manufacturer, whichever is greater.

(xxxviii) All cable sheathing shall be Chlorine Free.

(xxxix) The lighting design of the New Works shall include for the energising and illumination of relevant illuminated signs and bollards.

(xl) All new road lighting cabling for supply to lighting columns shall be installed in not less than two HDPE ducts, purple in colour with an internal diameter of 100 millimetres. All ducts will be imprinted with the words “STREET LIGHTING” at intervals of not more than one metre throughout their length.

(xli) The ducting shall be laid in such a manner to:

(a) Prevent the cable from exceeding the maximum recommended bending radius for that cable.

(b) Prevent the duct alignment, where it differs from the trench, from exceeding a 1:30 transition from the vertical or horizontal.

(xlii) All new road lighting road crossings shall consist of not less than four purple HDPE ducts. Ducts shall have a minimum cover of 750 millimetres and shall be protected by a concrete surround of mix ST2 concrete to BS8500-2. All ducts shall be smooth bore, 100 millimetre internal diameter to BS EN 50086-2-4 to facilitate the crossing of the carriageway. The purple ducts shall be imprinted with the words “STREET LIGHTING” at intervals of not more than one metre throughout their length. All ducts shall terminate in an underground distribution chamber at each side of the carriageway.

(xliii) Cable ducts in the verge or central reserve shall consist of not less than two ducts and shall be HDPE with smooth bore of 100 millimetre internal diameter to BS EN 50086-2-4, purple in colour and imprinted with the words “STREET LIGHTING” at intervals of not more than one metre throughout their length. A minimum cover of 650 millimetres shall be provided.

(xliv) Metallic trace marker tape shall be laid above the duct to permit cable detection by electronic route tracing equipment. This shall be purple, self-coloured polyethylene tape for cable marking, and shall be laid approximately 250 mm above any duct carrying electrical supply/distribution cable. The tape shall be not less than 0.1 mm thick and 150 mm 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 street lighting ducts are laid in one trench, only one line of marker tape need be installed.

(xlv) Ducts shall be impervious to water, capable of being laid in temperature down to -10 degrees Celsius and be sufficiently flexible to follow undulation in a trench bottom.

(xlvi) At least 75 millimetres clearance shall be given between the cable duct and the sides of the trench and between ducts sharing the same trench.

(xlvii) Unless agreed otherwise with the Overseeing organisation, at least 500 millimetres clearance shall be given between cable ducts and services pipes belonging to Statutory Undertakers. The Company shall consult and comply with the Local Authorities regarding their specific requirements.

(xlviii) All duct trenches shall be 450 millimetres wide and not more than 1.5 metres deep for the laying of ducts.

(xlix) All ducting shall be Chlorine Free polyethylene.

(l) 1000 millimetre by 1000 millimetre distribution chambers shall be used at Motorway road crossings with a distribution chamber located in each verge with a minimum of four 100 millimetre minimum internal diameter ducts running between chambers. Chambers shall be covered with extra heavy duty covers.

(li) 450 millimetres by 450 millimetres distribution chambers shall be used at non-Motorway road crossings with a distribution chamber located in each verge with a minimum of four 100 millimetre minimum internal diameter ducts running between chambers. Chambers shall be covered with heavy duty covers.

(lii) The location of all distribution chambers and ducts shall be recorded on as-built drawings with an accuracy of 100 millimetres. Location measurements shall be taken from the nearest edge of the carriageway or fence line. Offsets of ducts shall be recorded at 20 metre intervals along their line. Offsets shall be defined longitudinally by distance from a permanent highway feature i.e. a marker post or other suitable feature.

(liii) All new lit bollards shall be internally illuminated by high efficiency lamps or LEDs with a cast aluminium base lit arrangement, or a suitable LED equivalent arrangement, and a minimum ingress protection rating of IP67, in accordance with BS EN 12899.

(liv) Not used

(lv) All bollard external fastenings shall be manufactured from stainless steel.

(lvi) Signing within 50 metres of a lighting column that requires to be illuminated shall have a mean luminance in accordance with the requirements of BS EN 12899. Illuminated Traffic Sign luminaires shall use low energy, high efficiency lamps, or LEDs with electronic control gear or LED drivers. Unless otherwise agreed with the Overseeing Organisation preference shall always be given to designs incorporating LED based lamps.

(lvii) In compliance with the DMRB, Transport Scotland operates a lighting inventory system. For newly installed equipment the Company shall provide all information in accordance with the Overseeing Organisation table of attributes contained within the Transport Scotland Trunk Road Inspection and Inventory Manuals as required to correctly populate the inventory system. The

Company shall consult and comply with Transport Scotland regarding the agreed format for the collected information.

(lviii) All street lighting and sign column cut-outs shall comply with BS7654.

(lix) 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 shall not be broken by the removal of the cut-out fuse carrier.

(lx) The cut-out gland plates shall be an integral part of the cut-out and be capable of terminating XLPE insulated and sheathed material with steel wire armouring / PVC / SWA / PVC cables up to 25 square millimetres and have the capacity for looping in-out. The brass gland plate shall typically accommodate up to three cables. Additional armoured cable termination, cut-out capacity and isolation devices shall be provided at multi-headed columns and at locations where spur supplies are provided.

(lxi) 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 shall 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.

(lxii) Underground cable joints shall not be permitted for cables supplying road lighting. Lighting installations shall be designed to employ a loop-in loop-out arrangement without joints. The Company shall repair damaged cables by replacing the full length of the damaged cable.

(lxiii) Under no circumstances shall cables enter a column, post, bollard or pillar base without the protection of ducting. Such ducts shall continue into the base and terminate at a suitable height to allow a seal to be formed using expanding foam sealant or similar.

(lxiv) Temporary lighting may be required at any part of the New Works Site where works shall be undertaken. All temporary lighting shall be provided in accordance with the applicable standards. The installation of temporary lighting shall comply with the relevant Acts and Regulations – for example (without limitation), the Electricity at Work Regulations 1989 and IET Wiring Regulations 17th Edition: BS 7671:2008 Incorporating Amendment No1: 2011. It shall not form a hazard to Users. No existing street lighting shall be disconnected until it has been replaced by either the new permanent lighting arrangement or a temporary lighting system provided to the satisfaction of the Scottish Ministers. The temporary lighting shall remain operative until the new permanent lighting arrangement is brought into use. Temporary lighting arrangements shall require the approval of the Scottish Ministers prior to the commencement of works in the affected area.

(lxv) A non-exhaustive list of relevant design documents in respect of the Works includes:

(a) Electricity at Work Regulations 1989;

(b) Electricity Safety, Quality and Continuity Regulations 2002 (amended 2006,2009);

(c) Waste Electronic and Electrical Equipment (amendment) Regulations 2006;

(d) Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2008;

(e) IET Wiring Regulations 17th Edition: BS 7671:2008 Incorporating Amendment No1: 2011

(f) BS 7430: Code of practice for earthing;

(g) BS EN 50110 Part one & 2: Operation of Electrical Installations;

(h) HSE Publication HSR25: Memorandum of Guidance on the Electricity at Work Regulations 1989;

(i) HSE Publication GS6: Avoidance of Danger from Overhead Electric Lines;

(j) HSE Publication HSG85: Electricity at Work – Safe Working Practices;

(k) HSE Publication HSG47: Avoiding danger from underground service;

(l) Institution of Lighting Engineers (ILE) Code of Practice for Electrical Safety in Highway Electrical operations;

(m) 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;

(n) ENA Technical Specification 43-8: Overhead Line Clearances;

(o) County Surveyors' Society (CSS) Publication: Guidance Notes on Electrical Safety on the Highway to Achieve Compliance with the Electricity at Work Regulations, 1995;

(p) CSS Publication: Code of Practice for the Installation and Operation of Seasonal Decorations on or above the Public Highway, 1995;

(q) National Joint Utilities Group (NJUG) Publication 1: Recommendations on the avoidance of danger from underground electricity cables;

(r) NJUG Publication 3: Cable Locating Devices;

(s) Well Lit Highways. Code of Practice for Highway Lighting Management and;

(t) Scottish Government guidance note "Controlling Light Pollution And Reducing Lighting Energy Consumption"

1.10.2 Earthing Arrangements

(i) An earth rod shall be installed at each control pillar, complete with rod, inspection pit and cover. The connection between the earth rod and the pillar shall be made with an earth cable of no less than 16 square millimetres in diameter with resistance to ground of 20 ohms or less.

(ii) An earth rod shall be connected to the last or penultimate column for each circuit.

(iii) Supplementary bonding shall be at the discretion of the electrical designer in accordance with BS7671 Regulation 559.10.3.1.(v).

1.10.3 New / Replacement Road Lighting

(i) Table 2.10.3 of this Section recommends a road lighting classification for each road description identified as requiring new and replacement road lighting within the scheme extents. The Company will provide a detailed explanation of the design selection and extents evaluation undertaken which shall be assessed in accordance with DMRB TD 34/07 complying with BS5489:2013, BS EN13201, CIE 115: 2010, and Scottish Government guidance note "Controlling Light Pollution And Reducing Lighting Energy Consumption".

(ii) Where the Company identifies locations where the existing street lighting installation can be removed and not replaced as part of the ongoing works, the TA 49/07 process, including supplementary requirements and guidance to the DMRB shall be applied in order to verify the decision and further consultation undertaken with the above bodies to establish the implementation strategy to be applied including stakeholder communications and safety monitoring plan.

(iii) New / Replacement road lighting shall be provided as follows, unless agreed otherwise with the Overseeing Organisation:

(a) at the locations detailed in Table 1.10.3 and where Reference Points are prescribed, with reference to drawings M8-C-REF-001 to 025.;

(b) to lighting levels in accordance with BS5489: 2013 and BS EN 13201-2 as detailed in Table 1.10.3;

(c) grouped by dimming / switching group as detailed in Table 1.10.3;

(d) all capable of being controlled and monitored through the intelligent lighting control system ("ILCS").

Table 1.10.3 New Road Lighting

Road Description	Chainages or Reference Points	Lighting classes to BS 5489: 2013 & BS EN 13201-2	Dimming / Switching Section Group Number[3]
Proposed M8 Baillieston	Ch. 1-1000	ME3a	TS

Road Description	Chainages or Reference Points	Lighting classes to BS 5489: 2013 & BS EN 13201-2	Dimming / Switching Section Group Number[3]
M73-Mollinsburn/Maryville	Ch. 0-1700	ME3a	TS
Baillieston to Coatbridge Link	D3-D1	CE3	GCC
A89 Coatbridge Road	B12-E4	ME4a	GCC
Proposed M8 Shawhead	Ch. 4200-5200	ME3a	TS
Hagmill Road/Kirkshaws Road	E11-E12	ME4a	NLC
Proposed M8 Chapelhall/Eurocentral	Ch. 6000-8500	ME3a	TS
Townhead Avenue (Eurocentral)	E27-E28	ME4a	NLC
Chapelhall	E29-E30	ME4a	NLC
Chapelhall	E39-E40	ME4a	NLC
Chapelhall	E45-E46	ME4a	NLC
Chapelhall	E37-E38	ME4a	NLC
Chapelhall	E31-E32	ME4a	NLC
Chapelhall	E35-E36	ME4a	NLC
Raith Junction	B29-B33	ME3a	TS
Raith M74/A74	CH. 350-2400	ME3a	TS
Raith Junction	E70-E69	ME4a	SLC
Raith Junction	E75-E76	ME4a	SLC
Daldowie Junction	E57-E59	ME4a	GCC
Roundabouts and Extents	D4-D7	CE3	TS
Roundabouts and Extents	D8-D10	CE3	NLC

Road Description	Chainages or Reference Points	Lighting classes to BS 5489: 2013 & BS EN 13201-2	Dimming / Switching Section Group Number[3]
M74	Extents to A27	ME3a	TS
M74	A32 to A34	ME3a	TS
M74	A38 to A39	ME3a	TS
Strathclyde Park Access Road (see note 2)	E61 to E62	S5	NLC

Notes to Table 1.10.3

1 It is a requirement of TS that all intersections, junctions and roundabouts are lit, however the Company may review the road lighting extent and maximum unlit gap between lit sections as part of their design selection and extents evaluation process

2 It is a requirement that Strathclyde Park Access Road is lit utilising a 5 meter lighting column mounting height utilising a LED light source.

3 TS = Transport Scotland controlled dimming

NLC = North Lanarkshire Council controlled dimming

SLC = South Lanarkshire Council controlled dimming

GCC = Glasgow City Council controlled dimming

(iv) The new road lighting system must be capable of varying the light level and switching period of the installed light source whilst offering remote control and monitoring via an intelligent lighting control system ("ILCS") on the Trunk Road Network ("TRN"). Transport Scotland will provide details to the Company of their existing ILCS, and the Company shall consult and comply with the requirements of Transport Scotland to ensure the compatibility, functionality and user interface capabilities of the ILCS roadside equipment.

(v) For Transport Scotland road lighting as identified in Table 1.10.3, the Company shall provide, install, and commission the roadside ILCS equipment.

(ii) Where the lighting assets are located within the operational areas of one of the three Local Authorities, as identified in Table 1.10.3, the Company shall specifically consult and comply with the requirements of Glasgow City Council, North Lanarkshire Council and South Lanarkshire Council with respect to any ILCS system they may employ.

(iii) For road lighting within the operational areas of one of the three Local Authorities, the Company shall provide, install, and commission the roadside ILCS equipment.

(iv) The Company shall consult and comply with Transport Scotland and the three Local Authorities in establishing the variable lighting regimes and emergency protocols required to be deployed by the Company on the Motorway and Trunk Road Network

(v) Each luminaire shall be fitted with a control and monitoring module incorporating DALI compatible, enabled and accredited lighting control and monitoring circuitry and wireless radio frequency communication technology allowing secure data exchange with the roadside base stations. The control and monitoring module shall be directly powered from the same mains supply as the asset it is controlling.

(vi) Roadside base stations shall be provided by the Company in accordance with the functional requirements of Transport Scotland's existing ILCS. Transport Scotland will be responsible for any charges associated with data communication for the operation of the ILCS.

(vii) The Company shall carry out site acceptance testing of roadside ILCS equipment with Transport Scotland and the three Local Authorities as required.

(viii) The Company shall consult and comply with Transport Scotland and the three Local Authorities to agree the scope and scale of the site acceptance testing of the roadside ILCS equipment.

(ix) The Company shall consult and comply with the requirements of the following bodies as appropriate, within their respective boundaries, regarding all aspects of lighting design and approvals, including those sections of existing lighting that the Company proposes to incorporate into the New Works:

(a) Transport Scotland with respect to the Motorway and Trunk Road Network;;

(b) Local Authorities with respect to those roads not included in 1.10.3 (xi) (a):

(i) Glasgow City Council

(ii) North Lanarkshire Council

(iii) South Lanarkshire Council

(x) The Company shall be responsible for the design, provision, management and installation of the permanent power supply, feeder pillars, chambers, columns and the like for all road and pedestrian lighting as well as trenching and laying of ducts.

(xi) The Company shall liaise with the DNO regarding the provision of power supplies, the upgrading of existing power supplies and requirements for their provision. Where the Company needs to organise a new / transfer of an existing DNO connection then the individual metering requirements are to be clarified in advance of the ordering of works.

(xii) The road lighting and electrical works design shall provide for the alteration of any existing road lighting and electrical works together with provision of new road lighting and electrical works.

(xiii) The lighting design for new lighting installations shall comply with the following criteria:

(a) design factors relative to the loading of lighting columns shall be applied in accordance with BSEN 40-5: 2002;

(b) a cleaning interval of three to four years shall be assumed to coincide with maintenance requirements of conventional light sources (lamp replacement, etc) and five years for LED light sources to coincide with electrical testing requirements; and

(c) for all lighting columns, a ‘‘K’’ value relative to exposure Class one shall be applied.

1.10.4 Transport Scotland Supplementary Guidance Documents

The Company shall take cognisance of the following Transport Scotland guidance documents in their design and provision of road lighting and electrical Works.

(i) LDS8001 07 – Roadside Electrical Assets and Lighting Identification System;

(ii) LDS8004 09 – Roadside Electrical Assets and Lighting Health & Safety File Requirements with Model Forms;

(iii) LDS8005 09 – Electrical Inspection and Testing of Lighting and Associated Electrical Assets and Installations with Model Forms;

(iv) LDS8006 09 – Electricity Supplies to Roadside Electrical Assets and Lighting;

(v) LDS8013 09 – Guidance on making Roadside Electrical Assets obsolete, redundant or derelict;

(vi) LDS8014 09 – Competency Requirements Relating to Work on Transport Scotland’s Roadside Electrical Assets and Lighting;

(vii) LDS8017 09 – Special Requirements for Local Authority Roadside Electrical Assets;

(viii) LDS8018 09 – Guidance on Sustainability in Relation to Roadside Electrical Assets and Lighting;

(ix) LDS8023 09 – Electrical Maintenance Guidelines;

(x) LDS8025 09 – Typical Drawings for Roadside Electrical Assets.

1.11 Scotland Gas Networks

1.11.1 The Company shall provide a pipe bridge crossing the existing 250mm dia. gas pipeline which lies below the access track to the new proposed SUDS treatment facility to the north of Raith Interchange. The pipe bridge shall conform to IGEM/TD/1 Ed 5, *“Steel Pipelines and Associated Installations for High pressure Transmission”,, Oct 2010*.

1.11.2 SUDS pond overflow routes, in particular adjacent to the M73 and Blantyre Farm Road, shall not be designed to pass across the line of SGN pipelines without prior consultation and consent from SGN plant protection department.

2. Structures General Requirements

2.1 General

2.1.1 The design of Structures shall, as a minimum, be in accordance with the requirements of the Structures Design Basis in APPENDIX I, the DMRB and Transport Scotland Interim Amendments.

2.1.2 All structures shall undergo a Category 3 design check as defined by BD2 Technical Approval of Highway Structures. The design checking of all Structures shall be in accordance with the requirements of the Structures Design Basis in APPENDIX I, the DMRB and Transport Scotland Interim Amendments.

2.1.3 For the purposes of these New Works Requirements, in addition to Structures listed in APPENDIX H, Gantries, culvert headwalls, pier protection, closed circuit television ("**CCTV**") supports, high mast lighting supports and variable message sign ("**VMS**") substructures and superstructures shall be regarded as Structures. The design of CCTV supports shall be to the same parameters as high mast lighting supports.

2.1.4 The design of the New Works for all Structures over or adjacent to railway lines shall be in accordance with the relevant European and National standards, statutory and Health and Safety Executive ("**HSE**") / Office of Rail Regulation ("**ORR**") requirements, and the relevant Network Rail Group and Line Standards. The Company shall consult and comply with the requirements of Network Rail and / or any other relevant railway Statutory Undertaker or owner / operator.

2.1.5 The Company shall ensure that the design of the New Works shall comply with the requirements of, Network Rail and / or any other relevant railway undertaker or owner / operator. With the exception of Structure S105 it is envisaged that construction and / or modification of all Structures over railway lines will be undertaken using 'Rules of the Route' possessions for Network Rail lines or other agreed possessions for lines owned / operated by others. Other than noted below no disruptive possessions have been pre-booked. The Scottish Ministers understands (without guarantee or warranty) that it is the policy of Network Rail to allow disruptive possessions only when it has been demonstrated that the work cannot be completed using non-disruptive possessions. Disruptive possessions which have been pre-booked for the construction of Structure S105 are detailed in the Particular Requirements for that structure and will be subject to confirmation through the Company's consultation with Network Rail.

2.1.6 The Company shall consult and comply with the requirements of the Scottish Environment Protection Agency (SEPA) with regard to the design, construction, completion and maintenance of all Structures adjacent to or otherwise affecting watercourses. The Company shall provide the Scottish Ministers with the completed Consultation Certificate, in accordance with Section 8 of PART 5 of these New Works Requirements.

2.1.7 The Company shall consult and comply with the requirements of Statutory Undertakers and owners of Private Apparatus including, but not limited to:

(a) Scottish Water;

(b) Scottish Power;

(c) Scotland Gas Networks;

(d) BT;

(e) Everything Everywhere (formerly known as T Mobile);

(f) Trafficmaster

(g) Virgin Media; and

(h) Cable and Wireless;

in relation to the design for the layout and location of apparatus, over, through and adjacent to Structures and the method of access to such apparatus.

The Company shall provide the Scottish Ministers with the completed Consultation Certificate in accordance with Section 8 of PART 5 of these New Works Requirements.

2.1.8 All structures shall be designed to prevent unauthorised access to the bottom flanges of steel or concrete girders and beams.

2.2 Location and Description of Structures

2.2.1 The approximate locations and brief descriptions of the principal Structures in the design of the New Works shall be as described in APPENDIX H.

2.2.2 The Particular Requirements for Structures are set out in Section 3.

2.3 Design Loading

2.3.1 The design loading for all Structures shall be as described in APPENDIX H.

2.4 Design Headroom

2.4.1 Unless otherwise stated in APPENDIX H, the design of Structures shall provide a minimum headroom of 5.3 metres measured to the soffit of an overbridge above the carriageways, central reserve or verges, as defined in Table 6-1 of TD27 in the DMRB.

2.5 Road Cross Section at Structures

2.5.1 Carriageway and verge widths at Structures shall be as described in APPENDIX H.

2.6 Parapets and Wind Barriers

2.6.1 All parapets and other road restraint systems on Structures including vehicle parapets, pedestrian parapets and pedestrian protection at headwalls, wingwalls and retaining walls shall be in accordance with Series 400 of the Specification, BS EN 1317 and TD 19 of the DMRB, as described by Transport Scotland Interim Amendment No. 39 (TS IA 39).

2.6.2 Vehicle parapets shall be compatible with the vehicle restraint systems to which they are, or shall be, connected in accordance with Section 1.4.

2.6.3 New vehicle parapets shall extend at least two panels or six metres, whichever is the greater, beyond the top of the slope intersecting line.

2.6.4 Steel parapets shall be unpainted and galvanised with a minimum coating finish of 100 microns. If painting of steel parapets is required, prior to painting they shall receive appropriate treatment to aid paint adhesion as stated in the Schedule 2 Part 4,Table 19/1. The colour of the paint protection system shall be submitted to the Scottish Ministers for approval.

2.6.5 Unless otherwise stated, vehicle containment parapets of aluminium, concrete construction or combined metal and concrete construction shall not be permitted on Structures except for road bridges over rail infrastructure where concrete H4A parapets shall be permitted.

2.6.6 Where stainless steel parapets or handrails are required, these shall be designed to be anti-vandal and anti-theft to the satisfaction of the Scottish Ministers.

2.7 Structural Form

2.7.1 The form of new Structures shall be such that consistency of material, form and finish shall be achieved throughout the New Works giving the appearance of a 'family' of Structures.

2.7.2 Unless otherwise permitted in Section 3 bridges shall be of an open aspect, having a constant superstructure thickness (unless otherwise permitted). End supports shall have an exposed height below deck soffit level of not greater than 2.5 metres unless otherwise permitted in Section 3.

2.7.3 The inclined surfaces in front of the superstructure end supports shall maintain continuity of the gradient of adjacent earthworks slopes.

2.7.4 Haunched ends shall be permitted to bridge deck soffits subject to an aesthetic review by the Scottish Ministers. Straight triangular haunches to bridge deck soffits shall not be permitted.

2.7.5 Unless otherwise specified, for new Structures the design of the New Works shall provide deck edges with suitable cantilevers as follows:

(a) all cantilevers shall be a constant dimension over the length of the superstructure;

(b) the minimum width of cantilever shall be equal to or greater than 0.7 times the depth of deck subject to a minimum cantilever of 500 millimetres and a maximum cantilever of 2500 millimetres;

(c) the cantilever width shall be measured from the outside edge of the parapet edge beam to the outermost edge of the deck soffit below.

(d) the depth of deck shall be measured from the underside of the beam / slab soffit to the top of the top slab; and

(e) where deck edges and cantilevers of existing Structures shall be reconstructed, the existing cantilever width shall not be reduced.

2.7.6 The use of leaf piers shall not be permitted unless otherwise permitted in Section 3.

2.7.7 Piers shall not be located in the central reserve of a carriageway unless otherwise permitted in Section 3.

2.7.8 Where the design of the New Works includes prefabricated elements including, but not limited to, precast concrete beams or steel girders as main members in deck construction, the deck shall be made structurally continuous under live load over intermediate piers.

2.7.9 Where the design of the New Works includes a transverse diaphragm over intermediate piers, it shall be formed within the depth of the deck with no extension below the deck soffit unless otherwise permitted in Section 3.

2.7.10 The use of a pier crosshead beam in the design shall not be permitted unless otherwise permitted in Section 3 .

2.7.11 All wingwalls, retaining walls and bridge decks shall have copes with a constant 2.5 per cent crossfall.

2.7.12 The use of gabions shall not be permitted in any part of the Design and the Permanent New Works.

2.7.13 Structures Over Waterways

2.7.13.1 The design for all burn, stream and river Structures and the like shall include for ledges as required in Volume 10 of the DMRB and as defined elsewhere in these New Works Requirements, to ensure safe passage of mammals when the watercourse is in spate.

2.7.13.2 For the purposes of the design of the New Works, spate shall be assumed to be the flood flow for a storm with a return period of 25 years.

2.7.13.3 Where the burn, stream or river or otherwise is subject to tidal influence, spate flow levels shall be the peak flow levels which would occur during a storm with a return period of 25 years simultaneous with a tidal event with a high water level of mean high water spring.

2.7.13.4 Manholes shall be provided to culverts at locations along the length of the culvert at spacings not more than 50 times the diameter / clear span of such culvert subject to a maximum spacing of 90 metres.

2.7.13.5 The design of the burn, stream and river Structures and the like shall provide for the security of safety harnesses for inspection and maintenance purposes.

2.7.13.6 The design and selection of clear span for waterway Structures shall be such that the land adjacent and upstream of the Structures shall not suffer inundation under design flood conditions.

2.7.13.7 Structures over waterways shall be designed to accommodate the flood flow for a storm with a return period of 200 years.

2.7.13.8 The design for all burn, stream and river Structures shall in addition be in conformance with the design of the New Works Guidance Booklet: *River Crossings and Migratory Fish* - A Consultation Paper produced by the Scottish Executive (April 2000).

2.7.13.9 Where it is proposed to modify or extend existing Structures over waterways the Design shall ensure that the existing cross-section is maintained as a minimum.

2.7.13.10 The minimum span of any new Structure shall not be less than the existing Structure it is replacing.

2.7.13.11 Where an Underpass is combined with a watercourse crossing, the Underpass shall be separated from the watercourse using a 1.5m high parapet.

2.7.14 Segmental Construction

2.7.14.1 Segmental construction is only to be used following consultation with the Bridges Branch at Transport Scotland.

2.7.14.2 Where segmental construction is adopted the tendons shall be external and replaceable without damage to either the tendons or the Structure. In addition adequate provision shall be made for the inspection and maintenance of the tendons.

2.7.14.3 To avoid second order effects due to beam deflections between points where the tendons are fixed, external tendons shall be restrained transversely relative to the concrete section at centres not exceeding 12 times the minimum depth of the beam between the fixing points.

2.7.14.4 In the absence of test results or other investigation justifying smaller values, the radius of curvature of tendons in the deviators shall not be less than the following values:

Tendon (strand number – size)	**Minimum radius (metres)**
19 -13 and 12 – 15 millimetres	2.5
31 -13 and 19 – 15 millimetres	3.0
55 -13 and 37 – 15 millimetres	5.0

2.7.15 The Company shall ensure that the supplier and installer of prestressing tendons shall be fully certified in accordance with the UK Certification Authority for Reinforcing Steels ("**CARES**") Certification Scheme for the supply and Installation of Post-tensioning Systems in Concrete Structures, in accordance with CARES Appendix 2a(i) or equivalent.

2.7.16 The Company shall ensure that the supplier and installer of grouting for post-tensioning systems shall be fully certified in accordance with the CARES Certification Scheme for Void Grouting of Post-tensioning System in Concrete Structures in accordance with CARES Appendix PT2 (a) v or equivalent.

2.7.17 The design of the New Works and construction of post-tensioned concrete shall comply with the requirements and recommendations provided in the latest edition of Concrete Society Technical Report No 47 *Durable Post-Tensioned Concrete Bridges* unless stipulated otherwise in these New Works Requirements.

2.7.18 The Company shall carry out a full-scale grout trial in accordance with the Specification and the latest edition of the Concrete Society Technical Report No 47 *Durable Post-Tensioned Concrete Bridges*, prior to construction of any in situ post tensioned bridges.

2.7.19 A full-scale grout trial shall be to the profile of a typical tendon in each Structure and shall be over the full length of the tendon contained in each Structure design.

2.8 Structural Finish

2.8.1 Finishes to Structures shall be such that a consistency is achieved throughout the New Works.

2.8.2 All exposed in situ structural concrete constituents shall be supplied from a single source and shall ensure a consistency of colour and exposure.

2.8.3 Plain concrete finishes shall not be permitted for large areas of exposed vertical surfaces except for the interior and wing walls of drainage culverts.

2.8.4 All exposed vertical concrete surfaces on reinforced concrete bankseats, wingwalls, abutment walls, leaf type piers, retaining walls and interior

surfaces of box underpasses, shall have a patterned profile type finish which shall be consistent throughout the scheme.

2.8.5 The patterned profile shall comprise 40 millimetres deep vertical rebates, 200 millimetres wide at the inner most face of the rebate tapering to 250 millimetres wide at the outermost face of the rebate. Rebates shall be symmetrical and be spaced at 500 millimetre centres.

2.8.6 In all cases where a patterned profile finish shall be provided for vertical elements, a plain concrete border 500 millimetres wide shall be provided.

2.8.7 Concrete finish class F1 and F2 as defined in the Specification shall not be permitted on any exposed concrete surface.

2.8.8 Exposed concrete arises shall be finished with a 25 millimetre by 25 millimetre chamfer unless otherwise specified.

2.8.9 Where steel universal beam, plate girder or box construction is adopted:

a) splices, where provided in internal spans, shall be positioned symmetrically about the centre line of the span;

b) splices, where provided in end spans, shall be positioned a distance from the adjacent pier proportional to the distance from the pier to a splice, if provided in the adjacent span, in the ratio of the end span to adjacent span. Where no splice is provided in the adjacent internal span, the splice in the end span shall be positioned to suit the design of the end span;

c) with the exception of bearing stiffeners, intermediate stiffeners shall not be permitted on the outer face of steel universal beam and plate girders at the edge of the deck;

d) where steel box construction is adopted the external surfaces of the boxes shall be free of both intermediate stiffeners and / or bearing stiffeners; and

e) the use of bolted splices on external members shall not be permitted. Only full strength butt welds shall be allowed.

2.8.10 The interior surfaces of accessible steel box sections shall be painted. The paint colour code shall be 10C33 to BS 4800 Yellow.

2.9 Service Ducts

2.9.1 The design of the New Works shall include the services and service duct requirements specified in APPENDIX H.

2.9.2 The design of all service ducts shall make due allowance for anticipated settlement of embankments and structural elements.

2.9.3 Service ducts, pipes and the like shall not be exposed in the finished Structure.

2.9.4 Wherever possible, service ducts shall be accommodated within the raised verges across the bridge superstructure and shall be surrounded with Class C28/35 fibre reinforced air entrained concrete as defined in Section 2.12.

2.9.5 Where service ducts are accommodated in raised verges across the bridge superstructure, the minimum depth of concrete cover over the duct shall be 75 millimetres and the minimum width of concrete between ducts shall be 50 millimetres.

2.9.6 Where the design of the New Works requires the use of service troughs, the troughs shall be fully waterproofed, inspectable and positively drained. In addition, sufficient space around services shall be agreed with the service authority to enable future inspection, maintenance and replacement of the service.

2.9.7 Ducts shall be suitably sleeved at any expansion joints to prevent the ingress of water.

2.9.8 The sleeves shall be capable of carrying accidental actions from vehicles on the bridge in accordance with Eurocode BS EN 1991-2.

2.9.9 Ducts, whether empty or containing services, shall be sealed to prevent the ingress of water.

2.9.10 All apparatus carried by bridge decks shall be replaceable without disruption to, or removal of the structural concrete or the waterproofing system.

2.9.11 Notwithstanding any other provisions of the Agreement, ducts within bridge decks shall be of a minimum 100 millimetres diameter.

2.9.12 The location of apparatus through or adjacent to Structures shall meet the requirements of the Statutory Undertakers and any other companies.

2.9.13 Access chambers shall be provided at each end of each Structure carrying apparatus and shall be so designed to curtail passage of water along ducts.

2.9.14 Each service duct chamber shall be suitably drained. Covers and frames for service duct access chambers shall conform with Class D400 and Class B125 to BS EN 124, be watertight and have a strength class appropriate to their location.

2.10 Structural Drainage

2.10.1 The design of all drainage shall make due allowance for anticipated settlement of embankments and structural elements.

2.10.2 Road drainage shall not be continuous across bridge superstructures.

2.10.3 Systems for the drainage of surface water from the superstructure shall be so designed that water shall not be allowed to fall freely from the superstructure.

2.10.4 Drainage pipes shall not be exposed in the finished Structure.

2.10.5 Drainage systems shall not contain details which shall be integral with either the superstructure or sub-structure of any Structure, such as downpipes cast into abutments.

2.10.6 Bridge decks shall be provided with an adequate surface water drainage system, minimum diameter 100 millimetres, which shall be capable of being rodded from both ends. The maximum distance between rodding points shall be 40 metres.

2.10.7 Drainage pipes shall be suitably sleeved at any expansion joints to prevent the ingress of water.

2.10.8 Holes shall be provided to drain the voids of superstructures. The holes shall be formed such as to prevent passage of water along the underside of the superstructure and shall discharge to an area remote from the carriageway.

2.10.9 A positive drainage system shall be provided to drain any water which may reach the deck waterproofing.

2.10.10 The top surfaces of bridge superstructures shall have adequate falls to prevent ponding thereon.

2.10.11 Bridge superstructures shall where possible project beyond the substructure such as to prevent water from running down piers and abutments.

2.10.12 Manholes shall be provided at each end of each Structure. Covers and frames shall conform with Class D400 of BS EN 124 and be watertight.

2.10.13 Drainage water from the superstructure of any Structure shall not be discharged into the drainage layer behind the sub-structure. Openings through the superstructure to allow the passage of surface water drainage shall not be permitted.

2.10.14 All earth retaining Structures shall incorporate a positive drainage system to earth faces which shall be connected to the road drainage system via a manhole or catchpit.

2.10.15 Positive drainage shall be provided to all underpasses in accordance with TD 36 of the DMRB.

2.10.16 Drainage systems shall be sufficiently robust to withstand damage during cleaning and shall be resistant to all commonly occurring chemical spillages.

2.10.17 Suitable drip checks shall be provided at all copings, parapet cantilevers, soffit edges, edge beams, superstructure ends over abutments and elsewhere to prevent runoff to the underside of Structures and adjacent vertical faces.

2.10.18 Groove type checks at the edge of bridge decks shall not be permitted.

2.10.19 For concrete parapet copes, drip checks shall take the form of 100 to 150 millimetres wide by 75 millimetres deep projections below the adjacent soffit.

2.11 Verges, Side Slopes and Paved Areas

2.11.1 Raised verge construction across bridge superstructures shall continue to the end of any wing walls, return walls, parapet extensions or retaining walls which are returned parallel to the carriageway related to the verge under consideration.

2.11.2 Verges abutting the bridge parapets shall be so designed as to provide a smooth transition between the Structures and embankments and between the parapets and adjoining vehicle restraint systems.

2.11.3 Raised verge construction across bridge decks shall consist of Class C28/35 fibre reinforced air entrained concrete as defined in Section 2.12. The surface finish shall be hot rolled asphalt, subject to compliance with Section 2.9.5, or have a brushed concrete surface finish to give a non-slip surface.

2.11.4 The minimum verge crossfall towards the carriageway shall be 2.5 per cent and any widened verges shall be adequately drained.

2.11.5 Kerb upstands across bridge decks shall be in accordance with TD27 of the DMRB.

2.11.6 Side slopes, verges and central reserve (excluding hard strips) below the plan area of all bridges, shall be surfaced with pattern imprinted concrete which shall provide a random stone pattern with a 200 millimetre wide flush finished concrete kerb all round. Construction joints shall be formed in straight lines at centres not greater than four metres throughout the pattern imprinted concrete area. Joints shall be parallel and at right angles to kerb lines with each panel having an aspect ratio not exceeding 1.5.

2.11.7 Carriageway surfacing over Structures shall be a minimum thickness of 120 millimetres including any additional protective layer to the waterproofing system in accordance with Transport Scotland Interim Amendment Number 24. An additional protective layer of sand asphalt shall only be provided when required by the individual waterproofing system.

2.12 Durability

2.12.1 General

2.12.1.1 Annex C1 of Transport Scotland Interim Amendment Number 39 in reference to BD 57, Design for Durability, and Transport Scotland Interim Amendment Number 23 shall be taken to be requirements for the design, execution and completion of all Structures.

2.12.1.2 Bridges with lengths not exceeding 60 metres and skews not exceeding 30 degrees shall be of integral construction and earth pressures shall be determined in accordance with the Structures Design Basis (APPENDIX I). All bridges shall be designed with a continuous superstructure.

2.12.1.3 Integral abutments which include bearings shall not be permitted.

2.12.1.4 In-span discontinuities, generally referred to as half joints, shall not be permitted in bridge superstructures.

2.12.1.5 The use of concrete hinges shall not be permitted unless otherwise specified in Section Appendix H.

2.12.2 Concrete

2.12.2.1 All structural concrete shall be designed concrete in accordance with BS EN 206-1 and BS 8500, subject to the requirements of these New Works Requirements and Transport Scotland Interim Amendment Number 23.

2.12.2.2 All exposed concrete surfaces in the New Works except internal faces of culverts carrying watercourses and drainage and all exposed concrete surfaces to new works to existing structures except internal faces of culverts carrying watercourses and drainage shall be impregnated in accordance with the requirements of BD 43 of the DMRB. This shall include all surfaces of reinforced or prestressed concrete which shall be exposed to the atmosphere in the completed New Works. Exposed concrete surfaces of existing structures shall be impregnated, as stipulated in the specification.

2.12.2.3 Any curing agents used shall be compatible with the surface impregnant.

2.12.2.4 All structural concrete shall have a minimum cement / combination content of 360 kilograms per cubic metre.

2.12.2.5 All structural concrete shall have a maximum water / cement ratio of 0.45.

2.12.2.6 All structural concrete above ground level, other than for precast prestressed concrete bridge beams, shall be air entrained as follows:

Maximum aggregate size	Minimum air content
20 millimetres	3.5 per cent
14 millimetres	4.5 per cent
10 millimetres	5.5 per cent

2.12.2.7 Other than where it is required for factory precast prestressed concrete bridge beams, structural concrete strength class C50/60 shall be permitted above ground level only if it is required for structural purposes. In this circumstances, concrete strength class C50/60 shall only be permitted subject to the prior approval of the Transport Scotland (Bridges Branch).

2.12.2.8 The design of all structural concrete for buried components, and any additional protective measures that may be required, shall ensure durability taking into account the design chemical class appropriate to the chemical composition of the soil and groundwater in addition to the stated strength requirements. Sulfate-resisting Portland cement may be required for the most aggressive design chemical classes.

2.12.2.9 Footway / verge infill concrete shall be placed such that shrinkage cracking is minimised. This shall require either restricting the length of pours or the introduction of crack inducers at discrete intervals for longer pours.

2.12.2.10 The following strength classes and cement / combinations shall apply to structural concrete for the locations indicated in Table 3.12.2 below:

Table 3.12.2 Permissible Cement Combinations and Minimum Strength Requirements

TS Application	Minimum Strength Class	TS Permitted Cement Combinations (refer to Table A.6 of BS 8500-1:2006)						
		CEM I	II A	IIB-S	IIB-V IIB + SR	IIIA IIIA + SR	IIIB IIIB +SR	IVB-V
Footway/Verge Infill Concrete	C28/35AF		√	√	√	√	†	√
In situ reinforced concrete above ground	C32/40 a.e. or C40/50		√	√	√	√	†	√
Site cast precast reinforced concrete	C32/40 a.e. or C40/50		√	√	√	√	†	√
Factory cast precast rc elements, e.g. box culverts, reinforced soil retaining wall panels etc.	C32/40 a.e. or C40/50	√ (C40/50 only)	√	√	√	√	†	√
In situ pre-stressed post tensioned concrete	C40/50		√	√	√	√	†	√
Factory cast pre-stressed concrete bridge beams	C40/50 or C50/60	√	√	√	√	√	†	√
Reinforced concrete below ground	C32/40	Depends on DC class. Refer to TS IA 23 and BS 8500-1						

Notes
† IIIB cement combination may be considered through Application for Departure from Standard
AF Air Entrained, Fibre Reinforced
a.e. Air Entrained (see 2.12.2.6)

2.12.2.11 Minimum concrete cover to reinforcement shall be appropriate to the most onerous exposure class at any particular location within a Structure for an

intended working life of at least 100 years. Tolerance Δc between the minimum cover and the nominal cover to allow for fixing precision shall be in accordance with Transport Scotland Interim Amendment Number 23.

2.12.2.12 To ensure that the designed minimum cover to reinforcement shall be achieved, the Company shall carry out a cover meter survey to finished concrete sections in accordance with Clause 1714 of the Specification within one day of removal of formwork, and shall submit the results to the Scottish Ministers within one further day.

2.12.2.13 The use of paint systems or the equivalent to reduce the minimum cover shall not be permitted.

2.12.2.14 The Company shall put in place curing procedures which shall include effective methods of monitoring the temperature differences within the concrete members.

2.12.2.15 The methods of curing and their duration shall be such that the concrete shall have satisfactory durability and strength and the member shall suffer a minimum of distortion, be free of excessive efflorescence and shall not cause, by its shrinkage, undue cracking in the Structure in excess of the acceptable flexural and early thermal cracking limits.

2.12.2.16 Reinforced concrete sections shall be designed such that they comply with the flexural and early thermal crack limits required by Eurocode BS EN 1992-2 for the relevant exposure conditions.

2.12.2.17 Exposed or debonded tendons at the ends of precast prestressed beams shall be protected against corrosion.

2.12.2.18 If voided concrete slab construction is adopted, then during the placement of concrete, the difference in level of the placed concrete on either side of the void formers shall be controlled to avoid movement of the formers and shall not exceed 150 millimetres.

2.12.2.19 Provision shall be made for compacting the concrete below void formers and for drainage of the formed voids. The drainage shall be formed in such a manner as to prevent passage of water along the underside of the deck and shall discharge to an area remote from the carriageway.

2.12.2.20 All buried concrete surfaces shall be treated with two coats of bitumen paint as specified in Clause 2004 of the Specification.

2.12.2.21 Accommodation / farm underpasses shall incorporate sacrificial concrete protection against diesel spillage, abrasion and animal fouling in accordance with the following:

a) a sacrificial concrete invert which is separate from the structural base slab of the underpass shall be provided across the full width of the floor to the following criteria:

i. surface finish and grade shall comprise of:

- 300 millimetres thick Type 1 sub-base to Clause 803 of the Specification
- 150 millimetres thick concrete to BS 5328 surfacing with expansion joints at 40 metre centres and contraction joints at four metre centres (see Drawings C1, C2 and C3 in Volume 3 of the MCHW). The surface finish shall be tamped or brushed.

ii. sufficient crossfall and longitudinal gradient shall be provided to minimise the risk of icing during winter;

b) sacrificial concrete shall be provided on the internal walls of underpasses extending from the structural base slab of the underpass to one third of the height of the underpass above the sacrificial concrete invert. In the case of reinforced concrete underpasses this may be provided as an additional 50 millimetres cover to the reinforcement and may be provided as part of a profiled patterned finish. A stepped profile will not be acceptable at a third height. In this case an additional 50mm cover shall be provided over the full height;

c) the requirement for sacrificial concrete protection in a(i) and a(ii) above shall be taken into account in the design of the New Works for the span and height of the underpass.

2.12.3 Steelwork

2.12.3.1 Structural steelwork, except for weathering resistant steels, shall be protected using a paint system appropriate to an 'Inland' environment and 'Difficult' access in accordance with Series 1900 of the Specification and shall meet the following minimum durability requirements:

a) no maintenance up to 12 years

b) minor maintenance from 12 years

c) major maintenance after 20 years.

2.12.3.2 The Company's proposed paint systems, including completed Specification Appendices shall be submitted to the Transport Scotland (Bridges Branch) prior to execution of any relevant part of the New Works. The Company shall not commence any painting Works before such consultation has taken place and the paint system and colour is approved by Transport Scotland (Bridges Branch). The Company shall provide the Scottish Ministers with the completed Consultation Certificate in accordance with Section 8 of PART 5 of these New Works Requirements.

2.12.3.3 All paint systems shall comply with the requirements of current Environmental and Health & Safety regulations and legislation.

2.12.3.4 The use of weathering steel shall be permitted.

2.12.3.5 Intermittent fillet welds shall not be permitted outwith areas that are completely protected from the adverse effects of weather.

2.12.3.6 The design of steelwork shall ensure the prevention of the accumulation of water, dirt and debris.

2.12.3.7 Exposed structural steelwork shall not be used in the substructures of Structures.

2.12.3.8 Where the design of the New Works includes transition slabs, stainless steel reinforcement, grade 1.4436 or 1.4462 to BS EN 10088 shall be used in connecting a transition slab to an abutment.

2.12.3.9 Transition slabs shall be treated as part of the superstructure with regard to application of the waterproofing system and the provision of either articulation or movement joints.

2.12.3.10 Reinforcement bridging joints, or items penetrating the concrete surface, and also subject to chloride contamination (e.g. dowel bars) shall be stainless steel Grade 1.4436 or 1.4462.

2.12.3.11 Any mechanical bearings, where permitted, shall be either steel with protection of steelwork against corrosion, or stainless steel, with the following minimum grades:

a) plates and flats shall be 1.4436 or 1.4462;

b) sliding surfaces shall be 1.4436 or 1.4462; and

c) fasteners shall have mechanical properties and dimensions that comply with grade A4-70 or A5-80. Chemical composition shall comply with grade 1.4436 or 1.4462.

2.12.3.12 Anchorages, including threaded anchorages, cast into concrete for attachments to Structures shall be stainless steel grade 1.4362, 1.4436 or 1.4462.

2.12.3.13 Fasteners for parapet anchorages shall be stainless steel with the following minimum grades:

a) holding down bolts, studs and nuts shall have mechanical properties and dimensions that comply with grade A4-80. Chemical composition shall comply with grade 1.4436 or 1.4462; and

b) washers shall be 1.4436 or 1.4462.

2.12.3.14 Provision shall be made to prevent electrolytic corrosion of dissimilar metals.

2.12.3.15 Temporary works shall not be attached to any part of the permanent Structure.

2.12.4 Waterproofing

2.12.4.1 Bridge deck waterproofing systems shall be in accordance with Transport Scotland Interim Amendment Number 24, shall have a current BBA Roads and Bridges Agrément Certificate and shall be capable of being non-destructively tested.

2.12.4.2 Waterproofing systems shall be independently tested in accordance with the Specification.

2.12.4.3 The independent testing organisation shall have current third party quality assurance certification.

2.12.4.4 The whole width of the bridge deck slab between parapet upstands to a height of 100 millimetres minimum above the adjacent deck slab shall be waterproofed.

2.12.4.5 In addition to those surfaces specified in the DMRB and elsewhere, the following concrete surfaces shall be waterproofed:

a) pier and abutment bearing shelves;

b) inaccessible areas which may be subject to leakage;

c) all internal faces of abutment galleries;

d) vertical faces at deck ends to a distance of 200 millimetre below the level of either the underside of the deck beams at the abutment or of

any associated construction joint in the abutment, whichever is the lower; and

e) where buried box sections are proposed in the design including accommodation underpasses, the bottom slab.

2.12.4.6 Further to the testing requirements of the Specification, Holiday testing as defined in the DMRB shall be carried out on the completed waterproofing to check for any discontinuity in the coating and for any thickness less than that specified by the manufacturer.

2.13 Maintenance and Inspection

2.13.1 Provision shall be made for future inspection and maintenance of all Structures throughout the design life of the Structures. All requirements of Health and Safety Legislation and other relevant requirements shall be observed in such provisions. Standards in excess of the minimum requirements shall be provided where possible.

2.13.2 Where bridge bearings shall be used they shall be replaceable without requiring the removal of any structural concrete or welding of structural steelwork.

2.13.3 Provisions shall be made to allow for jacking from the substructure during bearing replacement.

2.13.4 Replacement of bearings shall be possible whilst maintaining traffic flows over the Structure in accordance with the requirements of Section 5 of the Structures Design Basis contained in APPENDIX I.

2.13.5 Provision for access at Structures shall be made for the following purposes:

a) cleaning and painting;

b) maintenance and inspection;

c) jacking, removal / replacement of bearings;

d) removal / replacement of movement joints; and

e) inspection of closed cell and box members.

2.13.6 The design for all steel and concrete interfaces on a Structure shall permit ease of access for inspection and maintenance.

2.13.7 Where voided elements of bridge Structures, e.g. box girder decks, voided piers, voided abutment stems, inspection galleries and the like are provided, they shall be of sufficient size to allow internal inspection. Access shall be provided in accordance with the following:

a) access to the voids shall, where practicable, be from the underside of the bridge;

b) access points shall be placed in such positions as to give convenient access, and where their use would not cause interference to traffic;

c) all access points and access ways within the voids shall be suitably sized and designed to allow for the evacuation of a casualty on a stretcher and the like if necessary;

d) specific emergency routes and exits shall be identified clearly by signs and shall be provided with lighting;

e) access points to the voids, where provided, shall be carefully located and detailed so as to minimise their visibility to passing traffic;

f) access points to the voids shall not be permitted on surfaces visible on the main bridge elevation, with the exception of access doors and ancillary arrangements for accessing abutment inspection galleries;

g) all permanent services, equipment and the like shall be capable of withstanding the prevailing environmental conditions including ingress of dust and water and the natural movement of the Structure;

h) permanent access ladders or steps, as appropriate, shall be provided at changes in level within the voids;

i) access ladders and steps shall be provided with guardrails;

j) all walking surfaces shall be provided with a non-slip surface coating compatible with the waterproofing system and shall avoid details which create a risk of tripping and shall be self-draining;

k) permanent lighting with permanent power supply shall be provided for access routes and access chambers;

l) lighting levels shall be a minimum of 30 lux. Additional emergency lighting shall be provided in the Structure along emergency routes having a minimum intensity of 0.2 lux and having a separate battery operated power supply and warning notices and signs shall be provided to all mains power boards, valves and the like where the operation may affect the safety of persons using the voids of any such Structure;

m) all access points to galleries and voids and the like shall be capable of being secured from unauthorized access by means of lockable steel doors or grills;

n) public access to any facilities provided for bridge inspection or maintenance shall be prevented by means of suitable barriers, covers and the like and colonisation of accessible areas by plants, animals or birds shall be prevented by the application of suitable measures to be agreed with the Scottish Ministers; and

o) inspection platforms shall be provided in front of abutments to overbridges for both integral and non-integral Structures with the exception of structures where integral abutments of monolithic concrete construction are provided. Platforms shall be in accordance with the requirements of, CIRIA C543 *Bridge Detailing Guide* or similar detail, proposals for which shall be submitted to the Scottish Ministers in accordance with the Certification Procedure.

2.13.8 The Design shall ensure that the layout of and access to publicly and privately owned services and supplies shall meet the requirements of the relevant statutory bodies, Undertakers and any other companies as well as the requirements of these New Works Requirements.

2.14 Reinforced Soil

2.14.1 The Company shall consult and comply with the requirements of the Transport Scotland (Bridges Branch) with respect to the design of reinforced soil Structures (i.e. having a face greater than 70 degrees to the horizontal).

2.14.2 Precast concrete facing panels associated with reinforced soil Structures in the New Works shall be replaceable in the event of damage and shall have a patterned profile finish. The Company shall consult and comply with the requirements of the Transport Scotland (Bridges Branch) with respect to such works. The Company shall provide the Scottish Ministers Representative with the completed Consultation Certificate in accordance with Section 8 of Part 5 of these New Works Requirements.

2.14.3 Precast concrete facing panels shall comprise square or rectangular panels; cruciform units shall not be permitted.

2.14.4 The top edge of precast concrete facing units shall be finished with a continuous cope.

2.14.5 In the design of reinforced soil Structures, the Company shall take due cognisance of factors including, but not limited to:

(a) durability;

(b) vibration from road traffic;

(c) floods;

(d) water flows;

(e) replacement of facing panels; and

(f) stability following a vehicular fire and the like.

2.14.6 Where used in conjunction with a parapet the precast concrete facing panels shall extend to the underside of the parapet cope.

2.14.7 Reinforced soil abutments shall not be permitted.

2.14.8 The dimensional tolerances on completion of erection of reinforced soil Structures shall comply with the limitations given in APPENDIX L of these New Works Requirements. The design tolerances used shall be stated in the Structures Design Statement for each reinforced earth Structure.

2.14.9 Permanent reference points shall be provided on reinforced soil Structures to enable the extent of deformations which occur following completion of the New Works to be monitored.

2.14.10 Reinforced soil slopes (i.e. having a face not exceeding 70 degrees to the horizontal) shall be so finished that they are capable of supporting vegetation.

2.15 Corrugated Steel Buried Structures

2.15.1 The use of corrugated steel buried Structures to provide access for vehicular traffic through the Structure shall not be permitted.

2.15.2 The minimum durability requirement for corrugated steel buried Structures shall be for an aggressive environment.

2.15.2.1 All corrugated steel buried Structures shall have a sacrificial concrete invert protection. The invert shall extend across the full width of the floor and a third of the way up the sides of the Underpasses. This requirement shall be taken into account in the Design of the span and height of the Structure.

2.15.3 The ends of all corrugated steel buried Structure type culverts shall be provided with a structural headwall or a concrete ring beam of 300 millimetres minimum thickness. The concrete ring beam shall follow and finish flush with the slope of the adjacent earthworks.

2.15.4 Corrugated steel buried Structures shall be designed in accordance with BD 12 of the DMRB.

2.15.5 Corrugated steel buried Structures shall have a secondary protective coating system applied to permanently accessible surfaces, with a life to first maintenance of six years.

2.15.6 The secondary protective system shall not be taken into account in determining the sacrificial steel thickness, it shall be certified in accordance with BD12 of the DMRB and shall have a life to major maintenance of 20 years.

2.16 Existing Structures

2.16.1 Where it shall be proposed by the Company to incorporate any part of an existing Structure into the design of the New Works, it shall be the Company's responsibility to ensure the adequacy of such Structure within the design of the New Works and carry out all remedial works and strengthening required such that it meets all the necessary standards and certification requirements as set out in the Agreement.

2.16.2 Notwithstanding the requirements of Clause 2.16.1, all structures that are subject to structural modifications and/or additional lanes of traffic shall be assessed in accordance with Appendix J and strengthened if necessary to comply with the requirements of this Agreement. For the purposes of this clause, pier protection works to prevent vehicle collision impact loads on existing structures that are structurally independent of the existing structure shall not be deemed to be a structural modification of the existing structure.

2.16.3 The durability and serviceability limit state criteria defined within the DMRB and Eurocodes for new Structures shall not apply to existing structures or parts of existing Structures incorporated within the design of the New Works.

2.16.4 All existing Structures subject to structural modification as defined in 2.16.2 shall be assessed and, if required, strengthened in accordance with the assessment procedure detailed in APPENDIX J. In respect of bridge bearings, provided there is no evidence of cracking, structural failure or other instability, a qualitative assessment shall be acceptable. In respect of free-standing piers, a quantitative assessment shall be required. The contents of the assessment reports required in accordance with APPENDIX J shall be based on the requirements of BD 79 of the DMRB (Appendices E and F for bridges and retaining walls respectively).

2.16.5 Defects in existing Structures to be retained shall be assessed by the Company and all Category 1 and Category 2 defects shall be dealt with as described in Schedule 4: Part 2.

2.16.6 Where the parapets of existing Structures are to be replaced, the replacement parapets shall extend at least two panels or six metres, whichever is the greater, beyond the top of the slope intersecting line.

2.16.7 Where an existing Structure is to be extended or amended, the extended or amended Structure form and finishes shall match the existing Structure. The requirements for the extended or amended portions of the existing Structures shall be as for new Structures. Extensions to existing crib walling shall not be permitted; any extension of such structures shall be designed as a new Structure in accordance with these New Works Requirements.

2.16.8 Existing Structures that are to be abandoned or made redundant within the Site shall be demolished and removed by the Company.

2.16.9 Where an existing Structure shall be demolished, it shall be demolished to a minimum of one metre below finished ground level.

2.16.10 If an existing Structure shall be modified, the modifications shall be designed in accordance with these New Works Requirements.

2.16.11 Clause Deleted

2.16.12 Modifications to existing Structures shall not replicate detailing that is not compliant with the DMRB.

2.16.13 Where existing Structures are to be modified the interaction between the modified section and the existing Structure shall not adversely affect the short and long term integrity of both elements. Items to be considered shall include, but not be limited to:

a) differential settlement;

b) creep;

c) shrinkage;

d) differential deflection;

e) early thermal cracking; and

f) traffic induced vibrations, deflection and stresses.

2.16.14 Where maintenance painting of existing Structural steelwork shall be carried out, Structural steelwork shall be protected using a paint system appropriate to an 'Inland' environment and 'Difficult' access in accordance with Series 5000 of the Specification for Highway Works and shall meet the following minimum durability requirements:

a) no maintenance up to 15 years;

b) minor maintenance from 15 years; and

c) no major maintenance up to 20 years.

2.16.15 Maintenance painting of existing Structures shall be carried out in accordance with the requirements of BD 87 of the DMRB. As a minimum, existing structures which undergo Maintenance Painting shall receive a finishing (top) coat in accordance with Table 50/2 of Series 5000 of the Specification for Highway Works to all exposed surfaces of existing steelwork to ensure a consistent appearance over the structure.

2.16.16 The colour of the final paint coat on existing structures on which maintenance painting is carried out shall be Medium Grey 18 B 21 to BS 4800, or as otherwise directed by the Scottish Ministers.

2.16.17 The Company's proposed paint systems, including completed Specification Appendices shall be submitted to the Scottish Ministers in accordance with the Certification Procedure prior to execution of any relevant part of the New Works.

2.16.18 Where a Maintenance Painting Strategy is to be prepared in accordance with Section 3, the Strategy shall include but not be limited to the following:

(a) health & safety and environmental considerations;

(b) pre-specification overall survey including steel bearings where present;

(c) categories of failure of the existing paint systems;

(d) requirement for feasibility trials for proposed methods of surface preparation and proposed paint systems; and

(e) requirement selection and duties of painting inspection firm.

2.16.19 Where bearings and movement joints are to be replaced in a Structure the design of such replacement items shall be in accordance with the Eurocodes and the Structures Design Basis. In the design of such replacement items, an additional allowance of +2 degrees Celsius shall be made for climate change.

2.16.20 Where bearings are to be replaced in a Structure the Company shall propose and agree with the Scottish Ministers in accordance with the Certification Procedure the live load regime during the replacement of bearings when the Structure is supported on temporary jacks taking account of the Company's specific traffic management proposals during bearing replacement.

2.16.21 The Company shall identify substructure elements of existing structures which fail the assessment for collision loading in accordance with BD 48/93. Where necessary to meet the requirements of this Agreement the Company shall strengthen or protect those elements which fail to meet the assessment collision loading so as to be able to sustain the collision loads given in Table 2/1 of BD 48/93. Protection systems shall allow for thermal and other structural movements and the inspection and replacement of any structural bearings, including those at the base of columns.

2.17 Removal and Replacement of Existing Waterproofing

2.17.1 Surfaces exposed after the removal of existing waterproofing shall be inspected for either spalling or reinforcement corrosion and repaired in accordance with the Schedule 2 Part 4.

2.17.2 Areas contaminated with oil or grease or residue from the removed waterproofing system shall be cleaned with a suitable detergent.

2.18 Construction Tolerances in Structural Concrete

2.18.1 The tolerances stated in Clause 1770 AR of Appendix 0/1 of Schedule 2: Part 4 shall be adopted in the design, execution and completion of the New Works.

2.19 Road Lighting

2.19.1 Where the design of the New Works incorporates road lighting columns on bridge superstructures the Company shall ensure that the design of such columns ensures that they are located behind the traffic face of the bridge parapet at a minimum distance of the working width of the parapet.

2.19.2 Lighting columns shall not be located directly opposite bridge parapet posts.

2.19.3 The attachment of lighting columns to bridge superstructures by means of bracketed steel fixings shall not be permitted.

2.19.4 Wherever possible, street lighting columns shall be provided in line with columns or other intermediate substructures supporting the bridge superstructure.

2.19.5 The Company shall consult and comply with the requirements of the local authorities, as appropriate, in connection with the design of road lighting on Side Road Structures in their respective boundaries.

2.19.6 Vandal proof lighting systems shall be provided at all Public Underpasses.

2.19.7 All lighting provided at pedestrian/cycleway Underpasses shall provide a level of illumination in accordance with the recommendations of BS5489:Part 1.

2.20 Structures Design Statement

2.20.1 Prior to the commencement of the design, the Company shall submit a completed Structures Design Statement to the Scottish Ministers Representative, including a completed Annex E Choices and Options table, fully defining the design assumptions and parameters to be used in the design of each Structure.

2.20.2 Sample Structures Design Statements for Structures are provided in APPENDIX K.

2.20.3 Following completion of the design a final version of the Structures Design Statement (for Construction) shall be submitted to the Scottish Ministers Representative with the Design Certificate and Design Check Certificate, which shall be updated to record, in the Choices and Options table provided as an appendix to the Structures Design Statement, all decisions made by the Designer that affect the standard of the design of the New Works.

2.21 As Built Records

2.21.1 As built records shall comply with the requirements of BD62 of the DMRB. In addition, reference shall be made to the document “Transport Scotland Inspection Manual, Principal Inspections of Trunk Road Structures & Location System – March 2009”.

2.21.2 A Structures Management System Datasheet shall be compiled for each structure and provided to Transport Scotland (Bridges Team) one month prior to scheme completion.

3 Particular Requirements for Structures

3.1 Structure 101 Glasgow to Coatbridge Railway Bridge

3.1.1 The design for Structure 101 shall ensure compliance with the following:

(i) The existing structure shall be assessed and strengthened in accordance with Section 2.16.

(ii) The Company shall consult and comply with the requirements of Network Rail.

3.2 Structure 103 Baillieston Junction Retaining Wall

3.2.1 The design for Structure 103 shall ensure compliance with the following:

(i) The cope detail shall be consistent with that provided on all other Structures.

3.3 Structure 104 Braehead Farm Footbridge and Farm Access

3.3.1 The design for Structure 104 shall ensure compliance with the following:

(i) The use of intermediate piers shall be permitted except that these shall not be positioned within the central reserve of the new M8 Motorway.

(ii) The use of leaf piers shall be permitted subject to a maximum width of 6 metres.

3.4 Structure 105 Rutherglen to Coatbridge Railway Bridge

3.4.1 The design for Structure 105 shall ensure compliance with the following:

(i) The Company shall consult and comply with the requirements of Network Rail

(ii) The appearance of the structure shall be similar to that indicated by the artist impressions.

(iii) The following provisional rail possessions have been booked for 2014 - 14 day blockade over the Glasgow Fair preceded by 4 consecutive 54 hour week-end possessions commencing the first week-end in April.

(iv) Full height abutments are permitted.

(v) Central reserve piers are permitted.

(vi) The structure shall have 3 spans and be continuous over the piers.

(vii) The southern span shall have a minimum clearance between face of pier and abutment defined by 2 lines with the following end coordinates – line 1 E 269715.665 N 663769.593, E 269732.757 N 663752.073 Line 2 E 269675.162 N 663769.691 E 269692.808 N 663751.603 to allow for the provision of a future slip road.

(viii) The structure shall be designed to minimise the depth of the main longitudinal elements, which shall be of constant depth over the full length of the structure, to reduce the visual impact of the structure.

(ix) Where access units are provided for access to the main longitudinal elements the access units shall extend a minimum of 3.5m past the

main abutment bearings and their appearance as viewed from the M8 shall reflect the appearance of the main longitudinal elements.

(x) Bridge deck drainage only may be tied into the M8 drainage system.

(xi) The top of the wing walls shall at their highest point be at approximately beam soffit level.

(xii) The wing walls shall splay back from the line of the M8 by a minimum of 30 degrees and a maximum of 45 degrees.

(xiii) The minimum vertical clearance from bearing shelves etc. to the soffit of steelwork shall be 750mm. (To allow adequate clearance for maintenance and inspections)

(xiv) The minimum lateral clearance from ballast walls to the wing walls shall be 250mm. (To allow adequate clearance for maintenance and inspections)

(xv) A "architectural" recess shall be provided in the elevations to the abutments to give the same visual appearance as illustrated on Specimen Design drawing numbered M8/SPD/1600/S105/02.

(xvi) Transverse diaphragms over intermediate piers formed below the depth of the deck shall be permitted provided that such transverse diaphragms have a maximum width equal to the intermediate piers and no part of the transverse diaphragms protrude beyond the width of the intermediate piers. Any such transverse diaphragm shall have a form and finish consistent with the supporting piers.

(xvii) Pier crossheads shall be permitted provided that such pier crossheads have a maximum width equal to the intermediate piers and no part of the pier crossheads protrude beyond the width of the intermediate piers. Any such pier crosshead shall have a form and finish consistent with the supporting piers.

3.5 Structure 106 A752 Bargeddie Junction Overbridge

3.5.1 The design for Structure 106 shall ensure compliance with the following:

(i) The Company shall consult and comply with the requirements of Scottish Water. In particular embankment earthworks shall not be placed directly over the sewers. Sheet piling or similar shall be provided over the plan area of the bridge deck to allow Scottish water future access to the 1650mm diameter sewer.

(ii) Maximum exposed abutment height to be 5m.

(iii) "Central" piers will be permitted.

3.6 Structure 107A A752 Bargeddie Junction Luggie Burn Bridge

3.6.1 The design for Structure 107A shall ensure compliance with the following:

(i) The new structure and existing structure shall be made continuous such that the join shall be buried with a minimum of 1m of soil.

(ii) The foundations of the new structure shall not interfere with the flow of the existing water course.

3.7 Structure 107B A752 Bargeddie Junction Luggie Burn Retaining Wall

3.7.1 The design for Structure 107B shall ensure compliance with the following:

(i) The wall shall take the form of a reinforced soil slope which shall be constructed at such an angle and with a form of construction that can support rough grass vegetation. Other than as described below hard facings shall not be permitted.

(ii) The top of the reinforced slope shall make provision for supporting a vehicle parapet and for the location of future services. The maximum depth of any wall supporting the parapet and allowing for future services, excluding parapet cope, shall be 2m.

3.8 Structure 108 Bargeddie Footbridge

3.8.1 The design for Structure 108 shall ensure compliance with the following:

(i) The use of intermediate piers shall be permitted except that these shall only be positioned between the new M8 Motorway and the A8 APR and not within the central reserve of either carriageway .

(ii) The use of leaf piers shall be permitted except that they shall not project beyond the outer face of the bridge deck.

(iii) The structure shall be designed to accommodate the loading effects of future provision of a glazed (solid face) enclosure. This requirement shall apply to the full length of those spans over roads and any adjacent spans to provide for such enclosure to extend a minimum of 5.0 metres beyond the edge of the nearest carriageway. The Conceptual Design drawings shall illustrate the proposed form of this enclosure.

(iv) CCTV cameras shall be provided to cover the full extent of the bridge including approach ramps and stairs.

(v) The Company shall consult and comply with the requirements of North Lanarkshire Council.

3.9 Structure 110 Bankhead Farm accommodation Bridge

3.9.1 The design for Structure 110 shall ensure compliance with the following:

(i) The maximum height of exposed abutment permitted shall be 5.6 metres for the south abutment and 3.6m for the north abutment.

(ii) The adoption of “central” piers shall be permitted subject to the requirements of clause 2.7.2.

3.10 Structure 111 Shawhead Farm Accommodation Bridge

3.10.1 The design for Structure 111 shall ensure compliance with the following:

(i) The west verge shall be infilled with 250mm minimum depth landscape quality top soil with an added water retention medium and seeded in accordance with the environmental section of this document.

(i) A 500mm high opaque screen shall be provided to both parapets.

(ii) The use of leaf piers shall be permitted subject to a maximum width of 6 metres.

(iii) "Central" piers will be permitted.

3.11 Structure 112 Shawhead Junction

3.11.1 The design for Structure 112 shall ensure compliance with the following:

(i) The new structure shall reflect the structural span arrangement of the existing bridge.

(ii) The use of leaf piers shall be permitted.

(iii) The maximum exposed abutment height shall be 1.5m..

(iv) Any longitudinal joint between the new and old structures shall be located within the central reserve and shall be water tight.

(v) The parapet and edge beams on the existing structure shall be replaced.

(vi) Existing deck waterproofing and surfacing shall be replaced.

3.12 Structure 113 Shawhead Footbridge No. 2

3.12.1 The design for Structure 113 shall ensure compliance with the following:

(i) The use of leaf piers shall be permitted except that they shall not project beyond the outer face of the bridge deck.

(iii) The structure shall be designed to accommodate the loading effects of a future provision of a glazed (solid face) enclosure. This requirement shall apply to the full length of those spans over roads and any adjacent spans to provide for such enclosure to extend a minimum of 5.0 metres beyond the edge of the nearest carriageway. The Conceptual Design drawings shall illustrate the proposed form of this enclosure.

(iv) CCTV cameras shall be provided to cover the full extent of the bridge including approach ramps and stairs.

(v) The Company shall consult and comply with the requirements of North Lanarkshire Council.

3.13 Structure 114 Shawhead Junction A725 Bridge

3.13.1 The design for Structure 114 shall ensure compliance with the following:

(i) The maximum exposed height of the south abutment shall be 3m.

(ii) The maximum exposed height of the north abutment shall be 6m

(vi) The adoption of "central" piers shall be permitted subject to the requirements of clause 2.7.2.

3.14 Structure 115 Shawhead Footbridge No. 1

3.14.1 The design for Structure 115 shall ensure compliance with the following:

(i) The maximum exposed height of abutments shall be 4.5 metres.

(ii) The Structure shall be designed to accommodate the loading effects of a future provision of a glazed (solid face) enclosure. This

requirement shall apply to the full length of those spans over roads and any adjacent spans to provide for such enclosure to extend a minimum of 5.0 metres beyond the edge of the nearest carriageway. The Conceptual Design drawings shall illustrate the proposed form of this enclosure.

(iii) CCTV cameras shall be provided to cover the full extent of the bridge including approach ramps and stairs.

(iv) The Company shall consult and comply with the requirements of North Lanarkshire Council.

3.15 Structure 117 Shawhead Junction North Road Link Bridge (North)

3.15.1 The design for Structure 117 shall ensure compliance with the following:

(i) Central reserve piers shall be permitted.

3.16 Structure 119 North Calder Water Underbridge

3.16.1 The design for Structure 119 shall ensure compliance with the following:

(i) The appearance of the structure shall be similar to that indicated by the artist impressions.

(ii) The structure shall have a single clear span of approximately 70m as bounded by the following coordinates.

E 273567.798 N 662371.594

E 273603.251 N 662274.309

E 273642.094 N 662358.477

E 273672.657 N 662274.708

(v) Reinforced soil slopes (45^0) shall be provided where possible to surround the abutments. The top of the slopes should extend some 10m to 15m from the abutment corners on the south west and north east sides to form a curve prior to merging with the existing ground profile.

(vi) The clearance between the soffit of the bridge beams and the reinforced soil slope should be 2.5m at outer elevations.

(vii) Where possible retaining structures shall take the form of reinforced soil slopes.

(viii) Reinforced soil slopes should be planted or otherwise treated in accordance with the environmental requirements of these New Works Requirements. Where conditions below the structure would not support grassland vegetation seeding may be omitted and a hard stone/gravel facing provided.

(ix) Inspection Access to the west abutment gallery shall be from the east abutment inspection gallery via permanent walkways between the central group of girders The access point to the east abutment gallery shall be from below the bridge deck and near the south access track.

(x) Structural steelwork shall be formed from weathering steel.

(xi) Intermediate stiffeners or bolted splices shall not be permitted on the outer elevations.

(xii) Provision shall be made to allow principal inspections to be carried out at the required intervals in a safe manner. Provision shall be made to allow minor maintenance work to be carried out to the bridge deck in a safe manner. Scaffold or other access equipment supported from the valley floor shall not be permitted. On site equipment which requires regular inspections and maintenance shall not be permitted.

(xiii) Permanent access walkways shall have a minimum life to first maintenance of 60 years. The side of the bottom flange of the girders shall be visible from the walkways.

3.17 Structure 120 Carnbroe Road Accommodation Bridge

3.17.1 The design for Structure 120 shall ensure compliance with the following:

(i) The maximum exposed height of abutments shall be 3 metres.

(ii) The adoption of “central” piers shall be permitted subject to the requirements of clause 2.7.2.

3.18 Structure 121 Motherwell to Coatbridge railway Bridge

3.18.1 The design for Structure 121 shall ensure compliance with the following:

(i) The Company shall consult and comply with the requirements of Network Rail.

3.19 Structure 122 Carnbroe Footbridge

3.19.1 The design for Structure 122 shall ensure compliance with the following:

(i) The use of leaf piers shall be permitted except that they shall not project beyond the outer face of the bridge deck.

(ii) The Structure shall be designed to accommodate the loading effects of a future provision of a glazed (solid face) enclosure. This requirement shall apply to the full length of those spans over roads and any adjacent spans to provide for such enclosure to extend a minimum of 5.0 metres beyond the edge of the nearest carriageway. The Conceptual Design drawings shall illustrate the proposed form of this enclosure.

(iii) CCTV cameras shall be provided to cover the full extent of the bridge including approach ramps and stairs.

(iv) The Company shall consult and comply with the requirements of North Lanarkshire Council.

3.20 Structure 123 Eurocentral Junction West Bound A8 APR Bridge

3.20.1 The design for Structure 123 shall ensure compliance with the following:

(i) Central reserve piers shall be permitted.

3.21 Structure 125 Chapelhall Junction B799 Bridge

3.21.1 The design for Structure 125 shall ensure compliance with the following:

(i) Central reserve piers shall be permitted.

3.22 Structure 128 Badger Underpass

3.22.1 The design for Structure 128 shall ensure compliance with the following:

(i) 4 number light wells to be provided in verges of the roads over the structure with lockable galvanised open mesh gratings sufficient to prevent unauthorised access. Light wells shall be minimum 3m x 3m in plan.

(ii) Pipes to be laid at fall to allow drainage.

3.23 Structure 129 Newhouse junction Fairybank Underpass Extension

3.23.1 The design for Structure 129 shall ensure compliance with the following:

(i) The existing structure shall be assessed and strengthened in accordance with Section 2.16.

(ii) Clearances below the existing structure to be maintained through extended structure.

3.24 Structure 130 Newhouse Junction Bothwellshields Culvert

3.24.1 The design for Structure 130 shall ensure compliance with the following:

(i) The Structure shall be assessed and strengthened in accordance with Section 2.16.

3.25 Structure 131 Accommodation Bridge

3.25.1 The design for Structure 131 shall ensure compliance with the following:

(i) The Structure shall be assessed and strengthened in accordance with Section 2.16.

3.26 Structure 132 Accommodation Bridge

3.26.1 The design for Structure 132 shall ensure compliance with the following:

(i) The Structure shall be assessed and strengthened in accordance with Section 2.16.

3.27 Structure 133 Accommodation Bridge

3.27.1 The design for Structure 133 shall ensure compliance with the following:

(i) The Structure shall be assessed and strengthened in accordance with Section 2.16.

3.28 Structure 201 Raith Underpass

3.28.1 The design for Structure 201 shall ensure compliance with the following:

(i) The underpass shall be an open structure from west verge to east verge.

(ii) Discrete props at the wall head or intermediate points if required will be permitted.

(iii) The structure shall be water tight against water ingress from the ground behind or below the structure.

(iv) Where precast concrete or other form of cladding is to used in the design for structure S201 the form and finish shall be to the approval of the Scottish Ministers, and;

a) Panels shall be removable and replaceable in the event of damage without affecting the structure.

b) The panels shall be adequately fire resistant in the event of a carriageway vehicle fire or other fire incident so as not to present an additional hazard.

c) The panels shall not be less robust or durable than equivalent precast concrete panelling. The panels should be able to resist minor impacts from vehicles without presenting a hazard.

d) A 150mm minimum cavity shall be provided between the panel and the piles or other structural wall element.

e) The cladding panels shall be attached using stainless steel fixings accessible from the front face. Lifting points shall be provided.

(v) The service trenches shall be infilled with a porous material and covered with removable precast concrete covers. The covers shall be designed to span the trench and carry accidental wheel loads. The individual covers shall be provided with lifting points.

(vi) A VRS shall be provided between the service trench and the edge of carriageway.

(vii) Any concrete ground slab or similar structure including interior of service trenches and the like shall be protected with a bridge deck waterproofing system.

(viii) Surfacing shall be a minimum of 125mm in depth.

(ix) The Company shall undertake a risk assessment for the Design and provide a suitable protection barrier at the wall heads which shall, as a minimum, be of metal construction and 1.0m high. .

(x) 4 no 100mm diameter ducts shall be provided within a service trench for the provision of future services. Draw pits shall be provided at 50m intervals.

(xi) Perforated drainage pipes for sub-surface/seepage water shall be provided within the service trenches.

3.29 Structure 202 Raith East Footbridge

3.29.1 The design for Structure 202 shall ensure compliance with the following:

(xii) The use of leaf piers shall be permitted except that they shall not project beyond the outer face of the bridge deck.

3.30 Structure 203 Raith West Footbridge

3.30.1 The design for Structure 203 shall ensure compliance with the following:

(i) The use of leaf piers shall be permitted except that they shall not project beyond the outer face of the bridge deck.

3.31 Structure 204 Bothwell House Accommodation Bridge

3.31.1 The design for Structure 204 shall ensure compliance with the following:

(i) The use of leaf piers shall be permitted subject to a maximum width of 5 metres.

(ii) The use of central reserve piers shall be permitted.

3.32 Structure 205 Bellshill Bypass Extension to Bridge Over Railway at Bogsbrae

3.32.1 The design for Structure 205 shall ensure compliance with the following:

(i) The Company shall consult and comply with the requirements of Network Rail

(ii) The existing structure shall be assessed and strengthened in accordance with Section 2.16.

3.33 Structure 401 Halliburton Footbridge Pier Protection M8 9-10 F75

3.33.1 The design for Structure 401 shall ensure compliance with the following:

(iii) The Company shall ensure that the actions from the pier protection system shall not adversely affect the existing bridge foundations. The Company shall carry out such assessments of the structure including the foundations as may be required to confirm that no adverse effect on existing foundations occurs.

(iv) An Access Roadway for Emergency vehicles shall be provided to the rear of verge piers in accordance with TD 27/05 Annex B, Figure 3 where a discontinuous hardshoulder is to be adopted. Any retaining structure required in connection with this provision shall be treated as structure for Design and Certification in accordance with this Agreement.

3.34 Structure 402 Wardie Road Bridge Pier Protection M8 9-10 50

3.34.1 The design for Structure 402 shall ensure compliance with the following:

(i) The Company shall ensure that the actions from the pier protection system shall not adversely affect the existing bridge foundations. The Company shall carry out such assessments of the structure including foundations as may be required to confirm that no adverse effect on existing foundations occurs.

(ii) An Access Roadway for Emergency vehicles shall be provided to the rear of verge piers in accordance with TD 27/05 Annex B, Figure 3 where a discontinuous hardshoulder is to be adopted. Any retaining structure required in connection with this provision shall be treated as structure for Design and Certification in accordance with this Agreement.

3.35 Structure 403 Easterhouse Road Bridge Pier Protection M8 9-9 10

3.35.1 The design for Structure 403 shall ensure compliance with the following:

(i) The Company shall ensure that the actions from the pier protection system shall not adversely affect the existing bridge foundations. The Company shall carry out such assessments of the structure including the foundations as may be required to confirm that no adverse effect on existing foundations occurs.

(ii) An Access Roadway for Emergency vehicles shall be provided to the rear of verge piers in accordance with TD 27/05 Annex B, Figure 3 where a discontinuous hardshoulder is to be adopted. Any retaining structure required in connection with this provision shall be treated as structure for Design and Certification in accordance with this Agreement.

3.36 Structure 404 M73 Over Rail Parapet Replacement M73 2-2 10

3.36.1 The design for Structure 404 shall ensure compliance with the following:

(i) Where additional traffic lanes are to be provided across the existing deck the structure shall be assessed and strengthened in accordance with Section 2.16.

(ii) The Company shall consult and comply with the requirements of Network Rail.

(iii) 4 no 100mm diameter ducts shall be provided within each verge for motorway communications.

3.37 Structure 405 Ellismuir Farm Accommodation Bridge Replacement

3.37.1 The design for Structure 405 shall ensure compliance with the following:

(i) Central reserve piers shall be permitted

(ii) The use of leaf piers shall be permitted subject to a maximum width of 5 metres.

3.38 Structure 406 North Calder Water Central Reserve Gap Infill M73 1-2 55

3.38.1 The design for Structure 406 shall ensure compliance with the following:

(i) Where additional traffic lanes are to be provided across the existing deck the structure shall be assessed and strengthened in accordance with Section 2.16.

(ii) 4 no. 100mm diameter ducts shall be provided within each verge for motorway communications

3.39 Structure 408 North Calder Bridge Extension M74 4-3 70

3.39.1 The design for Structure 408 shall ensure compliance with the following:

(i) The existing structure shall be assessed and strengthened in accordance with Section 2.16

(ii) The extensions to the bridge shall not adversely affect the hydraulic capacity of the structure.

3.40 Structure 409 Powburn Toll Overbridge Pier Protection M74 5-4 80

3.40.1 The design for Structure 409 shall ensure compliance with the following:

(i) The Company shall ensure that the actions from the pier protection system shall not adversely affect the existing bridge foundations.

The Company shall carry out such assessments of the structure including the foundations as may be required to confirm that no adverse effect on existing foundations occurs.

3.41 Structure 410 Old Mill Road Proposed Pier Protection M74 5-4 70

3.41.1 The design for Structure 410 shall ensure compliance with the following:

(i) The Company shall ensure that the actions from the pier protection system shall not adversely affect the existing bridge foundations. The Company shall carry out such assessments of the structure including foundations as may be required to confirm that no adverse effect on existing foundations occurs.

(ii) An Access Roadway for Emergency vehicles shall be provided to the rear of verge piers in accordance with TD 27/05 Annex B, Figure 3 where a discontinuous hardshoulder is to be adopted. . Any retaining structure required in connection with this provision shall be treated as structure for Design and Certification in accordance with this Agreement.

3.42 Structure 411 Uddingston Junction Parapet Replacement M74 5-4 60

3.42.1 The design for Structure 411 shall ensure compliance with the following:

(i) The Company shall consult and comply with the requirements of Network Rail.

(ii) 2 no. 100mm diameter ducts shall be provided within each verge for motorway communications.

(iii) Bridge deck joints to be renewed over the full width of the deck..

3.43 Structure 412 Spindlehowe Underpass Extension M74 5-4 60

3.43.1 The design for Structure 412 shall ensure compliance with the following:

(i) The existing structure shall be assessed and strengthened in accordance with Section 2.16.

3.44 Structure 413 Bellshill Road Bridge M74 5-4 40

3.44.1 The design for Structure 413 shall ensure compliance with the following:

(i) The existing structure shall be assessed and strengthened in accordance with Section 2.16..

3.45 Structure 414 Fallside Road Pier Protection M74 5-4 30

3.45.1 The design for Structure 414 shall ensure compliance with the following:

(i) The Company shall ensure that the actions from the pier protection system shall not adversely affect the existing bridge foundations. The Company shall carry out such assessments of the structure including foundations as may be required to confirm that no adverse effect on existing foundations occurs.

(ii) An Access Roadway for Emergency vehicles shall be provided to the rear of verge piers in accordance with TD 27/05 Annex B, Figure 3 where a discontinuous hardshoulder is to be adopted. Any

retaining structure required in connection with this provision shall be treated as structure for Design and Certification in accordance with this Agreement.

3.46 Structure 415 Cadzow Underpass Extension M74 65 20

3.46.1 The design for Structure 415 shall ensure compliance with the following:

(i) The existing structure shall be assessed and strengthened in accordance with Section 2.16..

3.47 Structure S418 - Existing Structure M74 5-5 10 Raith Interchange – Bothwellhaugh North

(i) The existing bridge piers shall be protected against vehicle collision.

(ii) The Company shall ensure that the actions from the pier protection system shall not adversely affect the existing bridge foundations. The Company shall carry out such assessments of the structure including foundations as may be required to confirm that no adverse effect on existing foundations occurs.

3.48 Structure S419 - Existing Structure M74 5-5 20 Raith Interchange – Bothwellhaugh South

(i) The existing bridge piers shall be protected against vehicle collision.

(ii) The Company shall ensure that the actions from the pier protection system shall not adversely affect the existing bridge foundations. The Company shall carry out such assessments of the structure including foundations as may be required to confirm that no adverse effect on existing foundations occurs.

3.49 Existing Structure A8 35 Eurocentral

(i) Maintenance painting shall be carried out on structure beams and bearings in accordance with the requirements of this Agreement.

4 ITS Gantry Structural Requirements

4.1 General

4.1.1 The Company shall design, construct and complete all Gantries that shall be necessary to meet the requirements of the Agreement. The design of the Gantries shall be in accordance with the requirements of the DMRB as supplemented by these New Works Requirements and the Structures Design Basis (Road Connections) in APPENDIX I. The design of the Gantries shall also take cognisance of the requirements for Traffic Scotland Equipment in Part 3 of these New Works Requirements.

4.1.2 The design checking of all Gantries shall be in accordance with the requirements of the DMRB as supplemented by the Structures Design Basis in APPENDIX I.

4.1.3 The Company shall consult and comply with the requirements of the Scottish Ministers Trunk and Bus Operations with regards to the design, construction and completion of all Gantries.

4.1.4 Gantries shall be designed to accommodate loading from both advance direction signing in accordance with Section 1.9.8 and all TSE. The Company shall consult and comply with the Scottish Ministers Trunk and Bus Operations over the size and weight of Traffic Scotland Issued Equipment ("TSIE"). Signing shall be illuminated as described in Section 1.9.8.

4.1.5 The Company shall ensure that access to the signing and TSE shall be via an enclosed walkway. Any maintenance works required to the TSE shall also be achievable from the enclosed walkway, such that lane closures on the carriageway below are not required. The enclosed walkway shall be in accordance with Paragraph 4.14.4.

4.1.6 A structured cable management system shall be incorporated into the design of the Gantries. The system shall provide continuous protection for the ducted network in the nearside verge to a point 3.5 metres above the adjacent ground level to protect against accidental damage and vandalism. The system must permit rapid fixing and removal of cables and shall include quick release joints at the Gantry verge support frame / main frame connections and foundation / verge support frame connections. Where cable routes are external to the structure they shall be placed remote from the usual driver's line of sight i.e. on the down-stream face where possible.

4.2 Location and Description of Gantries

4.2.1 The locations for the Gantries shall be as described in Appendix H and the list of TSE in the New Works shall be in accordance with the requirements of Part 3 of these New Works Requirements..

4.3 Design Working Life

4.3.1 Notwithstanding the requirements of BD 51 of the DMRB, the design working life of Gantries shall be 50 years in accordance with the Structures Design Basis in APPENDIX I.

4.4 Design Loading

4.4.1 New Gantries shall be designed for live loading as defined in BD 51 of the DMRB and as modified and supplemented by the Structures Design Basis in APPENDIX I.

4.4.2 Gantries shall be designed to withstand static, dynamic, environmental and impact loading; be safe for use by personnel; easily replaceable and may be constructed from materials other than conventional steel and concrete, e.g. aluminium.

4.4.3 Wind and temperature environmental effects shall be determined in accordance with BS EN 1991-1-4 and BS EN 1991-1-5 respectively. The return period shall be taken as the Design Working Life of the Gantry.

4.4.4 The Gantries shall be designed for buffeting loads from high sided vehicles in accordance with the recommendations provided in BD 94/07. The criteria shall be agreed with the Transport Scotland Network Operations Manager prior to the submission of the Structures Design Statement.

4.4.5 The fatigue design life shall be the Design Working Life plus 10 years.

4.5 Design Headroom and Clearances

4.5.1 The minimum headroom clearance provided to the Gantry mainframe soffit or the bottom of the ADS support frame or any attached equipment, whichever is lower, shall be 5.80 metres over the full width of the carriageway including verges, hard shoulders and hard strips where these are provided.

4.6 Road Cross Section at Gantries

4.6.1 Carriageway and verge widths at Gantries shall be as described in Appendix H

4.7 Pre-Camber

4.7.1 Gantries shall be pre-cambered in accordance with the requirements of BD 51 of the DMRB as modified and supplemented by the Structures Design Basis in APPENDIX I.

4.8 Future Proofing

4.8.1 All Gantries shall be designed such that they allow the installation of additional TSE as detailed in Part 3 of these New works Requirements.

4.8.2 Lane Control Units (LCUs) shall have a fixing arrangement that shall enable horizontal and vertical adjustment and be capable of being moved by 100 millimetres in each lateral direction.

4.9 Road Connections Gantry Foundations

4.9.1 The design of Gantry foundations shall be in accordance with BD 51 of the DMRB as modified and supplemented by the Structures Design Basis in APPENDIX I.

4.9.2 Gantry foundations shall be integral with a reinforced concrete plinth 1.5 metres in height above the adjacent road level, so as to provide impact protection to the Gantry support frame.

4.9.3 Gantry foundations for cantilever type Gantries (standalone MS4VMS) shall be integral with a reinforced concrete in situ plinth 1.5 metres in height above the adjacent road level so as to provide impact protection to the Gantry support leg.

4.9.4 Differential foundation settlement between end supports of Gantries shall not exceed 25 millimetres.

4.10 Visual Appearance

4.10.1 The Company shall ensure that the visual appearance of Gantries meets the requirements of drawing numbers: M8/SPD/1600/SG401/001 and M8/SPD/1600/SG402/001 as listed in Appendix 0/4 in Part 3 these New Works Requirements - Specification.

4.10.2 Enclosure of the Gantry main frame and enclosure of the walkway behind the MS4VMS shall be as follows:

(a) a solid non-slip floor plate shall be provided over the full internal plan area of the Gantry main frame and the MS4VMS walkway;

(b) a solid 150 millimetre high kick plate, compatible with the Gantry mainframe and sub-frame material, shall be provided immediately above the walkway floor;

(c) a mesh, comparable with the Gantry mainframe and sub-frame material, shall be provided to the vertical internal area of the Gantry mainframe and MS4VMS walkway from the non-slip floor plate to the top of the walkway. The mesh shall be a fine mesh with openings not exceeding five millimetres; and

(d) all mesh shall be removable for inspection and maintenance purposes.

4.10.3 The colour of the Gantries shall be BS 4800 Medium Grey 18 B 21.

4.11 Structural Finish – Concrete Foundations

4.11.1 Finishes to concrete foundations supporting Gantries shall be consistent throughout the Works.

4.11.2 All exposed in-situ structural concrete constituents shall be supplied from a single source and shall have a consistency of colour and exposure.

4.11.3 Except where the face of the plinth is an integral part of the vehicle restraint system plain concrete finishes shall not be permitted in the design of Gantry foundations. All other exposed faces exceeding six square metres in area shall have a pattern profile finish in accordance with Section 2.8.

4.11.4 Concrete finish class F1 and F2 shall not be permitted on any exposed concrete surface.

4.11.5 Exposed concrete arises shall be finished with a 25 millimetre by 25 millimetre chamfer.

4.12 Construction Tolerances in Structural Concrete

4.12.1 The tolerances stated in Clause 1770 AR of Appendix 0/1 in Part 4 of these New Works Requirements - Specification shall be adopted in the design, construction and completion of the New Works.

4.13 Durability

4.13.1 All structural concrete and structural steelwork shall comply with the requirements of Section 2.12.

4.13.2 Structural steelwork in gantries shall be protected using a paint system appropriate to a 'marine' environment and 'difficult' access in accordance with Series 1900 of the Specification and shall meet the following durability requirements:

a. no maintenance up to 12 years;

b. minor maintenance from 12 years; and

c. no major maintenance up to 20 years.

4.13.3 The Company's proposed paint systems, including completed Specification Appendices shall be submitted to the Scottish Ministers in accordance with the Certification Procedure prior to execution of any relevant part of the New Works.

4.13.4 The use of weathering steel shall not be permitted in the New Works.

4.13.5 Intermittent fillet welds shall not be permitted.

4.13.6 The design for steelwork shall ensure the prevention of the accumulation of water, dirt and debris.

4.13.7 Anchorages, including threaded anchorages cast into concrete, for attachment of steel Gantries to concrete foundations shall be stainless steel grade 1.4362, 1.4436 or 1.4462. Holding down bolts, studs and nuts shall be stainless steel grade 1.4436 or 1.4462.

4.13.8 Provision shall be made to prevent electrolytic corrosion of dissimilar metals.

4.14 Gantry Frame

4.14.1 Each gantry frame shall comprise the main frame, sub-frame, ADS support frame, MS4VMS support frame and verge support frame as shown on Drawing numbers M8/SPD/1600/SG401/001 and M8/SPD/1600/SG402/001.

4.14.2 The design of the Gantries and the connections between the verge support frames and the foundations, and the verge support frames and the main frame shall facilitate rapid and simple installation and removal in order to keep traffic disruption due to traffic management to a minimum during construction, maintenance or demolition.

4.14.3 The gantry sub-frame and main frame shall allow uninterrupted space for the installation and maintenance of the Active Network Traffic Scotland Equipment as specified in Part 3.

4.14.4 The Gantry mainframe internal walkway dimensions shall not be less than 2.1 metres high and 1.5 metres wide. No fixings or structural elements shall intrude into this space.

4.14.5 Provision of person access to the Gantry main frame and MS4VMS walkway shall be via an end access ladder on the nearside of the road.

4.14.6 The access from the ladder to both the mainframe and MS4VMS walkway shall incorporate push through safety barriers which shall open away from the ladder. The design for the safety barriers shall provide an automatic swing back mechanism which shall prevent maintenance personnel inadvertently falling from the walkway. The barrier shall be at least 1.2 metres high and shall be covered by the same mesh as used on the internal faces of the Gantry mainframe. Provision shall be made to enable

maintenance personnel to access equipment housed at high level within the MS4VMS unit.

4.14.7 The ladder shall have a paved hard standing area at ground level in accordance with the NDX series drawings listed in Appendix 0/4 in Part 4 of these New Works Requirements - Specification and shall be connected to the gantry at walkway level. A locking mechanism shall be provided to prevent unlawful entry to the access ladder, gantry mainframe and MS4VMS walkway. The access ladder shall comply with the requirements of BS 4211.

4.14.8 Provision of equipment access to the Gantry main frame and MS4VMS walkway shall be of a size that allows entry for maintenance equipment for signing and TSE.

4.14.9 The design for the equipment access doors shall include a locking system which shall lock the doors closed when not in use and will lock the doors in the open position when in use such that access from the end access ladder entrances to the mainframe is precluded during use of the maintenance accesses.

4.14.10 The equipment accesses shall also incorporate walk-on safety covers which shall open toward the offside of the mainframe. The design for the safety covers shall provide a locking system which shall lock the covers closed when not in use and will lock the covers in the open position when in use such that access from the offside of the mainframe is precluded during use of the maintenance accesses.

4.14.11 Notwithstanding the access doors and covers locking arrangement two dedicated attachment positions, on each level of the mainframe, shall be provided for the clipping on of fall arrest equipment when persons are using the maintenance access doors to prevent a fall from height through the maintenance access doors.

4.14.12 The Company shall provide a system which shall enable maintenance operatives to safety maintain the external luminaires whilst standing on the internal walkway of the Gantry.

4.14.13 An “I” beam with a safe working load of 500 kilograms point load shall be attached to the internal top of the Gantry mainframe over the full length of the Gantry mainframe to enable equipment, or in an emergency a person, to be lifted or lowered from the mainframe walkway and MS4VMS walkway via the maintenance access doors. A Girder Trolley (“Girder Trolley”) with a safe working load not less than 500 kilograms shall be attached to the bottom flange of the “I” beam for supporting and moving the load. The Girder Trolley shall be able to be locked in position and have machined steel wheels mounted on pre-lubricated, encapsulated ball bearings.

4.14.14 Where overhead sign Gantries are required at merges and diverges, they shall be combined where possible into a single Structure spanning both the main carriageway and the adjacent Slip Road.

4.14.15 Where Gantries on adjacent carriageways are located within 50 metres of one another a combined single span Gantry shall be provided except in exceptional circumstances and where alternative proposals have been submitted to the Scottish Ministers for approval..

4.15 Maintenance and Inspection

4.15.1 Provision shall be made for future inspection and maintenance throughout the design life of the Gantries.

4.15.2 The design for all interfaces between different materials on a Gantry shall permit ease of access for inspection and maintenance.

4.15.3 The Company shall provide a safe means of access to the top section of the MS4VMS from the walkway.

4.15.4 Maintenance of gantry mounted TSE shall be achievable without the requirement for traffic management.

4.16 Lifting Points

4.16.1 Gantry frame lifting points shall be provided on each Gantry to facilitate its installation and removal. The lifting system shall be designed such that each Gantry can be lifted onto / removed from its support Structure whilst fully laden with equipment. Where a MS4VMS is provided, this shall be installed / removed from the support frame on the Gantry separately and shall not be considered in the design of the lifting system.

5 Settlement

5.1 Design

The Design shall pay due regard to the effects of settlement or heave.

Measures shall require to be taken by the Company to ensure that settlement and heave of embankments shall either be prevented or shall be substantially complete before road pavement shall have been constructed.

5.1.1 The following criteria shall apply:

(a) Within 10 metres of the interface between Structures and adjacent embankments, the differential settlement or heave between any two points at any time within 60 months of Final Completion

(b) for any two points less than 1 metre apart, 5 millimetres;

(c) for any two points greater than 1 metre but less than 3 metres apart, 10 millimetres;

(d) for any two points greater than 3 metres but less than 6 metres apart, 15 millimetres;

(e) for any two points greater than 6 metres but less than 8 metres apart, 20 millimetres; and

(f) for any two points greater than 8 metres apart, 25 millimetres.

5.1.2 Over a distance of 50 metres back from any Structure the maximum permitted change in gradient, from the Design gradient monitored in accordance with Section 3.2 shall be 0.1 percent.

5.1.3 Where new construction imposes loads on existing embankments, pavements or Structures, appropriate measures shall be taken by the Company to prevent differential settlement or damage.

5.1.4 Differential settlements which adversely affect carriageway drainage shall not be acceptable in the New Works.

5.1.5 Notwithstanding the other provisions of this Section at any time within 60 months of Final Completion, the maximum permitted change in gradient from the Design gradient shall be 0.5 percent except for Accommodation Works Access Tracks where the maximum permitted change in gradient from the Design Gradient shall be 1.0 percent.

For the purposes of analysis the gradient shall be calculated using surveyed levels of the adjacent equally spaced control points.

5.2 Instrumentation

5.2.1 To monitor the settlement, control points shall be attached to the pavement by the Company and levelled by them immediately after construction of the pavement and thereafter monthly for an initial period of six months.

The Company shall continue to monitor settlement on a monthly basis until such time as settlement trends have been established and significant movements have ceased.

5.2.2 The control points shall be installed at the following locations, referred to Ordnance Survey datum, and be co-incident with Design chainages:

(a) all embankments of height greater than 3 metres.

Control points shall be installed in the pavement at 10 metre intervals on

both edges of the carriageway and on the centreline;

(b) within 10 metres of the interface between Structures and approach embankments.

Control points shall be installed in the pavement at 10 metres intervals on both edges of the carriageway and on the centre line;

(c) behind Structures.

Control points shall be installed in the pavement at 5 metre intervals on both edges of the carriageway and on the centre line, over a distance of 50 metres.

5.2.3 The centreline control points shall be levelled until the carriageway is opened, and thereafter only when the edge control points indicate significant level changes, or as otherwise directed by the Scottish Ministers.

5.2.4 The Company shall submit to the Scottish Ministers the results of the monitoring within one week of the measurements having been taken.

5.2.5 Notwithstanding the requirements of paragraph 5.2.1, the Company shall take all measures to identify the area over which any remedial measures are required due to unacceptable differential settlements.

6 Environment, Landscape and Ecology

6.1 Design and Mitigation: General

6.1.1 The Company shall ensure that the New Works are designed and constructed to mitigate and/or minimise adverse environmental impacts such that in the opinion of the Scottish Ministers they are clearly and demonstrably not greater than those identified in the Environmental Assessment Documents contained in Schedule 8.

6.1.2 Subject to the other provisions of this Agreement, the Design shall include environmental, landscape and ecology mitigation measures in accordance with these New Works Requirements. In carrying out the Design, construction and completion of the New Works the Company shall note that the documents which form the Environmental Assessment Documents have been produced over a period of time in response to a particular highway design and policy current at the time of publication, and in response to additional information becoming available. The requirements in the Environmental Assessment Documents may not therefore satisfy current best practice. In the event of a conflict between the Environmental Assessment Documents and this Part 2 of these New Works Requirements, the New Works Requirements shall prevail.

6.1.3 The Company shall employ a landscape practice registered with the Landscape Institute to Design and supervise the environmental, landscape and ecology works. The landscape Design shall be carried out by a suitably experienced chartered Landscape Architect experienced in the Design and construction of landscape and other environmental mitigation works on road schemes. Other specialist environmental professional(s) shall be required to address, including but not limited to, the ecology, archaeology, acoustics, water quality and drainage, as necessary. The Company shall also employ:

(i) at least one landscape clerk of works to assist the landscape architect during the construction of the New Works;

(ii) at least one ecological clerk of works who shall be a suitably experienced ecologist with full membership of the Institute of Ecology and Environmental Management to monitor and advise on implementation of ecological protection, mitigation and measures to minimise adverse ecological impacts;

(iii) an archaeologist who is a Member of the Institute of Field Archaeologists (MIFA) with appropriate archaeological field experience.

6.1.4 The Company shall ensure that the qualified professionals identified in paragraph 6.1.3 shall be involved throughout the New Works Design, construction and completion to assist the Company and to ensure that:

(i) the Design, construction and completion of the New Works complies with the requirements of this Agreement;

(ii) the qualified professionals participate in all necessary consultations so that they are in a position to make recommendations on the Design measures to mitigate adverse environmental impacts;

(iii) a proper and thorough review of method statements and programmes for the New Works takes place, to ensure, that the New Works are undertaken at the appropriate time and in accordance with the requirements of this Agreement;

(iv) professional completion of all procedural audits and preparation of all other reports;

(v) professional plant inspections; and

(vi) regular New Works site supervision and inspection of the landscape works takes place during the construction and completion of the New Works in accordance with, but not limited to, paragraph 4.17.

6.2 Design and Mitigation: Methodologies

6.2.1 The Design shall ensure that all measures shall be taken to protect the environment and control pollution in accordance with all statutory requirements and those of this Agreement. Environmental mitigation measures and the landscape Design shall be in accordance with Legislation and current good practice guidelines within Scotland.

6.3 Cultural Heritage

6.3.1 The Company shall consult and comply with the requirements of Historic Scotland in respect of any sites of archaeological interest or archaeological remains which are likely to be affected by the New Works, including the landscape Design.

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

6.3.2 The Company shall take due cognisance in the Design, construction and completion of the New Works with respect to minimising disturbance to cultural heritage interests in accordance with these New Works Requirements and the Environmental Assessment Documents.

6.3.3 The Company shall ensure that the scheduled ancient monuments, listed buildings and archaeological sites or any other sites of archaeological interest or archaeological remains identified as requiring protection by Historic Scotland within the vicinity of the New Works Site shall not be adversely affected by the Design, construction and completion of the New Works without written consent from Historic Scotland.

6.3.4 The Company should be aware of the possibility of unrecorded finds and shall where considered appropriate as described in the Environmental Statements undertake an archaeological watching brief relating to the New Works as required including but not limited to, fieldwork, post-excavation work, mitigation Design and implementation, reporting, archiving and publication.

6.3.5 The archaeological watching brief shall be undertaken during the removal of topsoil, soil or any other overburden which may obscure archaeological remains within the New Works Site.

6.3.6 The purpose of the archaeological watching brief shall be to investigate and record any archaeological remains encountered.

6.3.7 In the event of a feature of possible archaeological interest being discovered during the archaeological watching brief, or at any other time during the New Works, the Company shall cease the stripping of topsoil, soil or any other overburden and otherwise or excavation work or construction work in the vicinity, erect temporary fencing around it and immediately inform the Scottish Ministers and Historic Scotland.

6.3.8 The Company shall not carry out any further works within the fenced off area until written approval to do so has been given by Historic Scotland.

6.3.9 Any features of possible archaeological interest discovered during the archaeological Watching Brief or at any other time during the New Works shall be recorded in accordance with Institute of Field Archaeology and Historic Scotland guidelines.

6.3.10 Where the need for archaeological mitigation measures is identified, the Company shall submit a mitigation proposal report to the Scottish Ministers and Historic Scotland detailing the mitigation proposed.

6.3.11 Following written agreement of such with the Scottish Ministers and Historic Scotland, the Company shall undertake all mitigation measures in accordance with the requirements of Historic Scotland, including inter alia the storage of archaeological finds.

6.3.12 On completion of all fieldwork, The Company shall submit a brief report to Discovery and Excavation in Scotland (DES) and prepare a post-excavation assessment report. The post-excavation assessment report shall include proposals for specialist analysis, processing, conservation, storage of finds and samples and reporting.

6.3.13 Within twelve months of receiving written agreement from Historic Scotland for the post-excavation report the Company shall undertake specialist analysis, processing, conservation, storage of finds, samples and reporting.

6.3.14 The Company shall prepare a final report detailing the results of all archaeological works undertaken including all specialist reporting, post excavation analysis and conclusions shall be produced. If required the Company shall submit a separate report suitable for publication in an appropriate archaeological journal or series.

6.3.15 The Company shall submit a digital copy of all final and specialist reports to the National Monuments Record of Scotland within 12 months of their acceptance by Historic Scotland.

6.3.16 The Company shall, as soon as possible after the completion of all reporting prepare an archive and procure the deposition and long-term storage of each archive in the National Monuments Record of Scotland (NMRS).

6.4 Ecology and Nature Conservation

6.4.1 The Company shall consult and comply with the requirements of Scottish Natural Heritage (Contact: Lanark Office) in respect of any species or sites protected by legislation or scheduled for protection which are likely to be affected by the New Works, including any hard and soft landscaping.

6.4.2 The Company shall provide Consultation Certificates in accordance with the Certification Procedure in respect of this requirement and shall comply with the conditions of all current licences which relate to protected species.

6.4.3 The Company shall obtain all necessary licences required in relation to potential mitigation on species protected by legislation.

6.4.4 The Company shall be responsible for ensuring that all legislation with regard to ecology and nature conservation is strictly adhered to.

6.4.5 Before the commencement of any New Works the Company shall consult and comply with Scottish Natural Heritage (Contact: Lanark Office) and shall carry out surveys of plants and animals protected by legislation, which

may be directly or indirectly affected by the New Works, in accordance with their requirements.

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

6.4.7 The surveys shall be undertaken by specialists in the subjects who are approved in writing by Scottish Natural Heritage before survey work commences.

6.4.8 Where surveys indicate that mitigation measures, in addition to those identified in the Environmental Assessment Documents, are required, these shall be agreed with Scottish Natural Heritage (Contact: Lanark Office).

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

6.4.10 Following the surveys detailed in paragraph 6.4.5 and 6.4.7, the Company shall provide the Scottish Ministers with details of their proposals for mitigation measures which may include, but shall not be limited to:

(i) protection during construction of features of ecological interest;

(ii) wildlife fencing, tunnels, mammal ledges in culverts or one-way gates to allow the passage of mammals including, but not limited to, badgers and otters;

(iii) fencing to direct fauna towards tunnels at hazardous road crossing points; and

(iv) wildlife habitat creation, enhancement and management.

6.4.11 If Scottish Natural Heritage require that certain species of plants, animals, fish and birds are protected during New Works construction, the Company shall programme the New Works so that disturbance to the habitat of those species is avoided.

In addition:

(i) The Company's Construction Programme shall clearly indicate the programmed time for removal of existing vegetation and areas to be removed; and

(ii) the Company shall take due cognisance in the Design, construction and programming of the New Works with respect to minimising disturbance to wildlife and wildlife habitat. Particular attention shall be given to the protection of existing areas of semi-natural vegetation.

6.4.12 Where required by Scottish Natural Heritage the Design shall include, but shall not be limited to:

(i) Culverts designed to allow the free passage of mammals and/or fish; and

(ii) Additional dry pipe crossings in locations and to layouts which shall encourage their use by mammals as far as is reasonably possible.

6.4.13 The Design shall include ecological impact mitigation and habitat creation associated with riparian corridors affected by the proposals.

6.4.14 In addition to 6.4.13 above, storage, attenuation or settlement ponds or otherwise and other means of treating surface runoff shall be designed, constructed and completed in order to create and enhance wildlife habitat.

6.4.15 Bats

The Company shall take due cognisance in the Design, construction and completion of the New Works with respect to avoiding significant negative impacts on local roosting bat populations.

6.4.16 Badgers

The Company shall take due cognisance in the Design, construction and completion of the New Works with respect to avoiding disturbance to badger setts and significant negative impacts on local badger populations.

6.4.17 Breeding Birds

The Design, construction and completion of the New Works shall include the protection of birds during the breeding season which is typically between March 31st and July 31st but in some instances may vary.

6.4.18 The Company shall ensure that any modification to the course of the North Calder Water, River Clyde, Luggie Burn and Shotts Burn during construction of the New Works takes place during autumn and/or winter to avoid impacts on breeding birds.

6.4.19 Amphibians

The Company shall take due cognisance in the Design, construction and completion of the New Works with respect to avoiding impact on amphibians. The Design of the storage, attenuation or settlement ponds and otherwise and modification of watercourses shall take into account habitat requirements of amphibians.

6.4.20 Otters

The Company shall take due cognisance in the Design, construction and completion of the New Works with respect to avoiding disturbance to otter holts and significant negative impacts on local otter populations.

6.4.21 Site of Special Scientific Interest

The Company shall obtain all necessary licences and consents from Scottish Natural Heritage prior to undertaking any works in the vicinity of Sites of Special Scientific Interest. All such works shall be supervised by the Company's ecological clerk of works.

6.5 Air Quality and Dust

6.5.1 The Company shall consult and comply with the requirements of Glasgow City Council, North Lanarkshire Council and South Lanarkshire Council, as appropriate, with respect to air quality and dust emissions.

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

6.5.3 The Design shall ensure that all necessary measures shall be implemented to reduce airborne dust levels as far as is possible and to prevent damage, loss, injury or nuisance caused by dust at all times during the construction and completion of the New Works.

Such measures may include but shall not be restricted to:

(i) use of water sprays;

(ii) sheeting of vehicles carrying material which may give rise to wind blown dust;

(iii) enforcement of speed limits on haul roads and unmade roads;

(iv) avoiding dust generating activities in conditions likely to cause nuisance;

(v) provision of windbreaks where appropriate;

(vi) minimising drop heights;

(vii) switching off machinery not in use;

(viii) equipment and internal road maintenance;

(ix) control of stockpiled materials;

(x) planting over stored materials where appropriate; and

(xi) avoiding/preventing build-up of mud on roads by measures such as wheel washing.

6.5.4 Notwithstanding any other provisions of this Agreement, the Company shall produce method statements for handling dust and preventing dust spreading to adjacent communities during the construction of the New Works.

6.6 Water Quality and Drainage

6.6.1 The Company shall comply with the requirements of the Controlled Activity Regulations 2005 (CAR).

6.6.2 The Company shall consult and comply with the requirements of SEPA regarding water quality and drainage and the use of herbicides and other potentially polluting chemicals in proximity to watercourses.

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

6.6.4 The Design shall minimise changes to the existing drainage patterns within the topography of the New Works Site.

6.6.5 Particular care shall be taken during construction and completion of the New Works over or adjacent to watercourses, channel habitats, and local drainage systems to ensure minimal disturbance to the banks and beds of watercourses and existing land drainage systems during, but not limited to, the construction of SUDS, culverts, watercourse crossings or diversions.

6.6.6 These shall include, but shall not be limited to, the North Calder Water, River Clyde, Luggie Burn, Shotts Burn in addition to other watercourses.

6.6.7 Subject to the other provisions of this Agreement, surface water runoff from all roads detailed in Table 1 of Appendix D, including associated cuttings and embankments, shall be carried to storage, attenuation or settlement ponds or otherwise wherever possible.

6.6.8 The Design shall ensure that water tables shall be maintained, as far as possible, and shall not be artificially lowered, to ensure that the flora and fauna adjacent to the New Works Site shall not be adversely affected.

6.6.9 The Design shall ensure that all water (as defined in CAR) and other watercourses within and adjacent to the New Works Site are identified and

monitored for quality of water, prior to any New Works and during construction and completion of the New Works.

6.6.10 The Design shall ensure that the containment, treatment and disposal of surface water run-off from all roads detailed in Table 1 of Appendix D or groundwater produced by the New Works prevents any contaminants entering and polluting controlled waters (as defined in CAR) and the drainage system.

6.6.11 The Design shall ensure that reasonable care shall be taken in the use and storage of potentially polluting chemicals and materials to minimise the risk of spillage or release into watercourses, ditches or surface drains.

6.6.12 The Design shall ensure that diversions for Undertakers and owners of private Apparatus shall be undertaken in a manner which shall minimise the risk of spillage or release into watercourses, ditches or surface drains.

6.6.13 Storage, attenuation or settlement ponds or otherwise, required as part of the road drainage system shall:

(i) be designed to integrate with the surrounding landscape and provide habitat for wildlife;

(ii) be sited within naturally low lying areas and designed to look as natural as possible;

(iii) have surrounding earthworks with smooth flowing contours to integrate naturalistically with the surrounding landform;

(iv) avoid abrupt changes in slope, sharp angles and steep side slopes;

(v) have fencing which shall be as unobtrusive as possible, with the fence type and alignment designed to minimise visual impact;

(vi) have planting to help screen fencing, outfall and inlet structures, enhance wildlife habitat and provide visual interest;

(vii) have adjacent open ground around the storage, attenuation or settlement ponds or otherwise shall be seeded with semi-natural vegetation/wildflowers to provide added wildlife habitat and visual interest; and.

(viii) have ledges within ponds within the zone between 0 and 0.5 metres below average water level which shall be planted with native species emergent aquatic vegetation to provide wildlife habitat and visual interest and discourage access to the water.

6.6.14 SUDs and wetland features illustrated within the landscape design layout sheets M8MVJV/3000/001-025 shall include the following:

(i) SUDS pond in close proximity to junction and existing vegetation to be retained east of Swinton (refer to sheet M8MVJV/3000/002)

(ii) Integration of SUDs pond along the western carriageway, south of Kirkwood. This is located north of North Calder Water and existing SINC designation, developing habitat opportunities in this location (refer to sheet M8MVJV/3000/004).

(iii) SUDS pond along the north bound carriageway, south of Shawhead Junction. Wet woodland introduced adjacent to North Calder Water to integrate existing and proposed landscape features (refer to sheet M8MVJV/3000/005).

(iv) Wetland habitat creation to the north of Newhouse Industrial estate (refer to sheet M8MVJV/3000/008).

(v) Wetland habitat creation adjacent to North Calder Water along eastern carriageway of M73. Protection of Ancient Woodland and SINC in close proximity required (refer to sheet M8MVJV/3000/014).

(vi) SUDs pond and associated earthworks at Maryville, increasing wetland habitat and woodland planting to mitigate for loss of existing vegetation (refer to sheet M8MVJV/3000/014).

(vii) Creation of wetland habitat to the east of Bothwell, adjacent to existing SINCs (refer to sheet M8MVJV/3000/018).

(viii) SUDs/flood compensatory feature northeast of Raith junction, with sensitive integration of wetland features required (refer to sheet M8MVJV/3000/018).

(ix) As indicated on Drawing M8/C/LMA/018, works within the designated area to the northeast of Raith Junction 5 shall be restricted to the ecological mitigation works as described below.

Works are to be restricted to mitigation activities within this low disturbance area. No storage of materials, plant or equipment is permitted in this area. For all permitted works in these areas, the Company will be required to ensure that best practice measures are adopted to minimise any direct or indirect adverse impacts. The Company shall consult and comply with Transport Scotland regarding works within the ecological mitigation areas.

Shallow scrapes are to be created as indicated within Drawing M8/C/3000/018. These are shallow excavations intended to be intermittently wet at certain times during the year. Their purpose is to create additional wetland habitat complementary to the nearby SSSI and SINC as mitigation for the planned construction. Existing vegetation/habitats adjacent to the construction area are to be protected during the works whilst allowing for minor re-profiling design and seeding to soften the edge of the attenuation feature to the northeast of Raith. Any construction work shall take place outside of the bird breeding season. The extent of working / disturbed area within the bounds of environmentally sensitive area is to be minimized and should be fully described in the method statement.

Clearance of existing areas of natural vegetation is also to be minimized. Areas are to be allowed to naturally regenerate where no proposed planting is shown (refer to Drawing M8/C/3000/018) to the northeast of the flood compensation storage area adjacent to Raith Junction.

6.7 Planning and Land Use

6.7.1 The Company shall consult and comply with the requirements of:

(i) Glasgow City Council

(ii) North Lanarkshire Council, and

(iii) South Lanarkshire Council; as appropriate

in respect of planning policies and any statutory planning consents required in respect of the Design and the New Works. All other statutory or other approvals required in respect of the Design shall be complied with and obtained by the Company.

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

6.8 Traffic Noise and Vibration

6.8.1 The Company shall consult and comply with:

(i) Glasgow City Council;

(ii) North Lanarkshire Council, and

(iii) South Lanarkshire Council; as appropriate

with regard to construction noise levels.

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

6.8.3 The Design and the New Works shall ensure that noise levels emanating from all roads detailed in Table 1 of Appendix D shall be minimised and shall meet the following criteria:

(i) noise levels at adjacent locations, including garden areas and the living space of houses near such roads due to traffic movements on said roads, upon completion of the New Works shall be no greater than those recorded in a pre-construction noise survey, undertaken within the parameters detailed for the pre-construction ambient noise survey detailed in Appendix 1/9 to Part 4 of these New Works Requirements.

(ii) the locations described in the Environmental Assessment Documents shall be considered as representative of any surrounding properties and all shall be considered for noise mitigation for within the Design.

(iii) a post-construction ambient noise assessment shall be undertaken by an appropriately qualified acoustician, appointed by the Company, who is a member of the Institute of Acoustics, within three months of Final Completion. The post-construction ambient noise assessment shall demonstrate that the Design complies with the requirements of 6.8.4; and

(iv) measurement locations and other noise variables, including but not limited to positioning, height and time of day, chosen for the post-construction ambient noise assessment shall, where practicable, be of a similar nature to those undertaken in the pre-construction ambient noise survey.

6.8.4 Should the noise levels recorded in the post-construction ambient noise assessment exceed the levels measured in the pre-construction ambient noise assessment or those reported in the Environmental Assessment Documents as appropriate, the Company shall Design and construct

suitable mitigation measures to provide noise levels lower than or equal to those recorded in the pre-construction ambient noise assessment, or reported in the Environment Assessment Documents, as appropriate.

6.8.5 For properties and locations given in the Environmental Assessment Documents where the M8/M73/M74 and network improvements are deemed not to be the primary noise source, evidence shall be provided by the Company to demonstrate that the levels measured cannot be reasonably mitigated against.

6.8.6 Noise barriers shall be constructed at the earliest opportunity available during the New Works and prior to earthworks and road construction works where practicably possible.

6.8.7 The Design shall ensure that noise barriers are designed, constructed and completed to provide the required noise attenuating properties and shall include the following:

(i) where two noise barriers of the same height but differing type meet, there shall be no reduction in the overall height or effectiveness of the noise mitigation measures;

(ii) Where the noise barrier heights change, a smooth graded interchange shall occur; and

(iii) Notwithstanding the noise mitigation Design, as a minimum, noise barriers shall be provided as detailed in Appendix E.

6.9 Landform Design Requirements

6.9.1 General

(i) The landform and grading Design shall comply with the Indicative Landscape Proposal Drawings as listed in Appendix 0/4 to Part 4 of these New Works Requirements and be fully integrated with the planting Design, meet with the other landscape Design requirements contained in these New Works Requirements and shall be in accordance with the Environmental Assessment Documents.

(ii) The landform design shall achieve integration with the surrounding local landscape to reduce adverse landscape and visual impacts as follows:

(a) The grading out of side slopes to allow a smooth transition into the adjoining landforms as indicated on the Indicative Landscape Design Drawings;

(b) The creation of smooth flowing landforms which reflect the existing naturally occurring topography (within the local landscape character area as identified in the Environmental Assessment Documents) in terms of gradients, scale and form.

(iii) The specific requirements for landform design and construction shall achieve the following:

(a) Back slopes on noise bunds shall be generally not steeper than 1:3 using material excavated from the New Works;

(b) Noise bunds shall have gently tapering end slopes no steeper than 1:7, subject to other provisions of these New Works Requirements;

(c) All other landscape earthworks shall generally be no steeper than 1:4;

(d) Where land is to be returned to the landowner graded out slopes shall be prepared and seeded to the approval of the landowner; and

(e) Where reinforced soil slopes are adopted in the Design hard facings shall not be permitted and the slopes shall be vegetated to minimise visual impact.

(iv) The design of the New Works shall include the rounding off at the top and bottom of embankments and cuttings as specified in Section 1.6.

6.9.2 Earthworks and Grading Works

(i) The Design shall include for the grading out of side slopes to the maximum possible extent within the Land Made Available by the Scottish Ministers for the New Works to allow a smooth transition into the adjoining landforms as indicated on the Indicative Landscape Proposals Drawings as listed in Appendix 0/4 to Part 4 of these New Works Requirements at locations illustrated.

(ii) The Design shall include the rounding off of the tops of cutting slopes to allow a smooth transition into the adjoining landform as indicated on the Indicative Landscape Proposals Drawings as listed in Appendix 0/4 to Part 4 of these New Works Requirements at locations illustrated.

(iii) The design of the New Works shall include for the up-filling and grading to form slopes to reflect local topography and provide visual separation between roads as indicated on the Indicative Landscape Design Drawings at the following locations:

(a) Earthworks at junction to the west of Bargeddie to minimize visual impact (refer to sheet M8MVJV/3000/002).

(b) Earthworks slope reduced to integrate M8 into surrounding context, with woodland planting and earthworks providing visual separation between the M8 and A8 (refer to sheet M8MVJV/3000/003).

(c) Earthworks designed to provide screening, minimise visual and noise impact to adjacent residential properties to the northwest of Chapelhall Junction (refer to sheet M8MVJV/3000/007).

(d) Regrading of earthworks at Uddingston (soil nailing to be considered to minimise loss of existing vegetation). (refer to sheet M8MVJV/3000/016).

(e) Regrading of earthworks east of Bothwell (soil nailing to be considered to minimise loss of existing vegetation). (refer to sheet M8MVJV/3000/017).

(f) Regrading of earthworks (soil nailing to be considered to minimise loss of existing vegetation) along eastern carriageway of M73, southwest of Calderbraes. (refer to sheet M8MVJV/3000/014).

(g) Reinforced soil slope south of Easterhouse, eastern carriageway to maximise retention of existing vegetation and protect wildlife corridor (refer to sheet M8MVJV/3000/001).

(h) Reinforced soil slope at Luggy Burn. Slope to be vegetated to minimise visual impact (refer to sheet M8MVJV/3000/003).

(iv) Gradients associated with environmental mitigation of earthworks shall have gently tapering end slopes in the long section, no steeper than 1:7, subject to other provisions of these New Works Requirements.

6.9.3 Earthworks Bunds / False Cuttings

(i) Notwithstanding the other requirements of this Agreement, as a minimum, earthwork bunds shall be provided as detailed in Appendix E.

(ii) Earthwork bunds shall be constructed suitably, within the Land Made Available by the Scottish Ministers for the New Works, to maximise the earthwork bunds' mitigating effects in terms of reducing noise to the adjacent locations, including garden areas and the living space of houses.

(iii) Earthwork bunds shall be designed and constructed in accordance with HA65 of the DMRB.

(iv) False cuttings and earthworks bunds include the following (the full extent is indicated on the Indicative Landscape Design Drawings):

(a) False cutting to the north of eastern carriageway at Showcase Cinema provides visual separation between the M8 and the A8, and provides screening to visual receptors to the north (refer to sheet M8MVJV/3000/003).

(b) False cutting to the north of Chapelhall Junction (refer to sheet M8MVJV/3000/003).

(c) False cutting to the west of Chapelhall Junction (refer to sheet M8MVJV/3000/003).

6.9.4 Additional Landform Integration

(i) In addition to the landform Design at the specific locations listed in paragraphs 6.9.2 and 6.9.3, the Company may carry out additional landform Design through raising existing ground levels at the locations as illustrated on the Indicative Landscape Proposal Drawings as listed in Appendix 0/4 to Part 4 of these New Works Requirements subject to the other provisions of this Agreement.

(ii) The general requirements for landform Design shall achieve the following:

(a) the creation of smooth flowing contours which reflect, and which are in character with the existing naturally occurring topography (within the local landscape character area as

identified in the Environmental Assessment Documents) in terms of gradients, scale and form;

(b) Integration with existing ground levels, structures and planting;

(c) The tops and bottoms of embankments and cuttings in soft materials shall be rounded as specified in Section 1.6;

(d) Creation of slope gradients which allow for re-establishment of suitable ground conditions where establishment of semi-natural vegetation is required by the Design;

(e) creation of bunding and false cuttings for noise attenuation and to screen views of the roads as detailed in Section 6.10 and traffic from adjacent visual receptors; and

(f) All opportunities shall be taken to grade out embankment and cutting slopes to more closely resemble the surrounding natural topography and allow return of land to agricultural use if required.

6.10 General Landscape Design Requirements

6.10.1 The landscape Design shall provide integration of the New Works with the surrounding landscape and built environment together with any other mitigation measures identified in accordance with the Environmental Assessment Documents.

6.10.2 The overall landscape Design philosophy shall generally respond to, or reflect the landscape through which the New and upgraded M8, M73 and M74 Motorway passes.

6.10.3 The landscape Design on the section of the New and upgraded M8, M73 and M74 Motorway shall reflect the rural character of the locality. The landscape Design shall reflect the existing mixed urban and wooded character of the existing M8, M73 and M74 corridors.

6.10.4 The Design shall:

(i) ensure that the construction and establishment maintenance of the New Works comply with the landscape Design and management policy contained in Cost Effective Landscape Learning from Nature (the Scottish Office, 1998) (CEL:LfN).

(ii) Prior to commencement of implementation of the landscape planting and seeding works the Company shall submit a Procedural Inspection report to demonstrate compliance with this policy. A procedural inspection (as detailed on page 16 of CEL:LfN) may be carried out by the Scottish Ministers to ascertain compliance with the policy;

(iii) minimise adverse environmental impact of all roads detailed in Table 1 of Appendix D, associated earthworks, bridges, culverts, retaining walls, other Structures, signs, barriers and lighting columns.

(iv) Careful consideration shall be given to the location, orientation, scale, structural form, materials, finishes and colours in the Design of Structures.

Adverse visual impacts shall be mitigated for the following viewers:

(a) Users of the existing roads;

(b) residents in all adjacent properties; and

(c) Users of all adjacent public buildings, public open spaces, work places, footpaths, cycle routes and bridleways.

(v) ensure that adverse visual impact of lighting on the roads listed in Table 1 of Appendix D shall be minimised by limiting the lighting to that necessary to comply with the Design criteria given in Section 1.10. In addition the road and pedestrian lighting provided shall be screened to prevent leakage and scatter of light rays to areas outside the New Works;

(vi) ensure all temporary works and construction areas, including , but not limited to compounds, haul routes, accesses, material stockpiles and otherwise, outside the area of the permanent works, are restored to their original condition, particularly in relation to soil cover, vegetation cover and hydrological condition;

(vii) retain where practicable and make use of existing vegetation;

(viii) consolidate and enhance existing vegetation patterns;

(ix) enhance the nature conservation value of existing habitats and provide new habitat areas and corridors of nature conservation interest to replace or compensate for lost habitats;

(x) ensure interesting and varied views from the roads detailed in Table 1 of Appendix D; and

(xi) take account of stopping and overtaking sightline distances, minimum clear distances for signs and the visibility of marker post reflective strips and numbers.

6.10.5 Existing trees, shrubs and hedges that are considered by to be significant (by reason of scale, maturity or landscape importance) shall be retained and preserved except where unavoidably removed for the construction of the New Works, as highlighted within section 6.11.

6.10.6 Field boundaries, where removed, disturbed or severed by the New Works shall be reinstated, replaced or linked using the same materials in the same styles as the original boundaries except where otherwise required in these New Works Requirements or the Environmental Assessment Documents.

6.10.7 All existing roads, tracks, hardstanding areas, kerbs, gullies, lamp posts, barriers, signage and otherwise, made redundant as a result of the New Works, shall be removed to their full depth of construction, graded to appropriate levels and reinstated with subsoil and topsoil where appropriate to allow their use for planting or seeding in accordance with the road and landscape Design.

6.10.8 The Design shall ensure that the method of treating phytotoxic elements, including, but not limited to tar, sulphurous compounds, petrochemicals and otherwise, shall not adversely effect the growth of plants and shall not contaminate topsoil or adjacent watercourses.

6.10.9 The Company shall exploit opportunities to re-use and recycle materials including soils, peat, vegetation, rock and otherwise within the New Works Site.

6.10.10 All excess material, excluding topsoil and surface peat, shall be disposed of in accordance with this Agreement and with due regard to minimising impact to the environment. The Company shall make timeous applications and be responsible for all waste management licenses required for the New Works.

6.10.11 The Company shall consult and comply with the requirements of SEPA regarding the disposal of waste.

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

6.10.13 Topsoil

(i) All topsoil excavated shall be stored and reused in locations where adjacent soils are of the same soil type.

(ii) In particular, topsoil stripped from areas of felled woodland shall be reused in proposed woodland areas and topsoil stripped from areas of agricultural land shall be retained and reused in similar proposed agricultural areas.

(iii) The Company shall keep records of the location and volume of soils and peat stripped and stored and these records shall be made available to the Scottish Ministers.

(iv) Such records shall be compiled as soon as the soils and peat are stripped and stockpiled.

(v) The Company shall also keep records of soils and peat removed from stockpiles together with records of the location and volume of re-used soils and peat and these records shall also be made available to the Scottish Ministers.

(vi) Where the Design identifies topsoil from a particular source that shall be re-spread in a specified location within the New Works, the Company shall stockpile the topsoil separately and mark the storage location on a plan.

(vii) Stockpile vegetation and upper soil horizons shall be stored separately from lower soil horizons.

(viii) Soil stockpiles shall not be placed over the rooting zone of mature trees, in areas where existing trees/habitats may be damaged or where surface run-off may cause pollution.

6.11 Protection of Existing Vegetation

6.11.1 The Design shall incorporate the following general protection requirements with respect to existing vegetation:

(i) to protect and retain the maximum possible amount of existing woodland, scrub, individual trees and shrubs and grassland vegetation as a potentially valuable landscape and ecological resource; and

(ii) to reuse/recycle existing cleared vegetation and soils and seed bank in the New Works;

Vegetation to be protected is indicatively illustrated within the Specimen Design Vegetation Protection Drawings M8/SPD/3000/029-053.

These drawings are intended to compliment and reflect the Landscape Design illustrated on the Indicative Landscape Layout drawings M8MVJV/3000/001 – 025. The extent of vegetation protection illustrated shall not be considered as definitive and the Company may submit alternative proposals subject to demonstrating that the proposed Design meets all the requirements given in the Environmental Assessment documents. The proposed Design shall also reflect the general principles illustrated on the Indicative Landscape Layout drawings in terms of visual impact and ecology and may include compensatory features.

The Company shall consult and comply with the requirements of Transport Scotland in connection with vegetation removal and general site clearance (see also section 1.2).

6.11.2 The Company shall erect a temporary fence, around areas of existing vegetation within the New Works Site that shall require to be protected, in line with 'BS 5837: Trees in relation to design, demolition and construction' dated 30th April 2012.

6.11.3 The Company shall ensure that no personnel are permitted to enter the protected fenced areas during the course of the New Works other than to erect and remove the temporary fencing.

6.11.4 Subject to the other provisions of this Agreement, the Company shall ensure that no damage to existing vegetation or ground conditions occurs in such protected areas during the New Works.

6.11.5 Should damage occur, the Company shall undertake at his own cost all necessary remedial works.

6.11.6 Such remedial works for trees, shrubs and other vegetation shall include but not be limited to replacement planting of the same size and form as the vegetation prior to the damage.

6.11.7 Such remedial works for damage to the ground conditions shall include removal and reinstatement of the ground plus the replacement, as above, of any vegetation that may be affected.

6.11.8 Immediately before Final Completion the temporary fence shall be removed.

6.12 Protection from Wind and Windthrow

6.12.1 The Company shall assess the potential effect of windthrow on any existing planting and shall incorporate into the Design any appropriate mitigation measures.

6.13 Visual Amenity and Noise Mitigation

6.13.1 The New Works consider landscape mitigation measures in relation to visual amenity, was illustrated within the landscape drawings. Key locations include, but are not limited to the following:

(i) Junction east of Swinton – retention of existing vegetation for screening, earthworks to assist with screening, proposed new specimen tree planting to for visual amenity mitigation (refer to sheet M8/C/3000/002)

(ii) Visual amenity and vegetation along western carriageway, south of Kirkshaws (refer to sheet M8/C/3000/004).

(iii) Woodland blocks introduced at Shawhead Junction to provide screening to compensate for loss of existing woodland and create visual separation and minimise visual highway intrusion (refer to sheet M8/C/3000/005).

(iv) Hedge planting to provide visual separation between A8 and M8 between Eurocentral and Chapelhall. Noise barriers provided to reduce noise impact (refer to sheet M8/C/3000/007).

(v) Road moved further away from Newhouse Industrial Estate providing additional woodland and screening (refer to sheet M8/C/3000/007).

(vi) Hedge and feathered trees provided to screen south of Chapelhall along the eastern carriageway. Use of acoustic barrier to provide noise mitigation (refer to sheet M8/C/3000/008).

(vii) Provision of noise mitigation for residential properties to the east within Orbiston (refer to sheet M8/C/3000/022).

6.14 Planting Design

6.14.1 The planting Design shall be in accordance with the Indicative Landscape Proposal Drawings as listed in Appendix 0/4 to Part 4 of these New Works Requirements.

6.14.2 Variations to the planting Design may be permitted where appropriate only in locations where in the opinion of the Scottish Ministers, the Design differs significantly from that indicated on the Indicative Landscape Proposal Drawings as listed in Appendix 0/4 to Part 4 of these New Works Requirements.

6.14.3 The Design shall:

(i) retain existing trees and hedgerows wherever possible, and tie in with new planting proposals;

(ii) avoid planting where the route crosses naturally open tracts of land, unless such planting is required for essential screening;

(iii) minimise the risk of collision between vehicles and deer. The Company shall undertake an assessment of the potential risk of collisions between vehicles and deer and identify appropriate mitigation measures.

(iv) ensure that where possible planting close to the roads detailed in Table 1 of Appendix D which would obscure lines of sight between areas where deer may be present and approaching vehicles on the carriageway should be avoided.

(v) ensure that where proposed planting would obscure lines of sight between areas where deer may be present and approaching vehicles on the carriageway, the Company shall take appropriate measures such as erection of deer fencing to minimise the risk of collision between vehicles and deer;

(vi) compensate for woodland lost in the New Works Site;

(vii) reinforce and link with existing hedgerows including those severed by the New Works and trees for visual and ecological continuity;

(viii) make good use of redundant field corners and landlocked areas as appropriate;

(ix) provide mass planting at junctions, interchanges and bridges to help assimilate the new arrangements in to the surrounding landscape;

(x) provide visual interest throughout the route but particularly at junctions and interchanges;

(xi) provide ecological diversity and interest wherever possible;

(xii) provide visual screening of the Project Roads and associated Structures from nearby receptors;

(xiii) ensure that the plants selected shall be generally native to the area and in keeping with the naturally occurring and existing vegetation. The planting species shall also be appropriate to the physical conditions of the locality;

(xiv) consolidate and reinforce field patterns; and

(xv) reduce adverse landscape and visual impacts whilst retaining beneficial views from all roads detailed in Table 1 of Appendix D.

6.14.4 The various species and sizes of trees and shrubs incorporated in the Design shall be arranged in such a way that they create either natural woodland characteristics typical in the locality or a designed landscape feature.

6.14.5 Gorse or broom shall not be planted or seeded on the New Works Site.

6.14.6 Plant stock to be used in the Design shall be selected from the following types described in BS 3936 Parts 1-10:

(i) feathered trees;

(ii) standard trees;

(iii) heavy standard trees;

(iv) extra heavy standard trees;

(v) large rootballed trees, including specimen conifers;

(vi) 1+2 and 2+1 transplanted trees and shrubs;

(vii) 1+1 broadleaf transplanted trees, shrubs and climbers protected by tree and shrub shelters as appropriate;

(viii) cell grown trees and shrubs not less than 18 months old and not more than 24 months old protected by tree or shrub shelter;

(ix) cell grown trees, shrubs and climbers not less than 300 cubic centimetres in volume and 18 months old, protected by tree or shrub shelters as appropriate;

(x) container grown plants grown in containers of 2 litres minimum size, or alternatively in the case of holly species, 1.5 litre rigid cells with internal grooves or ridges; and

(xi) cell grown clumps of trees and shrubs not less than 3 years old in 300 millimetres deep root containers.

6.14.7 Holly species shall be grown to 600 millimetres and cut back to 200 millimetres immediately prior to delivery.

6.14.8 All holly and evergreen trees shall be protected by shrub shelters with stakes which shall be removed in May after being in place for 2 growing seasons.

6.14.9 Bare root evergreens, bare rooted conifers and bare root birch and larch shall not be permitted in the New Works.

6.14.10 The Company shall protect all planting from grazing by animals including livestock, rabbits and other browsing animals such as hares, voles and deer.

6.14.11 The Company shall ensure that all new planting is adequately protected from grazing animals.

6.14.12 Protective measures shall be in place at the time of planting to ensure that no damage occurs.

6.14.13 Rabbit repellent sprays shall not be acceptable. Tree guards or shelters shall not be used in isolation to protect planting against damage from deer.

6.14.14 No shrubs or hedges shall be planted within 3 metres of a carriageway and no trees (except those maintained as hedging) within 5 metres. With respect to pipelines, underground cables, overhead wires and other equipment, all statutory or advisory minimum planting distances and clearances shall be adhered to.

6.14.15 Where the Design includes a 300 millimetre or greater depth of topsoil in areas of proposed deciduous woodland planting with scrub, native scrub planting and mixed woodland planting with scrub, plants may be notch planted or pit planted.

6.14.16 Plants planted in inverted turves shall be notch planted.

6.14.17 All other plants shall be pit planted in drier ground or planted in ridges formed by forestry ploughing in wetter areas.

6.14.18 The Design shall ensure that all landscape areas disturbed during the construction of the New Works shall be reinstated with a vegetation cover similar to that in areas adjacent to the disturbed area except for areas of planting, land reinstated for arable agricultural purposes and areas of wildflower seeding.

6.14.19 Plant Selection and Proof of Provenance

(i) The Company shall submit Provenance Certificates in accordance with the Certification Procedure.

(ii) The Company shall state in the Provenance Certificates issued with each batch of plants the zone of provenance of the trees to be supplied and the location where seeds and cuttings were obtained.

(iii) Each batch of plants shall have been individually labelled prior to delivery.

(iv) The labels shall be retained by the Company and the eventual destination on site of the plants contained within that batch, identified on a marked-up planting drawing which shall be returned to the Scottish Ministers on completion of planting.

6.14.20 Planting Densities

(i) The various species and sizes of trees and shrubs shall be arranged in such a way that they meet these New Works Requirements and

wherever possible resemble the natural woodland characteristics typical in the locality. Planting shall be carried out in single species or multi- species clumps to obtain a naturalistic effect.

(ii) Areas of deciduous woodland planting, native scrub planting and mixed woodland planting shall be planted at an average density of not less than one plant per 4m square metres.

(iii) Hedgerows shall be planted in double rows at a density of not less than 6 plants per linear metre.

(iv) Where the hedge is planted close to agricultural land it shall be planted not less than 1 metre from the boundary fence in order to protect hedge plants from being grazed by livestock within the agricultural land.

(v) Feathered trees within hedgerow planting incorporating tree planting shall be planted at an average density of not less than 10 trees per 100 metre length of hedgerow.

6.14.21 Planting Mixes

(i) Planting mixes used in the Design of the New Works shall be in accordance with the Indicative Landscape Proposals Drawings and Planting Schedules as listed in Appendix 0/4 to Part 4 of these New Works Requirements.

(ii) Other mixes may be permitted where appropriate, only in locations where in the opinion of the Scottish Ministers, the Design differs significantly from that indicated on Indicative Landscape Drawings as listed in Appendix 0/4 to Part 4 of these New Works Requirements.

6.14.22 Specific requirements for planting mixes to be used in the landscape Design are listed below:

(i) Areas of Semi Natural Woodland planting:

Planted as a mix of predominantly native trees and shrubs, these areas are intended to mature as multi-layered woodland with a mix of native species including oak, birch, alder, elder, rowan, blackthorn, and rose.

(ii) The Design shall resemble naturally occurring planting, featuring clumps and glades.

(iii) Areas towards the edges of woodlands areas shall be planted with predominantly native trees and shrubs but with a high percentage of small trees shrubs and climbers, but no large trees.

(iv) Areas of Screening Woodland planting:

Planted as a mix of predominantly native trees and shrubs, these areas are intended to mature as multi-layered screening woodland with a mix of native species including evergreen species to assist with year round screening. Species include pine, yew, willow, rowan and holly.

(v) The Design shall resemble naturally occurring planting, featuring clumps and glades.

(vi) Areas towards the edges of woodlands areas shall be planted with predominantly native trees and shrubs but with a high percentage of small trees shrubs and climbers but no large trees.

(vii) Wet Woodland / Scrub planting:

These areas are intended to mature as a mix of native shrubs and small trees such as hawthorn, hazel, goat willow and birch. The Design shall resemble naturally occurring planting, featuring clumps and glades, with species mixes reflecting locally occurring native vegetation.

(viii) Shrub/Scrub planting:

These areas are intended to mature as a mix of native shrubs such as hawthorn, blackthorn, elder and goat willow. The Design shall resemble naturally occurring planting, featuring clumps and glades, with species mixes reflecting locally occurring native vegetation.

(ix) Hedge/Hedgerow Trees

Generally the hedge species shall reflect those of the existing hedgerows. Native species will be utilised, including hawthorn, dog rose, blackthorn and honeysuckle.

6.15 Management of Existing Vegetation

6.15.1 The Company shall survey the existing vegetation which can be retained. Notwithstanding any other requirements of these New Works Requirements and shall submit a written action report of proposed remedial management measures to the Scottish Ministers prior to commencement of any such works. The Company shall undertake all the measures which have been agreed by the Scottish Ministers, in accordance with Clauses 3006 and 3010 of the Specification and to BS 5837. Specifically the report shall include proposals for:

(i) felling or pruning of any dead, diseased or unsafe trees or plants blocking signs and lines of sight;

(ii) thinning of any overcrowded trees and shrubs to allow better specimens to grow, improve habitat value or reduce shading to adjacent houses and gardens;

(iii) coppicing of overgrown trees and shrubs to allow growth of new shoots;

(iv) under planting of new shrubs and trees in gapped areas to increase screening, enhance visual amenity or improve habitat value;

(v) wildlife habitat creation, for example through deposition of felled timber and brash within woodland areas in log piles and windrows where appropriate; and

(vi) measures to mitigate the potential for wind throw in areas of trees affected by the New Works.

6.15.2 Location specific management measures and under planting shall be undertaken in accordance with the Indicative Landscape Proposal Drawings as listed in Appendix 0/4 to Part 4 of these New Works Requirements.

6.16 Grass and Herbaceous Vegetation General Design Requirements

6.16.1 Grass and Wildflower Seeding

(i) The soiling, ground preparation and seed mix Design for areas of grass and wildflower seeding shall create a sward appearance appropriate for the locality and which matches that which exists in the surrounding landscape.

Consideration shall be given to use of grass and wildflower species which are unpalatable to deer where there is a risk that deer shall be attracted to areas close to the Project Roads.

(ii) The location of seed mixes shall be as follows:

(a) General purpose grasslands shall be used in road verges, embankments and cuttings not planted or where other grassland is required.

The Design mixes shall provide a rapidly establishing sward to provide an appearance and habitat which reflects adjacent and surrounding grassland communities.

The mixes shall reflect the diversity of grassland communities along the route as described in the Environmental Assessment Documents;

(b) Wildflower grassland shall be flora and grassland of very low fertility created to enhance the amenity and nature conservation value of the road corridor and to compensate for the loss of existing habitat of value along the corridor at the locations identified on the Indicative Landscape Proposal Drawings as listed in Appendix 0/4 to Part 4 of these New Works Requirements.

The proposed mixes 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;

(c) Productive grassland shall be used 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.

(d) Areas to be returned to arable use shall be seeded with nitrogen fixing species and the plants grown from such seed shall be ploughed into the soil after one full growing season. The Company shall consult with relevant landowners with regard to species mixes and sowing density on land to be returned to arable use.

(e) All mixed woodland, deciduous 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.

6.17 Programme and Method Statements

6.17.1 The Company shall submit a Landscape Maintenance Manual to the Scottish Ministers for approval not less than 6 weeks prior to commencement of planting operations detailing the landscape maintenance

and management operations that the Company intend to carry out during the Period within 60 months of Final Completion.

6.17.2 All landscape preparation, planting and seeding in the New Works shall be completed at the earliest practical opportunity to ensure early establishment.

6.17.3 The Company shall provide method statements which shall explicitly describe the role of the Company's chartered landscape architect, ecological clerk of works, archaeologist and geotechnical clerk of works for all stages of the New Works. The method statements shall include, but shall not be limited to, the following activities and are to be provided for the consent of the Scottish Ministers prior to the commencement of the New Works.

(i) clearance of vegetation and erection of protective fencing;

(ii) management of existing vegetation;

(iii) earthworks, ground preparation, soil stripping and soiling;

(iv) construction of protective fencing, for vegetation and wildlife;

(v) grass / wildflower seeding including natural regeneration;

(vi) weed control and herbicide application;

(vii) planting;

(viii) direct tree and shrub seeding; and

(ix) protection of species protected by statute.

6.18 Site Attendance

6.18.1 The Company's chartered landscape architect shall visit the New Works Site at suitable intervals not exceeding 1 month and the landscape clerk of works shall attend the New Works Site throughout the duration of the New Works. The Company's chartered landscape architect shall visit the New Works Site whilst the following works are being carried out:

(i) identification of vegetation to be protected or removed;

(ii) topsoil stripping;

(iii) earthworks and landscape grading;

(iv) breaking out redundant surfaces;

(v) subsoil ripping;

(vi) spreading of soil and peat;

(vii) cultivation;

(viii) preparation for seeding;

(ix) preparation for planting; and

(x) planting.

6.18.2 The Company's ecological clerk of works shall visit the New Works Site at suitable intervals to monitor and advise on implementation of all ecological mitigation and to ensure that adverse ecological impacts are minimised.

6.18.3 The Company's ecological clerk of works shall visit the site at suitable intervals to monitor and advise on all works affecting Hamilton Low Parks SSSI.

6.18.4 The Company's archaeologist shall visit the New Works Site at suitable intervals to satisfy the requirements of Section 6.3 of these New Works Requirements.

6.19 Contaminated Land

6.19.1 The Company shall consult and comply with the requirements of:

(i) SEPA;

(ii) Glasgow City Council;

(iii) North Lanarkshire Council; or

(iv) South Lanarkshire Council; as appropriate

regarding treatment and disposal of all contaminated materials.

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

6.19.3 The Company shall investigate and survey areas of land within the New Works Site which may be potentially subject to contamination from past or present uses either on or adjacent to the New Works Site.

6.19.4 The Design shall include the removal of contaminated material and include mitigation measures to avoid potential mobilisation of contaminants into controlled waters (as defined in Section 30A of the Control of Pollution Act 1974).

6.19.5 The Company shall ensure that any contaminated materials which shall be removed from the New Works Site shall be transported to an appropriately licensed site.

6.19.6 Any other waste on the New Works Site shall be removed by an authorised waste carrier and taken to a site authorised to accept it for further treatment or disposal.

6.19.7 All parties involved shall retain duty of care transfer notes and special waste consignment notes as appropriate.

6.19.8 The Design shall take account of the potential for piling works to create pathways for contaminated materials into controlled waters and shall include suitable mitigation measures.

6.19.9 The Company shall take all necessary measures to prevent dust blow of contaminated materials around and off the New Works Site from the New Works Site surface, excavations, stockpiles, treatment areas and otherwise that may create either a hazard or a nuisance.

6.19.10 Stockpiling of contaminated material shall be avoided wherever possible, although where stockpiles are deemed to be necessary short-term prior to disposal or treatment of material, the Company shall take precautions to prevent the generation of contaminated leachate by preventing infiltration of precipitation, generation of potentially contaminated run-off and dust blow.

6.19.11 Stockpiles of materials shall be segregated from other working areas.

6.19.12 The Design shall ensure that construction methods adopted for the New Works minimise exposure of construction workers to contaminated materials, dust and groundwater.

6.19.13 The Design shall include measures for collecting, containing and treating contaminated groundwater in temporary drainage work prior to disposal.

6.19.14 The Design shall ensure that all groundwater, surface water, leachate and otherwise entering or leaving excavations shall be either collected and treated or disposed of in accordance with these New Works Requirements and this Agreement.

6.19.15 Any free product comprising hydrocarbons, tars and otherwise encountered in excavations shall be collected or separated from water and disposed of at a suitable licensed waste facility.

APPENDIX A

THIS IS APPENDIX A TO PART 2 OF THE NEW WORKS REQUIREMENTS

AMENDMENTS TO THE DMRB AND THE MCHW

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AMENDMENTS TO THE DMRB AND THE MCHW

INTERIM AMENDMENTS

Title	Description
SEDD INTERIM AMENDMENT NO 11	Volume 0: Section 1: Model Contract Document For Highway Works The Housing Grants, Construction and Regeneration Act 1996
SEDD INTERIM AMENDMENT NO 12	Volume 1: Specification For Highway Works – March 1998 Sector Scheme 14 (for the Production of Asphalt Mixes)
SEDD INTERIM AMENDMENT NO 13	Volume 0: Section 1: Model Contract Document For Highway Works Part 3: Model Contract Document For Highway Works (For Use In Scotland) - August 1994 Supply of Goods and Services by Local Authorities
SEDD INTERIM AMENDMENT NO 14	Volume 0: Section 1: Model Contract Document For Highway Works Part 3: Model Contract Document For Highway Works (For Use In Scotland) - August 1994 Aggregates Levy
SEETLLD INTERIM AMENDMENT 16	Volume 0, Section 1: Model Contract Document For Highway Works Part 3: Model Contract Document For Highway Works (For Use In Scotland) – August 1994. Volume 4: Section 1: Method Of Measurement For Highway Works Sustainability in Construction – The Considerate Constructors Scheme
SE INTERIM AMENDMENT 18	Manual Of Contract Documents For Highway Works (MCHW) Volume 1: Specification For Highway Works – May 2005. Volume 2: Notes For Guidance On The Specification For Highway Works – May

Title	Description
	2005 The Use of the Saturation Ageing Tensile Stiffness (SATS) Test
TS INTERIM AMENDMENT 20	Design Manual For Road And Bridges Volume 3. Interim Management Strategy For Concrete Half-Joint Deck Structures
TS INTERIM AMENDMENT 21	Design Manual For Road And Bridges Volume 3. Principal and general inspection of sign/signal gantries, and gantries with low handrails or open mesh flooring (BD 63/94and BA 63/94)
TS INTERIM AMENDMENT 22	Implementation Of New Reinforcement Standards (BS 4449:2005, BS 4482:2005, BS 4483: 2005 And BS 8666:2005).
TS INTERIM AMENDMENT 23 Rev 02	Implementation Of BS8500-1:2006 Concrete – Complementary British Standard To BS EN 206-1
TS INTERIM AMENDMENT 24	Guidance on Implementing Results of Research on Bridge Deck Waterproofing.
TS INTERIM AMENDMENT 25	Assessment and Upgrading of Existing Vehicle Parapets.
TS INTERIM AMENDMENT 26	The Anchorage of Reinforcement and Fixings in Hardened Concrete.
TS INTERIM AMENDMENT 27 Rev 01	Implementation of Construction (Design and Management) 2007 and the withdrawal of SD 10/05 and SD 11/05
TS INTERIM AMENDMENT 28 Rev 02	Certification of Combined Kerb and Drainage Products
TS INTERIM AMENDMENT 29	Identification of ‘Particularly at Risk’ Supports
TS INTERIM AMENDMENT 30	The Use of Foamed Concrete
TS INTERIM AMENDMENT 32	Clarification on the deflection of permanent formwork during the construction of trunk road bridges

Title	Description
TS INTERIM AMENDMENT 33	Guidance on the use of various documents relating to General & Principal Inspections for Trunk Road Road Structures
TS INTERIM AMENDMENT 34	Guidance on the use of High Friction Surfacing at Signalised Pedestrian Crossings on single carriageway Trunk Roads
TS INTERIM AMENDMENT 35	Guidance on the Introduction of Transport Scotland TS 2010 surface course specification
TS INTERIM AMENDMENT 36	Guidance on structural safety reporting relating to the Scottish Trunk Road Network
TS INTERIM AMENDMENT 37	Design of Single 2+1 single roads
TS INTERIM AMENDMENT 38	Temporary Barrier Decision Tool (TBDT)
TS INTERIM AMENDMENT 39	Use of Eurocodes for the Design of Bridges and Road Related Structures
TS INTERIM AMENDMENT 40	Road Safety Auditor Certification – Compliance with EC Directive 2008/96/EC

APPENDIX B

THIS IS APPENDIX B TO PART 2 OF THE NEW WORKS REQUIREMENTS

CONSULTATION MATRIX

Clause Number	Subject	Contact
SCHEDULE 2 – PART 1		
6.1	Temporary Traffic Management Schemes	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] Transport Scotland Trunk Road and Bus Operations: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Police Scotland Traffic Management: [REDACTED] Tel: [REDACTED] Email: Abnormal Loads Administrator: [REDACTED] Tel: [REDACTED] Email: The Scottish Ministers Trunk Road South West Management Unit Amey Infrastructure Services: [REDACTED] Tel: [REDACTED] Email: The Scottish Ministers Trunk Road South East Management Unit BEAR Scotland Limited: [REDACTED] Tel: [REDACTED] **Email:**

6.2	Speed Restrictions	Police Scotland Traffic Management: [REDACTED] Tel: [REDACTED] Email:
8.3	Permanent fencing and Accommodation Works fencing	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
8.4	Working hours and the control of noise and vibration	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: [REDACTED] North Lanarkshire Council - [REDACTED] Tel; 01698 27 4204 Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] **Email:** [REDACTED]
9.2	Licences and Approvals	Network Rail: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
9.3	Requirements of the Water Environment (Controlled Activities) Regulations 2005 ("CAR").	SEPA: [REDACTED] Tel: [REDACTED] **Email:** [REDACTED]
12.1	Permissions which are required to enable the Accommodation Works	Relevant Landowners
13.1	Alterations to public and private roads, accesses and public and private rights of way	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] **Email:** [REDACTED]

14.4	Security and protection	Police Scotland Traffic Management: [REDACTED] Tel: [REDACTED] Email:
17.9	Road Safety Audits on Temporary Traffic Management Schemes	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] **Email:** [REDACTED] Transport Scotland Trunk Road and Bus Operations: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Police Scotland Traffic Management: [REDACTED] Tel: [REDACTED] Email:
SCHEDULE 2 - PART 2		
1.1.2 (iv)	Design standards for side roads	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]

1.1.10 (iv)	Police observation platforms	Police Scotland: Traffic Management: [REDACTED] Tel: [REDACTED] Email:
1.1.11 (ii)	Location of maintenance crossover points	Transport Scotland Trunk Road and Bus Operations: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
1.1.17 (iii)	Application of the principles of Secured by Design (ACPO) to the design of temporary and permanent footpaths, cycle paths and underpasses.	Police Scotland Crime Prevention Design Advisor: [REDACTED] Tel: [REDACTED] Email: Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
1.1.18	Proposed Carfin Holytown Dualling Project	North Lanarkshire Council : [REDACTED] Business Manager (Roads and Structures Design), Tel: [REDACTED]

1.2.1 (i)	Site Clearance	Transport Scotland Trunk Road and Bus Operations: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
1.3.1 (vi)	Anti-Glare screens	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
1.3.2 (i)	Temporary Fencing, Gates and otherwise	Relevant Landowners
1.3.3 ((iv)	Permanent Boundary Fencing, Walling, Gates and otherwise.	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
1.3.4 (iii)	Design, location and extent of fencing for protected species.	Scottish Natural Heritage: [REDACTED], Area Officer Tel: [REDACTED] Email: [REDACTED]
1.3.5 (ii)	Location of Noise Fences and Barriers	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]

1.4.1	Road Restraint Systems	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] The Scottish Ministers Trunk Road South West Management Unit Amey Infrastructure Services: [REDACTED] Tel: [REDACTED] Email: The Scottish Ministers Trunk Road South East Management Unit BEAR Scotland Limited: [REDACTED] Tel: [REDACTED]
1.5.1	Water Environment (Controlled Activities) Regulations 2005 ("**CAR**").	SEPA: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
1.5.2 (iii)	Design including, but not limited to, drainage outfalls, culverts, all works on inland waters and pollution control	SEPA: [REDACTED] Tel: [REDACTED] Email: [REDACTED]

1.5.2 (iv)	Discharging water from the New Works Site on either a temporary or permanent basis	SEPA: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Scottish Natural Heritage: Debbie Skinner, Area Officer Tel: [REDACTED] Email: [REDACTED] Scottish Water Tel: Email: Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED] The Scottish Ministers Trunk Road South West Management Unit Amey Infrastructure Services: [REDACTED] Tel: [REDACTED] Email: The Scottish Ministers Trunk Road South East Management Unit BEAR Scotland Limited: [REDACTED] Tel: [REDACTED]

1.5.2 (v)	Drainage connections to the existing drainage network	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED] The Scottish Ministers Trunk Road South West Management Unit Amey Infrastructure Services: [REDACTED] Tel: [REDACTED] Email: The Scottish Ministers Trunk Road South East Management Unit BEAR Scotland Limited: [REDACTED] Tel: [REDACTED] Scottish Water Tel: Email:
1.5.3 (ix)	Land drain connections	Relevant Landowners

1.5.4 (v)	Incorporation of existing drainage into the New Works	SEPA: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
1.5.6 (viii)	Provision of trash screens and security screens at culverts	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] SEPA: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]

1.5.7 (ii)	Flood prevention and flood control	SEPA Tel: Email: Glasgow City Council Tel: Email: North Lanarkshire Council Tel: Email: South Lanarkshire Council Tel: Email: Transport Scotland Tel: Email:
1.5.7 (xiii)	Measures to prevent unauthorised use of maintenance access routes and safety at settlement, attenuation or storage ponds and otherwise.	Transport Scotland Trunk Road and Bus Operations: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
1.5.8 (i)	Watercourse Diversion Design	SNH: [REDACTED], Area Officer Tel: [REDACTED] Email: [REDACTED] SEPA: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
1.5.9 (i)	Provision of Service Ducts	Undertakers and other Relevant Parties
1.5.13	Monklands Canal Pipeline	Transport Scotland Trunk Road and Bus Operations: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
1.6.1 (xi)	Proposals for necessary works to existing gabions or crib walling.	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
1.6.1 (xvi)	Earthworks in the vicinity of railway	Network Rail: [REDACTED] Tel: [REDACTED] Email: [REDACTED]

1.6.2 (ii)	Mine workings or subsurface voids	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] The Coal Authority: [REDACTED] Tel: [REDACTED] Email: [REDACTED] SEPA: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
1.6.2 (iv)	Grouting works	SEPA: [REDACTED] Tel: [REDACTED] Email: [REDACTED]

1.6.8 (iii)	Blasting	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] SNH: [REDACTED], Area Officer Tel: [REDACTED] Email: [REDACTED] The Scottish Ministers Trunk Road South West Management Unit Amey Infrastructure Services: [REDACTED] Tel: [REDACTED] Email: The Scottish Ministers Trunk Road South East Management Unit BEAR Scotland Limited: [REDACTED] Tel: [REDACTED] Network Rail: [REDACTED] Tel: [REDACTED] Email; [REDACTED]
1.6.14	Existing Monitoring Wells at M74 Junction 5 Raith	SEPA: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Scottish Natural Heritage: [REDACTED], Area Officer Tel: [REDACTED] Email: [REDACTED]

1.7.1 (iv)	Carriageway tie-ins that extend outwith the Reference Points described in Table 1 of Appendix D for Side Roads	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
1.7.4 (vi)	Pavement Design for any Side Road pavement.	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
1.8.1 (iii)	Details of dropped kerb arrangements	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]:
1.8.2 (xi)	Design for kerbing, crossing points and access points from adjacent roads on combined footway/cycletracks and otherwise.	SUSTRANS Tel: Email:

1.9.1 (iii)	All detail for the provision of traffic signs, road markings and studs for Motorways, including junction numbering. All detail for the provision of traffic signs and road markings for Side Roads.	Transport Scotland Trunk Road and Bus Operations: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
1.9.1 (iv)	Maintaining existing sign information during construction of the New Works	Transport Scotland Trunk Road and Bus Operations: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
1.9.1 (xiv)	Signing and marking of cycle facilities	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]

1.9.1 (xxi)	Provision, location and lighting of traffic signs on Side Roads.	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
1.9.4 (ii)	Location of the new distance marker posts.	Transport Scotland Trunk Road and Bus Operations: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
1.9.6 (i)	Provision of road studs on Side Roads	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
1.9.6 (ii)	Locations for CHART node and section markers.	Transport Scotland Trunk Road and Bus Operations: [REDACTED] Tel: [REDACTED] Email: [REDACTED]

1.9.7.1 (i)	Layout of traffic signals, pedestrian crossings and combined pedestrian / cycle crossing installations.	Transport Scotland Trunk Road and Bus Operations: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] The Scottish Ministers Trunk Road South West Management Unit Amey Infrastructure Services: [REDACTED] Tel: [REDACTED] Email: The Scottish Ministers Trunk Road South East Management Unit BEAR Scotland Limited: [REDACTED] Tel: [REDACTED]

1.9.7.1 (vii)	Optimum traffic signal operation.	Transport Scotland Trunk Road and Bus Operations: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] The Scottish Ministers Trunk Road South West Management Unit Amey Infrastructure Services: [REDACTED] Tel: [REDACTED] Email: The Scottish Ministers Trunk Road South East Management Unit BEAR Scotland Limited: [REDACTED] Tel: [REDACTED]
1.9.7.3	Electrical supplies	Insert Electricity Supply Companies for the above areas

1.9.7.4 (i)	the proposed communications solution and compatibility with the existing systems' telecommunications.	Transport Scotland Trunk Road and Bus Operations: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] The Scottish Ministers Trunk Road South West Management Unit Amey Infrastructure Services: [REDACTED] Tel: [REDACTED] Email: The Scottish Ministers Trunk Road South East Management Unit BEAR Scotland Limited: [REDACTED] Tel: [REDACTED]
1.9.7.6 (i)	Supply and install duct access chambers	Transport Scotland Trunk Road and Bus Operations: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Relevant Local Authority
1.9.7.8 (v)	Specification and type of Traffic Signal Controller to be procured.	Transport Scotland Trunk Road and Bus Operations: [REDACTED] Tel: [REDACTED] Email: [REDACTED]

1.9.7.9 (ii)	Passively safe traffic signal posts on side roads.	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
1.9.7.10 (vi)	The fabrication or specification details of the external light source for traffic signs on overhead traffic signal gantries	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
1.10.1 (ii)	Proposals for Road Lighting	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Glasgow City Council - [REDACTED] Tel: [REDACTED] Email:North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
1.10.1 (lviii)	Format of the Overseeing Organisation table of attributes.	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
1.10.1 (lxv)	Temporary lighting arrangements	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]

1.10.3 (ii)	New Road Lighting	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
1.10.3 (xi)	Primary and Redundancy Servers	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
1.10.3 (xxi)	Provision of new lighting columns at and around the interface Reference Points.	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]

1.10.3 (xxii)	Lighting Design and Approvals	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Glasgow City Council - [REDACTED] Tel: [REDACTED] Email:North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
1.10.3 (xxv)	Locations of permanent power supplies for road lighting and electrical works.	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Glasgow City Council - [REDACTED] Tel: [REDACTED] Email:North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
2.1.4	Structures over or adjacent to railway lines	Network Rail: [REDACTED] Tel: [REDACTED] Email; [REDACTED]
2.1.6	Structures adjacent to watercourses	SEPA: [REDACTED] Tel: [REDACTED] Email: [REDACTED]

2.1.7	Apparatus and structures	Scottish Water Tel: Email: Scottish Power: Distribution Network [REDACTED] Tel: [REDACTED] Email: [REDACTED] Scottish Power: Transmission Network - [REDACTED] Tel: [REDACTED] Scotland Gas Networks: [REDACTED] Tel: [REDACTED] Email: [REDACTED] British Telecommunications Tel: [REDACTED] Email: [REDACTED] Cable and Wireless: Various – see Schedule 4, Part 8, Third Parties Tel: Email:
2.12.3.2	Paint protection system including colour	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
2.13.7 (o)	Inspection platforms in front of abutments	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
2.14.1	Reinforced soil structures	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
2.14.2	Precast Concrete Facing Panel	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
2.16.16	Proposed paint systems for maintenance works	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]

2.16.19	Live load regime during the replacement of bearings	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
2.19.5	Road lighting on Side Road Structures	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
3.1.1,3.4.1, 3.18.1,3.32.1, 3.36.1, 3.42.1	Particular Requirements for Structures	Network Rail: [REDACTED] Tel: [REDACTED] Email; [REDACTED]
3.5.1(i)	Protection to Sewers	Scottish Water Tel: Email:
4.1.3	Design, construction and completion of all Gantries	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
4.1.4	Size and weight of Traffic Scotland Issued Equipment	Transport Scotland: [REDACTED] Tel: Email: [REDACTED]
6.3.1	Sites of archaeological interest or archaeological remains which are likely to be affected by the New Works, including the landscape Design.	Historic Scotland: [REDACTED] Tel: [REDACTED] Email:
6.4.1	Species or sites protected by legislation or scheduled for protection which are likely to be affected by the New Works, including any hard and soft landscaping	Scottish Natural Heritage: [REDACTED], Area Officer Tel: [REDACTED] Email: [REDACTED]
6.4.5	Carry out surveys of plants and animals protected by legislation, which may be directly or indirectly affected by the New Works.	Scottish Natural Heritage: [REDACTED], Area Officer Tel: [REDACTED] Email: [REDACTED]

6.4.9	Details of their proposals for mitigation measures following surveys of plants and animals protected by legislation, which may be directly or indirectly affected by the New Works	Scottish Natural Heritage: [REDACTED], Area Officer Tel: [REDACTED] Email: [REDACTED]
6.5.1	Air quality and dust emissions	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
6.6.2	Water quality and drainage and the use of herbicides and other potentially polluting chemicals in proximity to watercourses.	SEPA: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
6.6.14 (ix)	Ecological mitigation works	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
6.7.1	Planning policies and any statutory planning consents required in respect of the Design and the New Works	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]

6.8.1	Construction Noise Levels	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
6.10.11	Disposal of Waste	SEPA: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
6.11.1	Protection of existing vegetation	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
6.16.1 (ii)	Species mixes and sowing density on land to be returned to pasture.	Relevant Landowners
6.19.1	Treatment and disposal of all contaminated materials.	SEPA: [REDACTED] Tel: [REDACTED] Email: [REDACTED] Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
		SCOTTISH CANALS: [REDACTED] Tel: [REDACTED] Email: [REDACTED]

SCHEDULE 2 – PART 3		
1.1.11	Provision of local VMS and associated infrastructure	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]
1.4.1	"Strategy of ITS New Works for Traffic Scotland Equipment Document"	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
1.4.2	Provide a communication network that is fully compatible with the Scottish Ministers existing communication network	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
1.4.3	Adoption of non-standard details	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
2.1.1	Liaison with TSS equipment and service providers. Interface between the TSS equipment provided by the Scottish Ministers and the Passive Network	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
2.1.3	Ownership of ITS equipment	Glasgow City Council - [REDACTED] Tel: [REDACTED] Email: North Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED] South Lanarkshire Council - [REDACTED] Tel; [REDACTED] Email: [REDACTED]

3.3.5	The time period before a temporary repair to Traffic Scotland Equipment must become permanent	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
3.3.11	Items of TSE to be removed from Site and taken to the EIE nominated store	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
4.1.6	IP communications infrastructure design	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
5.2.1.6	TSE site layouts not conforming to standard details	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
5.2.3.8	Ascertain suitable interface locations for the ducting and chambers with the existing network at the extents of the scheme.	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
5.2.5.8	Connect / disconnect cables, transmission paths or lasers at or across the extents of the Site.	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
5.5.4.11	New WIM installations	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
5.5.5.9	Testing, integration and performance requirements	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
5.5.11.3	Marker post numbering System	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]

7.1.10	Assembling Gantry mounted EIE and proving maintenance access requirements	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
10.1.10	Creation of the CTIP	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]
Appendix E	Prepare a “Strategy for Delivery of the ITS works for Traffic Scotland Equipment	Transport Scotland: [REDACTED] Tel: [REDACTED] Email: [REDACTED]

APPENDIX C

THIS IS APPENDIX C TO PART 2 OF THE NEW WORKS REQUIREMENTS

DEPARTURES FROM STANDARDS PROFORMAS

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APPENDIX C

Application for Departure from Standards

DMRB Volumes 1, 2 and 3 (Structures) Proforma

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DEPARTURE FROM STANDARDS

(Bridges and other Highway Structures)

Name of Works.....

Name of Bridge or Structure.....

Structure Reference Number.....

TRANSPORT SCOTLAND

APPLICATION FOR DEPARTURE FROM STANDARDS - (Departure Title)

APPLICANT: **PROJECT TITLE:** **DEPARTURE No:** **STRUCTURE REF:** **SUBMISSION DATE:**
1. List of supporting documentation Standards: Drawings: Other:
2. Description of proposed departure (Include details of DMRB / Eurocode Standards and Clause numbers which are being departed from)
3. Designer / Assessor justification (Include reasons why existing DMRB / Eurocode Standards are inappropriate)
4. Cost implications (Include an estimate of cost savings to Transport Scotland as well as the effect on future maintenance costs) **4.1. Construction costs** **4.2 Maintenance costs**
5. Applicant design of the Works Team Leader Declaration: I declare that reasonable professional skill and care have been exercised in the preparation of this Departure submission. Signed: Name: Date:
6. Transport Scotland Forth Crossing Team Structures / Geotechnical Manager's Comments and Recommendation: I recommend that the above departure should be accepted / rejected Signed: Name: Date:
7. Transport Scotland Bridges Branch Comments and Recommendation:

I recommend that the above departure should be accepted / rejected

Signed:

Name:

Date:

8. Transport Scotland Chief Bridges Engineer Recommendation

The above Departure is approved / rejected.

Signed:

Name: Bill Valentine

Date:

Application for Departure from Standards

DMRB Volume 6 (Road Geometry) Proforma

APPLICANT : .....

PROJECT TITLE : .....

DEPARTURE No. : .....

PROJECT DETAILS	
General description of project	
Route strategy	
Road category & type	
Proposed carriageway cross-section	
design of the Works speed proposed	
Future traffic flows & composition	

DESCRIPTION OF DEPARTURE	
Location and chainage	
Departure type	
DMRB reference	
Required standard	
Standard provided	
Associated Departures or relaxations	
Drawing Nos.	

APPLICANT : .....

PROJECT TITLE : .....

DEPARTURE No. : .....

JUSTIFICATION	
Detailed justification	
Safety implications	
Structural integrity	

ESSENTIAL COMPENSATORY MEASURES	
Compensatory measures	

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APPENDIX D

THIS IS APPENDIX D TO PART 2 OF THE NEW WORKS REQUIREMENTS

REQUIREMENTS FOR ROADS

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Motorways *Forming part of the Network Roads*												
M8 Motorway Eastbound	A1 to A2	9	D3M	11.0	3.3	0.7	1.5		No	A/E	No	120A
M8 Motorway Eastbound	A2 to A3	10	D4M	14.7	3.3	0.7	1.5		No	A/E	No	120A
M8 Motorway Eastbound	A3 to A4	8A	D2M	7.3	3.3	0.7	1.5		No	A/E	No	120A
M8 Motorway Eastbound	A4 to A5	8A	D2M	A/E								120A
M8 Motorway Eastbound	A5 to A6	8A	D2M	7.3	3.3	0.7	1.5		No	3.1	No	120A
M8 Motorway Eastbound	A6 to A8	9	D3M	11.0	3.3	0.7	1.5		No	3.1	No	120A
M8 Motorway Eastbound	A8 to A10	10	D4M	14.7	3.3	0.7	1.5		No	3.1	No	120A
M8 Motorway Eastbound	A10 to A12	9	D3M	11.0	3.3	0.7	1.5		No	3.1	No	120A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Motorways *Forming part of the Network Roads*												
M8 Motorway Eastbound	A12 to A14	8A	D2M	7.3	3.3	0.7	1.5		No	3.1	No	120A
M8 Motorway Eastbound	A14 to A15	8A	D2M	A/E								120A
M8 Motorway Eastbound	A15 to A16	8A	D2M	7.3	3.3	0.7	1.5		No	3.1	No	120A
M8 Motorway Eastbound	A43 to A44	8A	As D2M with 1m Hardstrips	7.3	1.0	1.0	1.5		No	3.1	No	120A
M8 Motorway Westbound	A45 to A46	8A	As D2M with 1m Hardstrips	7.3	1.0	1.0	1.5		No	3.1	No	120A
M8 Motorway Westbound	A16 to A15	8A	D2M	7.3	3.3	0.7	1.5		No	3.1	No	120A
M8 Motorway Westbound	A15 to A14	8A	D2M	A/E								120A
M8 Motorway Westbound	A14 to A13	8A	D2M	7.3	3.3	0.7	1.5		No	3.1	No	120A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Motorways *Forming part of the Network Roads*												
M8 Motorway Westbound	A13 to A11	9	D3M	11.0	3.3	0.7	1.5		No	3.1	No	120A
M8 Motorway Westbound	A11 to A9	10	D4M	14.7	3.3	0.7	1.5		No	3.1	No	120A
M8 Motorway Westbound	A9 to A7	9	D3M	11.0	3.3	0.7	1.5		No	3.1	No	120A
M8 Motorway Westbound	A7 to A5	8A	D2M	7.3	3.3	0.7	1.5		No	3.1	No	120A
M8 Motorway Westbound	A5 to A1	Varies	Varies	A/E								120A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Motorways *Forming part of the Network Roads*												
M73 Motorway Southbound	A18 to A20	8A	D2M	7.3	3.3	0.7	1.5		No	3.1 (Minimum width of 0.5m applicable over extent of Glasgow Coatbridge Rail Bridge)	No	120A
M73 Motorway Southbound	A20 to A21	9	D3M	11.0	3.3	0.7	1.5		No	3.1	No	120A
M73 Motorway Southbound	A21 to A22	10	D4M	14.7	3.3	0.7	1.5		No	3.1 (Minimum width of 0.5m applicable over extent of North Calder Water Bridge)	No	120A
M73 Motorway Southbound	A22 to A23	8A	D2M	7.3	3.3	0.7	1.5		No	A/E	No	120A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Motorways *Forming part of the Network Roads*												
M73 Motorway Northbound	A25 to A24	9	D3M	11.0	3.3	0.7	1.5		No	A/E	No	120A
M73 Motorway Northbound	A24 to A21	10	D4M	14.7	3.3	0.7	1.5		No	3.1 (Minimum width of 0.5m applicable over extent of North Calder Water Bridge)	No	120A
M73 Motorway Northbound	A21 to A19	9	D3M	11.0	3.3	0.7	1.5		No	3.1 (Minimum width of 0.5m applicable over width of Glasgow Coatbridge Rail Bridge)	No	120A
M73 Motorway Northbound	A19 to A18	8A	D2M	7.3	3.3	0.7	1.5		No	3.1	No	120A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Motorways *Forming part of the Network Roads*												
M74 Motorway Southbound	A26 to A27	9	D3M	A/E								120A
M74 Motorway Southbound	A27 to A28	9	D3M	11.0	3.3	0.7	1.5		No	3.1	No	120A
M74 Motorway Southbound	A28 to A30	8A	D2M	7.3	3.3	0.7	1.5		No	3.1	No	120A
M74 Motorway Southbound	A30 to A31	8A	D2M	A/E								120A
M74 Motorway Southbound	A31 to A33	9	D3M	11.0	3.3	0.7	1.5		No	3.1	No	120A
M74 Motorway Southbound	A33 to A34	10	D4M	14.7	3.3	0.7	1.5		No	3.1	No	120A
M74 Motorway Southbound	A34 to A35	9	D3M	11.0	3.3	0.7	1.5		No	3.1	No	120A
M74 Motorway Southbound	A35 to A37	10	D4M	14.7	3.3	0.7	1.5		No	3.1	No	120A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Motorways *Forming part of the Network Roads*												
M74 Motorway Southbound	A37 to A38	9	D3M	A/E								120A
M74 Motorway Southbound	A38 to A39	10	D4M	14.7	3.3	0.7	1.5		No	3.1	No	120A
M74 Motorway Southbound	A39 to A40	8A	D2M	A/E								120A
M74 Motorway Northbound	A40 to A36	9	D3M	A/E								120A
M74 Motorway Northbound	A36 to A32	10	D4M	14.7	3.3	0.7	1.5		No	3.1	No	120A
M74 Motorway Northbound	A32 to A30	8A	D2M	A/E								120A
M74 Motorway Northbound	A30 to A29	8A	D2M	7.3	3.3	0.7	1.5		No	3.1	No	120A
M74 Motorway Northbound	A29 to A26	9	D3M	A/E								120A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Motorways *Forming part of the Network Roads*												
A8(M) Baillieston to Swinton Motorway	A41 to A42	7B	D2UM	7.3	2.75	0.7	1.5		No	3.1	No	85A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
All Purpose Roads *Forming part of the Network Roads*												
A8 APR Eastbound	B15 to B16	8A	D2AP with h/shoulder	7.3	3.3	0.7	1.5		No	N/A	No	100A
A8 APR Westbound	B17 to B18	8A	D2AP with h/shoulder	7.3	3.3	0.7	1.5		No	N/A	No	100A
A8 APR Eastbound	B19 to B20	5	D2AP	7.3	1.0	1.0	2.5	2.5	No	N/A	No	100A
A8 APR Westbound	B21 to B22	5	D2AP	7.3	1.0	1.0	2.5	2.5	No	N/A	No	100A
A8 APR Eastbound	B23 to B24	5	D2AP	7.3	1.0	1.0	2.5	2.5	No	N/A	No	100A
A8 APR Westbound	B25 to B26	5	D2AP	7.3	1.0	1.0	2.5	2.5	No	N/A	No	100A
A725 APR Southbound	B29 to B31	5	D2AP	7.3	1.0	1.0	2.5		No		A 3 metre wide footway shall be provided within the verge from the northern tie-in at B29 to the tie-in at point G29	85A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
All Purpose Roads *Forming part of the Network Roads*												
A725 APR Southbound	B31 to B32	5	As D2AP with 1 lane hatched	7.3	1.0	1.0	2.5		No	2.5	No	85A
A725 APR Southbound	B32 to B33	5	D2AP	7.3	1.0	1.0	2.5		No	2.5	No	85A
A725 Northbound	B33 to B30	5	D2AP	7.3	1.0	1.0	2.5		No	2.5	No	85A
A725 Northbound	B30 to B29	7C	D3AP	11.0	1.0	1.0	2.5		No	2.5	No	85A
Glasgow & Edinburgh Road Eastbound	B1 to B2	5	D2UAP	7.3			2.0		Yes	1.8	A 3 metre wide footway shall be provided within the verge from the western tie-in at B1 to the tie-in at E1.	50A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
All Purpose Roads *Forming part of the Network Roads*												
Glasgow & Edinburgh Road Westbound	B2 to B1	5	D2UAP	7.3			2.0		Yes	1.8	A 2 metre wide footway shall be provided within the verge from the western tie-in at B1 for a length of approximately 150m.	50A
A8 APR Westbound	B3 to B4	5	D2UAP	7.3			2.0		Yes	1.8	A 2 metre wide footway shall be provided within the nearside verge to facilitate access to a new bus stop.	70A
A8 APR Westbound	B4 to B5	7C	D3UAP	11.0			2.0		Yes	1.8	No	70A
A8 APR Eastbound	B6 to B7	5	D2UAP	7.3			2.0		Yes	1.8	A 2 metre wide footway shall be provided within the nearside verge from the tie-in at Point E1 to the tie-in at Point B7	70A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
All Purpose Roads *Forming part of the Network Roads*												
A8 APR Eastbound	B7 to B8	5	D2UAP	A/E with hatching to reduce to 1 lane								70A
A8 APR Eastbound	B8 to B9	N/A	N/A	4.0			2.0		Yes	1.8	A 2 metre wide footway shall be provided within the nearside verge from the tie-in at Point B8 to the tie-in at Point B9	70A
A8 APR Eastbound	B9 to B10	7C	D3UAP	11.0			2.0		Yes	1.8	A 2 metre wide footway shall be provided within the nearside verge from the tie-in at Point B9 to the tie-in at Point B10	70A
A8 APR Westbound	B11 to B12	5	D2UAP	7.3			2.0		Yes	1.8	No	70A
A8 APR Eastbound	B13 to B14	8A	D2AP with h/shoulder	7.3	3.3	0.7	1.5		No	3.1	No	100A
A8 APR Westbound	B14 to B13	8A	D2AP with h/shoulder	7.3	3.3	0.7	1.5		No	3.1	No	100A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
All Purpose Roads *Forming part of the Network Roads*												
A725 APR Southbound	B27 to B28	5	D2AP	7.3	1.0	1.0	2.5		Yes	2.5	No	70A
A725 Northbound	B28 to B27	5	D2AP	7.3	1.0	1.0	2.5		Yes	2.5	A 3 metre wide footway shall be provided within the verge from the western tie-in at B27 for a length of approximately 170m.	70A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Slip Roads *Forming part of the Network Roads*												
M8 J10 Merge Slip Road	C1 to C2	N/A	MG1A	3.7	3.3	0.7	1.5	2.3	No	N/A	No	85A
M8 J9 Diverge Slip Road	C3 to C4	N/A	DG1A	3.7	3.3	0.7	1.5	2.3	No	N/A	No	85A
M8 Eastbound to M73 Southbound Interchange Link	C5 to C6	N/A	IL2A	7.3	3.3	1.0	1.5	2.0	No	N/A	No	85A
M8 Eastbound to M73 Southbound Interchange Link	C6 to C7	N/A	DG2A/ IL1A	11.0	3.3	1.0	2.5	2.3	No	N/A	No	85A
M8 Eastbound to M73 Southbound Interchange Link	C7 to C8	N/A	IL1A	3.7	3.3	0.7	1.5	2.3	No	N/A	No	85A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Slip Roads *Forming part of the Network Roads*												
M8 Eastbound to A8 Eastbound APR Diverge Slip Road	C7 to C9	N/A	DG2A	7.3	1.0	1.0	2.5	2.0	No	N/A	No	85A
Baillieston Interchange Roundabout to M8 Eastbound Merge Slip Road	C10 to C11	N/A	MG2C	7.3	3.3	1.0	1.5	2.0	No	N/A	No	70A
M8 Westbound to Baillieston Interchange Roundabout Diverge Slip Road	C12 to C13	N/A	DG2C	7.3	3.3	1.0	1.5	2.0	No	N/A	No	70A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Slip Roads *Forming part of the Network Roads*												
A725 Northbound to M8 Eastbound Diverge Slip Road	C14 to C15	N/A	DG2C	7.3	3.3	1.0	1.5	2.0	No	N/A	No	70A
A725 Northbound to M8 Eastbound Merge Slip Road	C15 to C16	N/A	MG2C	7.3	3.3	1.0	1.5	2.0	No	N/A	No	70A
M8 Westbound to A725 Southbound Diverge Slip Road	C17 to C18	N/A	DG2A	7.3	1.0	1.0	2.5	2.0	No	N/A	No	70A
M8 Westbound to A725 Southbound Merge Slip Road	C18 to C19	N/A	N/A	3.7	1.0	1.0	1.5	2.0	No	N/A	No	70A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Slip Roads *Forming part of the Network Roads*												
M8 Eastbound to EuroCentral Diverge Slip Road	C20 to C21	N/A	DG2A	7.3	1.0	1.0	2.0	2.3	No	N/A	No	70A
EuroCentral to M8 Westbound Merge Slip Road	C22 to C23	N/A	MG1A	3.7	3.3	0.7	2.0	2.0	No	N/A	No	70A
M8 Eastbound to Chapelhall Diverge Slip Road	C24 to C25	N/A	DG2A	7.3	1.0	1.0	2.5	2.0	No	N/A	No	70A
Chapelhall to M8 Westbound Merge Slip Road	C26 to C27	N/A	MG2C	7.3	3.3	1.0	2.0	2.0	No	N/A	No	70A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Slip Roads *Forming part of the Network Roads*												
A8 APR Eastbound to Newhouse Diverge Slip Road	C28 to C29	N/A	DG2E	7.3	1.0	1.0	2.5	2.5	No	N/A	No	70A
Newhouse to A8 APR Westbound Merge Slip Road	C30 to C31	N/A	MG1C	3.7	3.3	0.7	2.0	2.3	No	N/A	No	70A
Newhouse to M8 Eastbound Merge Slip Road	C32 to C33	N/A	MG1C	3.7	3.3	0.7	2.0	2.3	No	N/A	No	70A
M8 Westbound to Newhouse Diverge Slip Road	C34 to C35	N/A	DG1C	3.7	3.3	0.7	2.0	2.3	No	N/A	No	70A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Slip Roads *Forming part of the Network Roads*												
M8 Westbound to Newhouse Diverge Slip Road	C35 to C36	N/A	DG2E	7.3	3.3	1.0	2.0	2.0	No	N/A	No	70A
M8 Eastbound to M8 Eastbound Merge Slip Road	C37 to C38	N/A	MG2C	7.3	1.0	1.0	2.0	2.0	No	N/A	No	70A
M8 Westbound to M8 Westbound Diverge Slip Road	C39 to C40	N/A	DG2A	7.3	1.0	1.0	2.5	2.0	No	N/A	No	70A
Baillieston Interchange Roundabout to M73 Southbound Merge Slip Road	C41 to C42	N/A	MG1A	3.7	3.3	0.7	1.5	2.5	No	N/A	No	70A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Slip Roads *Forming part of the Network Roads*												
M73 Northbound to Baillieston Interchange Roundabout Diverge Slip Road	C43 to C44	N/A	DG2C	7.3	3.3	1.0	1.5	2.0	No	N/A	No	70A
M73 Northbound to Baillieston Interchange Roundabout Diverge Slip Road	C44 to C45	N/A	DG1A	3.7	3.3	0.7	1.5	2.3	No	N/A	No	70A
M8 Eastbound to M73 Southbound Interchange Link	C46 to C47	N/A	IL2A	7.3	3.3	1.0	1.5	2.0	No	N/A	No	85A

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Table 1

M73 Northbound to M8 Westbound Interchange Link	C48 to C49	N/A	IL2A	7.3	3.3	1.0	1.5	2.0	No	N/A	No	85A
M73 Southbound to M74 Southbound Interchange Link	C50 to C51	N/A	IL2A	7.3	3.3	1.0	1.5	2.0	No	N/A	No	85A
M74 Southbound to M73 Northbound Interchange Link	C52 to C53	N/A	IL2A	7.3	3.3	1.0	1.5	2.0	No	N/A	No	85A
M74 Southbound to Daldowie Diverge Slip Road	C54 to C55	N/A	DG2C	7.3	3.3	1.0	1.5	2.0	No	N/A	No	85A
Daldowie to M73 Northbound Merge Slip Road	C55 to C56	N/A	MG2C, tapers to single lane	7.3	3.3	1.0	1.5	2.0	No	N/A	No	85A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Slip Roads *Forming part of the Network Roads*												
Daldowie to M73 Northbound Merge Slip Road	C56 to C57	N/A	MG1A	3.7	3.3	0.7	1.5	2.3	No	N/A	No	85A
M73 Southbound to M74 Northbound Merge Slip Road	C58 to C59	N/A	MG2C	7.3	3.3	1.0	1.5	2.0	No	N/A	No	85A
Daldowie to M74 Northbound Merge Slip Road	C60 to C61	N/A	MG2C	A/E								85A
M74 Northbound to Daldowie Diverge Slip Road	C61 to C62	N/A	DG2A	A/E								85A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Slip Roads *Forming part of the Network Roads*												
M74 Northbound to M73 Northbound Interchange Link	C63 to C64	N/A	IL2A	7.3	3.3	1.0	1.5	2.0	No	N/A	No	85A
M74 Southbound to Bothwell Services Diverge Slip Road	C65 to C66	N/A	DG1A	3.7	3.3	0.7	1.5	2.3	No	N/A	No	70A
Bothwell Services to M74 Southbound Merge Slip Road	C67 to C68	N/A	MG1A	3.7	3.3	0.7	1.5	2.3	No	N/A	No	70A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Slip Roads *Forming part of the Network Roads*												
M74 Southbound to Raith Roundabout Diverge Slip Road	C69 to C70	N/A	DG2C	7.3	3.3	1.0	1.5	2.0	No	N/A	No	85A
M74 Southbound to Raith Roundabout Diverge Slip Road	C70 to C71	N/A	As DG2C but with additional 3rd lane	11.0	3.3	1.0	1.5	2.0	No	N/A	No	85A
Raith Roundabout to M74 Northbound Merge Slip Road	C72 to C73	N/A	MG2C	7.3	3.3	1.0	1.5	2.0	No	N/A	No	85A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Slip Roads *Forming part of the Network Roads*												
Bellshill Road to M74 Northbound Diverge Slip Road	C74 to C75	N/A	MG1C	3.7	3.3	0.7	2.0	2.8	No	N/A	No	60A
Raith Roundabout to A725 Northbound Merge Slip Road	C76 to C77	N/A	As MG2E with hard-shoulder, tapers to single lane	7.3	3.3	1.0	2.5	2.5	No	N/A	No	85A
Raith Roundabout to A725 Northbound Merge Slip Road	C77 to C78	N/A	MG1C	3.7	3.3	0.7	2.0	2.8	No	N/A	No	85A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Slip Roads *Forming part of the Network Roads*												
A725 Northbound to Bellshill Diverge Slip Road (Orbiston Junction)	C79 to C80	N/A	DG1C	3.7	3.3	0.7	2.0	2.8	No	N/A	No	85A
A725 Southbound to Raith Roundabout Diverge Slip Road	C81 to C82	N/A	DG2E	7.3	1.0	1.0	2.5	2.5	No	N/A	No	85A
A725 Southbound to Raith Roundabout Diverge Slip Road	C82 to C83	N/A	As DG2E but with an additional 3rd lane	11.0	1.0	1.0	2.5	2.5	No	N/A	No	85A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Slip Roads *Forming part of the Network Roads*												
Raith Roundabout to A725 Southbound Merge Slip Road	C84 to C85	N/A	As MG2E with hard-shoulder, tapers to single lane	7.3	3.3	1.0	2.5	2.5	No	N/A	No	70A
Raith Roundabout to A725 Southbound Merge Slip Road	C85 to C86	N/A	MG1C	3.7	3.3	0.7	2.0	2.8	No	N/A	No	70A
A725 Northbound to Bellshill Road Diverge Slip Road	C87 to C88	N/A	DG2E	7.3	1.0	1.0	2.5	2.5	No	N/A	No	70A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Slip Roads *Forming part of the Network Roads*												
A725 Northbound to Bellshill Road Southbound Diverge Slip Road	C89 to C90	N/A	As DG1C with 1m hardstrip	3.7	1.0	0.7	2.0	2.8	No	N/A	No	70A
Raith Roundabout to M74 Southbound Merge Slip Road	C91 to C92	N/A	MG2C, tapers to single lane	7.3	3.3	1.0	1.5	2.0	No	N/A	No	85A
Raith Roundabout to M74 Southbound Merge Slip Road	C92 to C93	N/A	MG1A	3.7	3.3	0.7	1.5	2.3	No	N/A	No	85A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Slip Roads *Forming part of the Network Roads*												
M74 Northbound to Raith Roundabout Diverge Slip Road	C94 to C95	N/A	As DG2A but with an additional 3rd lane	11.0	1.0	1.0	2.5	2.0	No	N/A	No	85A
M74 Northbound to Raith Roundabout Diverge Slip Road	C95 to C96	N/A	DG2A	7.3	1.0	1.0	2.5	2.0	No	N/A	No	85A
M74 Southbound to Hamilton Diverge Slip Road	C97 to C98	N/A	IL2A	7.3	3.3	1.0	1.5	2.0	No	N/A	No	85A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Slip Roads *Forming part of the Network Roads*												
A725 Northbound to Belshill Diverge Slip Road (Orbiston Junction)	C79 to C80	N/A	DG1C	3.7	3.3	0.7	2.0	2.8	No	N/A	No	85A
A8 APR E/B to Shawhead Slip Road	E17 to E18	2	S2	7.3	1.0	1.0	2.5	2.5	Yes	N/A	No	70A
A8 APR W/B to Shawhead Slip Road	E19 to E20	2	S2	7.3	1.0	1.0	2.5	2.5	Yes	N/A	No	70A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Roundabouts *Forming Part of the Network Roads*												
Baillieston Roundabout	D3	N/A	N/A	9.5					Yes	N/A	No	N/A
EuroCentral North Roundabout	D4	N/A	N/A	10.0					Yes	N/A	A 3 metre wide footway shall be provided within the Western and Southern verge from the tie-in at F56 to the tie-in at E23	N/A
EuroCentral South Roundabout	D5	N/A	N/A	10.0					Yes	N/A	A 3 metre wide footway shall be provided within the Northern, Eastern and Southern verge from the tie-in at E24 to the tie-in at E27	N/A
Chapelhall North Roundabout	D6	N/A	N/A	10.0					Yes	N/A	No	N/A
Chapelhall South Roundabout	D7	N/A	N/A	10.0					Yes	N/A	No	N/A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Roundabouts *Forming Part of the Network Roads*												
Bo'ness Road North Roundabout	D8	N/A	N/A	10.0					Yes	N/A	A 3 metre wide footway shall be provided within the Northern and Eastern verge from the tie-in at E34 to the tie-in at E37	N/A
Bo'ness Road South Roundabout	D9	N/A	N/A	10.0					Yes	N/A	A 3 metre wide footway shall be provided within the Eastern and Southern verge from the tie-in at E38 to the tie-in at E42	N/A
Raith Roundabout	D12 to D13	N/A	N/A	7.3					Yes	N/A	No	N/A
Raith Roundabout	D13 to D14	N/A	N/A	11.0					Yes	N/A	No	N/A
Raith Roundabout	D14 to D15	N/A	N/A	14.7					Yes	N/A	No	N/A
Raith Roundabout	D15 to D16	N/A	N/A	11.0					Yes	N/A	No	N/A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Roundabouts *Forming Part of the Network Roads*												
Raith Roundabout	D16 to D12	N/A	N/A	7.3					Yes	N/A	No	N/A
A8 Swinton Roundabout	D1	N/A	N/A	11.0					Yes	N/A	A 3 metre wide footway shall be provided within the Northern verge from the western tie-in at B1 to the tie-in at E1 and between the tie-in at E1 to the tie-in at B7.	N/A
A89 / A8 Bargeddie Roundabout	D2	N/A	N/A	Varies (11.0/9.5)					Yes	N/A	A 3 metre wide footway shall be provided within the Northern verge from the tie-in at B10 to the tie-in at E4	N/A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Side Roads *Forming Part of the Network Roads*												
Rhindhouse Road	E79 to E2	N/A	N/A	5.5			2.0	2.0	Yes	N/A	A 3 metre wide footway shall be provided within the Western verge from the tie-in at B1 to the tie-in at E1.	50A
North Road Southbound	E10 to E17	5	D2UAP	7.3			2.0		Yes	1.8	No	70A
North Road Northbound	E17 to E10	5	D2UAP	7.3			2.0		Yes	1.8	A 3 metre wide footway shall be provided within the Western verge between the tie-in at E17 to the tie-in at E10.	70A
EuroCentral Overbridge	E23 to E24	N/A	N/A	A/E								50A
Shawfoot Road	E25 to E80	1	SU2	7.3			2.5	2.5	Yes	N/A	A 3 metre wide footway shall be provided within the Northern verge between the tie-in at E25 to the tie-in at E26.	50A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Side Roads *Forming Part of the Network Roads*												
Chapelhall Junction Link Road	E29 to E30	2	S2	7.3	1.0	1.0	2.5	2.5	Yes	N/A	No	50A
Chapelhall North Link Road	E31 to E32	2	S2	7.3	1.0	1.0	2.5	2.5	No	N/A	No	50A
Chapelhall South Link Road Southbound	E39 to E40	6	D2AP	7.3	1.0	1.0	2.5		No	2.5	No	50A
Chapelhall South Link Road Northbound	E40 to E39	6	D2AP	7.3	1.0	1.0	2.5		No	2.5	No	50A
Bellshill Road Southbound	E69 to E70	5	D2UAP	7.3			2.0		Yes	1.8	A 3 metre wide footway shall be provided within the Eastern verge between the tie-in at G33 to the tie-in at E70.	60A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Side Roads *Forming Part of the Network Roads*												
Bellshill Road Northbound	E70 to E69	5	D2UAP	7.3			2.0		Yes	1.8	A 3 metre wide footway shall be provided within the Western verge between the tie-in at E70 to the tie-in at G34	60A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Access Tracks *Forming Part of the Network Roads*												
Access Track to Structure, East of Shawhead	F42 to F43	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A
SUDS Pond Access Track	F44 to F45	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A
Orchard Farm West SUDS Pond Access Track	F53 to F54	N/A	N/A	5.0			1.0	1.0	As Required	N/A	N/A	N/A
Orchard Farm East SUDS Pond Access Track	G23 to F57	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A
Woodhall SUDS Pond Access Track from A8 APR Eastbound	F61 to F62	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Access Tracks *Forming Part of the Network Roads*												
SUDS Pond Access Track from Woodhall Mill Road	F71 to F72	N/A	N/A	6.0			1.0	1.0	As Required	N/A	N/A	N/A
SUDS Pond Access Track from Rowantree Avenue	F73 to F74	N/A	N/A	5.5			1.0	1.0	As Required	N/A	N/A	N/A
SUDS Pond Access Track from Rowantree Avenue	F74 to F75	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A
SUDS Pond Access Track from Glasgow and Edinburgh Road	F76 to F77	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Access Tracks *Forming Part of the Network Roads*												
SUDS Pond Access Track, West of the A73	F78 to F79	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A
SUDS Pond Access Track, West of the A73	F79 to F80	N/A	N/A	7.0			1.0	1.0	As Required	N/A	N/A	N/A
Access Track, East of the A73	F81 to F82	N/A	N/A	A/E with new road pavement	N/A							
SUDS Pond Access Track, East of the A73	F83 to F84	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A
SUDS Pond Access Track from Bredisholm Road Access Track	F85 to F86	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Access Tracks *Forming Part of the Network Roads*												
Access Track from Roundknowe Road	F87 to F88	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A
Access Track from Roundknowe Road	F88 to F89	N/A	N/A	4.5			1.0	1.0	As Required	N/A	N/A	N/A
Access Track from Roundknowe Road	F89 to F90	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A
SUDS Pond Access Track	F91 to F92	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A
SUDS Pond Access Track from Grey Friars Road	F93 to F94	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Access Tracks *Forming Part of the Network Roads*												
SUDS Pond Access Track from Blantyre Farm Road	F95 to F96	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A
Access Track over BothwellPark Re-Aligned Bridge	F97 to F98	N/A	N/A	4.5			1.0	1.0	As Required	N/A	N/A	N/A
Access Track to Flood Compensation Storage Area	F99 to F100	N/A	N/A	4.5			1.0	1.0	As Required	N/A	N/A	N/A
Access Track to Flood Compensation Storage Area	F100 to F101	N/A	N/A	3.5			1.0	1.0	As Required	N/A	N/A	N/A
Field Access Track	F102 to F103	N/A	N/A	3.5			1.0	1.0	As Required	N/A	N/A	N/A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Access Tracks *Forming Part of the Network Roads*												
SUDS Pond Access Track, West of Raith	F104 to F105	N/A	N/A	4.5			0.5	0.5	As Required	N/A	N/A	N/A
Pumping Station Access Track	F106 to F107	N/A	N/A	4.5			4.0	1.0	As Required	N/A	N/A	N/A
Access Track to Flood Compensation Storage Area	F108 to F109	N/A	N/A	3.0			0.5	0.5	As Required	N/A	N/A	N/A
Access Track South of M74	F110 to F111	N/A	N/A	3.0			0.5	0.5	As Required	N/A	N/A	N/A
Swinton SUDS Pond Access Track	F3 to F4	N/A	N/A	5.0			1.0	1.0	As Required	N/A	N/A	N/A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Access Tracks *Forming Part of the Network Roads*												
SUDS Access from Old Monklands South Access Track	F20 to F21	N/A	N/A	6.0			1.0	1.0	As Required	N/A	N/A	N/A
SUDS Pond Access Track from Woodhall Cottage Road West	F66 to F68	N/A	N/A	5.0			1.0	1.0	As Required	N/A	N/A	N/A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Roundabouts *– Third Party Roads*												
Newhouse Roundabout	D10	N/A	N/A	9.0					Yes	N/A	A 2 metre wide footway shall be provided within the Eastern verge from the tie-in at E48 to the tie-in at E49	N/A
Daldowie Roundabout	D11	N/A	N/A	9.0					Yes	N/A	A/E	N/A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Side Roads *– Third Party Roads*												
Rhindhouse Road	E1 to E79	N/A	N/A	5.5			2.0	2.0	Yes	N/A	A 3 metre wide footway shall be provided within both verges from the tie-in at B1 to the tie-in at E1.	50A
A89 Coatbridge Road Eastbound	E3 to E4	5	D2UAP	7.3			2.5		Yes	1.8	A 3 metre wide footway shall be provided within the Northern verge from the tie-in at E3 to the tie-in at E4	70A
A89 Coatbridge Road Westbound	E4 to E3	5	D2UAP	7.3			2.5		Yes	1.8	No	70A
A89 Coatbridge Road Eastbound	E5 to E6	5	D2UAP	7.3			2.5		Yes	1.8	A/E	70A
A752 Langmuir Road and Gartcosh Road	E7 to E8	1	SU2	7.3			2.5	2.5	Yes	N/A	A/E	70A

Appendix D: Requirements for Roads

Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Side Roads – *Third Party Roads*												
A725 Whifflet Street	E9 to E10	5	D2UAP	7.3			2.0		Yes	1.8	A 3 metre wide footway shall be provided within both verges between the tie-in at E9 to the tie-in at E10.	70A
Kirkshaws Road	E10 to E11	1	SU2	7.3			2.5	2.5	Yes	N/A	A 3 metre wide footway shall be provided within both verges between the tie-in at E10 to the tie-in at E11.	50A
Hagmill Road	E10 to E12	1	SU2	7.3			2.5	2.5	Yes	N/A	A 2 metre wide footway shall be provided within the Northern verge to facilitate the provision of a crossing and within the Southern verge between the tie-in at E12 to the tie-in at E10.	50A
Mackinnon Mills Access	E13 to E14	N/A	N/A	A/E								50A
Mayfield Place	E15 to E16	N/A	N/A	5.0			2.0	2.0	Yes	N/A	No	50A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Side Roads *– Third Party Roads*												
North Road	E21 to E22	2	S2	7.3	1.0	1.0	2.5	2.5	Yes	N/A	No	70A
Shawfoot Road	E80 to E26	1	SU2	7.3			2.5	2.5	Yes	N/A	A 3 metre wide footway shall be provided within the Northern verge between the tie-in at E25 to the tie-in at E26.	50A
Townhead Avenue Southbound	E27 to E28	5	D2UAP	7.3			2.0		Yes	1.8	A 3 metre wide footway shall be provided within the Eastern verge between the tie-in at E27 to the tie-in at E28.	70A
Townhead Avenue Northbound	E28 to E27	5	D2UAP	7.3			2.0		Yes	1.8	A 3 metre wide footway shall be provided within the Western verge between the tie-in at E28 to the tie-in at E27.	70A
Woodhall Mill Road	E33 to E34	2	S2	7.3	1.0	1.0	2.5	2.5	Yes	N/A	A 3 metre wide footway shall be provided within the Southern verge between the tie-in at E33 to the tie-in at E34.	50A

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Table 1

Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Side Roads *– Third Party Roads*												
Bo'Ness Road	E35 to E36	1	SU2	7.3			2.5	2.5	Yes	N/A	A 3 metre wide footway shall be provided within the Eastern verge between the tie-in at E35 to the tie-in at E36.	50A
Bo'Ness Road	E37 to E38	2	WS2	10.0	1.0	1.0	2.5	2.5	Yes	N/A	A 3 metre wide footway shall be provided within the Eastern verge between the tie-in at E37 to the tie-in at E38. A 3 metre wide footway shall also be provided within the Western verge facilitating access to/from the bus lay-bys.	70A
McNeil Drive	E41 to E42	1	SU2	7.3			2.5	2.5	Yes	N/A	A 3 metre wide footway shall be provided within the Northside verge between the tie-in at E41 to the tie-in at E42.	50A

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					N/S	O/S	N/S	O/S				
Side Roads *– Third Party Roads*												
Rowantree Avenue Eastbound	E43 to E44	5	D2UAP	7.3			2.0		Yes	1.8		50A
Rowantree Avenue Westbound	E44 to E43	5	D2UAP	7.3			2.0		Yes	1.8	A 3 metre wide footway shall be provided within the Southern verge between the tie-in at E43 to the tie-in with existing.	50A
Bo'ness Road	E45 to E46	2	S2	7.3	1.0	1.0	2.5	2.5	Yes	N/A	A 3 metre wide footway shall be provided within the Eastern verge between the tie-in at E45 to the tie-in at E46.	50A
A73 Bellside Road Southbound	E47 to E48	5	D2UAP	7.3			2.0		Yes	1.8	A 2 metre wide footway shall be provided within the Eastern verge between the tie-in at E47 to the tie-in at E48.	50A
A73 Bellside Road Northbound	E48 to E47	5	D2UAP	7.3			2.0		Yes	1.8	No	50A

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					N/S	O/S	N/S	O/S				
Side Roads – *Third Party Roads*												
A73 Bellside Road Southbound	E49 to E50	5	D2UAP	7.3			2.0		Yes	1.8	A 2 metre wide footway shall be provided within the Eastern verge between the tie-in at E49 to the tie-in at E50.	50A
A73 Bellside Road Northbound	E50 to E49	5	D2UAP	7.3			2.0		Yes	1.8	No	50A
Calderpark Terrace	E51 to E52	3B	WS2	A/E								50A
A74 Hamilton Road Eastbound	E53 to E54	5	D2UAP	7.3			2.0		Yes	1.8	A/E	70A
A74 Hamilton Road Westbound	E54 to E53	5	D2UAP	7.3			2.0		Yes	1.8	A/E	70A
A74 Hamilton Road Eastbound	E55 to E56	5	D2UAP	7.3			2.0		Yes	1.8	A/E	70A

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					N/S	O/S	N/S	O/S				
Side Roads – *Third Party Roads*												
A74 Hamilton Road Westbound	E56 to E55	5	D2UAP	7.3			2.0		Yes	1.8	A/E	70A
A721 Daldowie Southbound	E57 to E58	5	AS D2UAP with reduced central reserve	7.3			2.0		Yes	1.0*	A 2 metre wide footway shall be provided within the Eastern verge between the tie-in at E57 to the tie-in at E58.	70A
A721 Daldowie Northbound	E58 to E57	5	AS D2UAP with reduced central reserve	7.3			2.0		Yes	1.0*	No	70A
Daldowie Overbridge Southbound	E58 to E59	1	As SU2	3.65	A/E							70A
Daldowie Overbridge Northbound	E59 to E58	5	AS D2UAP	7.3	A/E							70A

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					N/S	O/S	N/S	O/S				
Side Roads – *Third Party Roads*												
Access to Daldowie Crematorium	E59 to E60	3B	WS2	A/E								50A
Access to Kilmallie House	E61 to E62	1	As SU2	4.50*			2.5	2.5	As Required	N/A	No	N/A
Network Rail Access	E63 to E64	1	As SU2	3.65*			2.5	2.5	As Required	N/A	No	N/A
Access from Access to Kilmallie House	E65 to E66	1	As SU2 with reduced lane width	3.00*			2.5	2.5	As Required	N/A	No	N/A
Access to Strathclyde Country Park	E67 to E68	1	SU2	A/E								50A
Access from Bellshill Road	E71 to E72	1	As SU2	6.00*			2.5	2.5	Yes	N/A	A 3 metre wide footway shall be provided within the Southern verge to facilitate crossing.	N/A

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					N/S	O/S	N/S	O/S				
Side Roads *– Third Party Roads*												
Access to Bellshill Road	E73 to E74	1	As SU2	6.00*			2.5	2.5	Yes	N/A	A 3 metre wide footway shall be provided within both verges to facilitate crossing and tie-in with existing.	N/A
Hamilton Road	E75 to E76	1	SU2	A/E								N/A
Old Bothwell Road	E77 to E78	1	SU2	A/E								N/A
Aitkenhead Road	N/A	A/E										85A

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					N/S	O/S	N/S	O/S				
Access tracks *- Third Party Roads*												
Rutherglen to Coatbridge Railway Line Access Track	F1 to F2	N/A	N/A	3.0			1.0	1.0	As Required	N/A	N/A	N/A
Langmuir Road Access Track	F5 to F6	N/A	N/A	6.0			1.0	1.0	As Required	N/A	N/A	N/A
Bredisholm Road Access Track	F7 to F8	N/A	N/A	A/E with new road pavement								N/A
Bredisholm Road Access Track	F9 to F10	N/A	N/A	4.0			0.5	0.5	As Required	N/A	N/A	N/A
Bredisholm Road Access Track	F10 to F11	N/A	N/A	A/E with new road pavement								N/A
Bredisholm Road Access Track	F12 to F13	N/A	N/A	6.0			1.0	1.0	As Required	N/A	N/A	N/A

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					N/S	O/S	N/S	O/S				
Access tracks *- Third Party Roads*												
Bredisholm Road Access Track	F13 to F11	N/A	N/A	4.0 with passing places			1.0	1.0	As Required	N/A	N/A	N/A
Cutty Sark South Access Track	F11 to F14	N/A	N/A	4.0 with passing places			1.0	1.0	As Required	N/A	N/A	N/A
Cutty Sark South Access Track	F14 to F15	N/A	N/A	3.0			1.0	1.0	As Required	N/A	N/A	N/A
Access from Cutty Sark South Access Track	F16 to F17	N/A	N/A	3.0			1.0	1.0	As Required	N/A	N/A	N/A
SUDS Pond Access from Cutty Sark South Access Track	F18 to F19	N/A	N/A	6.0			1.0	1.0	As Required	N/A	N/A	N/A

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Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Access tracks *- Third Party Roads*												
Bankhead Farm Access Track	F22 to F23	N/A	N/A	6.0			1.0	1.0	As Required	N/A	N/A	N/A
Bankhead Farm Access Track	F22 to F24	N/A	N/A	5.0			1.0	1.0	As Required	N/A	N/A	N/A
Bankhead Farm Access Track	F24 to F25	N/A	N/A	6.0			1.0	1.0	As Required	N/A	N/A	N/A
Bankhead Farm to Shawhead Farm Access Track	F24 to F26	N/A	N/A	6.0 with passing places			1.0	1.0	As Required	N/A	N/A	N/A
Shawhead Farm Access Track	F27 to F26	N/A	N/A	6.0			1.0	1.0	As Required	N/A	N/A	N/A

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Road Name	Road Located between Points (refer to Note 1)	Table 4 of Category TD9 of the DMRB	Type of Road TD9, TD27 of the DMRB	Carriageway Width (metres) (refer to Note 2)	Hard shoulder/ Hardstrip Width (metres)		Minimum Verge Width (metres) (refer to Note 3)		Kerb Required (refer to Note 6)	Minimum Central Reserve/Strip Width (metres) (refer to Note 4)	Footway and/or Cycletrack Required/Width (metres)	Design Speed (kph)
					N/S	O/S	N/S	O/S				
Access tracks *- Third Party Roads*												
Shawhead Farm Access Track	F26 to F28	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A
Shawhead Farm Access Track	F28 to F29	N/A	N/A	3.0			1.0	1.0	As Required	N/A	N/A	N/A
Shawhead Farm Access Track (overbridge)	F30 to F31	N/A	N/A	6.0			1.0	1.0	As Required	N/A	N/A	N/A
Field Access from Shawhead Farm Access Track	F32 to F33	N/A	N/A	3.0			1.0	1.0	As Required	N/A	N/A	N/A
Field Access from Shawhead Farm Access Track	F34 to F35	N/A	N/A	2.5			1.0	1.0	As Required	N/A	N/A	N/A

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					N/S	O/S	N/S	O/S				
Access tracks *- Third Party Roads*												
Field Access from Shawhead Farm Access Track	F36 to F37	N/A	N/A	2.5			1.0	1.0	As Required	N/A	N/A	N/A
SUDS Pond Access Track	F38 to F39	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A
SGN Access Track	F40 to F41	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A
Carnbroe Road Access Track	F46 to F47	N/A	N/A	4.0 (7.3m width over extent of Structure S120)			1.0	1.0 (3.0 m width over extent of Structure S120)	As Required	N/A	N/A	N/A

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					N/S	O/S	N/S	O/S				
Access tracks *- Third Party Roads*												
Carnbroe Mains Farm Field Access Track	F48 to F49	N/A	N/A	5.0			1.0	1.0	As Required	N/A	N/A	N/A
Carnbroe Mains Farm Access Track	F48 to F50	N/A	N/A	4.5			1.0	1.0	As Required	N/A	N/A	N/A
Carnbroe Road Access Track	F47 to F51	N/A	N/A	A/E with new road pavement								N/A
Carnbroe Road Access Track	F51 to F52	N/A	N/A	3.0			1.0	1.0	As Required	N/A	N/A	N/A
Field Access from A8 APR Westbound	F55 to F56	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A
Orchard Farm East SUDS Pond Access Track	F58 to G23	N/A	N/A	4.0			1.0	1.0	As Required	N/A	N/A	N/A

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					N/S	O/S	N/S	O/S				
Access tracks *- Third Party Roads*												
Dakota Hotel Access	F59 to F60	1	SU2	6.0			2.5	2.5	Yes	N/A	A 3 metre wide footway shall be provided within the both verges between the tie-in at F59 to F60.	50A
Woodhall Football Ground Access Track	F63 to F64	N/A	N/A	3.0			0.5	0.5	As Required	N/A	N/A	N/A
Woodhall Cottage Road West	F65 to F66	N/A	N/A	6.0			2.5	2.5	Yes	N/A	N/A	N/A
Woodhall Cottage Road West	F66 to F67	N/A	N/A	4.0			2.0	2.0	Yes	N/A	N/A	N/A
Access Track from Woodhall Mill Road	F69 to F70	N/A	N/A	Varies (6 to 2.5)			2.5	2.5	As Required	N/A	N/A	N/A

Appendix D: Requirements for Roads

Table 1

NOTES TO TABLE 1

1.) Reference Points are as shown on the Reference Drawings as described in Appendix 0/4 to Part 3 of these New Works Requirements.

2.) Allowance shall be made for widening on curves, or to accommodate junction requirements.

3.) Verge widths do not include hardstrips or hardshoulders. Additional verge width may be required to accommodate road restraint systems installation, street lighting, drainage, ITS ducting / installations footways, cycletracks and sightlines for forward visibility.

4.) Central Reserve/Strip widths do not include hardstrips.

5.) “N/A” means not applicable. “A/E” means as existing.

6.) Kerbs required at Junctions and Roundabouts (up to corner radii tangent points), and at other locations in accordance with the DMRB and as required for footways, footpaths and footway/cycletracks.

7.) Roundabout Design shall comply with TD16 of the DMRB.

8.) For cross-sections at Structures refer to Appendix B.

9.) For details of Side Road design standards refer to Section 1.1.8. For Access Track/Road design standards refer to Section 1.1.9.

Appendix D: Requirements for Roads

Table 2

Reference (refer Note 1)	Approximate Location	Requirements between Reference Points (refer Note 1)	Widths/Verges etc.	Non Motorised Users Provision	Crossing Provision / Termination Details
New Footpaths and Cycle Tracks					
Swordale Place Footpath	North of the New M8 Motorway (West of Wardie Road overbridge)	G1 to G2	2.5 metre wide footpath	Pedestrian/ cyclists	Tie-in to existing footway on Swordale Place and existing track under Wardie Road.
Braehead West Footpath	South of the New M8 Motorway (East of Baillieston Interchange)	G3 to G4	3 metre wide footpath, 1m verges	Pedestrian/ cyclists	Tie-in to new access track at point G3 and existing track at G4.
Aitkenhead West Footpath	South of New M8 Motorway, West of Aitkenhead Road	G5 to G6	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	Tie into new access track at west end and existing footpath at east end
Aitkenhead East Footpath	South of New M8 Motorway, East of Aitkenhead Road	G7 to G8	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	Tie into new access track at east end and existing footpath at west end

Appendix D: Requirements for Roads

Table 2

Reference (refer Note 1)	Approximate Location	Requirements between Reference Points (refer Note 1)	Widths/Verges etc.	Non Motorised Users Provision	Crossing Provision / Termination Details
New Footpaths and Cycle Tracks (Continued)					
Kirkwood Footpath	From the north of the A8 APR to the south of the New M8 Motorway connecting Viewfield Road with the new access track.	G9 to G10	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	
Easter Wood Footpath	South of New M8 Motorway connecting Shawhead Access Track with new footpaths.	G11 to G12	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	
A725 overbridge footpath	From the west side of the A725 to the east side of the A725 connecting to the new footpath on the B7070 North Road	G12 to G13	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	
Strathclyde Business Park Footpath Link	East side of the A725 connecting the new footpaths to the A725 SUDs pond access road / Strathclyde Business Park Footpath Link	G12 to G14	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	
North Road Footway	Within the west verge of North Road	G15 to G13	2 metre wide footway, 1m verges	Pedestrian / Cyclists	
North Road Footway/ Footpath	From the west verge of North Road over North Road connecting to the new footpath	G13 to G16	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	

Appendix D: Requirements for Roads

Table 2

Reference (refer Note 1)	Approximate Location	Requirements between Reference Points (refer Note 1)	Widths/Verges etc.	Non Motorised Users Provision	Crossing Provision / Termination Details
New Footpaths and Cycle Tracks (Continued)					
Kirkshaws to Shawhead Footpath	From the south verge of Kirkshaws Road alongside the A725 and over the A725 connecting to the new footpath	G16 to G17	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	
Carnbroe Footpath	North of the New M8 Motorway between approximate chainage 4420 and 5670 metres.	G16 to G18	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	Tie into new access track at the east end and new footpath at the west end
Carnbroe Footbridge	Over existing A8 from existing access track to the west verge of Carnbroe Road	G19 to G20	3 metre wide footpath 1m verges	Pedestrian / Cyclists	Terminates at Carnbroe Road approximately 110 metres from junction with the A8.
Orchard Farm Footpath	South of the New A8 APR westbound carriageway between Orchard Farm and Townhead Avenue.	G21 to G22	3 metre wide footpath, 1m verge, 2.7m segregation strip from carriageway.	Pedestrian / Cyclists	Tie into the new access track at the west end and Townhead Avenue footway at the east end

Appendix D: Requirements for Roads

Table 2

Reference (refer Note 1)	Approximate Location	Requirements between Reference Points (refer Note 1)	Widths/Verges etc.	Non Motorised Users Provision	Crossing Provision / Termination Details
New Footpaths and Cycle Tracks (Continued)					
Heathery Lea Footpath	North of the Eurocentral Junction	G23 to G24	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	Tie into the new SUDS Pond access track at the west end and the existing footpath at the east end
Chapelhall Woodland Path	South of Lancaster Avenue	G25 to G26	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	
Kilmallie House Footpath	East of the A725 southbound carriageway between the A725 footway and the Kilmallie House access track.	G27 to G28	1.5 metre wide footpath, 0.5m verges	Pedestrian / Cyclists	
East of Raith footpath	Footpath southbound on A725 Bellshill Road to side road leading to Strathclyde Country Park	G29 to G30	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	Tie in with existing footpaths on A725 & Strathclyde Country Park road

Appendix D: Requirements for Roads

Table 2

Reference (refer Note 1)	Approximate Location	Requirements between Reference Points (refer Note 1)	Widths/Verges etc.	Non Motorised Users Provision	Crossing Provision / Termination Details
New Footpaths and Cycle Tracks (Continued)					
Footpath through Raith	Footpath leading from southbound A725 Bellshill road, through Raith and ending on Bellshill Road	G29 to G31	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	Tie in with existing footpath on A725 & traffic signals on proposed Northbound offslip from A725
South of Raith footpath	Footpath leading from A725 Northbound offslip to the footway on the Southbound nearside of Bellshill Road	G32 to G33	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	Tie in with traffic signals on proposed Northbound offslip from A725 and new footway on Southbound nearside of Bellshill Road
Bellshill Road footpath	Footpath connecting Bellshill Road footpath & footpath between Clydeview & Langside Road	G34 to G35	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	Tie in with proposed footpath between Langside Road & Clydeview

Appendix D: Requirements for Roads

Table 2

Reference (refer Note 1)	Approximate Location	Requirements between Reference Points (refer Note 1)	Widths/Verges etc.	Non Motorised Users Provision	Crossing Provision / Termination Details
New Footpaths and Cycle Tracks (Continued)					
Clydeview footpath	Footpath joining Clydeview & Langside Road	G35 to G36	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	Tie in with existing footpaths on Langside Road & Clydeview
Clydeview footpath	Footpath joining Clydeview & Langside Road	G35 to G36	3 metre wide footpath, 1m verges	Pedestrian / Cyclists	Tie in with existing footpaths on Langside Road & Clydeview
Blantyre Farm Road bridle path	Bridle way adjacent to the western verge of Blantyre Farm Road	G37 to G38	3 metre wide bridle way, 1m verges	Equine	Tie in with existing bridle path on Blantrye Fram Road Bridge and with SUDs access (F95 to F96)

Appendix D: Requirements for Roads

Table 3 – New Means of Access

Accesses shall be provided at the following Reference Point locations:

Reference Point	Locations
H1	Access to proposed Swinton SUDS pond access track
H2	Access to Langmuir Road access track
H3	Access to field from Existing A89 Coatbridge Road westbound carriageway
H4	Access to field from New A8 APR westbound carriageway
H5	Field access from Bredisholm Road access track
H6	SUDS pond access from Bredisholm Road access track
H7	Field access from Bredisholm Road access track
H8	Field access from Bredisholm Road access track
H9	Field access from Bredisholm Road access track
H10	Field access from Bredisholm Road access track
H11	Field access from Cutty Sark South access track
H12	Field access from Cutty Sark South access track
H13	Access to Cutty Sark North SUDS pond
H14	Field access from Old Monklands South access track
H15	Field access from Old Monklands South access track
H16	SUDS pond access from Old Monklands South access track
H17	Access to Bankhead Farm
H18	Access to field from New Bankhead Farm to Shawhead Farm Access Track
H19	Access to field from New Bankhead Farm to Shawhead Farm Access Track
H20	Access to the proposed track crossing the M8 motorway at Shawhead Farm
H21	Access to Shawhead Farm from New Shawhead Farm Access Track
H22	Access to proposed A725 SUDS Pond from the A725 SUDS Pond Access Track / Strathclyde Business Park Footpath Link
H23	Access to proposed Scottish Gas Networks Apparatus from the New B7070 North Road
H24	Access to field South of Carnbroe Farm

Appendix D: Requirements for Roads

Table 3 – New Means of Access

Reference Point	Locations
H25	Access to proposed Carnbroe SUDs Pond Access Track from the New Carnbroe Road Access Track
H26	Access to Carnbroe Farm and the adjacent field from Carnbroe Road
H27	Access to field from the New Carnbroe Mains Farm Access Track
H28	Access to field from the New Carnbroe Road Access Track;
H29	Access to field from the New Carnbroe Road Access Track
H30	Access to proposed Orchard Farm West SUDS Pond Access Track from Carnbroe Road
H31	Access to landscaped area from A8 APR eastbound carriageway
H32	Access to field from New A8 APR westbound carriageway
H33	Access to proposed Orchard Farm East SUDS Pond from Orchard Farm Pool East SUDS Pond Access Track
H34	Access to Dakota Hotel from Shawfoot Road
H35	Access to proposed Woodhall SUDS Pond Access Track from New A8 APR Eastbound carriageway
H36	Access to field from new access track from Woodhall Mill Road to Sports Pavilion
H37	Access to proposed Woodhall Football Ground Access Track from New Woodhall Mill Road
H38	Access to proposed Woodhall Cottage Road West SUDS Pond Access Track from Woodhall Cottage Road
H39	Access to existing field track from New Woodhall Mill Road
H40	Access to field from new access track leading to Kennelburn Road from Woodhall Mill Road
H41	Access to field from New Woodhall Mill Road;
H42	Access to proposed Woodhall Cottage Road East SUDS Pond Access from New Woodhall Mill Road
H43	Access to Woodhall Cottage Road from New Woodhall Mill Road
H44	Access to Organon Laboratories from New Bo'ness Road north roundabout. Entrance on roundabout has splitter island, carriageway width = 6.75m, verge needs to accommodate 3m footway
H45	Access to landscaped area from Chapelhall Junction to Bo'ness Road South Link Road southbound carriageway

Appendix D: Requirements for Roads

Table 3 – New Means of Access

Reference Point	Locations
H46	Access to proposed Chapelhall South SUDS Pond Access Track from Rowantree Avenue
H47	Access to proposed Newhouse SUDS Pond Access Track from Glasgow and Edinburgh Road
H48	Access to the proposed Newhouse Roundabout West SUDS Pond Access Track from the A73 Bellside Road northbound carriageway
H49	Access to the proposed Newhouse Roundabout East SUDS Pond Access Track from the location of the existing access to Budshaw Farm from the A73 Bellside Road southbound carriageway
H50	Access to the proposed Newhouse Roundabout East SUDS Pond Access Track from the location of the existing access to Budshaw Farm from the A73 Bellside Road southbound carriageway
H51	Access to the adjacent field from the location of the existing access to Budshaw Farm from the A73 Bellside Road southbound carriageway
H52	Access to SUDS pond access track from Roundknowe Road
H53	Access from Roundknowe Road to Woodhead Farm
H54	Access to SUDS pond from Greyfriars Road
H55	Access to SUDS pond from Blantyre Farm Road
H56	South access to relocated Bothwellpark Road bridge
H57	North access to relocated Bothwellpark Road bridge and to new access track leading to the flood storage compensation storage area North of Raith
H58	Access to field from the proposed access track leading to the flood compensation storage area North of Raith
H59	Access to new side road at Kilmallie House
H60	Access to existing side road from the proposed side road from Kilmallie House
H61	Access to the inside of Raith roundabout
H62	Access to existing field between M74 and Bellshill Road
H63	Access to SUDS pond West of Raith from Langside Road
H64	Access to flood compensation storage area between Bellshill Road and A725

Appendix D: Requirements for Roads

Table 4 – Junction Geometry

Junction / Slip Road description	Layout	Nose Length (metres)	Nose Ratio	Taper Length (metres)	Auxiliary Lane Length (metres)	Auxiliary Lane Taper (metres)	Ghost Island Head/ Tail (metres)
M8 Junction 10, Easterhouse							
Easterhouse Merge Slip Road to the New Eastbound M8 Motorway	Merge Layout E	115	1:40	-	-	-	-
M8 Junction 9, Springhill							
Springhill Diverge Slip Road from the New Eastbound M8 Motorway	Diverge Layout A	80	1:15	170	-	-	-
M8 Junction 8, Baillieston							
Baillieston Diverge Slip Road from the New Eastbound M8 Motorway	Diverge Layout E	235	1:15	-	-	-	-
Baillieston Diverge Slip Road from the New Eastbound M8 Motorway (within Interchange)	Diverge Layout D (Option 2)	70	1:15	-	150	55	-
Baillieston Merge Slip Road to the New Eastbound M8 Motorway	Merge Layout F (Option 1)	115	1:40	205	-	-	180
Baillieston Diverge Slip Road from the New Westbound M8 Motorway	Diverge Layout D (Option 1)	80	1:15	170	-	-	180
M8 Junction 7, Shawhead							
Shawhead Merge Slip Road to the New Eastbound M8 Motorway	Merge Layout F (Option 1)	115	1:40	205	-	-	180
Shawhead Diverge Slip Road from the New Westbound M8 Motorway	Diverge Layout D (Option 1)	80	1:15	170	-	-	180

Appendix D: Requirements for Roads

Table 4 – Junction Geometry

Junction / Slip Road description	Layout	Nose Length (metres)	Nose Ratio	Taper Length (metres)	Auxiliary Lane Length (metres)	Auxiliary Lane Taper (metres)	Ghost Island Head/ Tail (metres)
Shawhead Merge Slip Road to the Southbound A725	Merge Layout B	75	1:25	-	250	55	-
Shawhead Diverge Slip Road from the Northbound A725	Diverge Layout D (Option 1)	40	1:12	75	-	-	80
M8 Junction 6(b), Eurocentral							
Eurocentral Diverge Slip Road from the New Eastbound M8 Motorway	Diverge Layout D (Option 1)	80	1:15	170	-	-	180
Eurocentral Merge Slip Road to the New Westbound M8 Motorway	Merge Layout E	115	1:40	-	-	-	-
M8 Junction 6(a), Chapelhall							
Chapelhall Diverge Slip Road from the New Eastbound M8 Motorway	Diverge Layout D (Option 1)	80	1:15	170	-	-	180
Chapelhall Merge Slip Road to the New Westbound M8 Motorway	Merge Layout F (Option 1)	115	1:40	205	-	-	180
M8 Junction 6, Newhouse							
Newhouse Diverge Slip Road from the New Eastbound A8 APR	Diverge Layout A	70	1:15	130	-	-	-
Newhouse Merge Slip Road to the New Westbound A8 APR	Merge Layout A	75	1:25	130	-	-	-
Newhouse Merge Slip Road to the New Eastbound A8 APR	Merge Layout A	85	1:30	150	-	-	-

Appendix D: Requirements for Roads

Table 4 – Junction Geometry

Junction / Slip Road description	Layout	Nose Length (metres)	Nose Ratio	Taper Length (metres)	Auxiliary Lane Length (metres)	Auxiliary Lane Taper (metres)	Ghost Island Head/ Tail (metres)
Newhouse Diverge Slip Road from the Westbound New A8 APR	Diverge Layout A	70	1:15	150	-	-	-
Newhouse Merge Slip Road to the New Eastbound M8 Motorway	Merge Layout C	115	1:40	205	-	-	180
Newhouse Diverge Slip Road from the New Westbound M8 Motorway	Diverge Layout B (Option 1)	80	1:15	170	-	-	180
M73 Junction 2, Baillieston							
Baillieston Diverge Slip Road from the Northbound M73 Motorway	Diverge Layout D (Option 1)	80	1:15	170	-	-	90
Baillieston Merge Slip Road to the Southbound M73 Motorway	Merge Layout F (Option 1)	115	1:40	115	-	-	128
Baillieston Interchange roundabout Diverge Slip Road from the Northbound M73 Motorway	Diverge Layout C	80	1:15	-	-	-	-
Baillieston Interchange roundabout Merge Slip Road to the Southbound M73 Motorway	Merge Layout E	115	1:40	-	-	-	-
M74 Junction 3(a), Daldowie							
Daldowie Diverge Slip Road from the Southbound M74 Motorway	Diverge Layout A	80	1:15	185	-	-	-
Daldowie Merge Slip Road to the M74 Southbound/M73 Northbound Interchange Link Motorway	Merge Layout D	75	1:25	130	-	-	-

Appendix D: Requirements for Roads

Table 4 – Junction Geometry

Junction / Slip Road description	Layout	Nose Length (metres)	Nose Ratio	Taper Length (metres)	Auxiliary Lane Length (metres)	Auxiliary Lane Taper (metres)	Ghost Island Head/ Tail (metres)
M74 Junction 4, Maryville							
Maryville Diverge Slip Road from the Southbound M74 to the Northbound M73 Motorway	Diverge Layout D (Option 1)	80	1:15	170	-	-	180
Maryville Merge Slip Road to the Northbound M74 Motorway	Merge Layout F (Option 1)	115	1:40	205	-	-	180
Maryville Diverge Slip Road from the Southbound M73 Motorway	Diverge Layout E	80	1:15	-	-	-	-
Maryville Diverge Slip Road from the Northbound M74 Motorway	Diverge Layout E	80	1:15	-	-	-	-
M74, Bothwell Services							
Bothwell Services Diverge Slip Road from the Southbound M74 Motorway	Diverge Layout C	80	1:15	-	-	-	-
Bothwell Services Merge Slip Road to the Southbound M74 Motorway	Merge Layout E	115	1:40	-	-	-	-
M74 Junction 5, Raith							
Raith Diverge Slip Road from the Southbound M74 Motorway	Diverge Layout C	80	1:15	-	-	-	-
Raith Merge Slip Road to the Northbound M74 Motorway	Merge Layout F (Option 1)	115	1:40	205	-	-	180
Raith Merge Slip Road to the Southbound M74 Motorway	Merge Layout E	115	1:40	-	-	-	-

Appendix D: Requirements for Roads

Table 4 – Junction Geometry

Junction / Slip Road description	Layout	Nose Length (metres)	Nose Ratio	Taper Length (metres)	Auxiliary Lane Length (metres)	Auxiliary Lane Taper (metres)	Ghost Island Head/ Tail (metres)
Raith Diverge Slip Road from the Northbound M74 Motorway	Diverge Layout A	80	1:15	185	-	-	-
Raith Merge Slip Road to the Northbound A725 (Bellshill Road)	Merge Layout E	40	1:12	-	-	-	-
Raith Diverge Slip Road from the Southbound A725 (Bellshill Road)	Diverge Layout A	40	1:12	90	-	-	-
Raith Merge Slip Road to the Southbound A725 (Bellshill Road)	Merge Layout E	65	1:12	-	-	-	-
M74 Junction 6, Hamilton							
Hamilton Diverge Slip Road from the Southbound M74 Motorway	Diverge Layout E	80	1:15	-	-	-	-
A725 Strathclyde Business Park							
Strathclyde Business Park Merge Slip Road to the Northbound A725	Merge layout E	40	1:12	-	-	-	-

Appendix D: Requirements for Roads

Table 5 – Requirements for Junctions

Junction Name	Junction Type	Junction Reference Points (refer to Note 1)	Junction Approach Roads	Number of Lanes at Stop Line	Approach Half Width (metres)	Entry Width (metres)	Entry Flare (metres)	Exit Width (metres)	Traffic Signals	Pedestrian / Cyclist Crossing
New Special Road / Motorway Junctions										
M8 Junction 9	T - Junction	C4	M8 Eastbound Diverge slip at Junction 9	A/E	A/E	-	-	A/E	No	A/E – Uncontrolled Pedestrian Crossing
A8 Swinton Roundabout	Roundabout	B2	A8 from Baillieston Cross	2	-	-	-	-	Yes	Set back Toucan Crossing
		E2	Rhindhouse Road	1	-	-	-	-	Yes	Uncontrolled Pedestrian Crossing
		B6	Proposed A8 towards A89 roundabout	-	-	-	-	-	Yes	Set backToucan Crossing
		B5	Proposed A8 from A89 roundabout	3	-	-	-	-	Yes	Set back Toucan Crossing
		A41	Proposed A8 (M) from BIR	2	-	-	-	-	Yes	-
Baillieston Interchange Gyratory	Grade Separated Gyratory	A42	Proposed A8(M) from SwintonRbt.	2	-	-	-	-	No	-
		C43	Proposed diverge slip from M73 Northbound	2	-	-	-	-	No	-
		C12	Proposed Diverge from Westbound M8	2	-	-	-	-	No	-
A89 Roundabout	Roundabout	B10	Proposed A8 APR Eastbound	3	-	-	-	-	No	-

Appendix D: Requirements for Roads

Table 5 – Requirements for Junctions

Junction Name	Junction Type	Junction Reference Points (refer to Note 1)	Junction Approach Roads	Number of Lanes at Stop Line	Approach Half Width (metres)	Entry Width (metres)	Entry Flare (metres)	Exit Width (metres)	Traffic Signals	Pedestrian / Cyclist Crossing
		B13	Proposed A8 APR Westbound	2	-	-	-	-	No	-
		E3	Existing A89 westbound	2	-	-	-	-	No	-
A89 / A752 Junction	Cross roads	E5	Existing A89 Eastbound	2	-	-	-	-	Yes	Signalised Ped. Crossing
		E6	Existing A89 westbound	2	-	-	-	-	Yes	Signalised Ped. Crossing
		E7	Existing A752 Southbound	2	-	-	-	-	Yes	Signalised Ped. Crossing
		E8	Existing A752 Southbound	2	-	-	-	-	Yes	Signalised Ped. Crossing
Shawhead Northern Junction	Cross roads	E10	Kirkshaws Road Westbound	2	-	-	-	-	Yes	Signalised Ped. Crossing
		E10	Kirkshaws Road Eastbound	2	-	-	-	-	Yes	Signalised Ped. Crossing
		E10	A725 Northbound	3	-	-	-	-	Yes	Signalised Ped. Crossing
		E10	A725 Southbound	2	-	-	-	-	Yes	Signalised Ped. Crossing
Shawhead Central Junction	T - Junction	E17	Eastbound Diverge from A8 APR	3	-	-	-	-	Yes	-
		B27	A725 Northbound	2	-	-	-	-	Yes	-
		B27	A725 Southbound	3	-	-	-	-	Yes	-
Shawhead	Cross Roads	E21	B7070 North Road	2	-	-	-	-	Yes	-

Appendix D: Requirements for Roads

Table 5 – Requirements for Junctions

Junction Name	Junction Type	Junction Reference Points (refer to Note 1)	Junction Approach Roads	Number of Lanes at Stop Line	Approach Half Width (metres)	Entry Width (metres)	Entry Flare (metres)	Exit Width (metres)	Traffic Signals	Pedestrian / Cyclist Crossing
Southern Junction		E21	A725 Southbound	4	-	-	-	-	Yes	-
		E20	Westbound Diverge from A8 APR	2	-	-	-	-	Yes	-
		E20	A725 Northbound	3	-	-	-	-	Yes	-
M8 Junction 7 Eurocentral Northern Roundabout	Roundabout	E23	M8 Junction 7 Eurocentral Overbridge	2	-	-	-	-	No	-
		C21	New M8 Junction 7 Diverge	2	-	-	-	-	No	Uncontrolled Ped. Crossing
		B16	New A8 APR Eastbound	2	-	-	-	-	No	Uncontrolled Ped. Crossing
M8 Junction 7 Eurocentral Southern Roundabout	Roundabout	E24	M8 Junction 7 EurocentralOverbridge	2	-	-	-	-	Yes	Uncontrolled Ped. Crossing
		B21	New A8 APR Westbound	2	-	-	-	-	Yes	Uncontrolled Ped. Crossing
		E25	Access from Eurocentral BusinessPark	2	-	-	-	-	Yes	Uncontrolled Ped. Crossing
		E27	Townhead Avenue	2	-	-	-	-	Yes	Setback Toucan Crossing

Appendix D: Requirements for Roads

Table 5 – Requirements for Junctions

Junction Name	Junction Type	Junction Reference Points (refer to Note 1)	Junction Approach Roads	Number of Lanes at Stop Line	Approach Half Width (metres)	Entry Width (metres)	Entry Flare (metres)	Exit Width (metres)	Traffic Signals	Pedestrian / Cyclist Crossing
M8 Junction 6a Chapelhall Northern Roundabout	Roundabout	E29	Chapelhall Junction Link Road	2	-	-	-	-	No	-
		C25	M8 Junction 6a Eastbound Diverge	2	-	-	-	-	No	-
		B20	New A8 APR Eastbound	2	-	-	-	-	Yes	-
		E31	M8 Junction 6a Northern Interchange Link	2	-	-	-	-	Yes	-
M8 Junction 6a Chapelhall Southern Roundabout	Roundabout	E30	Chapelhall Junction Link road	2	-	-	-	-	No	-
		B25	New A8 APR Westbound	2	-	-	-	-	Yes	-
		E39	M8 Junction 6a Southern Interchange Link	2	-	-	-	-	Yes	-
M8 Junction 6a Chapelhall, Boness Road	Roundabout	E32	M8 Junction 6a Northern Interchange Link	2	-	-	-	-	No	-

Appendix D: Requirements for Roads

Table 5 – Requirements for Junctions

Junction Name	Junction Type	Junction Reference Points (refer to Note 1)	Junction Approach Roads	Number of Lanes at Stop Line	Approach Half Width (metres)	Entry Width (metres)	Entry Flare (metres)	Exit Width (metres)	Traffic Signals	Pedestrian / Cyclist Crossing
Northern Roundabout		E34	B802 Woodhall Mill Road	2	-	-	-	-	No	Uncontrolled Pedestrian Crossing
		E36	B799 Bo'Ness Road (North)	2	-	-	-	-	No	Uncontrolled Pedestrian Crossing
		H44	Access to Organon	2	-	-	-	-	No	Uncontrolled Pedestrian Crossing
		E37	B799 Bo'Ness Road (North)	2	-	-	-	-	No	Uncontrolled Pedestrian Crossing
M8 Junction 6a Chapelhall , Boness Road Southern Roundabout	Roundabout	E38	B799 Bo'Ness Road (North)	2	-	-	-	-	No	Uncontrolled Pedestrian Crossing
		E43	Access to Newhouse Industrial Estate	2	-	-	-	-	No	Uncontrolled Pedestrian Crossing
		E45	B799 Bo'Ness Road (South)	2	-	-	-	-	No	Uncontrolled Pedestrian Crossing
		E42	McNeil Drive	2				-	No	Uncontrolled Pedestrian Crossing
		E40	M8 Junction 6a Southern Interchange Link	2	-	-	-	-	No	-
M8 Junction 6 Newhouse Roundabout	Grade Separated Gyratory	E48	A73 (North)	2	-	-	-	-	No	-
		C34	M8 Junction 6a Merge to A8 APR Westbound	2	-	-	-	-	No	Uncontrolled Pedestrian Crossing
		E49	A73 (South)	2	-	-	-	-	No	-

Appendix D: Requirements for Roads

Table 5 – Requirements for Junctions

Junction Name	Junction Type	Junction Reference Points (refer to Note 1)	Junction Approach Roads	Number of Lanes at Stop Line	Approach Half Width (metres)	Entry Width (metres)	Entry Flare (metres)	Exit Width (metres)	Traffic Signals	Pedestrian / Cyclist Crossing
		C29	M8 Junction 6a Diverge from A8 APR Eastbound	2	-	-	-	-	No	-
M74 Junction 3a, Daldowie Northern Junction	Roundabout	E52	Calderpark Terrace	1	-	-	-	-	No	Uncontrolled Pedestrian Crossing
		E55	A74 Glasgow Road (East)	2	-	-	-	-	No	-
		E57	Daldowie Interchange Link	2	-	-	-	-	No	Uncontrolled Pedestrian Crossing
		E54	A74 Glasgow Road (East)	2	-	-	-	-	No	-
M74 Junction 3a, Daldowie Central Junction	Cross Roads	C55	Daldowie Interchange Link (north)	1 + 1 dedicated l/h turn	-	-	-	-	Yes	(Signalised Crossing over merge slip)
		C55	Daldowie Interchange Link (south)	2	-	-	-	-	Yes	-
		C55	M74 Southbound Junction 3a Diverge Slip	2	-	-	-	-	Yes	-
M74 Junction 3a, Daldowie	Cross Roads	C61	M74 Junction 4 diverge to J3a	**2**	-	-	-	-	Yes	Signalised Ped. Crossing

Appendix D: Requirements for Roads

Table 5 – Requirements for Junctions

Junction Name	Junction Type	Junction Reference Points (refer to Note 1)	Junction Approach Roads	Number of Lanes at Stop Line	Approach Half Width (metres)	Entry Width (metres)	Entry Flare (metres)	Exit Width (metres)	Traffic Signals	Pedestrian / Cyclist Crossing
Southern Junction		E59	Daldowie Interchange Link (north)	**1**	-	-	-	-	Yes	-
		E59	Daldowie Crematorium Access	**2**	-	-	-	-	Yes	-
M74 Junction 5, Raith	Grade Separated Gyratory	C71	M74 Junction 5 Southbound Diverge	**3**	-	-	-	-	Yes	-
		C83	A725 Southbound diverge to M74 Junction 5	**3**	-	-	-	-	Yes	-
		E67	Strathclyde Country Park Access Road	**2**	-	-	-	-	Yes (part time signals)	Signalised Ped. Crossing setback into StrathclydeCountryPark
		C94	M74 Junction 5 Northbound Diverge	**3**	-	-	-	-	Yes	-
		E69	B7071 Bellshill Road	**2**	-	-	-	-	Yes	-
A725 Northbound Diverge / Bellshill Road	T-Junction	C88	A725 Northbound Diverge B7071 / Bellshill Road	**2+1 L/H turn lane**	-	-	-	-	Yes	Signalised Ped. Crossing
		C88	Access to Industrial Area	**N/A**	-	-	-	-	N/A	Set Back uncontrolled pedestrian crossing
		C88	B7071 Bellshill Road (Towards Raith)	**2**	-	-	-	-	Yes	-
		C88	B7071 Bellshill Road (Towards Bothwell)	**2**	-	-	-	-	Yes	Signalised Toucan Crossing
New Local Road Junctions										

Appendix D: Requirements for Roads

Table 5 – Requirements for Junctions

Junction Name	Junction Type	Junction Reference Points (refer to Note 1)	Junction Approach Roads	Number of Lanes at Stop Line	Approach Half Width (metres)	Entry Width (metres)	Entry Flare (metres)	Exit Width (metres)	Traffic Signals	Pedestrian / Cyclist Crossing
Bellshill Road / Hamilton Road / Bothwell Road	T - Junction	E70	B7071 Bellshill Road	**2**	-	-	-	-	Yes	Signalised Ped. Crossing
		E70	B7071 Hamilton Road	**2**	-	-	-	-	Yes	Signalised Ped. Crossing
		E70	B7071 Hamilton Road	**2**	-	-	-	-	Yes	Signalised Ped. Crossing
Egress from Retail area off B7071 Bellshill Road (Autoglass etc)	T-Junction	E74	Unclassified road off B7071 Bellshill road	**1**	-	-	-	-	No	Uncontrolled Pedestrian Crossing

NOTES TO TABLE 5

1.) Reference Points are as shown on the Reference Drawings as described in Appendix 0/4 to Part 4 of these New Works Requirements.

APPENDIX E

THIS IS APPENDIX E TO PART 2 OF THE NEW WORKS INFORMATION

ACOUSTIC BARRIERS

Acoustic Barrier Reference Number	Location of Acoustic Barrier	Acoustic Barrier Type	Minimum Height of Acoustic Barrier (above highest adjacent finished road level unless otherwise stated). Minimum Length of Noise Barrier
AB01	A89 w/b to M8 w/b Houses to Rail Bridge	Noise Fence	2m high, length = 420m
AB02	A8 e/b Ch 435 - Ch 620	Noise Fence	2m high, length =185m
AB03	A8 e/b Ch 620 - Ch 660	Noise Fence	3m high, length = 40m
AB04	A8 e/b Ch 670 - Ch 840	Noise Fence	3m high, length = 170m
AB05	A8 e/b Ch 875 – Ch 1245	Noise Fence	2m high, length = 370m
AB06	M8 e/b Ch 1175 - Ch 1525	Noise Fence	2m high, length = 350m
AB07	M8 e/b Ch 1585 - Ch 2520	Noise Fence	2m high, length = 935m
AB08	M8 w/b Ch 1750 – Ch 2300	Noise Fence	2m high, length = 550m
AB09	M8 w/b Ch 2300 – Ch 2500	Noise Fence	3m high, length = 200m
AB10	M8 w/b Ch 2500 – Ch 2750	Noise Fence	2m high, length = 250m
AB11	M8 e/b Ch 3195 – Ch 3405	Noise Fence	2m high, length = 210m
AB12	A725 s/b on slip from M8 w/b Ch -30 - Ch 230	Noise Fence	2m high, length = 200m
AB13	M8 w/b Ch 4970- Ch 5180	Noise Fence	3m high, length = 210m
AB14	M8 e/b Ch 5250 – Ch 5730	Noise Fence	2m high, length = 480m
AB15	APR e/b Ch 6910 - Ch 8150	Noise Fence	2m high, length = 1240m
AB16	APR w/b Ch 6970 - Ch 7380	Noise Fence	2m high, length = 410m
AB17	APR w/b Ch 7575 - Ch 8165	Noise Fence	2m high, length = 590m
AB18	APR w/b Ch 8600 – Ch 8890	Noise Fence	3m high (see note 1), length = 290m
AB19	APR e/b Ch 8625 – Ch 8825	Noise Fence	2m high, length =

Acoustic Barrier Reference Number	Location of Acoustic Barrier	Acoustic Barrier Type	Minimum Height of Acoustic Barrier (above highest adjacent finished road level unless otherwise stated). Minimum Length of Noise Barrier 200m
AB20	M8 e/b Ch 8825 - Ch 10010	Noise Fence	2m high, length = 1185m
AB21	Existing A725 Southbound (between Bellshill Junction and the A725 / Wes Coast Mainline Rail Bridge	Noise Fence	2m high, length = 555m
AB22	Existing A725 Southbound (between Bellshill Junction and the A725 / Wes Coast Mainline Rail Bridge	Noise Fence	2m high, length = 115m
AB23	Existing A725 Southbound (between Bellshill Junction and the A725 / Wes Coast Mainline Rail Bridge	Noise Fence	2m high, length = 170m
AB24	Existing A725 Southbound (between Bellshill Junction and the A725 / Wes Coast Mainline Rail Bridge	Noise Fence	2m high, length = 160m

Note 1. – Clause 1.3.5(xii)(a) shall not apply to Reference Number AB18

APPENDIX F

THIS IS APPENDIX F TO PART 2 OF THE NEW WORKS REQUIREMENTS

PART 1: PROCEDURE FOR DEMONSTRATING COMPLIANCE WITH THE JUNCTION REQUIREMENTS AND JUNCTION PERFORMANCE INDICATORS

PART 2: JUNCTION PERFORMANCE INDICATORS

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APPENDIX F PART 1

PROCEDURE FOR DEMONSTRATING COMPLIANCE WITH THE JUNCTION REQUIREMENTS AND JUNCTION PERFORMANCE INDICATORS

See Separate Document – M8 V5 Schedule 2: Part 2 Appendix F & G

APPENDIX F PART 2

JUNCTION PERFORMANCE INDICATORS

See Separate Document – M8 V5 Schedule 2: Part 2 Appendix F & G

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APPENDIX G

THIS IS APPENDIX G TO PART 2 OF THE NEW WORKS REQUIREMENTS

CONTRACT JUNCTION COMPLIANCE TRAFFIC MODELS AND ASSOCIATED INSTRUCTIONS AND ANALYSIS SPREADSHEETS

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APPENDIX G

CONTRACT JUNCTION COMPLIANCE TRAFFIC MODELS AND ASSOCIATED INSTRUCTIONS AND ANALYSIS SPREADSHEETS

See Separate Document – M8 V5 Schedule 2: Part 2 Appendix F & G

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APPENDIX H

THIS IS APPENDIX H TO PART 2 OF THE NEW WORKS REQUIREMENTS

REQUIREMENTS FOR PRINCIPAL STRUCTURES

APPENDIX H

REQUIREMENTS FOR PRINCIPAL STRUCTURES

Structure Reference Number	Structure Title	Structure Reference Point and Reference Drawings	Description and Purpose of Structure	Minimum Cross-sectional / Internal Dimensions (Note 2)	Design Check Category	Required Live Loading (excluding LM3 Special Vehicles) (Eurocode BS EN 1991-2)	LM3 Special Vehicles (Eurocode BS EN 1991-2)	Vehicle Parapet Type (where required)	Service and Service Ducts to be provided
S101	Glasgow to Coatbridge Railway Bridge	M8/SPD/ 1600/ S101/ 01.	West of Baillieston Interchange Widening at the north end of existing bridge M8-9-20 (BR32) and the addition of a new parapet to current standards. Existing bridge prestressed beam single span deck on piled reinforced concrete abutments and wing walls.	<u>Bridge Deck Looking West</u> <u>M8 Westbound</u> As existing <u>M8 Eastbound</u> Central reserve – varies Hardstrip – 0.7m Carriageway – 7.3m Nosing – Varies Carriageway – 7.3m Hardshoulder – 3.3m North verge – 2.0m Below Deck Consult and comply with Network Rail	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	4-way ITS ducts in north verge.
S102	Baillieston to Swinton Link Bridge	M8/SPD/ 1600/ S102/ 01.	Baillieston Interchange. New bridge required linking Swinton roundabout and Baillieston Interchange spanning the M73 northbound to M8 westbound slip road.	<u>Bridge Deck Looking East</u> <u>Eastbound carriageway</u> North verge – 2.5m Hardshoulder– 3.3m Carriageway – 7.3m Hardstrip – 0.7m Central reserve – 2.5m <u>Westbound carriageway</u> Central reserve – 2.5m Hardstrip – 0.7m	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	No specific requirements.

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Structure Reference Number	Structure Title	Structure Reference Point and Reference Drawings	Description and Purpose of Structure	Minimum Cross-sectional / Internal Dimensions (Note 2)	Design Check Category	Required Live Loading (excluding LM3 Special Vehicles) (Eurocode BS EN 1991-2)	LM3 Special Vehicles (Eurocode BS EN 1991-2)	Vehicle Parapet Type (where required)	Service and Service Ducts to be provided
				Carriageway – 7.3m Hardshoulder – 3.3m South verge – 2.5m <u>Below Deck Looking North</u> As existing M73 – M8 Interchange Link and existing footpath. Headroom 5.7m					
S103	Retaining Wall Baillieston Junction.	M8/SPD/ 1600/ S103/ 01 & 02.	East of Baillieston Interchange – Ch 400 New retaining wall required between M8 and alignment of A8 APR.	Not Applicable	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	No specific requirements
S104	Braehead Farm Footbridge & Farm Access.	M8/SPD/ 1600/ S104/ 01.	East of Baillieston Interchange– Ch 460 New structure spanning the A8 APR, M8, slip road and footpath/ cyclepath.	<u>Bridge Deck Looking North</u> West verge – 1.0m Carriageway – 6.0m East verge – 1.0m <u>Below Deck Looking West</u> <u>Footpath/ cyclepath</u> Refer to Appendix D <u>M8 Westbound Offslip</u> Refer to Appendix D	3	LM1 and LM2 loading.	SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	12 way 100mm diameter BT ducts. (6 each verge)

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Structure Reference Number	Structure Title	Structure Reference Point and Reference Drawings	Description and Purpose of Structure	Minimum Cross-sectional / Internal Dimensions (Note 2)	Design Check Category	Required Live Loading (excluding LM3 Special Vehicles) (Eurocode BS EN 1991-2)	LM3 Special Vehicles (Eurocode BS EN 1991-2)	Vehicle Parapet Type (where required)	Service and Service Ducts to be provided
				M8 Westbound Refer to Appendix D M8 Eastbound Refer to Appendix D A8 APR Westbound Refer to Appendix D A8 APR Eastbound Refer to Appendix D Headroom - 5.7m					
S105	Rutherglen to Coatbridge Railway Bridge	M8/SPD/ 1600/ S105/ 01 & 02.	East of Baillieston Interchange – Ch 600 New Railway bridge required to the south of the existing "Cuttysark" railway bridge on the Rutherglen to Coatbridge Railway line. The bridge has to carry the existing north bound and south bound railway lines on their existing alignment.	Bridge Deck Looking North .Consult and comply with Network Rail Below Deck Looking West Area bounded by points as defined in clause 3.4.1 (vii).. Footpath/ cyclepath Refer to Appendix D M8 Westbound Offslip Refer to Appendix D M8 Westbound Refer to Appendix D	3	N/A Railway Loading to be as agreed with Network Rail in accordance with their Approval Procedures.	N/A	Consult and comply with Network Rail	Consult and comply with Network Rail

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Structure Reference Number	Structure Title	Structure Reference Point and Reference Drawings	Description and Purpose of Structure	Minimum Cross-sectional / Internal Dimensions (Note 2)	Design Check Category	Required Live Loading (excluding LM3 Special Vehicles) (Eurocode BS EN 1991-2)	LM3 Special Vehicles (Eurocode BS EN 1991-2)	Vehicle Parapet Type (where required)	Service and Service Ducts to be provided
				<u>M8 Eastbound</u> Refer to Appendix D Headroom - 5.7m.					
S106	A752 Bargeddie Junction Overbridge	M8/SPD/ 1600/ S106/ 01 & 02.	Bargeddie Junction – Ch 1600 New bridge to carry the M8 over the existing A752	<u>Bridge Deck looking West</u> <u>M8 Westbound</u> South verge – 1.5m Hardshoulder – 3.3m Carriageway – 11.0m Hardstrip – 0.7m Central reserve – 3.1m <u>M8 Eastbound</u> Hardstrip – 0.7m Carriageway – 11.0m Hardshoulder – 3.3m North verge – 1.5m <u>Below deck looking north</u> Existing A725 Existing Slip roads to/from west bound A8 APR.	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	No specific requirements.
S107A	A752 Bargeddie Junction	M8/SPD/ 1600/ S107/	Bargeddie Junction – Ch 1700 Luggie Burn Culvert	<u>Above culvert looking West</u> <u>M8 Westbound</u> South verge – 1.5m	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance	No specific requirements.

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REQUIREMENTS FOR PRINCIPAL STRUCTURES

Structure Reference Number	Structure Title	Structure Reference Point and Reference Drawings	Description and Purpose of Structure	Minimum Cross-sectional / Internal Dimensions (Note 2)	Design Check Category	Required Live Loading (excluding LM3 Special Vehicles) (Eurocode BS EN 1991-2)	LM3 Special Vehicles (Eurocode BS EN 1991-2)	Vehicle Parapet Type (where required)	Service and Service Ducts to be provided
	Luggie Burn Culvert	01.	Extension to carry the M8 and Footpath/Cyclepath to the south of the M8.	Hardshoulder – 3.3m Carriageway – 11.0m Hardstrip – 0.7m Central reserve – 3.1m <u>M8 Eastbound</u> Hardstrip – 0.7m Carriageway – 11.0m Hardshoulder – 3.3m North verge – 1.5m <u>Footpath/ cyclepath</u> North verge – 1.0m Path – 3.0m South verge – 1.0m				with TD19 of the DMRB.	
S107B	A752 Bargeddie Junction Luggie Burn Retaining Wall	M8/SPD/ 1600/ S107/ 02.	Bargeddie Junction – Ch 1600 to Ch 1850 Reinforced soil slope required to retain the M8 adjacent to the Luggie Burn, Footpath/Cyclepath and bridge.	Not Applicable.	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	No specific requirements.
S108	Bargeddie Footbridge	M8/SPD/ 1600/ S108/	Bargeddie Junction – Ch 1980 Foot/ cycle bridge is	<u>Bridge Deck.</u> 3m clear between parapets	3	LM4 loading. Maintenance vehicle as	N/A	Pedestrian/ cyclist parapet.	No specific requirements

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REQUIREMENTS FOR PRINCIPAL STRUCTURES

Structure Reference Number	Structure Title	Structure Reference Point and Reference Drawings	Description and Purpose of Structure	Minimum Cross-sectional / Internal Dimensions (Note 2)	Design Check Category	Required Live Loading (excluding LM3 Special Vehicles) (Eurocode BS EN 1991-2)	LM3 Special Vehicles (Eurocode BS EN 1991-2)	Vehicle Parapet Type (where required)	Service and Service Ducts to be provided
		01 & 02	required to the east of Bargeddie junction to span the A8 APR and M8. An approach ramp is required on the north and approach ramp and stairs are required on the south.	Below Deck Looking East A8 APR carriageways As existing M8 Eastbound Refer to Appendix D Central reserve – 3.1m M8 Westbound Refer to Appendix D Headroom 5.7m.		prescribed by North Lanarkshire Council			
S109	Chapel Hall Culvert	M8/SPD/ 1600/ S109/ 01	East of Bargeddie Junction – Ch 2200 A new culvert is required to the east of Bargeddie Junction to carry the diverted watercourse below the M8.	Above culvert looking West M8 east bound slip road to Chapel hall Junction. A8 APR to Chapelhall Junction	3	LM1 and LM2 loading.	SV196 SV100 SV80	N/A	No specific requirements
S110	Bankhead Farm Accommodation Bridge	M8/SPD/ 1600/ S110/ 01	West of Shawhead Junction – Ch 2740 A new accommodation bridge is required to carry Bankhead Farm Access road over the M8.	Bridge Deck. West verge – 1.0m Carriageway - 6.0m East verge – 1.0m Below Deck looking West	3	LM1 and LM2 loading.	SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	Scottish Water 63mm diameter water main in 75mm duct in 250mm diameter insulated duct

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REQUIREMENTS FOR PRINCIPAL STRUCTURES

Structure Reference Number	Structure Title	Structure Reference Point and Reference Drawings	Description and Purpose of Structure	Minimum Cross-sectional / Internal Dimensions (Note 2)	Design Check Category	Required Live Loading (excluding LM3 Special Vehicles) (Eurocode BS EN 1991-2)	LM3 Special Vehicles (Eurocode BS EN 1991-2)	Vehicle Parapet Type (where required)	Service and Service Ducts to be provided
				M8 Westbound Refer to Appendix D M8 Eastbound Refer to Appendix D Headroom 5.7m.					
S111	Shawhead Farm Accommodation Bridge	M8/SPD/ 1600/ S111/ 01	West of Shawhead Junction – Ch 3400 A new accommodation bridge is required to carry Shawhead Farm Access road over the M8.	Bridge Deck Looking North West verge – 1.0m Carriageway - 6.0m East verge – 1.0m Below Deck. Access track M8 Westbound Refer to Appendix D M8 Eastbound Refer to Appendix D Headroom 5.7m	3	LM1 and LM2 loading .	SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB. Refer also to Clause 3.10	No specific requirements
S112	Shawhead Junction .	M8/SPD/ 1600/ S112/ 01	Shawhead Junction – Ch 4400 Existing structure A8-60 carries the A725 over the A8	Bridge Deck Looking North A725 North Bound West verge – 2.5m Hardstrip – 1.0m	3	LM1 and LM2 loading.	SV196 SV100 SV80 & Note 2	Vehicle restraint system in accordance with TD19 of	Cable & Wireless 2-way ducts 100mm diameter (west verge) Virgin Media 4-

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REQUIREMENTS FOR PRINCIPAL STRUCTURES

Structure Reference Number	Structure Title	Structure Reference Point and Reference Drawings	Description and Purpose of Structure	Minimum Cross-sectional / Internal Dimensions (Note 2)	Design Check Category	Required Live Loading (excluding LM3 Special Vehicles) (Eurocode BS EN 1991-2)	LM3 Special Vehicles (Eurocode BS EN 1991-2)	Vehicle Parapet Type (where required)	Service and Service Ducts to be provided
			at Shawhead Junction. The existing bridge is a 4 span encased beam deck supported on insitu concrete piers and abutments. A parallel structure is to be constructed to the east to carry additional A725 southbound traffic lanes.	Carriageway – 7.3m Hardstrip – 1.0m Central reserve – 2.5m A725 South Bound Refer to Appendix D Below Deck Looking West As existing New bridge to match the structural spans of the existing bridge. Headroom 5.3m.				the DMRB.	way ducts 100mm dia. (east verge)
S113	Shawhead Footbridge No.2	M8/SPD/ 1600/ S113/ 01	North Of Shawhead junction – Ch 4400 A new pedestrian bridge is required to provide a route over the A725 and the B7070 North Road.	Bridge Deck. 3m clear between parapets Below Deck Looking North A725 North Bound Refer to Appendix D A725 South Bound Refer to Appendix D B7070 North Road Refer to Appendix D	3	LM4 loading. Maintenance vehicle as prescribed by North Lanarkshire Council	N/A	Pedestrian/ Cyclist parapet.	No specific requirements.

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REQUIREMENTS FOR PRINCIPAL STRUCTURES

Structure Reference Number	Structure Title	Structure Reference Point and Reference Drawings	Description and Purpose of Structure	Minimum Cross-sectional / Internal Dimensions (Note 2)	Design Check Category	Required Live Loading (excluding LM3 Special Vehicles) (Eurocode BS EN 1991-2)	LM3 Special Vehicles (Eurocode BS EN 1991-2)	Vehicle Parapet Type (where required)	Service and Service Ducts to be provided
				Headroom 5.7m.					
S114	Shawhead Junction A725 Bridge	M8/SPD/ 1600/ S114/ 01	Shawhead Junction – Ch 4400 A new bridge is required to carry the A725 and A725 northbound to M8 eastbound slip road over the M8.	<u>Bridge Deck Looking North</u> <u>A725 Northbound to M8 Eastbound slip road</u> West verge – 1.5m Hardshoulder – 3.3m Carriageway – 7.3m Hardstrip – 1.0m Nosing - varies <u>A725 Northbound</u> Hardstrip – 1.0m Carriageway – 7.3m Hardstrip – 1.0m Central reserve – 2.5m <u>A725 Southbound</u> Hardstrip – 1.0m Carriageway – 7.3m Hardstrip – 1.0m East verge – 2.5m <u>Below Deck Looking West</u> <u>M8 Westbound</u> Refer to Appendix D Central reserve – 3.1m	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	Cable & wireless 2-way ducts 100mm dia. (west verge)

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REQUIREMENTS FOR PRINCIPAL STRUCTURES

Structure Reference Number	Structure Title	Structure Reference Point and Reference Drawings	Description and Purpose of Structure	Minimum Cross-sectional / Internal Dimensions (Note 2)	Design Check Category	Required Live Loading (excluding LM3 Special Vehicles) (Eurocode BS EN 1991-2)	LM3 Special Vehicles (Eurocode BS EN 1991-2)	Vehicle Parapet Type (where required)	Service and Service Ducts to be provided
				M8 Eastbound Refer to Appendix D Shawhead to M8 east bound slip Refer to Appendix D Headroom 5.7m.					
S115	Shawhead Footbridge No.1	M8/SPD/ 1600/ S115/ 01	South of Shawhead Junction – Ch 4400 A new pedestrian bridge is required to provide a route over the A725.	Bridge Deck 3m clear between parapets Below Deck Looking North Refer to Appendix D A725 Northbound to M8 Eastbound Slip Road Refer to Appendix D A725 Northbound Refer to Appendix D Central reserve – 2.5m A725 Southbound Refer to Appendix D	3	LM4 loading Maintenance vehicle as prescribed by North Lanarkshire Council	N/A	Pedestrian/ cyclist parapet.	No specific requirement.

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REQUIREMENTS FOR PRINCIPAL STRUCTURES

Structure Reference Number	Structure Title	Structure Reference Point and Reference Drawings	Description and Purpose of Structure	Minimum Cross-sectional / Internal Dimensions (Note 2)	Design Check Category	Required Live Loading (excluding LM3 Special Vehicles) (Eurocode BS EN 1991-2)	LM3 Special Vehicles (Eurocode BS EN 1991-2)	Vehicle Parapet Type (where required)	Service and Service Ducts to be provided
				Headroom 5.7m					
S116	Shawhead Junction Rosehall Culvert Retaining Wall.	M8/SPD/ 1600/ S116/ 01	South of Shawhead Junction – Ch 1350 The existing Rosehall culvert requires modification to accommodate revisions to the A725.	<u>Section Looking North on A725</u> <u>A725 Northbound</u> Refer to Appendix D Central reserve – 2.5m <u>A725 Southbound</u> Refer to Appendix D	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	No specific requirements
S117	Shawhead Junction B7070 North Road Link Bridge (North)	M8/SPD/ 1600/ S117/ 01	Shawhead Junction – Ch 4490 A new bridge is required to carry the B7070 North Road over the M8.	<u>Bridge Deck Looking North</u> West verge – 2.5m Hardstrip – 1.0m Carriageway – 7.3m Hardstrip – 1.0m East verge – 2.5m <u>Below Deck Looking West</u> <u>M8 Westbound</u> Refer to Appendix D Central reserve – 3.1m <u>M8 Eastbound</u> Refer to Appendix D <u>A725 to to M8 eastbound slip</u>	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	SGN Distribution Network 355mm dia. Gas main (east verge) – separate service trench full length access to be provided. BT6-way ducts (west verge) Virgin Media 4-way ducts 100mm dia (west verge)

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Structure Reference Number	Structure Title	Structure Reference Point and Reference Drawings	Description and Purpose of Structure	Minimum Cross-sectional / Internal Dimensions (Note 2)	Design Check Category	Required Live Loading (excluding LM3 Special Vehicles) (Eurocode BS EN 1991-2)	LM3 Special Vehicles (Eurocode BS EN 1991-2)	Vehicle Parapet Type (where required)	Service and Service Ducts to be provided
				Refer to Appendix D Headroom 5.7m.					
S118	Shawhead Junction North Road Link Bridge (South)	M8/SPD/ 1600/ S118/ 01 & 02	Shawhead Junction – Ch 4450 A new bridge is required to carry the B7070 North Road over the M8 westbound to A725 southbound slip road.	<u>Bridge Deck Looking North</u> Cyclist/ pedestrian footpath – 2.5m Hardstrip – 1.0m Carriageway – 7.3m Hardstrip – 1.0m East verge – 2.5m <u>Below Deck Looking West</u> <u>M8 Eastbound to A725 Southbound slip road</u> Refer to Appendix D Headroom 5.7m.	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	SGN Distribution Network 355mm dia. Gas main (east verge) BT6-way ducts (west verge) Virgin Media 4-way ducts 100mm dia (west verge)
S119	North Calder Water Underbridge	M8/SPD/ 1600/ S119/ 01, 02 & 03.	East of Shawhead Junction – Ch 4750 A new bridge is required to carry the M8 and westbound slip road over the North Calder Water river.	<u>Bridge Deck Looking West</u> <u>M8 westbound diverge slip road to A725 southbound</u> Verge – 2m Hardstrip – 1m Carriageway – 7.3m Hardstrip – 1m	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	4-way ITS ducts in each verge.

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				Nosing - varies <u>M8 Westbound</u> Hardshoulder – 3.3m Carriageway – 11.0m Hardstrip – 0.7m Central reserve – 3.1m <u>M8 Eastbound</u> Hardstrip – 0.7m Carriageway – 11.0m Taper nosing – varies <u>M8 Eastbound merge slip road nearside lane</u> Taper nosing - varies Carriageway – 3.65m Hardshoulder – 3.3m South verge – 2.0m <u>Below Deck</u> Clear span approximately 70m. Refer to clause 3.16					
S120	Carnbroe Road Accommodation	M8/SPD/ 1600/ S120/	East of Shawhead Junction – Ch 5180	<u>Bridge Deck Looking North</u> West verge – 1.0m	3	LM1 and LM2 loading.	SV100 SV80	Vehicle restraint system in	East Verge

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	Bridge	01	A new bridge is required to carry the Carnbroe Road over the M8.	Carriageway – 7.3m East verge – 3.0m <u>Below Deck looking West</u> <u>M8 Westbound</u> Refer to Appendix D <u>M8 Eastbound</u> Refer to Appendix D Headroom 5.7m				accordance with TD19 of the DMRB.	Scottish Water 355mm dia. Water main – separate service trench full length access to be provided. 4 no 100mm diameter Virgin Media ducts
S121	Motherwell to Coatbridge Railway Bridge	M8/SPD/ 1600/ S121/ 01	West of Eurocentral Junction – Ch 5700 A new bridge is required to carry the M8 over the Motherwell to Coatbridge Railway Line.	<u>Bridge Deck looking West</u> <u>M8 Westbound</u> South verge – 1.5m Hardshoulder – 3.3m Carriageway – 14.7m Hardstrip – 0.7m Central reserve – 3.1m <u>M8 Eastbound</u> Hardstrip – 0.7m Carriageway – 14.7m Hardshoulder – 3.3m North verge – 1.5m	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	4-way ITS ducts in each verge.

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				<u>Below Deck</u> Consult with Network Rail					
S122	Carnbroe Footbridge	M8/SPD/ 1600/ S122/ 01	West of Eurocentral Junction – Ch 5780 A new bridge is required to provide a cycle route and footpath over the A8 APR.	<u>Bridge Deck.</u> 3m clear between parapets <u>Below Deck Looking West</u> <u>A8 APR Westbound</u> Refer to Appendix D <u>A8 APR Eastbound</u> As Existing Headroom 5.7m.	3	LM4 loading. Maintenance vehicle as prescribed by North Lanarkshire Council	N/A	Pedestrian/cyclist parapet	No specific requirement.
S123	Eurocentral Junction westbound A8 APR Bridge	M8/SPD/ 1600/ S123/ 01 & 02	West of Eurocentral Junction – Ch 6050 A new bridge is required to carry the westbound A8 APR over the M8.	<u>Bridge Deck Looking West</u> Footpath/cyclepath – 3.0m Segregation strip – 2.7m Hardshoulder – 3.3m Carriageway – 7.3m Hardstrip – 1.0m North verge – 2.5m <u>Below Deck Looking West</u> <u>M8 Westbound</u> Refer to Appendix D	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	No specific requirement.

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				M8 Eastbound Refer to Appendix D Headroom 5.7m.					
S124	Chapelhall Junction Link Road Bridge	M8/SPD/ 1600/ S124/ 01.	Chapelhall Junction – Ch 8310 A new bridge is required to allow the Chapelhall Junction Link Road to cross the M8	Chapelhall Junction Link Road, Crossing the M8 West verge – 2.5m Hardstrip – 1.0m Carriageway – 7.3m Hardstrip – 1.0m East verge – 2.5m M8, Crossing the Chapelhall Junction Link Road M8 Westbound Refer to Appendix D M8 Eastbound Refer to Appendix D Headroom 5.7m.	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	SP Distribution 6-way ducts 100mm dia. (west verge)
S125	Chapelhall Junction B799 Bridge	M8/SPD/ 1600/ S125/ 01	Chapelhall Junction – Ch 8550 A new bridge is required to	Bridge Deck Looking North West verge – 2.5m Hardstrip – 1.0m Carriageway – 10.0m Hardstrip – 1.0m	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of	SGN Distribution Network 400mm dia. Gas main (east

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			carry the B799 Bo'ness Road over the M8 and the westbound and eastbound A8 APR.	East verge – 2.5m <u>Below Deck Looking West</u> <u>A8 APR Westbound</u> Refer to Appendix D <u>M8 Westbound</u> Refer to Appendix D <u>M8 Eastbound</u> Refer to Appendix D <u>A8 APR Eastbound</u> Refer to Appendix D Headroom 5.7m.				the DMRB.	verge) BT 4-way ducts (west verge) Scottish Water 355mm dia. Water main & 100mm insulation (east verge) – Separate service trench full length access to be provided. Virgin Media 2-way ducts 100mm dia. (east verge)
S126N S126S	Newhouse Junction (West)	M8/SPD/ 1600/ S126/ 01	Newhouse Junction – Ch 10380 Two new bridges are required to carry the M8 westbound to A8 APR westbound slip road and the A8 APR eastbound to M8 eastbound slip road over the Newhouse roundabout.	<u>Bridge Decks Looking West</u> <u>Newhouse Westbound Interchange Link</u> South verge – 1.5m Hardstrip – 1.0m Carriageway – 7.3m Hardstrip – 1.0m North verge – 1.5m <u>Newhouse Eastbound</u>	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	4-way ITS in both verges

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				Interchange Link South verge – 1.5m Hardstrip – 1.0m Carriageway – 7.3m Hardstrip – 1.0m North verge – 1.5m . Below Decks Looking North Roundabout carriageway Headroom – 5.3m					
S127N S127S	Newhouse Junction (East)	M8/SPD/ 1600/ S127/ 01	Newhouse Junction – Ch 10490 Two new bridges are required to carry the M8 westbound to A8 APR westbound slip road and the A8 APR eastbound to M8 eastbound slip road over the Newhouse roundabout.	Bridge Decks Looking West Newhouse Westbound Interchange Link South verge – 1.5m Hardstrip – 1.0m Carriageway – 7.3m Hardstrip – 1.0m North verge – 1.5m Newhouse Eastbound Interchange Link South verge – 1.5m Hardstrip – 1.0m Carriageway – 7.3m Hardstrip – 1.0m North verge – 1.5m .	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	4-way ITS in both verges

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				<u>Below Decks Looking North</u> Roundabout carriageway Headroom – 5.3m					
S128	Badger Underpass	M8/SPD/ 1600/ S128/ 01	East of Newhouse Junction – Ch 10750 A new structure is required to provide a safe route for badgers below the M8.	1050mm diameter pipe below slip roads and main line carriageway.	3	LM1 and LM2 loading.	SV196 SV100 SV80	N/A	N/A
S129	Newhouse Junction Fairybank Underpass Extension	M8/SPD/ 1600/ S129/ 01	East of Newhouse Junction – Ch 11500 The existing Fairybank underpass requires extending to accommodate revisions to the M8.	<u>Bridge Deck looking West</u> <u>M8 Westbound diverge slip road nearside lane</u> South verge – 2.5m Hardstrip – 1.0m Carriageway – 3.65m Taper nosing - varies <u>M8 Westbound</u> Carriageway – 7.3m Hardstrip – 0.7m Central reserve – 3.1m <u>M8 Eastbound</u> Hardstrip – 0.7m Carriageway – 7.3m	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	4-way ITS in both verges

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				<u>M8 Eastbound merge slip road nearside lane</u> Taper nosing - varies Carriageway – 3.65m Hardstrip – 1.0m North verge – 2.0m <u>Below Deck Looking North</u> As existing carriageway and headroom					
S130	Newhouse Junction Bothwellshields Culvert	M8/SPD/ 1600/ S130/ 01	East of Newhouse Junction – Ch 11700 Retaining walls are required to accommodate revisions to the M8.	<u>Above Culvert looking West</u> <u>M8 Westbound</u> South verge – 1.5m Hardshoulder – 3.3m Carriageway – 7.3m Hardstrip – 0.7m Central reserve – 3.1m <u>M8 Eastbound</u> Central reserve – 3.1m Hardstrip – 0.7m Carriageway – 7.3m Hardshoulder – 3.3m North verge – 1.5m	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	4-way ITS in both verges

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S131	Existing Accommodation Bridge	M8/SPD/ 1600/ S131/ 01 & 02.	Accommodation Bridge over Rutherglen to Coatbridge Railway to west of M73. Purpose pedestrian/cyclist route	Verge – 0.6m Carriageway – 3m Verge – 0.6m	3	BD 37/01 ALL capacity of 40 tonnes Note 1	N/A	The existing parapets shall assessed and replaced or modified in accordance with TSIA No. 25.	No specific requirements.
S132	Existing Accommodation Bridge	M8/SPD/ 1600/ S132/ 01 & 02.	Accommodation Bridge over Rutherglen to Coatbridge Railway to east of M73. Purpose pedestrian/cyclist route	Verge – 0.6m Carriageway – 3m Verge – 0.6m	3	BD 37/01 ALL capacity of 40 tonnes Note 1	N/A	The existing parapets shall assessed and replaced or modified in accordance with TSIA No. 25.	No specific requirements.
S133	Existing Accommodation Bridge	M8/SPD/ 1600/ S133/ 01 & 02.	Existing masonry arch structure spanning the Motherwell to Coatbridge railway. Purpose pedestrian/cyclist route	Verge – 0.6m Carriageway – 3m Verge – 0.6m	3	BD 37/01 ALL capacity of 40 tonnes Note 1	N/A	The existing parapets shall assessed and replaced or modified in accordance with TSIA No. 25.	No specific requirements.
S134	Kirkshaws Burn Culvert	M8/SPD/ 1600/ S134/ 01.	Chainage 2300m new culvert east of Bargeddie Junction.	<u>M8 Eastbound</u> Refer to Appendix D <u>M8 Westbound</u>	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of	4-way ITS ducts in each verge.

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				Refer to Appendix D				the DMRB.	
S135	Shawhead Farm Access track Culvert	M8/SPD/ 1600/ S135/ 01.	West of Shawhead Junction – Ch 3400	Access Track West verge – 1.0m Carriageway - 6.0m East verge – 1.0m	3	LM1 and LM2 loading.	N/A	Vehicle restraint system in accordance with TD19 of the DMRB.	No specific requirement.
S136	Shawhead to M8 Eastbound Merge Slip Road Retaining Wall	M8/SPD/ 1600/ S136/ 01.	A retaining structure is required to support the Shawhead to A8 west bound merge slip road.	Not Applicable	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	No specific requirement.
S137	Newhouse Outfall	M8/SPD/ 1600/ S137/ 01.	Culvert immediately to east of Newhouse Junction	APR west bound off slip road M8 & APR main line APR east bound on slip	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	No specific requirement.
S138	Shawhead Junction Footbridge/ Suds Access Bridge	M8/SPD/ 1600/ S138/ 01.	A foot bridge/SUDS access bridge is required to cross the North Calder water to the south of Shawhead Junction and to the west of the A725.	3m clear between parapets	3	LM1 and LM2 loading.	N/A	Vehicle restraint system in accordance with TD19 of the DMRB.	No specific requirement.
S139	Kennel Burn Culvert	M8/SPD/ 1600/	New culvert required to the	A8 – APR west bound	3	LM1 and LM2	SV196 SV100	Vehicle restraint	No specific

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		S139/ 01.	east of Chapel Hall Junction.	M8 west bound M8 eastbound A8 – APR eastbound		loading.	SV80	system in accordance with TD19 of the DMRB.	requirement
S201	Raith Underpass	M8/SPD/ 1600/ S201/ 01, 02, 03, 04, 05,06, 07 & 08	A new underpass is required to carry the A725 traffic below the M74 and distributor roundabout at Junction 5.	<u>A725 north bound</u> West verge – 3.525m Hardstrip – 1m Carriageway- 7.3m Hardstrip – 1m Central reserve – 7.8m <u>A725 south bound</u> Hardstrip – 1m Carriageway- 7.3m Hardstrip – 1m West verge – 3.525m Headroom – 5.7m	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	
S201A	Bridge Deck Western Roundabout	M8/SPD/ 1600/ S201/ 01, 02, 03, 04, 05,06, 07 & 08	A bridge is required to carry the western half of the junction 5 roundabout over the A725 underpass.	<u>Bridge Deck</u> West verge – As required Carriageway- As existing East verge – As required	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	

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S201B	Bridge Deck M74	M8/SPD/ 1600/ S201/ 01, 02, 03, 04, 05,06, 07 & 08	A bridge is required to carry the M74 over the A725 underpass at junction 5.	As existing	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	
S201C	Bridge Deck Eastern Roundabout	M8/SPD/ 1600/ S201/ 01, 02, 03, 04, 05,06, 07 & 08	A bridge is required to carry the eastern half of the junction 5 roundabout over the A725 underpass.	Bridge Deck West verge – As required Carriageway- 14.6m East verge – As required	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	
S202	East Footbridge	M8/SPD/ 1600/ S202/ 01	A footbridge/cyclebridge is required to cross the eastern half of the junction 5 roundabout.	Bridge Deck. 3m clear between parapets Below Deck Roundabout Refer to Appendix D Headroom 5.7m	3	LM4 loading. Maintenance vehicle as prescribed by South Lanarkshire Council	N/A	Pedestrian/ cyclist parapet	
S203	West Footbridge	M8/SPD/ 1600/ S203/ 01	A footbridge/cyclebridge is required to cross the western half of the junction 5 roundabout.	Bridge Deck. 3m clear between parapets Below Deck	3	LM4 loading. Maintenance vehicle as prescribed by South Lanarkshire	N/A	Pedestrian/ cyclist parapet	

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				Roundabout Refer to Appendix D Headroom 5.7m		Council			
S204	Bothwell House Accommodation Bridge	M8/SPD/ 1600/ S204/ 01	The existing M74 5-4 15 Bothwellhouse bridge is to be demolished and replaced with a new structure to cater for the revised M74 Road Layout.	Bridge Deck West verge – 1m Carriageway – 4.5m East verge – 1m Below Deck Looking North M74 Northbound Merge On Slip Refer to Appendix D M74 Northbound Refer to Appendix D M74 Southbound Refer to Appendix D M74 Southbound Merge Off Slip Refer to Appendix D Headroom 5.7m	3	LM1 and LM2 loading.	SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	150mm diameter duct for Scottish Power HV cable in north verge. 90mm Scottish Water, Water Main in 125mm diameter duct in 250mm diameter insulated insulated duct.
S205	Bellshill Bypass	M8/SPD/ 1600/	The existing bridge (Transport Scotland no -	Bridge Deck looking north	3	LM1 and LM2	SV196 SV100	Vehicle restraint	To be

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	Extension to Bridge Over Railway at Bogsbrae	S205/ 01	A725 200:Network Rail no. - OB31/28) carrying the A725 over the West Coast main Line is to be extended on the west side to accommodate the revisions to the north bound A725 carriageways.	West verge - 2m Carriageway - 11m Nosing – varies. Diverge Slip Carriageway - 4m Hard strip -1m Central reserve – As existing Southbound carriageways – as existing.		loading.	SV80	system in accordance with TD19 of the DMRB.	confirmed
S206	Raith Culvert 4	M8/SPD/ 1600/ S206/ 01	Extension to existing culvert to the north side of the A725 underpass to the west and east sides of the M74.	Minimum internal dimension as existing	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	
S207	Raith Culvert 1	M8/SPD/ 1600/ S207/ 01	Re-alignment of existing culvert on the west side of Raith Junction. This culvert is to be moved some 150m to the east of the existing culvert.	To be determined from flood assessment	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	
S208	Raith Culvert 2	M8/SPD/ 1600/ S208/ 01	Extension to existing culvert to the east of Raith junction and on the south side of the A725.	Minimum internal dimension as existing	3	LM1 and LM2 loading.		Vehicle restraint system in accordance with TD19 of the DMRB.	

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S209	Raith Culvert 3	M8/SPD/ 1600/ S209/ 01	New culvert below access track at south east of Raith junction.	To be determined from flood assessment	3	LM1 and LM2 loading.		Vehicle restraint system in accordance with TD19 of the DMRB.	
S401	Halliburton Footbridge Pier Protection	M8/SPD/ 1600/ S401/001	West of Baillieston Interchange Protection of the north pier in accordance with these New Works Requirements (NWR). Earth retention	The structure shall accommodate the new M8 cross section as defined in Appendix D Table 1 Reduced cross section shall be subject to a Departure	3	N/A	N/A	N/A	Carrier drain between north pier and north abutment.

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			required behind pier protection to accommodate a carrier drain. (It is not permissible to install the carrier under the carriageway or hardshoulder.) Existing bridge three span reinforced concrete deck with half joints on pad foundations.						
S402	Wardie Road Bridge Pier Protection	M8/SPD/ 1600/ S402/001	West of Baillieston Interchange Protection of the north and central reserve piers in accordance with these NWR. Earth retention required behind north pier protection to provide for an emergency access.	The structure shall accommodate the new M8 cross section as defined in Appendix D Table 1 Reduced cross section shall be subject to a Departure	3	N/A	N/A	N/A	Carrier drain between north pier and north abutment.
S403	Easterhouse Road Bridge Pier Protection	M8/SPD/ 1600/ S403/001	West of Baillieston Interchange Protection of the north and central reserve piers in accordance with these NWR. Earth retention required behind north pier protection to provide for an	The structure shall accommodate the new M8 cross section as defined in Appendix D Table 1 Reduced cross section shall be subject to a Departure	3	N/A	N/A	N/A	No specific requirements.

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			emergency access.						
S404	M74 Over Rail Parapet Replacement	M8/SPD/ 1600/ S404/ 001	South of Baillieston Interchange Bridge M73 2-2 10 to have existing parapets replaced with an H4a containment parapet to TD19 of the DMRB.	Refer to Appendix D Table 1	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	4 X100mm ducts for motorway communications in each verge
S405	Ellismuir Farm Accommodation Bridge	M8/SPD/ 1600/ S405/001	South of Baillieston Interchange A farm access/footbridge is required to be constructed over the existing M73 providing access from Baillieston to the east of the M73	<u>Bridge Deck Looking west</u> West verge – 1.0m Carriageway - 4.0m East verge – 1.0m Below Deck The structure shall accommodate the new M73 cross section as defined in Appendix D Table 1	3	LM1, LM2 and LM4	N/A	Vehicle restraint system in accordance with TD19 of the DMRB.	No specific requirements
S406	North Calder	M8/SPD/	North of Maryville	Refer to Appendix D Table 1	3	LM1 and LM2	SV196	Vehicle	4X100mm

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	Water Central Reserve Gap Infill	1600/ S406/001	Interchange Gap infill to existing structure for the construction of a concrete safety barrier. Reduction of verge widths.			loading.	SV100 SV80	restraint system in accordance with TD19 of the DMRB.	ducts for motorway communications in each verge
S407	Daldowie Junction Retaining Structures	M8/SPD/ 1600/ S407/ 001	West of Maryville Interchange Retaining structures are required to accommodate carriageway widening.	The structure shall accommodate the new M74 cross section as defined in Appendix D Table 1 Reduced cross section shall be subject to a Departure	3	N/A	N/A	N/A.	No specific requirements.
S408	North Calder Bridge Extension	M8/SPD/ 1600/ S408/001	West of Maryville Interchange Extension to the north and south sides of the existing bridge.	<u>M74 Southbound</u> North verge – 1.6m Hardshoulder – 3.3m Taper – 1.4m (varies) Carriageway – 7.3m Reserve – 9.0m (varies) Carriageway – 7.3m Hardstrip – 0.7m Central reserve – 3.3m <u>M74 Northbound</u> Hardstrip – 0.7m Carriageway – 7.3m Taper – 1.6m (varies) Carriageway – 3.65m Taper - 1.6m (varies) Carriageway – 3.65m Hardshoulder – 3.3m	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	Provide existing capacity

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				South verge – 1.6m					
S409	Powburn Toll Overbridge Pier Protection	M8/SPD/ 1600/ S409/001	East of Maryville Interchange A concrete central reserve barrier is proposed around the piers due to lack of working width. A smooth traffic face must be provided at both abutments.	The structure shall accommodate the new M74 cross section as defined in Appendix D Table 1 Reduced cross section shall be subject to a Departure	3	N/A	N/A	N/A	No specific requirements
S410	Old Mill Road Bridge Proposed Pier Protection	M8/SPD/ 1600/ S410/ 001	East of Maryville Interchange Pier protection is required on each pier and the provision of earth retention to provide a 3.0m emergency access.	The structure shall accommodate the new M74 cross section as defined in Appendix D Table 1 Reduced cross section shall be subject to a Departure	3	N/A	N/A	N/A	No specific requirements
S411	Uddingston Junction Parapet Replacement	M8/SPD/ 1600/ S411/001	East of Maryville Interchange An H4a parapet is required to be installed at the Uddingston Junction Rail Bridge. Alteration/strengthening to the existing deck edge as required.	<u>Bridge Deck.</u> <u>M74 Southbound</u> North verge – 0.6m Hardstrip – 1.0m Carriageway – 13.8m Hardstrip – 0.7m Central reserve – 3.3m <u>M74 Northbound</u> Hardstrip – 0.7m Carriageway – 13.8m Hardstrip – 1.0m	3	As existing	As existing	Vehicle restraint system in accordance with TD19 of the DMRB.	2 x100mm ducts for motorway communications in each verge

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				South verge – 0.6m Headroom to rail line as existing.					
S412	Spindlehowe Underpass Extension	M8/SPD/ 1600/ S412/001	East of Maryville Interchange An extension to the existing underpass structure is required.	The structure shall accommodate the new M8 cross section as defined in Appendix D Table 1	3	LM1 andLM2	SV196 SV100 SV80	Pedestrian headwall protection in accordance with TD19 of the DMRB.	No specific requirements
S413	Bellshill Road Bridge	M8/SPD/ 1600/ S413/ 001	North Of Raith Junction The Bellshill Road Bridge is required to be extended to the east and west of the existing structure.	The structure shall accommodate the new M74 cross section as defined in Appendix D Table 1 No reduction to existing headroom.	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of the DMRB.	4 x100mm ducts for motorway communication s in each verge
S414	Fallside Road Bridge	M8/SPD/ 1600/ S414/001	North Of Raith Junction Pier protection is required on each pier and the provision of earth retention to provide a 3.0m emergency accesses	The structure shall accommodate the new M74 cross section as defined in Appendix D Table 1 Reduced cross section shall be subject to a Departure	3	N/A	N/A	N/A	No specific requirements
S415	Cadzow Underpass Extension	M8/SPD/ 1600/ S415/001	North of Hamilton Junction An extension to the existing underpass structure is required.	The structure shall accommodate the new M74 cross section as defined in Appendix D Table 1	3	LM1 and LM2 loading.	SV196 SV100 SV80	Vehicle restraint system in accordance with TD19 of	No specific requirements

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								the DMRB.	
S417	Glasgow Road Bridge	M8/SPD/ 1600/ S417/001	East of Maryville Interchange A retained earth structure is required to accommodate a carrier drain and service corridor between the bankseat and pier of Glasgow Road Bridge.	The structure shall accommodate the new M74 cross section as defined in Appendix D Table 1	3	N/A	N/A	N/A	No specific requirements
S418	Raith Interchange Bothwellhaugh North	M74 5-5 10	Protection of the north and south piers in accordance with these NWR.	The structure shall accommodate the proposed Raith gyratory carriageway.	3	N/A	N/A	N/A	No specific requirements
S419	Raith Interchange Bothwellhaugh South	M74 5-5 20	Protection of the north and south piers in accordance with these NWR.	The structure shall accommodate the proposed Raith gyratory carriageway and the new footway/cycleway.	3	N/A	N/A	N/A	No specific requirements
G01	ITS and Sign Gantry	M8/SPD/ 1600/SG4	ITS Gantry with ADS sign	Headroom 5.7m + sag	3	See Appendix I	N/A	N/A	No specific requirements

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		01/001 &SG402/001	M8 E/B J9 Diverge	compensation.					
G02	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M8 E/B J9 Diverge	<u>M8 Eastbound</u> Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G03	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M8 E/B J9 Diverge	<u>M8 Eastbound</u> Offside verge – 0.6m Hardstrip – 0.7m Carriageway – 14.7m Taper – 2.1m Diverge – 3.7m Hardshoulder – 3.3m Verge – 2.3m Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G04	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M8 E/B J8 Diverge	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements

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G05	ITS and Sign Gantry	M8/SPD/ 1600/SG4 01/001 &SG402/0 01	ITS Gantry with ADS sign M8 E/B J8 Diverge	M8 Eastbound Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G06	ITS and Sign Gantry	M8/SPD/ 1600/SG4 01/001 &SG402/0 01	ITS Gantry with ADS sign M73 S/B & A89 E/B Diverge	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G07	ITS Gantry	M8/SPD/ 1600/SG4 01/001 &SG402/0 01	ITS Gantry M8 E/B Through Baillieston	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G08	ITS and Sign Gantry	M8/SPD/ 1600/SG4 01/001 &SG402/0 01	ITS Gantry with ADS sign M8 W/B Diverge to Baillieston	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G09	ITS and Sign Gantry	M8/SPD/ 1600/SG4 01/001 &SG402/0 01	ITS Gantry with ADS sign M8 W/B Diverge to Baillieston	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G10	ITS and Sign Gantry	M8/SPD/ 1600/SG4	ITS Gantry with ADS sign M8 W/B Diverge to	Headroom 5.7m + sag	3	See Appendix I	N/A	N/A	No specific requirements

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		01/001 &SG402/001	Baillieston	compensation.					
G11	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M8 W/B Diverge to Baillieston	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G12	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	Gantry with ADS sign M8 W/B Diverge to Shawhead	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G13	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	Gantry with ADS sign M8 E/B Diverge to Eurocentral	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G14	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	Gantry with ADS sign M8 W/B Diverge to Shawhead	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G15	Sign Gantry	M8/SPD/1600/SG4	Gantry with ADS sign M8 E/B Diverge to	Headroom 5.7m + sag	3	See Appendix I	N/A	N/A	No specific requirements

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		01/001 &SG402/001	Eurocentral	compensation.					
G16	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	Gantry with ADS sign M8 W/B Diverge to Shawhead	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G17	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	Gantry with ADS sign M8 E/B Diverge to Eurocentral	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G18	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	Gantry with ADS sign M8 E/B Diverge to Chapelhall	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G19	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	Gantry with ADS sign M8 E/B Diverge to Chapelhall	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G20	Sign Gantry	M8/SPD/1600/SG4	Gantry with ADS sign M8 E/B Diverge to	Headroom 5.7m + sag	3	See Appendix I	N/A	N/A	No specific requirements

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		01/001 &SG402/001	Chapelhall	compensation.					
G21	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M73 S/B Junction 2 Diverge	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G22	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M73 S/B Junction 2 Diverge	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G23	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M73 S/B Junction 2 Diverge	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements

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G24	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M73 N/B Diverge to Baillieston	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G25	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M73 S/B Diverge to M74 S/B	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G26	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M73 N/B Diverge to M8 W/B	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G27	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M73 N/B Diverge to M8 W/B	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G28	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign N73 S/B Diverge to M74 S/B	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements

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G29	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign N73 S/B Diverge to M74 S/B	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G30	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M73 N/B Diverge to M8 W/B	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G31	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M74 S/B Diverge to Daldowie	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G32	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M74 S/B Diverge to Daldowie	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G33	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/0	ITS Gantry with ADS sign M74 S/B Diverge to M73 N/B	Headroom 5.7m +sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements

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		01							
G34	ITS and Sign Gantry	M8/SPD/ 1600/SG4 01/001 &SG402/0 01	ITS Gantry with ADS sign M74 S/B Diverge to M73 N/B	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G35	ITS and Sign Gantry	M8/SPD/ 1600/SG4 01/001 &SG402/0 01	ITS Gantry with ADS sign M73 S/B Diverge to M74 N/B or Daldowie	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G36	ITS and Sign Gantry	M8/SPD/ 1600/SG4 01/001 &SG402/0 01	ITS Gantry with ADS sign M74 N/B Diverge to M73 N/B or Daldowie	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G37	ITS and Sign Gantry	M8/SPD/ 1600/SG4 01/001 &SG402/0 01	ITS Gantry with ADS sign M74 N/B Diverge to M73 N/B	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G38	ITS and Sign Gantry	M8/SPD/ 1600/SG4	ITS Gantry with ADS sign M74 N/B Diverge to M73	Headroom 5.7m + sag	3	See Appendix I	N/A	N/A	No specific requirements

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		01/001 &SG402/001	N/B	compensation.					
G39	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M74 N/B at Maryville	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G40	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M74 N/B Diverge to M73 N/B	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G41	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	Gantry with ADS sign M74 S/B Diverge to Bothwell Services	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G42	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	Gantry with ADS sign M74 N/B Diverge to M73 N/B	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G43	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	Gantry with ADS sign M74 S/B Diverge to Bothwell Services	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements

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G44	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	Gantry with ADS sign M74 S/B Diverge to Bothwell Services	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G45	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	Gantry with ADS sign M74 S/B Diverge to Raith	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G46	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	Gantry with ADS sign M74 S/B Diverge to Raith	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G47	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	Gantry with ADS sign M74 S/B Diverge to Hamilton	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G48	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	Gantry with ADS sign M74 S/B Diverge to Hamilton	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G49	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/0	Gantry with ADS sign M74 S/B Diverge to	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements

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		01	Hamilton						
G50	Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	Gantry with ADS sign M74 S/B Diverge to Hamilton	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G51	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M74 N/B Diverge to Fullarton Junction	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G52	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M74 S/B Route Confirmatory	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G53	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M74 N/B J3 Diverge	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G54	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M74 N/B J3 Diverge	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G55	ITS and Sign	M8/SPD/1600/SG4	ITS Gantry with ADS sign		3	See Appendix I	N/A	N/A	No specific

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	Gantry	01/001 &SG402/001	M74 S/B Diverge to Daldowie	Headroom 5.7m + sag compensation.					requirements
G56	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M74 S/B Diverge to Daldowie	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements
G57	ITS and Sign Gantry	M8/SPD/1600/SG401/001 &SG402/001	ITS Gantry with ADS sign M74 N/B J3 Diverge	Headroom 5.7m + sag compensation.	3	See Appendix I	N/A	N/A	No specific requirements

Note 1 - To be assessed in accordance with the requirements of Appendix J of these New Works Requirements except that the minimum Assessed Live Load (ALL) of 40 tonnes only shall be applicable.

Note 2 - The minimum dimensions stated may need to be increased to accommodate sightline widening where required.

APPENDIX I

THIS IS APPENDIX I TO THE NEW WORKS REQUIREMENTS

STRUCTURES DESIGN BASIS

Separate Document – M8 V5 Schedule 2: Part 2 Appendix I

APPENDIX J

THIS IS APPENDIX J TO PART 2 OF THE NEW WORKS REQUIREMENTS

PROCEDURE FOR STRUCTURES ASSESSMENT

APPENDIX J

PROCEDURE FOR STRUCTURES ASSESSMENT

(Note: This procedure shall only be used with structures with a minimum Assessed Live Load (ALL) capacity of 40 tonnes and minimum HB capacity in accordance with BD37/01: Section 4.1. The Scottish Ministers do not warrant the accuracy of any assessment reports. Structures with an assessed live load capacity below 40 tonnes, and/or HB capacity below the BD37/01 requirements, will require to be demolished/strengthened at the Company's expense.)

J1 The assessment of an existing Structure with a minimum ALL capacity of 40 tonnes and HB capacity in compliance with BD 37/01, which is to be widened or otherwise modified, shall be carried out in accordance with the flowchart below and the following procedure:

(a) analyse the existing Structure to determine the load effects (moments, shears etc) the loading being in accordance with current assessment standards;

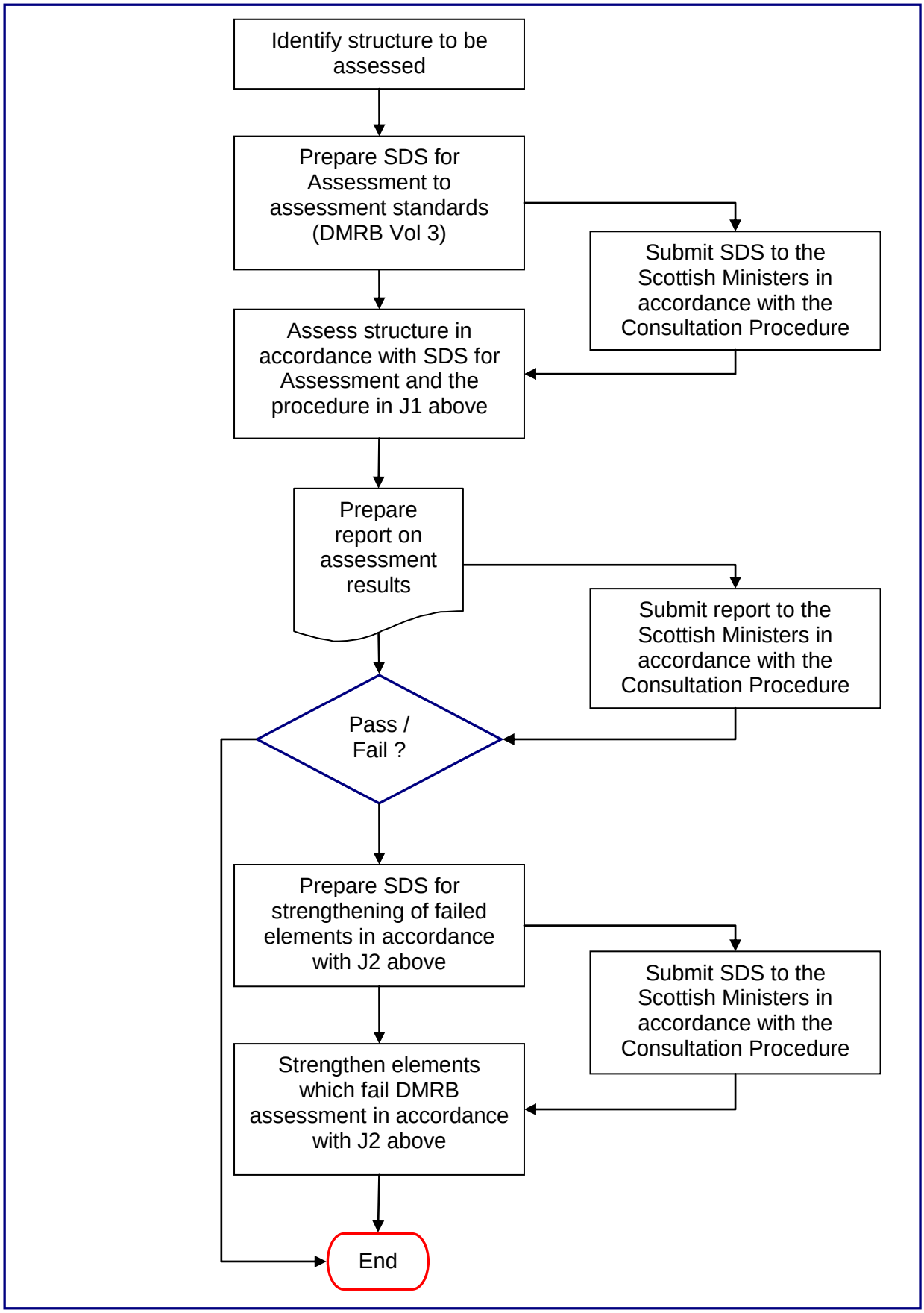
(b) analyse the Structure to determine the load effects (moments, shears etc) following widening or modification, the loading on the whole Structure being in accordance with current assessment standards;

(c) analyse the Structure to determine the load effects (moments, shears etc) following widening or modification, the loading on the whole Structure being in accordance with current Eurocode design standards as implemented by the Structures Design Basis (Appendix I);

(d) in relation to that part of the existing Structure to be retained and incorporated in the modified / widened Structure, provided the load effects determined in (b) above are no more adverse than those determined in (a) above, no strengthening need be carried out on the part of the existing Structure to be retained; and

(e) in relation to that part of the existing Structure to be retained and incorporated in the modified / widened Structure, where the load effects determined in (b) above are more adverse than those determined in (a) above, the part of the existing Structure to be retained and in which the load effects have become more adverse due to the proposed widening / modification shall be strengthened to carry the load effects determined in (c) above. Those parts of the existing Structure in which the load effects have not increased need not be strengthened;

J2 All new works to existing Structures which are to be widened or otherwise modified shall be designed to accommodate the load effects determined in accordance with current Eurocode design standards as implemented by the Structures Design Basis (Appendix I).



Flowchart for the assessment /strengthening of existing structure

APPENDIX K

THIS IS APPENDIX K TO THE NEW WORKS REQUIREMENTS

STRUCTURES DESIGN STATEMENT

1 ROAD DETAILS

1.1 Type of road

1.2 Permitted traffic speed [2]

1.3 Existing restrictions [3]

2 SITE DETAILS

2.1 Obstacle crossed

3 PROPOSED STRUCTURE

3.1 Description of Structure and design working life [4]

3.2 Structural type

3.3 Foundation type (including any special measures or associated works such as ground treatment or mine workings consolidation to take account of any problems identified in Section 6 below)

3.4 Span arrangements

3.5 Articulation arrangements

3.6 Classes and levels [5D]

3.6.1 Consequence class

3.6.2 Reliability class

3.6.3 Inspection level

3.7 Road restraint systems requirements

3.8 Proposed arrangements for future maintenance and inspection / Inspection for Assessment [1]

3.8.1 Traffic management

3.8.2 Arrangements for future maintenance and inspection of structure. Access arrangements to structure.

3.8.3 Intrusive or further investigations proposed [A]

3.9 Environment and sustainability

3.10 Durability. Materials and finishes [1,6D] / Materials strengths assumed and basis of assumptions [1,6A]

.

3.11 Risks and hazards considered for design, execution, maintenance and demolition Consultation with and/or agreement from CDM co-ordinator [7]

3.12 Proposed arrangements for execution [D]

3.12.1 Construction of Structure

3.12.2 Traffic management

3.12.3 Service diversions

3.12.4 Interface with existing Structures

3.13 Year of construction [A]

3.14 Reason for assessment [A]

3.15 Part of Structure to be assessed [A]

4 DESIGN CRITERIA

4.1 Actions

4.1.1 Permanent actions

4.1.2 Snow, wind and thermal actions

4.1.3 Actions relating to normal traffic under AW regulations and C&U regulations [8D, 8A]

4.1.4 Actions relating to General Order Traffic Under STGO regulations [9D]

4.1.5 Footway or footbridge variable actions

4.1.6 Actions relating to Special Order Traffic, provision for exceptional abnormal indivisible loads including location of vehicle track on deck cross-section [10D]

4.1.7 Accidental actions

4.1.8 Actions during execution

4.1.9 Any special actions not covered above [11]

4.2 Heavy or high load route requirements and arrangements being made to preserve the route, including any provisions for future heavier loads or future widening [12]

4.3 Minimum headroom provided

4.4 Authorities consulted and any special conditions required

4.5 Standards and documents

4.5.1 Technical Standards Schedule

4.5.2 Additional relevant Standards and publications

4.6 Proposed Departures from Standards given in 4.5

4.7 Proposed methods for dealing with aspects not covered by Standards in 4.5

4.8 List of record of options and choices (for Category 2 and 3 checks) [13D]

5 STRUCTURAL ANALYSIS

5.1 Methods of analysis proposed for superstructure, substructure and foundations [14]

5.2 Description and diagram of idealised Structure to be used for analysis

5.3 Assumptions intended for calculation of structural element stiffness

5.4 Proposed range of soil parameters to be used in the design / assessment [1] of earth retaining elements [D, 15A]

6 GEOTECHNICAL CONDITIONS

6.1 Geotechnical Category of Structure (BS EN 1997-1) [D]

6.2 Acceptance of recommendations of the Geotechnical Design Report to be used in the design / assessment [1] and reasons for any proposed changes

6.3 Summary of design for highway Structure in the Geotechnical Design Report

6.4 Differential settlement to be allowed for in the design / assessment [1] of the Structure (including reference to settlements at interface between Structure and earthworks)

6.5 If the Geotechnical Design Report is not yet available, state when the results are expected and list the sources of information used to justify the preliminary choice of foundations [16]

6.6 Tolerances for reinforced soil Structures (face angle >70 degrees) (including methodology for measurement) [D]

7 CHECKING

7.1 Proposed Category [D, A] and Design Supervision Level [D]

Design Supervision Level DSL3.

7.2 Name of proposed Category 3 Checker

8 DRAWINGS AND DOCUMENTS

8.1 List of drawings (including numbers) and documents accompanying the submission [17]

ANNEX A - Technical Standards Schedule [18D, 18A]

ANNEX B - Diagram of idealised structural analysis model

ANNEX C - Departures from Standards

ANNEX D - Drawings

ANNEX E - Choices and Options – Information to be Provided

9 THE ABOVE ACCURATELY REFLECTS THE ASSUMPTIONS USED FOR DESIGN / ASSESSMENT [1] OF THIS STRUCTURE

Signed _____

Name _____

Design Team Leader

Engineering Qualifications _____ [19]

Name of Organisation _____

Date _____

Notes

D. Indicates clauses to be used in Design SDS only.

A. Indicates clauses to be used in Assessment SDS only.

1. Delete as appropriate.

2. For a bridge, give over and/or under.

3. Include weight, height, width and any environmental restrictions at or adjacent to the bridge.

4. The design working life of the structure, including temporary structure, and replaceable structural parts shall be given. They shall be expressed as a number of years rather than a range of years. A design working life shall be based on the DMRB if stated. Otherwise it may be based on the guidance given in the Overseeing Organisation's current requirements for the use of Eurocodes for the design of highway structures. Refer to Structures Design Basis, Section 4.3 for further information.

5D State the classes and levels for the whole structure, as well as those for the individual main structural elements if higher or lower. See the Overseeing Organisation's current requirements for the use of Eurocodes for the design of highway structures. Refer to Structures Design Basis, Section 4.2 and BS EN 1990:2002 + A1:2005 cl. B3, B4 and B5 for further rinformation.

6D For concrete Structures, give applicable exposure classes for particular structural elements as stated in TS IA 23. For all material strengths given, list the relevant codes/standards..

6A Give material strengths from record drawings or intrusive investigation. For all material strengths given, list the relevant codes/standards.

7. List only risks and hazards that would not be apparent to an experienced and competent Contractor or are likely to require special attention to manage them effectively. Where possible and practicable, the identified potential risks and hazards shall be eliminated or minimised during the design stage. Designers shall name the CDM co-ordinator and confirm that the CDM co-ordinator has reviewed the risks and hazards identified in the AIP and is satisfied.

8D. e.g. Load Models 1 or 2, BS EN 1991-2.

8A e.g. Assessment Loading

9D. e.g. SV model vehicle in Load Model 3, BS EN 1991-2 (see Section 5.5.2 of Structures Design Basis).

9A e.g. HB or SV loading

10D e.g. SOV model vehicle in Load Model 3, BS EN 1991-2 (see Section 5.5.2 of Structures Design Basis) and / or individual vehicle which includes the following information as applicable:

a) Gross weight of the vehicle in tonnes and vehicle type and number;
b) Axle load and spacing (longitudinally and transversely);
c) Air cushion in tonnes over area applied in m x m; and
d) Single or twin tyres and wheel contact areas.

11 e.g. seismic action, atmospheric icing, floating debris etc.

12. The heavy or high load route requirements should be confirmed with Transport Scotland.

13D The list of choices and options for Category 2 and 3 Structures shall be recorded in an Annex to the SDS.

14 List the main structural elements for superstructure, substructure and foundation.

15A For assessment of existing Structures, where no such geotechnical information is available, suggested earth pressure coefficient values given in relevant DMRB parts should be used instead.

16. When the Geotechnical Design Report becomes available , an addendum to the SDS, covering section 6, must be submitted to the Scottish Ministers. The addendum must have its own sections 8 and 9 to provide a list of drawings, documents and signatures.

17. Where appropriate, also include:

a) Relevant extracts from the Geotechnical Design Report;

b) Methods of dealing with aspects not covered by Standards; and

c) Relevant correspondence and documents from consultations.

18D The relevant Design Standards are given in Annex A below to this Appendix N.

18A The relevant Assessment Standards are given in the Design Manual for Roads and Bridges (DMRB).

19. CEng, MICE, MIStructE or equivalent.

STRUCTURES DESIGN STATEMENT

ANNEX A

Technical Standards Schedule for New Works Design

It is the responsibility of the complier of the Structures Design Statement and/or the design or check certificate compiler to ensure that the Standards, references and clauses used - including amendments and corrigenda are relevant and current at the Base Date.

Documents in *italics* are under preparation at the time of publication of this document.

All Standards and Documents not used shall be struck through.

Schedule of Documents Relating to Design of Highway Bridges and Structures using Structural Eurocodes

British Standards (non-conflicting with Structural Eurocodes)	
BS 8006-1:2010	Code of practice for strengthened/reinforced soils and other fills
BS 8500-1:2006	Concrete – Complementary British Standard to BS EN 206-1 Part 1:Method of specifying and guidance for the specifier
BS EN 1317-1:2010 Road restraint systems – Part 1	Terminology and general criteria for test methods
BS EN 1317-2:2010 Road restraint systems – Part 2	Performance classes, impact test acceptance criteria and test methods for safety barriers including vehicle parapets
BS EN 1317-3:2010 Road restraint systems – Part 3	Performance classes, impact test acceptance criteria and test methods for crash cushions
BS EN 1317-4:1998 Road restraint systems – Part 4	*Performance classes, impact test acceptance criteria and test methods for terminals and crash cushions*
BS EN 1317-5:2007 + A1:2008 Road restraint systems – Part 5	Product requirements and evaluation of conformity for vehicle restraint systems
BS EN 14388:2005	Road traffic noise reducing devices - Specifications
BS EN 15050:2007	Precast concrete products. Bridge elements

Structural Eurocodes	
BS EN 1990:2002 + A1:2005	Eurocode: Basis of structural design
NA to BS EN 1990:2002 + A1:2005	UK National Annex to Eurocode: Basis of structural design

Structural Eurocodes	
BS EN 1991-1-1:2002	Eurocode 1: Actions on structures. Part 1-1: General Actions: Densities, self-weight, imposed load for buildings
NA to BS EN 1991-1-1:2002	UK National Annex to Eurocode 1: Actions on structures. Part 1-1: General Actions. Densities, self-weight, imposed load for buildings
BS EN 1991-1-3:2003	Eurocode 1: Actions on structures - Part 1-3: General Actions: Snow loads
NA to BS EN 1991-1-3:2003	UK National Annex to Eurocode 1: Actions on structures. Part 1-3: General Actions. Snow loads
BS EN 1991-1-4:2005 + A1:2010	Eurocode 1: Actions on structures – Part 1-4: General Actions: Wind actions
NA to BS EN 1991-1-4:2005 + A1:2010	UK National Annex to Eurocode 1: Actions on structures. Part 1-4: General Actions. Wind actions
BS EN 1991-1-5:2003	Eurocode 1: Actions on structures – Part 1-5: General Actions: Thermal actions
NA to BS EN 1991-1-5:2003	UK National Annex to Eurocode 1: Actions on structures. Part 1-5: General Actions. Thermal actions
BS EN 1991-1-6:2005	Eurocode 1: Actions on structures – Part 1-6: General Actions: Actions during execution
NA to BS EN 1991-1-6:2005	UK National Annex to Eurocode 1: Actions on structures. Part 1-6: General Actions. Actions during execution
BS EN 1991-1-7:2006	Eurocode 1: Actions on structures – Part 1-7: General Actions: Accidental actions
NA to BS EN 1991-1-7:2006	UK National Annex to Eurocode 1: Actions on structures. Part 1-7: General Actions. Accidental actions
BS EN 1991-2:2003	Eurocode 1: Actions on structures – Part 2: Traffic loads on bridges
NA to BS EN 1991-2:2003	UK National Annex to Eurocode 1: Actions on structures. Part 2: Traffic loads on bridges
BS EN 1992-1-1:2004	Eurocode 2: Design of concrete structures – Part 1-1: General rules and rules for buildings
NA to BS EN 1992-1-1:2004	UK National Annex to Eurocode 2: Design of concrete structures – Part 1-1: General rules and rules for buildings
BS EN 1992-2:2005	Eurocode 2: Design of concrete structures – Part 2: Concrete bridges – Design and detailing rules
NA to BS EN 1992-2:2005	UK National Annex to Eurocode 2: Design of concrete structure – Part 2: Concrete bridges – Design and detailing rules
BS EN 1992-3:2006	Eurocode 2: Design of concrete structures – Part 3: Liquid retaining and containment structures

Structural Eurocodes	
NA to BS EN 1992-3:2006	UK National Annex to Eurocode 2: Design of concrete structures – Part 3: Liquid retaining and containment structures
BS EN 1993-1-1:2005	Eurocode 3: Design of steel structures – Part 1-1: General rules and rules for buildings
NA to BS EN 1993-1-1:2005	UK National Annex to Eurocode 3: Design of steel structure – Part 1-1: General rules and rules for buildings
BS EN 1993-1-3:2006	Eurocode 3: Design of steel structures – Part 1-3 General rules – Supplementary rules for cold-formed members and sheeting
NA to BS EN 1993-1-3:2006	UK National Annex to Eurocode 3: Design of steel structures – Part 1-3: General rules – Supplementary rules for cold-formed members and sheeting
BS EN 1993-1-4:2006	Eurocode 3: Design of steel structures – Part 1-4: General rules – Supplementary rules for stainless steels
NA to BS EN 1993-1-4:2006	UK National Annex to Eurocode 3: Design of steel structures – Part 1-4: General rules – Supplementary rules for stainless steels
BS EN 1993-1-5:2006	Eurocode 3: Design of steel structures – Part 1-5: Plated structural elements
NA to BS EN 1993-1-5:2006	UK National Annex to Eurocode 3: Design of steel structure – Part 1-5: Plated structural elements
BS EN 1993-1-6:2007	Eurocode 3: Design of steel structures – Part 1-6 Strength and stability of shell structures
NA to BS EN 1993-1-6:2007	*UK National Annex to Eurocode 3: Design of steel structure – Part 1-6: Strength and stability of shell structures*
BS EN 1993-1-7:2007	Eurocode 3: Design of steel structures – Part 1-7 Plated structures subject to out of plane loading
NA to BS EN 1993-1-7:2007	*UK National Annex to Eurocode 3: Design of steel structures – Part 1-7: Plated structures subject to out of plane loading*
BS EN 1993-1-8:2005	Eurocode 3: Design of steel structures – Part 1-8: Design of joints
NA to BS EN 1993-1-8:2005	UK National Annex to Eurocode 3: Design of steel structures – Part 1-8: Design of joints
BS EN 1993-1-9:2005	Eurocode 3: Design of steel structures – Part 1-9: Fatigue
NA to BS EN 1993-1-9:2005	UK National Annex to Eurocode 3: Design of steel structures – Part 1-9: Fatigue
BS EN 1993-1-10:2005	Eurocode 3: Design of steel structures – Part 1-10: Material toughness and through-thickness properties
NA to BS EN 1993-1-10:2005	UK National Annex to Eurocode 3: Design of steel structures – Part 1-10: Material toughness and through-thickness properties

Structural Eurocodes	
BS EN 1993-1-11:2006	Eurocode 3: Design of steel structures – Part 1-11: Design of structures with tension components
NA to BS EN 1993-1-11:2006	UK National Annex to Eurocode 3: Design of steel structures – Part 1-11: Design of structures with tension components
BS EN 1993-1-12:2007	Eurocode 3: Design of steel structures – Part 1-12: Additional rules for the extension of EN 1993 up to steel grades S 700
NA to BS EN 1993-1-12:2007	UK National Annex to Eurocode 3: Design of steel structures – Part 1-12: Additional rules for the extension of EN 1993 up to steel grades S 700
BS EN 1993-2:2006	Eurocode 3: Design of steel structures – Part 2: Steel bridges
NA to BS EN 1993-2:2006	UK National Annex to Eurocode 3: Design of steel structures – Part 2: Steel bridges
BS EN 1993-5:2007	Eurocode 3: Design of steel structures – Part 5: Piling
NA to BS EN 1993-5:2007	UK National Annex to Eurocode 3: Design of steel structures – Part 5: Piling
BS EN 1994-2:2005	Eurocode 4: Design of composite steel and concrete structures – Part 2: General rules and rules for bridges
NA to BS EN 1994-2:2005	National Annex to Eurocode 4: Design of composite steel and concrete structures – Part 2: General rules and rules for bridges
BS EN 1995-1-1:2004 + A1:2008	Eurocode 5: Design of timber structures – Part 1-1: General – Common rules and rules for buildings
NA to BS EN 1995-1-1:2004 + A1:2008	UK National Annex to Eurocode 5: Design of timber structures – Part 1-1: General – Common rules and rules for buildings
BS EN 1995-2:2004	Eurocode 5: Design of timber structures – Part 2: Bridges
NA to BS EN 1995-2:2004	UK National Annex to Eurocode 5: Design of timber structures – Part 2: Bridges
BS EN 1996-1-1:2005	Eurocode 6: Design of masonry structures – Part 1-1: General rules for reinforced and unreinforced masonry structures
NA to BS EN 1996-1-1:2005	UK National Annex to Eurocode 6: Design of masonry structures – Part 1:-1 General rules for reinforced and unreinforced masonry structures
BS EN 1996-2:2006	Eurocode 6: Design of masonry structures – Part 2: Design considerations, selection of materials and execution of masonry
NA to BS EN 1996-2:2006	UK National Annex to Eurocode 6: Design of masonry structures – Part 2: Design considerations, selection of materials and execution of masonry

Structural Eurocodes	
BS EN 1996-3:2006	Eurocode 6: Design of masonry structures – Part 3: Simplified calculation methods for unreinforced masonry structures
NA to BS EN 1996-3:2006	UK National Annex to Eurocode 6: Design of masonry structures – Part 3: Simplified calculation methods for unreinforced masonry structures
BS EN 1997-1:2004	Eurocode 7: Geotechnical design – Part 1: General rules
NA to BS EN 1997-1:2004	UK National Annex to Eurocode 7: Geotechnical design – Part 1: General rules
BS EN 1997-2:2007	Eurocode 7: Geotechnical design – Part 2: Ground investigation and testing
NA to BS EN 1997-2:2007	UK National Annex to Eurocode 7: Geotechnical design – Part 2: Ground investigation and testing
BS EN 1998-1:2004	Eurocode 8: Design of structures for earthquake resistance – Part 1: General rules, seismic actions and rules for buildings
NA to BS EN 1998-1:2004	Eurocode 8: Design of structures for earthquake resistance – Part 1: General rules, seismic actions and rules for buildings
BS EN 1998-2:2005 + A1:2009	Eurocode 8: Design of structures for earthquake resistance – Part 2: Bridges
NA to BS EN 1998-2:2005	UK National Annex to Eurocode 8: Design of structures for earthquake resistance – Part 2: Bridges
BS EN 1998-5:2004	Eurocode 8: Design of structures for earthquake resistance - Part 5: Foundations, retaining structures and geotechnical aspects
NA to BS EN 1998-5:2004	UK National Annex to Eurocode 8: Design of structures for earthquake resistance - Part 5: Foundations, retaining structures and geotechnical aspects
BS EN 1999-1-1:2007 + A1:2009	Eurocode 9: Design of aluminium structures– Part 1-1: General structural rules
NA to BS EN 1999-1-1:2007 + A1:2009	UK National Annex to Eurocode 9: Design of aluminium structures – Part 1-1: General structural rules
BS EN 1999-1-3:2007	Eurocode 9: Design of aluminium structures – Part 1-3: Structures susceptible to fatigue
NA to BS EN 1999-1-3:2007	UK National Annex to Eurocode 9: Design of aluminium structures – Part 1-3: Structures susceptible to fatigue
BS EN 1999-1-4:2007	Eurocode 9: Design of aluminium structures – Part 1-4 Cold formed structural sheeting
NA to BS EN 1999-1-4:2007	UK National Annex to Eurocode 9: Design of aluminium structures – Part 1-4: Cold formed structural sheeting

BSI Published Documents (To be used with Structural Eurocodes))	
PD 6704	*Guidance on the design of structures to the UK National Annex to BS EN 1990*
PD 6688-1-1:2011	Background paper to the UK National Annex to BS EN 1991-1-1
PD 6688-1-4: 2009	Background information to the National Annex to BS EN 1991-1-4 and additional guidance
PD 6688-1-5	*Background paper to the UK National Annex to BS EN 1991-1-5*
PD 6688-1-7: 2009	Recommendations for the design of structures to BS EN 1991-1-7
PD 6688-2:2007	Recommendations for the design of structures to BS EN 1991-2
PD 6687-1:2010	Background paper to the National Annexes to BS EN 1992-1 and BS EN 1992-3
PD 6687-2:2008	Recommendations for the design of structures to BS EN 1992-2:2005
PD 6695-1-9:2008	Recommendations for the design of structures to BS EN 1993-1-9
PD 6695-1-10: 2009	Recommendations for the design of structures to BS EN 1993-1-10
PD 6695-2:2008	Recommendation for the design of bridges to BS EN 1993
PD 6695-5	*Background paper to the UK National Annex to BS EN 1993-5*
PD 6705-2:2010	Recommendations for the execution of steel bridges to BS EN 1090-2
PD 6696-2:2007	Background paper to BS EN 1994-2 and the UK National Annex to BS EN 1994-2
PD 6697 2010	Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2
PD 6694-1:2011	Recommendations for the design of structures subject to traffic loading to BS EN 1997-1
PD 6698: 2009	Recommendations for the design of structures for earthquake resistance to BS EN 1998
PD 6702-1:2009	Recommendations for the design of aluminium structures to BS EN 1999
PD 6705-3:2009	Recommendations for the execution of aluminium structures to BS EN 1090-3
PD 6703: 2009	Structural Bearings - Guidance on the use of structural bearings

Execution Standards	
BS EN 1090-1:2009	Execution of steel structures and aluminium structures – Part 1: Requirements for conformity assessment of structural components
BS EN 1090-2: 2008	Execution of steel structures and aluminium structures – Part 2: Technical requirements for the execution of steel structures
BS EN 1090-3:2008	Execution of steel structures and aluminium structures – Part 3: Technical requirements for aluminium structures
BS EN 13670:2009	Execution of concrete structures

The Manual of Contract Documents for Highway Works (MCDHW)
Volume 1: Specification for Highway Works
Volume 2: Notes for Guidance on the Specification for Highway Works
Volume 3: Highway Construction Details

Design Manual for Roads and Bridges (DMRB) **General Requirements, Standards (GD Series)**	
GD 01	Introduction to the Design Manual for Roads and Bridges
GD 02	Quality Management Systems for Highway Design

Design Manual for Roads and Bridges (DMRB) Bridges and Structures, Advice Notes (BA Series)	
BA 26/94	Expansion Joints for use in Highway Bridge Decks
BA 28/92	Evaluation of Maintenance Costs in Comparing Alternative Designs for Highway Structures
BA 41/98	The Design and Appearance of Bridges
BA 47/99	Waterproofing and Surfacing of Concrete Bridge Decks
BA 67/96	Enclosure of Bridges
BA 68/97	Crib Retaining Walls
BA 82/00	Formation of Continuity Joints in Bridge Decks
BA 85/04	Coatings for Concrete Highway Structures & Ancillary Structures
BA 92/07	The Use of Recycled Concrete Aggregates in Structural Concrete

Bridges and Structures, Standards (BD Series)	
BD 7/01	Weathering Steel for Highway Structures
BD 10/97	Design of Highway Structures in Areas of Mining Subsidence
BD 12/01	Design of Corrugated Steel Buried Structures with Spans greater than 0.9 metres and up to 8.0 metres
BD 29/04	Design Criteria for Footbridges
BD 33/94	Expansion Joints for use in Highway Bridge Decks
BD 35/06	Quality Assurance Scheme for Paints and Similar Protective Coatings
BD 36/92	Evaluation of Maintenance Costs in Comparing Alternative Designs for Highway Structures
BD 41/97	Reinforced clay brickwork retaining walls of pocket type and grouted cavity type construction – use of BS 5628:Part 2:1995
BD 43/03	The Impregnation of Reinforced and Prestressed concrete Highway Structures using Hydrophobic Pore-Lining Impregnants
BD 45/93	Identification Markings of Highway Structures
BD 47/99	Waterproofing and Surfacing of Concrete Bridge Decks
BD 51/98	Portal and Cantilever Signs / Signal Gantries
BD 62/07	As-built, Operational and Maintenance Records for Highway Structures
BD 65/97	Design Criteria for Collision Protection Beams
BD 67/96	Enclosure of Bridges
BD 68/97	Crib Retaining Walls
BD 78/99	Design of Road Tunnels
BD 82/00	Design of Rigid Buried Pipes
BD 90/05	Design of FRP Bridges and Highway Structures
BD 91/04	Unreinforced Masonry Arch Bridges
BD 94/07	Design of Minor Structures

Traffic Engineering and Control, Standards and Advice Notes (TD and TA Series)	
TD 9/93	Highway Link Design
TD 19/06	Requirement for Road Restraint Systems
TD 27/05	Cross Sections and Headroom
TD 36/93	Subways for Pedestrians and Cyclists, Layout and Dimensions
TD 89/08	Use of Passively Safe Signposts, Lighting Columns & Traffic Signal Posts to BS EN 12767

Highways, Advice Notes (HA Series)	
HA 66/95	Environmental Barriers – Technical Requirements

Highways, Standards (HD Series)	
HD 22/08	Managing Geotechnical Risk
HD 45/09	Road Drainage and Water Environment

Transport Scotland Interim Amendments	
TS IA 22	Transport Scotland Interim Amendment No 22: Implementation of New Reinforcement Standards (BS 4449:2005, BS 4482:2005, BS 4483: 2005 and BS 8666:2005)
TS IA 23 Revision 2	Transport Scotland Interim Amendment No 23: Implementation of BS 8500-1:2006 Concrete – complimentary British Standard to BS EN 206-1
TS IA 24	Transport Scotland Interim Amendment No 24: Guidance on implementing results on research on bridge deck waterproofing
TS IA 25	Transport Scotland Interim Amendment No 25: Assessment and upgrading of existing vehicle parapets
TS IA 26	Transport Scotland Interim Amendment No 26: The Anchorage of Reinforcement & Fixings in Hardened Concrete
TS IA 39	Use of Eurocodes for the Design of Bridges and Road Related Structures

STRUCTURES DESIGN STATEMENT

ANNEX B

Diagram of idealised structural analysis model

STRUCTURES DESIGN STATEMENT

ANNEX C

Departures from Standard

STRUCTURES DESIGN STATEMENT

ANNEX D

Drawings

STRUCTURES DESIGN STATEMENT

ANNEX E

Choices and Options – Information to be Provided

ANNEX E: PROJECT SPECIFIC INFORMATION TO BE RECORDED IN THE Structures Design Statement (SDS)

A list of choices and options are to be compiled in this Annex.

It is the responsibility of the compiler of the SDS and the design/check certificates to ensure that the Standards, references and clauses used, including amendments and corrigenda, are relevant and current at the Base Date.

Information is to be recorded only if applicable and/or where recommended values/methods are not used.

All choices and options which are not applicable shall be struck through.

Where the information to be recorded in the SDS is not available at the time of its submission, this shall be noted. The information shall be added when available to the SDS, addendum SDS or design / check certificates as appropriate.

The designer record is where the Designer should record the choices and options selected. The designer record should be provided to the Checker and should be included in the As Built Records, together with the SDS and the Design and Check Certificates.

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
BS EN 1990:2002 + A1:2005 Eurocode 0: Basis of structural design			
2.1 Basic Requirements (4)P NOTE 1	Define design events to be taken into account.	SDS 4.1.7	
3.4 Serviceability limit states (1)P NOTE 2	Define the serviceability requirements.	SDS 5.1 or 4.7	
4.1.2 Characteristic values of actions (8)	For accidental actions define the design value A_d.	Designer record	
4.1.2 Characteristic values of actions (9)	For seismic actions define the design value A_{Ed}.	Designer record	
A2.1.1 General (1) NOTE 4	Define the combination rules if clauses A2.2.2 to A2.2.5 are changed.	Designer record	
A2.2.1 General (10) NOTE	Define the requirements for snow loads and wind actions to be taken into account simultaneously with other construction loads (e.g. actions due to heavy equipment or cranes) during some transient design situations.	SDS 4.1.8	
A2.2.1 General (13) NOTE	Specify limits on total settlement and differential settlement.	SDS 6.3	
A2.2.1 General (15) NOTE 1	Define variable actions to be taken into account for settlements.	Designer record	
A2.2.2 Combination rules for road bridges (3) NOTE	Define the combination rules for special vehicles with normal traffic and other variable actions.	SDS 4.1.2 or 4.6	Information to be recorded only if combination rules defined in NA.2.3.3.2 are not used.

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
A2.2.5 Combinations of actions for accidental (non seismic) design situations (2) NOTE 2	Define additional combinations of actions for other accidental design situations.	SDS 4.1.7 or 4.7	
A2.2.5 Combinations of actions for accidental (non seismic) design situations (4) NOTE	For ship impact define additional requirements.	SDS 4.1.7 or 4.7	
A2.2.6 Values of ψ factors(1) NOTE 3	Define representative values of water forces (F_{wa}).	Designer record	
A2.2.6 Values of ψ factors (1) NOTE 5	For specific design situations (e.g. calculation of bridge camber for aesthetics and drainage consideration, calculation of clearance, etc.) define the requirements for the combinations of actions to be used.	Designer record	
Table A2.4(B) - Design values of actions (STR/GEO) (Set B) NOTE 5	Where actions due to water are not covered by EN 1997 (e.g. flowing water), define the combinations of actions to be used.	SDS 4.1.9 or 4.7	Advice is given in Table NA.A2.4(B) NOTE 2.
Table A2.5 - Design values of actions for use in accidental and seismic combinations of actions (***)	Specify particular seismic design situations.	SDS 4.6	Information to be recorded only if the advice given in NA.2.3.8 is not adopted.
A2.3.2 Design values of actions in the accidental and seismic design situations (2) NOTE	As an example, in the case of bridges built by the cantilevered method, some construction loads may be considered as simultaneous with the action corresponding to the accidental fall of a prefabricated unit. Define the relevant representative values.	Designer record	Information needs to be passed to the Contractor.
A2.4.3.1 Design situations and associated traffic assumptions (1) NOTE	Define the design situations.	SDS 4.1.3	
A2.4.3.1 Design situations and associated traffic assumptions (3) NOTE 1	Define traffic categories and the relevant design situations.	SDS 4.1.5	
NA to BS EN 1990:2002+A1:2005 – UK National Annex for Eurocode - Basis of structural design			
NA.2.1.1 NOTE	The values of design working life in Table NA.2.1 are indicative. Alternative values of design working life may be determined for the individual project.	SDS 3.1	See Table **A1** of this document.
NA.2.3.2 BS EN 1990(A1):2005, A.2.2.1(2), Note 1 General	Determine combinations involving actions that are outside the scope of EN 1991.	SDS 4.1.9 or 4.7	
NA.2.3.3.3 A.2.2.2(4), Note	Determine the combination of snow loads and group loads gr1a and gr1b.	SDS 4.1.2	Information to be recorded only if recommended values or methods are not used.

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
NA.2.3.3.4 A.2.2.2(6), Note	Depending upon the local climatic conditions determine a different simultaneity rule for wind and thermal actions.	SDS 4.1.2	Information to be recorded only if recommended values or methods are not used.
NA.2.3.4.1 A.2.2.3(2), Note	Depending upon the local climatic conditions define a different simultaneity rule for wind and thermal actions.	SDS 4.1.2	Information to be recorded only if recommended values or methods are not used.
NA.2.3.4.2 A.2.2.3(3), Note	Determine the combination of snow loads and group loads gr1a and gr1b.	SDS 4.1.2	Information to be recorded only if recommended values or methods are not used.
NA.2.3.4.3 A.2.2.3(4), Note	For footbridges on which pedestrian and cycle traffic is fully protected from all types of bad weather, determine combinations of actions.	SDS 4.1.9 or 4.7	
NA.2.3.6.3 A.2.2.6(1), Note 3	Determine representative values of water actions F_{wa}.	Designer record	
NA.2.3.7.3 A.2.3.1(7)	Record general and local scour depths if assessed. Define requirements for taking account of forces due to ice pressure on bridge piers, etc.	SDS 4.1.9 or 4.7	
NA.2.3.7.4 A.2.3.1(8)	In the case where γ_P values for prestressing actions are not provided in the relevant design Eurocodes, these values should be determined for the individual project.	SDS 4.1.9 or 4.7	

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
Table NA.A.2.4(A) – Design values of actions (EQU) (Set A)	Prestressing γ_P as defined in the relevant design Eurocode or for the individual project.	SDS 4.1.9 or 4.7	
	NOTE 2 For self-weight of water, ground-water pressure and other actions dependent on the level of water, no partial factor is specified in this National Annex. The design value of such actions may be directly assessed in accordance with 2.4.6.1 (2)P and 2.4.6.1(6)P of BS EN 1997-1:2004. Alternatively a safety margin may be applied to the characteristic water levels set out in 2.4.6.1(8) of BS EN 1997-1:2004. Partial factors for such actions may be determined for the individual project (see 2.4.7.3.2(2) of BS EN 1997-1:2004).	Designer record	
	NOTE 4 For all other actions, not covered in NOTES 1 to 3, the partial factors should be determined for the individual project.	Designer record	
	NOTE 7 Partial factors for actions involving aerodynamic effects of wind on bridges should be determined for the individual project. Guidance on the factors to be considered may be found in PD 6688-1-4:2009.	Designer record	
	NOTE 9 For verification of uplift of bearings of continuous bridges in cases where the verification of static equilibrium also involves the resistance of structural elements or the ground γ values may be determined for the individual project as an alternative to separate verifications based on Tables NA.A2.4(A)-(C), see also BS EN 1990:2002+A1:2005, 6.4.3.1(4).	Designer record	

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
Table NA.A.2.4(B) – Design values of actions (STR/GEO) (Set B)	Prestressing γ_P as defined in the relevant design Eurocode or for the individual project. NOTE 2 For self-weight of water, ground-water pressure and other actions dependent on the level of water, no partial factor is specified in this National Annex. The design value of such actions may be directly assessed in accordance with 2.4.6.1 (2)P and 2.4.6.1(6)P of BS EN 1997-1:2004. Alternatively a safety margin may be applied to the characteristic water level (see 2.4.6.1(8) of BS EN 1997-1:2004). Partial factors for such actions may be determined for the individual project (see 2.4.7.3.2(2) of BS EN 1997-1:2004). NOTE 4 For all other actions, not covered in NOTES 1 to 3, the partial factors should be determined for the individual project. NOTE 7 Partial factors for actions involving aerodynamic effects of wind on bridges should be determined for the individual project. Guidance on the factors to be considered may be found in PD 6688-1-4:2009. NOTE 9 For particular verifications, the values of γ_G and γ_Q may be sub-divided into γ_g and γ_q and the model uncertainty factor γ_{Sd}. A value of γ_{Sd} = 1,15 can be used except where otherwise determined for the individual project.	SDS 4.1.9 or 4.7 Designer record Designer record Designer record Designer record	
Table NA.A.2.4(C) – Design values of actions (STR/GEO) (Set C)	Prestressing γ_P as defined in the relevant design Eurocode or for the individual project. NOTE 2 For self-weight of water, ground-water pressure and other actions dependent on the level of water, no partial factor is specified in this National Annex. The design value of such actions may be directly assessed in accordance with 2.4.6.1 (2)P and 2.4.6.1(6)P of BS EN 1997-1:2004. Alternatively a safety margin may be applied to the characteristic water level (see 2.4.6.1(8) of BS EN 1997-1:2004). Partial factors for such actions may be determined for the individual project and agreed with the relevant authority, but see 2.4.7.3.2(2) of BS EN 1997-1:2004. NOTE 4 For all other actions, not covered in NOTES 1 to 3, the partial factors should be determined for the individual project.	SDS 4.1.9 or 4.7 Designer record Designer record	

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
Table NA.A.2.4(C) – Design values of actions (STR/GEO) (Set C)	NOTE 7 Partial factors for actions involving aerodynamic effects of wind on bridges should be determined for the individual project. Guidance on the factors to be considered may be found in PD 6688-1-4:2009. NOTE 9 For particular verifications, the values of γ_Q may be sub-divided into γ_q and the model uncertainty factor γ_{Sd}. A value of γ_{Sd} between 1,05 and 1,15, should be determined for the individual project.	Designer record Designer record	
Table NA.A2.5 – Design values of actions for use in accidental and seismic combinations of actions B)	The seismic design situation should be used only when specified for the individual project (see BS EN 1998).	SDS 4.1.9	
NA 2.3.9.3 A.2.4.1(2) Note	Determine serviceability requirements and criteria.	SDS 5.1	
NA.3.2.1 Annex B	Record if a design for a lower or higher consequence class is considered.	SDS 3.6.1	
NA.3.2.2 Annex C	Record if a design based on probabilistic methods is considered.	SDS 5.1	
BS EN 1991-1-1:2002 Eurocode 1: Actions on structures. General Actions. Densities, self-weight, imposed load for buildings			
4.1 General (1) NOTE	Define selected values of densities when a range is given in the table in Annex A.	SDS 4.1.1	
4.1 General 2)	For materials (e.g. new and innovative materials) which are not covered by the Tables in Annex A, define the characteristic value of the density.	SDS 4.1.1	
NA to BS EN 1991-1-1:2002 UK National Annex to Eurocode 1: Actions on structures. General Actions. Densities, self-weight, imposed load for buildings			
Table NA.1 Characteristic values of self-weight — UK guidance on additional provisions for bridges – 5.2.3(1)	Define self-weight of fill.	SDS 4.1.1	
BS EN 1991-1-3:2003 Eurocode 1: Actions on structures. General Actions. Snow loads			
1.5 Design assisted by testing	Tests and proven and/or properly validated numerical methods to obtain snow loads on the construction works.	SDS 4.1.2	Information to be recorded only if recommended values or methods are not used.
4.1 Characteristic values (1) NOTE 1	When there are unusual local conditions that need to be taken into account in the characteristic value of snow load on the ground (see NA to BS EN 1991-1-3 clause NA.2.8).	SDS 4.1.2	Information to be recorded only if recommended values or methods are not used.
NA to BS EN 1991-1-5:2003 UK National Annex to Eurocode 1: Actions on structures. General Actions. Thermal actions			

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
NA.2.2.1 General (2nd paragraph)	The uniform temperature component and temperature difference component for other types of bridges not covered in BS EN 1991-1-5.	SDS 4.1.2 or 4.7	Information to be recorded only if recommended values or methods are not used.
NA.2.3 Consideration of thermal actions [BS EN 1991-1-5:2003, 6.1.2(2)]	Use of Approach 1.	SDS 4.1.2	Information to be recorded only if recommended values or methods are not used.
NA.2.7 Temperature difference components [BS EN 1991-1-5:2003, 6.1.4(3)]	The initial temperature difference at the closure of cantilever construction.	Designer record	
BS EN 1991-1-6:2005 Eurocode 1: Actions on structures. General Actions. Actions during execution			
1.1Scope (1) NOTE 2	Define rules concerning the safety of people in and around the construction site. (Out of the scope of this BS EN 1991-1-6.)	SDS 3.1	
2.2 Construction loads (3) NOTE	Where construction loads are classified as fixed, define tolerances for possible deviations from theoretical position.	Designer record	
3.1 General – identification of design situations (12) NOTE	For long construction phases, define the scour levels.	Designer record	
3.3 Serviceability limit states (5) NOTE	Define the frequent values of particular actions which need to be considered.	Designer record	
4.1 General (5) NOTE	Define the friction coefficients.	Designer record	
4.4 Actions due to prestressing (1) NOTE	Define specific requirements of prestressing forces during execution.	Designer record	
4.7 Wind actions (1) NOTE	Define the dynamic response design criteria and procedures for wind actions for the execution stages.	Designer record	
4.7 Wind actions (3) NOTE	Define the maximum wind speed for lifting and moving operations or other construction phases that are of short duration.	Designer record	
4.9 Actions caused by water (2) NOTE	Define the classification of actions caused by water as permanent or variable.	Designer record	
4.9 (4) NOTE 1	A more refined formulation is used to determine F_{wa}.	Designer record	Information to be recorded only if recommended values or methods are not used.
4.9 (5) NOTE 1	If expression (4.2) is adjusted.	Designer record	Information to be recorded only if recommended values or methods are not used.

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
Table 4.1 Representation of construction loads (Q_c) NOTE 4	If the recommended characteristic value $q_{cc,k}$ is not used.	Designer record	Information to be recorded only if recommended values or methods are not used.
4.11.1 General (1) NOTE 2	Define the groupings of loads to be taken into account.	Designer record	
NA to BS EN 1991-1-6:2005 UK National Annex to Eurocode 1: Actions on structures. General Actions. Actions during execution			
NA.2.1 Design rules for auxiliary construction works	Define design rules for auxiliary construction works.	Designer record	
NA.2.2 Positioning of construction loads classified as "free"	Define the limits of movement for construction loads classified as "free".	Designer record	
NA.2.4 Return periods for the determination of the characteristic values of variable actions during execution	Define the return periods for the determination of the characteristic values of variable actions during execution.	Designer record	
NA.2.5 Minimum wind speed during execution	Define the minimum wind velocity during execution.	Designer record	
NA.2.6 Rules for the combination of snow loads and wind actions with construction loads	Define rules for combination of snow loads and wind actions with construction loads.	Designer record	
NA.2.7 Rules concerning imperfections in the geometry of the structure	Define the imperfections in the geometry of the structure and of structural members.	Designer record	
NA.2.8 Criteria associated with serviceability limit states during execution	Define the criteria associated with serviceability limit states during execution.	Designer record	
NA.2.9 Serviceability requirements for auxiliary construction works	Define serviceability requirements for auxiliary construction works.	Designer record	
NA.2.10 Actions due to ice, including floating ice	Define the loads and water levels associated with actions due to ice, including floating ice.	Designer record	
NA.2.11 Actions due to atmospheric icing	Define the representative values of the actions due to atmospheric icing.	Designer record	

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
NA.2.12 Recommended characteristic values of construction load Q_{cb}	Only record if the recommended minimum values Q_{ca} and Q_{cb} are not to be used.	Designer record	Information to be recorded only if recommended values or methods are not used.
NA.2.13 Construction loads during the casting of concrete	Only record if the recommended minimum values Q_{ca} and Q_{cc} are not to be used.	Designer record	Information to be recorded only if recommended values or methods are not used.
NA.2.14 Dynamic effects due to accidental actions	Define dynamic effects due to accidental actions.	Designer record	
NA.2.15 Dynamic effects due to falls of equipment	Define dynamic effects due to falls of equipment.	Designer record	
NA.2.17 Seismic actions	Define the design values for ground acceleration and the importance factor γ_I for seismic actions.	Designer record	
NA.2.19 Characteristic values of equivalent horizontal forces	Define the characteristic values of equivalent horizontal forces.	Designer record	
NA.2.20 Design values of vertical deflections for the incremental launching of bridges	Define the design values of vertical deflections for the incremental launching of bridges	Designer record	
NA.2.21 Reduction of the characteristic value of snow loads	Define the reduction of the characteristic value of snow loads.	Designer record	
NA.2.23 Design values of horizontal friction forces	Define the design values of horizontal friction forces.	Designer record	
NA.2.24 Determination of friction coefficients μ_{min} and μ_{max}	Define the friction coefficients μ_{min} and μ_{max}.	Designer record	
NA.3.1 Actions on structures during alteration, reconstruction or demolition	If Annex B is to be used for trunk road or railway structures.	SDS 4.1.8	Information to be recorded only if Annex B is used.
BS EN 1991-1-7:2006 Eurocode 1: Actions on structures. General Actions. Accidental actions			
B.5 Risk acceptance and mitigating measures (4) 2nd paragraph	Define risk acceptance levels	SDS 4.1.7	Information to be recorded only if recommended values or methods are not used.
NA to BS EN 1991-1-7:2006 UK National Annex to Eurocode 1: Actions on structures. Part 1-7 : Accidental actions			

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
NA.2.1 Classification of accidental actions [BS EN 1991-1-7:2006, 2 (2)]	Define accidental actions which are not free actions.	Designer record	
NA.2.8 Design approaches [BS EN 1991-1-7:2006, 3.4 (2) Note]	For the design of structures for higher and lower consequence classes define the requirements.	SDS 4.1.7	Information to be recorded only if recommended values or methods are not used.
NA.2.11.2.4.1	Define the values for T_a and T_b.	SDS 4.1.7	
NA.2.33 Classification system for ships on sea waterways [BS EN 1991-1-7:2006, 4.6.1 (3) Note 1]	Define the characteristics of ships on sea waterways to be taken into account in the case of ship impact on structures.	SDS 4.1.7	
NA.2.34 Values of frontal and lateral dynamic forces from river and canal traffic [BS EN 1991-1-7:2006, 4.6.2 (1) Note]	Define the values of frontal and lateral dynamic forces due to impact from river and canal traffic.	SDS 4.1.7	
NA.2.36 Application area of impact [BS EN 1991-1-7:2006, 4.6.2 (3) Note 1]	Define the height of application of the impact force and the impact area *b x h*.	SDS 4.1.7	
NA.2.37 Impact forces on bridge decks from ships [BS EN 1991-1-7:2006, 4.6.2 (4) Note]	Define the equivalent static impact forces on bridge decks from ships.	SDS 4.1.7	
NA.2.38 Dynamic impact forces from seagoing ships [BS EN 1991-1-7:2006, 4.6.3 (1) Note]	Define the values of frontal and lateral dynamic impact forces from seagoing ships.	SDS 4.1.7	
NA.2.40 Area and position of impact areas [BS EN 1991-1-7:2006, 4.6.3 (4)P Note]	Define the area and position of impact areas.	Designer record	
NA.2.41 Forces on superstructure [BS EN 1991-1-7:2006, 4.6.3 (5) Note 1]	Define the forces on superstructure.	SDS 4.1.7	

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
NA.2.42 Procedures to be used for types of internal explosions [BS EN 1991-1-7:2006, 5.3 (1)P Note] (3rd para)	Define the design requirements for dealing with internal explosions in road tunnels.	SDS 4.1.7	
PD 6688-1-7:2009 Recommendations for the design of structures to BS EN 1991-1-7			
2.5.1 d) 1) Impact on supporting substructures – For foot and cycle track bridges	Define the value for T_c.	SDS 4.1.7	See Annex B of this document.
BS EN 1991-2:2003 Eurocode 1: Actions on structures. Traffic loads on bridges			
4.2.1 Models of road traffic loads (1) NOTE 3	If additional dynamic amplification is to be taken into account.	Designer record	
4.2.3 Divisions of the carriageway into notional lanes (4) NOTE	If the rules given in 4.2.3(4) are to be adjusted.	Designer record	
4.3.5 Load Model 4 (crowd loading) (1) NOTE	Define the application of LM4.	SDS 4.1.5	Information to be recorded only if applicable.
4.6.1 General (2) NOTE 1	If horizontal forces are to be taken into account simultaneously with vertical forces.	SDS 4.1.9	Information to be recorded only if applicable.
4.6.1 General (2) NOTE 4	If the values of Fatigue Load Models 1 and 2 are to be modified.	SDS 4.1.9	Information to be recorded only if recommended values or methods are not used.
4.6.2 Fatigue Load Model 1 (similar to LM1) (1) NOTE	If q_{rk} is to be neglected.	SDS 4.1.9	Information to be recorded only if recommended values or methods are not used.
4.7.3.4 Collision forces on structural members (2) NOTE	For some intermediate members where damage to one of which would not cause collapse (e.g. hangers or stays), define smaller forces.	SDS 4.1.7	
4.8 Actions on pedestrian parapets (2) NOTE	Define whether pedestrian parapets can be considered as adequately protected.	SDS 3.7	

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
5.1 Field of application (2) NOTE 2	For large footbridges define complementary load models, with associated combination rules.	SDS 4.1.5	
5.2.1 Models of the loads (1) NOTE 1	Define loads due to horses or cattle.	SDS 4.1.9 or 4.7	
5.6.1 General (1) NOTE	Define other collision forces.	SDS 4.1.9 or 4.7	Information to be recorded only if recommended values or methods are not used.
5.9 Load model for abutments and walls adjacent to bridges (1) NOTE 2	If the characteristic value is to be adjusted.	SDS 4.1.9	Information to be recorded only if recommended values or methods are not used.
NA to BS EN 1991-2:2003 UK National Annex to Eurocode 1: Actions on structures. Traffic loads on bridges			
NA.2.3 Appropriate protection against collision	Define the requirements for protection against collision from road and rail traffic.	SDS 4.1.7	
NA.2.5 Bridges carrying both road and rail traffic	Define the rules for bridges intended for both road and rail traffic.	SDS 4.7	
NA.2.7 Weight restricted bridges	For road bridges where effective means are provided to strictly limit the weight of any vehicle, define specific load models.	SDS 4.1.3	Information to be recorded only if recommended values or methods are not used.
NA.2.8 Complementary load models	Define complementary load models and rules for their application.	SDS 4.1.9 or 4.7	Information to be recorded only if recommended values or methods are not used.
NA.2.9 Models for special vehicles	Define complementary load models for special vehicles and rules for their application.	SDS 4.1.9 or 4.7	Information to be recorded only if recommended values or methods are not used.
NA.2.16 Load Model 3 (Special Vehicles) (2nd para)	Define the choice of the particular STGO or SO model vehicle.	SDS 4.1.4 and 4.1.6	Advice is given clause **A.7** of this document.
NA.2.25 Fatigue Load Model 3	Define the conditions of application for two vehicles in the same lane.	SDS 4.1.9 or 4.7	
Table NA.5 Set of equivalent lorries for Fatigue Load Model 4	Define specific vehicle axle arrangements.	SDS 4.1.9	
NA.2.31 Collision forces on structural members	Define nominal vehicle collision forces on structural members.	SDS 4.1.7	

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
NA.2.32 Actions on pedestrian parapets	Define the required class of pedestrian parapet.	SDS 3.7	
NA.2.43 Accidental presence of a heavy vehicle	Define alternative load model characteristics.	SDS 4.1.7	
NA.2.44.1 General (3rd para)	Define any associated requirements such as: • mass gathering (for example marathons, demonstrations); • deliberate pedestrian synchronization; • vandal loading.	SDS 4.1.5	
NA.2.44.2 Dynamic actions to be considered (2)	Define crowd loading densities.	SDS 4.1.5	
NA.2.44.2 Dynamic actions to be considered (3)	Define whether jogging cases can be neglected.	SDS 4.1.5	
NA.2.44.5 Steady state modelling of pedestrians in crowded Conditions (3)	Define alternative appropriate dynamic models.	SDS 4.1.5	
NA.2.44.6 Recommended serviceability limits for use in design (1)	Define exposure factor k4.	SDS 5.1	
NA.2.44.6 Recommended serviceability limits for use in design (2)	Define exposure factor k4.	SDS 5.1	
NA.2.44.6 Recommended serviceability limits for use in design (3)	Define relaxation of the design limits.	SDS 5.1	
Tables NA.9 to NA.11 Recommended values for the structure height factor k3	Define values of k1, k2 and k3.	SDS 5.1	

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
NA to BS EN 1992-1-1:2004 UK National Annex to Eurocode 2: Design of concrete structures – Part 1-1: General rules and rules for buildings			
Table NA.1 – UK decisions for Nationally Determined Parameters described in BS EN 1992-1-1:2004 Sub clause 9.8.3 (2)	Minimum downward load for tie beams – To be determined for each individual project.	Designer record	
BS EN 1992-2:2005 Eurocode 2: Design of concrete structures – Part 2: Concrete bridges – Design and detailing rules			
5.7 (105) Non-linear analysis	Details of method for non-linear analysis and safety format.	Designer record	
5.8.5 Second order effects with axial load (including slender column design)	• Non-linear analysis to 5.8.6 • Method based on moment magnification factor to 5.8.7 • Method based on nominal curvature 5.8.8	Designer record	
5.10.6 Time dependent losses	• Use of 5.10.6 • Use of Annex D	Designer record	
6 ULS checks	• Member rules in 6.1 to 6.3 • Rules in Annex LL • Strut and tie rules in 6.5	Designer record	
6.1	6.1/(109)a) 6.1/(109)b) 6.1/(109)c)	Designer record	
6.2.4 Longitudinal shear with transverse bending – check of concrete crushing	Method of 6.2.4/(105) Method of Annex MM	Designer record	
6.8.7 Concrete Fatigue	• Equivalent damage (6.8.7(1)) • Static verification (6.8.7(2))	Designer record	
Annex KK	General method (KK.3) Incremental (KK.4) Linear viscoelasticity methods (KK.5) Ageing coefficient (KK.6)	Designer record	
PD6687-2:2008 Recommendations for the design of structures to BS EN 1992-2:2005			

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
6.5 Plastic Analysis BS EN 1992-1-1:2004 Clause 5.6	BS EN 1992-2:2005, 5.6.1 (101)P allows the use of plastic analysis when permitted by National Authorities. Permission for the use of plastic analysis should therefore be sought from the relevant body on a project-specific basis, see 2.1 of this Standard. Typically this will be part of the technical approval process.	Designer record	
12 Additional rules for external prestressing	The following additional rules are recommended for the design of structures with external prestressing. The need for their application should be determined on a project-specific basis.	Designer record	See Annex B of this document.
BS EN 1993-1-1:2005 Eurocode 3: Design of steel structures – Part 1-1 General rules and rules for buildings			
5.2.2(3) Treatment of second order effects and imperfections	a) – both totally by global analysis b) – partially by global analysis and partially through individual stability checks of members according to 6.3 c) – for basic cases by individual stability checks of equivalent members according to 6.3 using appropriate buckling lengths according to the global buckling mode of the structure.	Designer record	
5.3.2 Imperfections for analysis	5.3.2(3) – combination of local bow and global sway imperfections 5.3.2(11) – unique imperfection from shape of critical buckling mode	Designer record	
7.1 (3) Serviceability limit states, General	Any serviceability limit state and the associated loading and analysis model should be specified for a project.	Designer record	
BS EN 1993-1-5:2006 Eurocode 3: Design of steel structures – Part 1-5: Plated structural elements			
2.3 or 2.4 Stress calculation	Use effective width models (2.3) Use reduced stress method (2.4)	Designer record	
3.3(1) Calculation of shear lag effective widths at ULS	• a) elastic calculation • b) combined shear lag and plate buckling • c) elastic-plastic calculation	Designer record	
4.4(2) Effective cross-section for outstand compression elements	• Use k_σ from Table 4.1 or Table 4.2 • Determine k_σ from more accurate calculation	Designer record	
4.4(4), (5) Class 4 section design buckling resistance	• Use plate slenderness λ_p • Use second order analysis as appropriate and slenderness $\lambda_{p\ red}$	Designer record	
9.2.1(8) Torsional buckling of stiffeners	Criterion given by equation (9.3) More advanced method	Designer record	Information to be recorded only if recommended values or methods are not used.
9.2.1(9) Torsional buckling of stiffeners	Criterion given by equation (9.4) More advanced method	Designer record	Information to be recorded only if recommended values or methods are not used.

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
10(5) Reduction factor ρ	• Use of equation (10.4) • Use of equation (10.5)	Designer record	
A.1(2) Buckling coefficient $k\sigma,p$	Use of application rules supplied Use of first principles	Designer record	
C.2(1) Use of FE analysis	Project Specification to give conditions for use of FEM	SDS	
C.5(2) Use of imperfections	Equivalent geometric imperfections More refined analysis	Designer record	Information to be recorded only if recommended values or methods are not used.
C.6(2) Non-linear analysis of plates to EC3-1-5 Annex C – stress-strain curve	• Use of 3-1-5/C.6(2) curve a) • Use of 3-1-5/C.6(2) curve b) • Use of 3-1-5/C.6(2) curve c) • Use of 3-1-5/C.6(2) curve d)	Designer record	
C.8 Limit state criteria	Criteria given in C.8(1) Other criteria: e.g. attainment of the yielding criterion	Designer record	
E.1(1) Effective areas for the ultimate limit state	Method in 4.4(2) and 4.4(4) Method in E.1	Designer record	
NA to BS EN 1993-1-5:2006 UK National Annex to Eurocode 3: Design of steel structures – Part 1-5 Plated structural elements			
NA.2.11 - BS EN 1993-1-5:2006, C.2(1)	Conditions for the use of FEM analysis in design should be specified for the particular project.	Designer record	
BS EN 1993-1-8:2005 Eurocode 3: Design of steel structures – Part 1-8: Design of joints			
2.4(2) Calculation of resistance of joints	• Use of linear elastic calculation • Use of elastic-plastic calculation	Designer record	
Table 6.2 Calculation of prying forces	• Method 1 • Method 2	Designer record	
BS EN 1993-1-9:2005 Eurocode 3: Design of steel structures – Part 1-9: Fatigue			
6.4(1) Design value of modified nominal stress range	Determine according to equation (6.3) More accurate calculation	Designer record	
A.3 Cycle counting: Stress histories evaluation	Rainflow method Reservoir method Stress ranges & number of cycles Mean stresses	Designer record	
NA to BS EN 1993-1-9:2005 UK National Annex to Eurocode 3: Design of steel structures – Part 1-9 Fatigue			

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
NA.2.10 Fatigue strength categories not covered by Tables 8.1 to 8.10 or Annex B BS EN 1993-1-9:2005, Clause 7.1 (5)	Fatigue strength categories for details not covered by BS EN 1993-1-9 should be given for individual projects.	Designer record	
PD6695-1-9:2008 Recommendations for the design of structures to BS EN 1993-1-9			
4.2 Test specimens – Determining fatigue strengths from tests BS EN 1993-1-9:2005, 2(4)[2)]	Any other agreed alternative methods should be specified for the individual projects.	Designer record	
BS EN 1993-1-10:2005 Eurocode 3: Design of steel structures – Part 1-10: Material toughness and through-thickness properties			
2.1(2) Elements not subject to tension, welding or fatigue	Conservative rules in 2 Evaluation using fracture mechanism (2.4)	Designer record	
2.2(3) Methods to determine the toughness requirement	Fracture mechanics method Numerical evaluation	Designer record	
BS EN 1993-1-11:2006 Eurocode 3: Design of steel structures – Part 1-11 Design of structures with tension components			
2.2(2) Note Load factors for permanent loads (G) and prestress (P) (see also cl. 5.3)	• Same load factor applied to entity “G + P” • Separate factors applied to G and P	Designer record	
2.3.6(1) Design for cable replacement	During replacement of tension components, all elements of the structure should satisfy the relevant serviceability and ultimate limit state requirements without any restrictions to traffic or other imposed loads.	Designer record	
2.3.6(2) Design for cable accidental loss	Structures should be designed to accommodate the loss of any one hanger at ULS, stay or main cable without any restrictions to traffic or other imposed loads.	Designer record	
5.4 Global analysis to allow for non-linearities	• Cable sag catered for in non-linear analysis • Cable sag accounted for by Ernst equation	Designer record	
B(6) Monitoring cables after installation	Project Specification to specify: • Monitoring regime and duration • Replacement procedure	SDS 3.8.1	
NA to BS EN 1993-1-11:2006 UK National Annex to Eurocode 3: Design of steel structures – Part 1-11 Design of structures with tension components			

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
NA.2.1 (1) NOTE Replacement and loss of tension components BS EN 1993-1-11:2006, 2.3.6	If restrictions to traffic and other imposed loads are considered, the restrictions measures should be detailed in the Project Specification.	Record restriction measures in the SDS 3.8.2 if restriction to traffic and other imposed loads are considered.	
NA.2.1 (2) NOTE Replacement and loss of tension components BS EN 1993-1-11:2006, 2.3.6	Unless specified otherwise for specific projects, structures should be designed to accommodate the loss of any one hanger, stay without any restrictions to traffic or other imposed loads. The structure should be designed to satisfy all ultimate limit state requirements in the accidental combination, including the dynamic effect of cable removal in NOTE 2 of **2.3.6**(2). Where a structure cannot be designed to accommodate the loss of a particular tension component, the Project Specification should specify the protection measures to be adopted to prevent sudden removal of that tension component	Give details in SDS 3.8.1 if structure is not designed to accommodate the loss of any one hanger, stay without any restrictions to traffic or other imposed loads. Specify in the SDS 3.8.1 the protection measures for the prevention of sudden removal of tension components.	
NA.2.3 (1) Note 6 Strengths of steels and wires [BS EN 1993-1-11:2006, 3.1]	At present there is no limit to the maximum value for fu. However the current ongoing research might find that extra high strength wire is more susceptible to premature failure. Wires of tensile strengths greater than the recommended maximum value should be agreed and specified in the Project Specification.	Specify in the SDS 3.9 the tensile strength of wires if it is greater than the recommended maximum in the Project Specification.	
NA.2.4 Corrosion protection of the exterior of Group B tension components BS EN 1993-1-11:2006, 4.4 – (2) NOTE 1	The corrosion resistance class for the stainless steel should be specified for the individual projects.	Specify in the SDS 3.9 the corrosion resistance class for the stainless steel for the individual project.	
NA.2.7 Persistent design situation during service EN 1993-1-11:2006, 5.3 – (2) NOTE	The aforementioned structures are therefore not within the scope of BS EN 1993-1-11:2006, 5.3. If the rules of BS EN 1993-1-11 are applied to such structure types it is suggested that the actions P and G should have partial factors applied to them separately as required in 5.2 (3). In such cases the project specification should give the values of γ_G and γ_P that are to be used.	Specify in the SDS 5.1 the values of γ_G and γ_P for the individual project.	

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
NA.2.13 (1) Note Waterproofing [BS EN 1993-1-11:2006, A.4.5.1]	The tension components should be tested for water-tightness in accordance with article 11.3 of *SETRA Cable Stays* [1] unless an alternative test is specified in the Project Specification.	Specify details of any alternative test used in the Project Specification	
NA.2.15 (6) Note Annex B – Transport, storage, handling	Monitoring might be required to confirm that the design assumptions, such as final forces in tension components and vibration of tension components due to wind, rain and traffic, have been met in the completed structure. The Project Specification should specify the required monitoring regime and its duration. Details of maintenance procedures should be provided which should include at least: - Procedures for minor and major maintenance operations expected during the design lifetime of the tension components; The replacement procedure for a tension component in accordance with the design assumptions made in the Project Specification.	Specify the required monitoring regime and its duration for tension components in the Project Specification and in the SDS 4.1.8 Specify the replacement procedure for a tension component in the design assumptions in the Project Specification and in the SDS 3.8.1	
NA to BS EN 1993-1-12:2007 UK National Annex to Eurocode 3: Design of steel structures – Part 1-12 Additional rules for the extension of EN 1993 up to steel grades S 700			
NA.2.2.1 BS EN 1993-1-12:2007, 2.8 (4.2 (2) NOTE)	The required strength class of electrodes should be specified for the individual projects.	Record the required strength class of electrodes in the Project Specification	
BS EN 1993-2:2006 Eurocode 3: Design of steel structures – Part 2: Steel bridges			
2.1.3.4(1) Components which need to be designed for accidental design situations	Project Specification to specify components which need to be designed for accidental design situations	SDS 4.1.7	Information to be recorded if special components have been identified.
3.4(1) Types of cable which are deemed to satisfy the requirements for durability	Project Specification to specify the types of cable which are deemed to satisfy the requirements for durability	SDS 3.9	
5.2.1(4) Global analysis ($\alpha_{crit} \geq 10$)	First order theory Second order theory	Designer record	

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
5.4.1 Non-linear analysis of plates to EC3-1-5 Annex C – stress-strain curve	Plastic global analysis BS EN 1993-1-5 clause C.6(2) curve a) BS EN 1993-1-5 clause C.6(2) curve b) BS EN 1993-1-5 clause C.6(2) curve c) BS EN 1993-1-5 clause C.6(2) curve d)	Designer record	
6.2.8(1) Bending, axial load, shear and transverse loads	Interaction methods (6.2.8 to 6.2.10) Interaction of stresses (6.2.1)	Designer record	
6.3.1.5(1) Use of class 3 sect. prop. With stress limits	Use class 4 sec. prop. Use class 3 sec. prop. with stress limit.	Designer record	
6.3.3 Members in bending and axial compression	Use of BS EN 1993-2 clause 6.3.3(1) Use of BS EN 1993-1-1 clause 6.3.3(4) with interaction factors calculated in accordance with Annex A [(5) Note 1 alternative method 1] Use of BS EN 1993-1-1 clause 6.3.3(4) with interaction factors calculated in accordance with Annex B [(5) Note 1 alternative method 2] Use of BS EN 1993-1-1 clause 6.3.4 Use of BS EN 1993-2 clause 6.3.4.2(2)	Designer record	
7.11(2) Design of joint details if access is not provided	All parts effectively sealed against corrosion (with corrosion allowance) Use of weathering steel	Designer record	
9.4.1 Fatigue stress range	Use method of EN 1993-2/9 Use stress histories	Designer record	
BS EN 1993-5:2007 Eurocode 3: Design of steel structures – Part 5 Piling			
2.3 (2) Serviceability limit state criteria	Values for the limits given in (1), in relation to the combination of actions to be taken into account according to EN 1990, should be defined for each project.	Record the values for the limits in relation to the combination of actions to be taken into account in the SDS 5.1	
2.3 (3) Serviceability limit state criteria	Where relevant, values for limits imposed by adjacent structures should be defined for the project.	Only record in the SDS 5.1 if values for limits are to be imposed by adjacent structures.	
4.1 (6) Durability, General	The required design working life for sheet piling and bearing piles should be given for each project.	Record the design working life in the AIP 3.1	

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
4.1 (8) Durability, General	Corrosion protection systems should be defined for each project.	Record the corrosion protection systems in the SDS 3.9	
5.5.1 (4)P Combined walls, General	It should be stated for each project and agreed with the client whether driving imperfections need to be considered in the design of the combined wall. The design values of any driving imperfections shall be given as percentages of the length of the primary element, assuming a linear distribution.	Agree and record in the SDS 5.1 whether driving imperfections need to be considered in the design of the combined wall.	
6.1 (1) Serviceability limit states, Basis	The significance of settlements and vibrations, and their limiting values in each case, should be given for the project taking into account local conditions.	Record the significance of settlements and vibrations, and their limiting values in each case in the SDS 5.1	
BS EN 1994-2:2005 Eurocode 4: Design of composite steel and concrete structures – Part 2: General rules and rules for bridges			
5.3.2(1) Imperfection for bridges	Equivalent geometric imperfections should be used with values that reflect the possible effects of system imperfections and also member imperfections unless these effects are included in the resistance formulae.	Designer record	
5.4.2.8(4) Determination of internal forces in tension members	Simplified method in (5) Method in (6) and (7) A more accurate method according to (2) and (3).	Designer record	
NA to BS EN 1997-1:2004 National Annex to Eurocode 7: Geotechnical design – Part 1 General rules			
NA.3.4 BS EN 1997-1:2004 Annex H	The limiting values of structural deformation and foundation movement relate primarily to building. Limiting values of structural deformation and foundation movement for other civil engineering works should be determined for the project and agreed, where appropriate, with the client and other relevant authorities.	Agree and record the limiting values of structural deformation and foundation movement in the SDS 6.3	
A.2.1 Partial factors on actions	Actions listed in BS EN 1997-1:2004, 2.4.2 for which no values are set in BS EN 1991 may be specified for a particular project. The values of these actions and their partial factors and combination factors should be agreed with the client and relevant authorities.	Agree and record in the SDS 4.1.9 or 4.7 values of actions, partial factors and combination factors for actions for which no values are set.	

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
A3.1 Partial factors on actions or the effect of actions	Actions listed in BS EN 1997-1:2004, 2.4.2 for which no values are set in BS EN 1991 may be specified for a particular project. The values of these actions and their partial factors and combination factors might need to be agreed with the client and relevant authorities.	Agree and record in the SDS 4.1.9 or 4.7 values of actions, partial factors and combination factors for actions for which no values are set.	
NA to BS EN 1998-2:2005 National Annex to Eurocode 8: Design of structures for earthquake resistance – Part 2 Bridges			
Table NA.1 Ref. 2.1(3)P of BS EN 1998-2 Design seismic action	Reference return period T_{NCR} of seismic action for the no-collapse requirement may be specified for an individual project. See also 8.2 of PD 6698:2009.	Record in the SDS 4.1.9 reference return period determined from the site-specific hazard analysis.	Information to be recorded only if recommended values or methods are not used.
Table NA.1 Ref. 2.1(4)P of BS EN 1998-2 Design seismic action	The importance classes should be established for an individual project. For class 3 structures, the need for the design to consider earthquake resistance may be specified for an individual project.	Record in the SDS 4.1.9 the consequence class and the importance class of the structure. For bridges in consequence class 3, record whether earthquake resistance will be considered in the design.	Advice is given in Table **A.6** of this document.
Table NA.1 Ref. 2.1(6) of BS EN 1998-2 Design seismic action	Where T_{NCR} has been assessed on a project-specific basis, γ_I should also be chosen on a project-specific basis.	Record in the SDS 4.1.9 the value of γI used.	Information to be recorded only if recommended values or methods are not used.
Table NA.1 Ref. 4.1.2(4)P of BS EN 1998-2 Analysis – Modelling - Masses	The value of $\Psi_{2,1}$ for traffic loads assumed concurrent with the design seismic action may be specified for an individual project.	Record in SDS 4.1.9 values of Ψ2,1 used.	Information to be recorded only if recommended values or methods are not used.
Table NA.1 Ref. 6.6.2.3(3) of BS EN 1998-2 Bearings – Elastomeric bearings	Extent of damage to elastomeric bearings may be specified for an individual project, but see 8.8 of PD 6698:2009.	Record in the SDS 4.1.9 extent of damage to elastomeric bearings allowed.	Information to be recorded only if recommended values or methods are not used.
Table NA.1 Ref. 6.7.3(7) of BS EN 1998-2 Abutments rigidly connected to the deck	Value of d_{lim} may be specified for an individual project.	Record in the SDS 4.1.9 value of d_{lim} used.	Information to be recorded only if recommended values or methods are not used.

Document and Clause for Choices and Options	Choices and Options	Where recorded if applicable to the project	Comment
Table NA.1 Ref. 7.4.1(1)P of BS EN 1998-2 Seismic action – Design spectra	Value of control period T_D for the design spectrum of bridges with seismic isolation may be specified for an individual project, if a site-specific hazard analysis is carried out. See 8.10 of PD 6698:2009.	Record in the Designer record value of T_D used.	
Table NA.1 Ref. 7.7.1(2) of BS EN 1998-2 Lateral restoring capability	Values of δw and δd may be specified for an individual project.	Record in the Design Certificate values of δw and δd used.	
Table NA.1 Ref. J.1(2) of BS EN 1998-2 Factors causing variation of design properties	Value of annual probability used in the calculation of T_{min} and T_{max} may be specified for an individual project. See 8.13 of PD 6698:2009.	Record in the Designer record value of annual probability specified.	

APPENDIX L

THIS IS APPENDIX L TO PART 2 OF THE NEW WORKS INFORMATION

REINFORCED SOIL DIMENSIONAL TOLERANCES AND DEFORMATION LIMITS

APPENDIX L

REINFORCED SOIL DIMENSIONAL TOLERANCES AND DEFORMATION LIMITS

REINFORCED SOIL STRUCTURES - DESIGN VALUES OF CONSTRUCTION MOVEMENT TOLERANCES TO BE EQUALLED OR BETTERED

Tolerances for faces of retaining walls and abutments	
Location of plane of Structure	**Tolerance ± 50 mm**
Verticality	± 5 mm per metre height
Bulging (vertical)	± 20 mm in 4.5 m template
Bowing (horizontal)	± 20 mm in 4.5 m template
Steps at Joints	± 10 mm
Alignment along top	± 15 mm from reference alignment

Serviceability limits on post construction internal strains for bridge abutments and retaining walls	
Structure	**Strain (percent)**
Bridge Abutments	0.5
Walls	1.0

Minimum vertical movement capacities required for facing system to cope with vertical internal settlement of reinforced fill	
Structure form	**Minimum vertical movement capacity**
Discrete Panels	Joint closure of 1 in 150 relative to panel height

The Designer shall state the Design Values used in the Structure Design Statement for each reinforced soil structure.

Methodology for Measuring Tolerances

The Designer shall define the methodology to be used in the Structure Design Statement for each reinforced soil structure.

APPENDIX M

THIS IS APPENDIX M TO PART 2 OF THE NEW WORKS INFORMATION

EARTHWORKS DESIGN STATEMENT

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APPENDIX M

EARTHWORKS DESIGN STATEMENT

Name of Project **M8 M73 M74 Motorway Improvements**

Name of Earthworks _____

Earthworks Ref. No. _____

Location / Chainage _____

1 ROAD DETAILS

1.1 Type of Road

1.2 Permitted traffic speed

1.3 Nature of Scheme / Scheme Element *(e.g. new highway construction, highway widening, earthworks maintenance)*

2 EARTHWORKS TYPE AND PURPOSE

2.1 Generic Type of Earthworks *(e.g. earth embankment, rock cutting, strengthened soil slope, soil nailing)*

2.2 Purpose *(e.g. to allow highway widening, for earthworks failure reinstatement, for new construction in area of restricted land take, etc.)*

3 OUTLINE OF EXISTING GROUND AND GROUNDWATER CONDITIONS

(this section to refer to and summarise the relevant sections of the Designer's Ground Investigation Report and make use of drawings and sections as appropriate)

3.1 Ground Investigation Data *(list report references and comment on extent of data)*

3.2 Existing Ground Conditions *(brief summary of natural soil sequence, Made Ground, etc., together with strata levels)*

3.3 Existing Groundwater Conditions *(note on groundwater levels and movements)*

3.4 **Soil and Groundwater Chemistry** *(note on sulfate / chloride / pH conditions and / or ground contamination and microbiological action)*

3.5 **Existing Geotechnical Problems and Risks** *(any factors of geotechnical significance related to the existing ground conditions, e.g. slope failures, solution features, mine workings, slopes with marginal factors of safety, very soft / highly compressible soils, etc.)*

(The use of referenced drawings and sections to provide detail is encouraged)

4 PROPOSED EARTHWORKS

4.1 **Description of Earthwork** *(range of and average height of proposed earthwork in its final form, i.e. slope face angle, facing / landscaping details including where appropriate topsoil and planting details)*

4.2 **Foundation Preparation, including any Measures to deal with Geotechnical Problems** *(foundation proposals for the earthwork, including any special measures, field trails or associated works such as ground improvement or mine workings consolidation to take account of any problems outlined in 3.5 above)*

4.3 **Materials to be used in Construction** *(outline description of any geosynthetics, soil nails, imported fill materials, etc., including Design Certificates and evidence of CE marking under the Construction Products Directive where appropriate*)

4.4 **Drainage Measures** *(particular drainage control measures to be incorporated)*

4.5 **Arrangements for Highway Furniture and Buried Services and Landscaping** *(relevant details)*

4.6 **Inspection and Maintenance** *(particular inspection and maintenance requirements [including where appropriate the maintenance of vegetated slope faces], over and above routine observations)*

4.7 **Interface with Structures** *(brief details of interface construction measures with bridges, abutments, retaining walls, buried structures, other Earthworks, etc.)*

4.8 **Instrumentation and Monitoring** *(particular instrumentation and monitoring required to inform / confirm design, to monitor / control construction and to monitor / confirm post-construction performance, over and above routine observations)*

5 DESIGN METHODS

This section to refer to summaries and / or append supporting outputs from the design methods adopted as appropriate.)

5.1 **Internal Stability** *(the referenced design method / approach for determining stability of the earthwork itself)*

5.2 **External / Global Stability** *(the referenced design method / approach for determining stability of any associated overall slopes which include the strengthened earthwork)*

5.3 **Settlement** *(the referenced design method / approach for determining settlement of the earthwork including any long-term post construction settlement)*

6 DESIGN / ASSESSMENT CRITERIA

(this section to refer to and summarise the relevant sections of the Geotechnical Design Report and, where appropriate, the construction movement tolerances for reinforced soil structures carrying superimposed structures agreed with the Scottish Ministers)

6.1 **Geotechnical Category of Earthworks (BS EN 1997-1) and Design Life**

6.2 **List of Relevant Documents**

6.3 **Limit State Design Criteria** *(partial factors and / or target factor of safety on limit state stability conditions to be applied in the design, on both stability of the earthwork itself and on overall stability of associated slopes)*

6.4 **Serviceability Design Criteria** *(any total / differential settlement or other movement criteria adopted by the Designer, including any imposed by the New Works Requirements)*

6.5 **Design Parameters for Soils and Materials** *(schedule of relevant main design parameters for the soils and other materials to be used in construction compromising Characteristic Values and their derivation; Partial Factors; Design Values; and design strata levels)*

6.6 **Design Groundwater Conditions** *(statement of worst case, or range of piezometric conditions and / or ru values to be used in the design)*

6.7 **Actions / Loadings** *(for relevant Limit States, and including confirmation of worst case live loadings to be assumed in design)*

6.8 **Description / Diagram of Idealised Soil Structure Model to be used in Analysis** *(provide a section of the earthwork to illustrate the design method and associated main design assumptions)*

6.9 **Precautions against Chemical Attack to Materials** *(measures to accommodate ground conditions set out in 3.4)*

6.10 **Proposed Departures from Design Standards** *(departures from documents listed in 6.2)*

7 CHECKING

7.1 **Name of Checker**

8 DRAWINGS AND DOCUMENTS

8.1 **List of drawings (including numbers) and documents accompanying the submission**

APPENDIX A - Soils Information *(A list of the relevant trial hole logs and test results from the soils reports listed in para 3.1 and from any additional site investigation, extract from Geotechnical Reports)*

APPENDIX B - Relevant Correspondence, Documents and Certificates from Consultation with Relevant Authorities

APPENDIX C - Drawings and documents

9 THE ABOVE ACCURATELY REFLECTS THE DESIGN ASSUMPTIONS USED FOR DESIGN OF THESE EARTHWORKS

Signed _____

Name _____

Design Team Leader

Engineering Qualifications _____

Name of Organisation _____

Date _____

APPENDIX N

THIS IS APPENDIX N TO PART 2 OF THE NEW WORKS INFORMATION

ENVIRONMENTAL ASSESSMENT DOCUMENTS

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APPENDIX N

ENVIRONMENTAL ASSESSMENT DOCUMENTS

The Environmental Assessment Documents are as follows:

(a) M8 Baillieston to Newhouse Environmental Statement (October 2007)
Vol 1 Main Statement and Technical Appendices
Vol 2 Figures
Non Technical Summary;

(b) M74 Junction 5, Raith, Environmental Statement (March 2007)
Vol 1 Main Statement and Figures
Vol 2 Technical Appendices
Non Technical Summary;

(c) M8/M73/M74 Network Improvements Environmental Statement (March 2008)
Vol 1 Main Statement and Technical Appendices
Vol 2 Figures
Non Technical Summary

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APPENDIX O

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REQUIREMENTS FOR FENCES

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APPENDIX O

REQUIREMENTS FOR FENCES

Table 1 Requirements for Fences

Fence Located between Points (refer to Note 1)	Fence Type	Typical Detail Reference
F001 to F002	Timber post and wire mesh fence	F26 (Volume 3 of the MCHW)
F003 to F004	Timber post and wire mesh fence	F26
F004 to F005	Timber post and wire mesh fence	F26
F006 to F007	Timber post and wire mesh fence	F26
F008 to F009	Timber post and wire mesh fence	F26
F010 to F011	Timber post and wire	F2
F012 to F013	Timber post and wire	F2
F014 to F015	Timber post and wire	F2

NOTES FOR TABLE 1:

1. Reference Points are as shown on the drawings as described in Appendix 0/4 to the Specification.

Table 2 Requirements for Gates

Reference Point(refer to Note 1)	Gate Type	Typical Detail Reference
G01	Steel single field gate	G9 (Volume 3 of the MCHW)
G02	Steel double gate	G17
G03	Steel single field gate	G9
G04	Single steel gate post	G13
G05	Single steel gate post	G13
G06	Steel single field gate	G9
G07	Steel single field gate	G9
G08	Steel single field gate	G9
G09	Steel double gate	G17

Notes for Table:

1. Reference Points are as shown on the drawings as described in Appendix 0/4 to the Specification.

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