

**Scottish Trunk Road Network Management Contract
South West Unit**

Attachment 3.1 Additional Local Requirements

Table 3.1.1 Additional Local Requirements

3.1.1.1 M8/A8 Edinburgh - Greenock Trunk Road

Manhole inspection and maintenance shall be carried out in accordance with the requirements set out in the M8 Manhole Report.

Monklands Canal, inspections and maintenance shall be carried out in accordance with the requirements set out in the Monklands Canal Maintenance Manual.

3.1.1.2 M74/A74(M)/A74 Glasgow - Carlisle Trunk Road

Cathcart Cut Pumping Station, inspection and maintenance shall be carried out in accordance with the requirements set out in the M74 Cathcart Cut Pumping Station Operations and Maintenance Manual.

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Table 3.1.2 - Comprehensive Inspection of Geotechnical Assets and Reporting Requirements

Route No	Name	Start		End (if applicable)		Comprehensive Inspection Type	Frequency	Inspection	
		Easting	Northing	Easting	Northing			Specification	Submission
A77	Bennane	211067	588374			Geotechnical Assets - Visual Condition	At intervals not exceeding once every 6 months	In accordance with Trunk Road Information Manual	Each inspection report uploaded into APMS no later than twenty (20) Working Days after completing each inspection
M8	Bishopton	244939	669050			Geotechnical Assets - Visual Condition	At intervals not exceeding once every 6 months	In accordance with Trunk Road Information Manual	Each inspection report uploaded into APMS no later than twenty (20) Working Days after completing each inspection
A76	Blackwood	290372	588139	290227	588284	Geotechnical Assets - Visual Condition	At intervals not exceeding once every 6 months	In accordance with Trunk Road Information Manual	Each inspection report uploaded into APMS no later than twenty (20) Working Days after completing each inspection
A77	Cairnryan	205503	571736			Geotechnical Assets - Visual Condition	At intervals not exceeding once every 6 months	In accordance with Trunk Road Information Manual	Each inspection report uploaded into APMS no later than twenty (20) Working Days after completing each inspection
A77	Carlock Hill	209203	576674			Geotechnical Assets - Visual Condition	At intervals not exceeding once every 6 months	In accordance with Trunk Road Information Manual	Each inspection report uploaded into APMS no later than twenty (20) Working Days after completing each inspection
A77	Carlock Rockface	209290	577052	209323	577174	Geotechnical Assets - Visual Condition	At intervals not exceeding once every 6 months	In accordance with Trunk Road Information Manual	Each inspection report uploaded into APMS no later than twenty (20) Working Days after completing each inspection
A77	Carlock Wall	209290	577052	209323	577174	Geotechnical Assets - Visual Condition	At intervals not exceeding once every 6 months	In accordance with Trunk Road Information Manual	Each inspection report uploaded into APMS no later than twenty (20) Working Days after completing each inspection
A78	Chriswell	222841	674099			Geotechnical Assets - Visual Condition	At intervals not exceeding once every 12 months	In accordance with Trunk Road Information Manual	Each inspection report uploaded into APMS no later than twenty (20) Working Days after completing each inspection
A77	Drumbo Kennels	206312	573524			Geotechnical Assets - Visual Condition	At intervals not exceeding once every 6 months	In accordance with Trunk Road Information Manual	Each inspection report uploaded into APMS no later than twenty (20) Working Days after completing each inspection
M80	Earnock Cut	262749	667454	262944	667502	Geotechnical Assets - Visual Condition	At intervals not exceeding once every 6 months	In accordance with Trunk Road Information Manual	Each inspection report uploaded into APMS no later than twenty (20) Working Days after completing each inspection
A76	Glenairlie	283609	605549	283572	605639	Geotechnical Assets - Visual Condition	At intervals not exceeding once every 6 months	In accordance with Trunk Road Information Manual	Each inspection report uploaded into APMS no later than twenty (20) Working Days after completing each inspection
A77	Glengall	235034	618753	235127	618903	Geotechnical Assets - Visual Condition	At intervals not exceeding once every 6 months	In accordance with Trunk Road Information Manual	Each inspection report uploaded into APMS no later than twenty (20) Working Days after completing each inspection

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A77	Holmston	235837	620508			Geotechnical Assets - Visual Condition	At intervals not exceeding once every 6 months	In accordance with Trunk Road Information Manual	Each inspection report uploaded into APMS no later than twenty (20) Working Days after completing each inspection
A77	Mark Church	207764	574861			Geotechnical Assets - Visual Condition	At intervals not exceeding once every 6 months	In accordance with Trunk Road Information Manual	Each inspection report uploaded into APMS no later than twenty (20) Working Days after completing each inspection
A77	North of Stena	206028	569775			Geotechnical Assets - Visual Condition	At intervals not exceeding once every 6 months	In accordance with Trunk Road Information Manual	Each inspection report uploaded into APMS no later than twenty (20) Working Days after completing each inspection

Attachment 3.2 Tree Management Strategy & Tree Management Plan

Table 3.2.1 Tree Management Strategy

Introduction

- 3.2.1.1 The Operating Company is required to prepare a comprehensive Tree Management Strategy which shall be operational throughout the Contract Period. The strategy shall be integrated with the broader Landscape Strategy (described in this schedule) and the data held within the landscape inventory, with all trees and woodland areas accurately plotted as part of the geographical information system which shall be kept updated at all times.
- 3.2.1.2 The Operating Company shall prepare an annual Tree Management Plan which shall highlight proposed works required in order to deliver the Tree Management Strategy. Proposals, accompanied by appropriate supporting material, shall be submitted to the Director for approval.
- 3.2.1.3 Any tree works identified through safety inspections or other detailed inspections requiring urgent works shall be undertaken without delay.
- 3.2.1.4 Works required to roadside trees in order to maintain sightlines and visibility splays and/or to prevent obstruction of any authorised road sign shall be undertaken as part of the Operating Company's core activities.

Aim of the Strategy

- 3.2.1.5 The aim of the Tree Management Strategy and is to encourage the effective maintenance of all trees within the trunk road boundary, recognising their impact on the road corridor and wider landscape, whilst ensuring the safety of all road users and the road infrastructure.

The strategy shall also take account of the presence and impact of trees and woodland adjacent to but outwith the trunk road boundary.

Aim of the Plan

- 3.2.1.6 The aim of the annual Tree Management Plan is to identify and prepare for the delivery of any planned tree maintenance works, not considered urgent/Category 1 Defects. This may include, but not be limited to, the following operations/reasons:

- Thinning, coppicing, pollarding etc.
- Crown shaping, lifting, reduction etc.

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- Removing deadwood
- Re-balancing
- Pro-active or pre-emptive works
- Wider landscape management reasons (e.g. exposing views etc.)

Landscape Inventory

- 3.2.1.7 All trees and woodland areas are required to be accurately recorded within the landscape inventory as part of a geographical information system in accordance with the Contract requirements.
- 3.2.1.8 This database shall be kept up to date at all times and shall be populated with the relevant data and attributes required by the Contract. This will form the basis of the Tree Management Strategy and the annual Tree Management Plan.

Tree Inspections

- 3.2.1.9 The Tree Management Strategy and Plan shall utilise data collected via regular network inspections. The inspection regime, in respect of tree management, is intended to assess the condition and health of all trees on the network whilst highlighting any work that may be required to ensure the safety of road users. The inspections should also note any works proposed for the general benefit of the tree or associated with the delivery of the landscape strategy.
- 3.2.1.10 The inspection requirements are detailed in this Contract and include the following:
- Safety Inspections
 - Safety Patrols
 - Detailed Inspections
 - Arborist Survey (undertaken every 5 years)
 - Landscape Opportunity Inspections
- 3.2.1.11 In terms of the general safety of the network, detailed inspections for trees shall determine the requirements or recommendations for further action, including priority and urgent works, which shall be undertaken without delay. The inspections shall be undertaken in accordance with BS 5837:2012 Trees in relation to design, demolition and construction – recommendations, paying particular attention to section 4.4. The following information (not considered an exhaustive list) should be considered as part of the assessment
- General health of the tree including indication of disease

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- Consideration of tree type in terms of growth pattern and risk of failure
- Visual evidence of structural defects or physical damage
- Any indication of stress or die-back
- Any concerns related to tree location and the general public
- Evidence of the effects of detrimental ground conditions
- Evidence of the effects of exposure
- Evidence of the effects of any recent circumstantial changes

3.2.1.12 For the 5 year Arborist inspections the list of information requirements contained under clause 4.4.2.5 of BS 5837:2012 shall be incorporated, in addition to the above.

3.2.1.13 The information referred to in the above clauses (and any other data collected, as required) shall be linked to the landscape inventory. It shall form part of the annually updated Tree Management Plan, illustrating delivery of the Tree Management Strategy and helping to manage all trunk road trees for the environmental and ecological benefit of the road corridor and wider landscape, and to avoid any potential tree-related risks affecting road users, road infrastructure, trunk road operatives and the general public.

Trunk Road Tree Management

Introduction

3.2.1.14 Trees form an important part of the fabric of Scotland's landscape, whether these are individual specimens, avenues of trees, copses or blocks of woodland. Historically they have long been associated with roads, railways and other rights of way and continue to be a feature of our transportation corridors today, performing important roles such as screening or sheltering traffic, helping to integrate the road/railway into the surrounding environment and, in many areas helping to stabilise embankment and cutting slopes.

3.2.1.15 For the past 20 years or so Transport Scotland has followed the policy of planting native species on the trunk road network, although occasionally non-native species are incorporated into specific sites where this meets the objectives of the design (for example, urban roundabouts, by-pass screening etc.). The agency has also led the drive for using planting of local provenance as far as this is practicable, thereby ensuring that the planting mixes are suitable for the intended locations and have a better chance of establishing and growing well. This is now a common practice across the UK amongst other agencies, public authorities and

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large-scale commercial enterprises. For new road schemes species choice is determined by the professional landscape architects and ecologists involved in the project with species selected by taking account of the local landscape character, including the locally prevalent vegetation species.

3.2.1.16 The Scottish trunk road network is made up of a variety of types and character of road but broadly can be divided into those roads (or sections of road) that are the result of a carefully prepared assessment and design process and those roads that have developed almost incrementally from previous, much older thoroughfares and drove-roads. Modern design standards require a much more robust consideration of the type and location of planting within the vicinity of the road, with current policy requiring trees to be a minimum of 5 metres from the edge of carriageway and outwith any required visibility areas. In the past some new planting has been established much closer to the carriageway whilst in other areas natural regeneration has occurred and been allowed to establish with the same result.

3.2.1.17 In the case of the 'inherited' roads, many of these incorporate trees planted along the edge of carriageway which, over the years, have developed into large mature specimens. Such trees can form a very significant part of the local landscape character but may also have a potential impact on road safety – whether as a possible collision hazard or through the threat of falling or shedding limbs onto the road/traffic. A substantial number of the very large trees that appear alongside Scotland's trunk roads are, in fact, not within Scottish Ministers' land at all and are in private ownership, although they still add significantly to the character of the road corridor. Where such trees are considered a real risk to the network there is provision within the Road Scotland (1984) Act to permit the agency (through the trunk road Operating Companies) to liaise with the landowner concerned and to seek appropriate action.

Contract Management Provisions

3.2.1.18 The Scottish Trunk Road network (and its immediate surroundings) currently supports hundreds of thousands of trees of varying shapes, sizes and ages. These trees are spread throughout the network although there are significant areas where there are no trees and, conversely, other areas where the planting is particularly dense and continuous. The management and maintenance of these trees falls within the remit of the trunk road operating companies through the provisions of the term maintenance contracts.

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- 3.2.1.19 As part of the contract requirements the Operating Companies are required to survey, collate and maintain a comprehensive GIS-based inventory of all the assets/elements and their associated attributes found within the trunk road boundary whilst also recording certain relevant elements immediately adjacent although outwith the boundary. Through this process a complete and accurate digitally recorded picture of the whole network should be maintained with elements ranging from carriageways and safety fences to road studs, traffic signs and drainage ditches. The contract also has a corresponding inspection regime which requires these elements to be regularly checked with the resulting data helping to inform any reactive work needed and improve the means by which cyclic maintenance is planned, programmed and delivered.
- 3.2.1.20 As well as the functional aspects of the road network, the Trunk Road Inventory provides an invaluable detailed visual record of the associated landscape resource incorporating a variety of environmental elements including trees and woodland. The contract requires the Operating Companies to undertake weekly Safety Inspections/patrols and annual tree inspections across the whole network in order to identify any trees that may present a real risk (or are likely to do so) to road users and/or the road infrastructure. These inspections feed into annual maintenance programmes and may result in planned branch removal or tree thinning/removal works as well as any tree work deemed more urgent (Category 1 Defects) and required to be undertaken as quickly as possible.

Potential Issues

- 3.2.1.21 Not all trees represent a road hazard and generally provide other desirable functions and/or aesthetic interest. However, as the landscape within and adjacent to the trunk road network continues to establish and develop so the possible negative implications of trees close to the carriageway can become more acute. There are areas where trees have developed to a significant size in locations where, in certain circumstances, they could impact on the operation of the road itself. Such circumstances can include strong winds/severe gales and flooding events, the increased frequency of which may be one of the effects of the changing climate. There is also more awareness now of the significant number of pathogens being found within the UK which could result in potentially damaging tree and plant diseases. Some such diseases may have limited consequences whilst others could be catastrophic in terms of the impact on certain species,

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leading to large scale tree deaths. This has potential implications on the stability of dead/dying trees and/or their limbs.

Tree Management Strategy

3.2.1.22 To deal effectively with the potential dangers that may be caused to the road network by some trees requires a clear and comprehensive tree management strategy. It is not always easy to ascertain if a particular tree is a potential danger to the road or its users – a seemingly healthy, well-rooted specimen can be overturned by a very strong wind or a sudden gust from a non-prevailing direction, whilst an adjacent much poorer-looking tree may be left unscathed. However, as a responsible owner, Transport Scotland has a duty to ensure reasonable action is taken to prevent incidents occurring that might be harmful to road users and adjacent interests. The provisions of the Trunk Road Management and Maintenance Contracts cover this responsibility by requiring the preparation of a comprehensive strategy. Such a strategy can help define how the safety and integrity of the trunk road and its users can be protected against the possible implications of windblown trees/branches without indiscriminately removing trees and destroying the character of the roadside corridors, much admired by locals and visitors alike, and the benefits this provides for biodiversity and nature conservation generally.

Liability and Duty of Care

3.2.1.23 As the 'owners' of the trunk road and motorway network in Scotland, Scottish Ministers have a responsibility to ensure the network is fit for purpose. As the national transport agency for Scotland, delivering the Scottish Government's vision for transport, Transport Scotland assumes this responsibility and is required to make sure the existing network is safe and reliable whilst new interventions are designed and delivered to the required standard. This responsibility is discharged through the requirements of the Trunk Road Network Management contracts and delivered via the appointed Operating Companies.

3.2.1.24 This underlines the importance of the development of a comprehensive Tree Management Strategy, and associated Tree Management Plan, laying out the management requirements and procedures in a clear and unambiguous fashion, whilst maintaining precise information on the relevant tree resource and its inspection regime.

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Risk Assessment

- 3.2.1.25 In order to maintain the required Duty of Care it is important that the appropriate level of risk assessment is undertaken. It is not a simple process to assess the level of risk to stakeholders presented by trees due to their highly individual and varied nature combined with differing circumstances – a tree inspected and recorded as being in good health could still fail and fall due to unforeseen external influences or internal defects that could not reasonably be detected.
- 3.2.1.26 A reliable inspection process should ensure the following questions can be answered with confidence (and with supporting evidence):
1. Can a potential problem be realistically foreseen?
 2. What is the likelihood of it occurring?
 3. What is the likely consequence of its occurrence?
 4. What reasonable action can be taken to prevent it?
- 3.2.1.27 Of primary concern to the process of tree assessment and management is the maintenance of an accurate and up to date asset inventory and dataset.

Landscape Inventory

- 3.2.1.28 Effective management of trees within and adjacent to the trunk road corridor is only possible through detailed knowledge of the extent of the resource. It is crucially important to ensure the landscape inventory is fully accurate, populated with all the relevant fields/attributes and kept up to date. This can then support a comprehensive management system for inspecting, recording, analysing, prioritising and programming any required actions. This can be delivered by a straightforward tree risk management strategy and associated plan which focus on identifiable issues and reasonably foreseeable problems related to those trees likely to have a significant impact if subject to failure.
- 3.2.1.29 In the case of network trees and those immediately adjacent to the boundary, any individual specimens that may pose a particular risk to infrastructure or stakeholders can be identified for more detailed review.

Inspection Objectives

- 3.2.1.30 The Contract requires the Operating Company to undertake a number of defined inspections as well as other ad hoc inspections all of which add to the general knowledge of the trunk road asset and its component parts. The objectives of the contract inspection regime is to identify and log any defects for immediate repair (Category 1) or to facilitate the prioritising, preparation, and submission of

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short/medium term programmes and bids. The inspections will also assist in identifying the need for replacement, renewal or enhancing elements of the network which can inform longer term planning.

3.2.1.31 The following inspections are required to be delivered by the Operating Company:

1. Safety Inspections – designed to identify defects likely to constitute a danger (Category 1 defects) and undertaken at intervals not exceeding 7 days (covering the whole unit). These inspections are undertaken from a slow moving vehicle but there is provision to carry out some safety inspections by foot if deemed necessary or for further investigation).

In respect of trees on and adjacent to the network the inspectors should already be aware via the Landscape Inventory of any areas of significant trees that could constitute a potential danger to the public or the network itself (due to their size, location or previous survey record) and these should be observed for obvious signs of recent damage or possible failure, such as broken branches, leaning trunks/limbs, or changes in the local conditions such as flooding or land slippage etc.

2. Safety Patrols – designed to supplement the Safety Inspections by providing more frequent surveillance of the network for the identification of potential problems. These are undertaken between Safety Inspections such that there will be no more than 4 days between a Safety Inspection and Safety Patrol. Patrols are also undertaken from a slow moving vehicle with the same opportunity for more detailed investigations on foot.

Information resulting from either inspection type is required to be uploaded into the appropriate management system within 24 hours and will then be actioned accordingly.

3. Detailed Inspections – these are undertaken on foot at intervals no greater than 12 months and cover all trunk road assets, including all trees. These inspections offer the opportunity for a closer comprehensive scrutiny of the larger trees within and adjacent to the unit to see if there are any discernible relevant signs of possible failure or distress. These trees will already be identified through the Landscape Inventory which is required to be validated for accuracy during the detailed inspections and updated within 4 days. The inspections should result in a record of each tree inspected and an associated report where any issues are noted and any actions proposed (see clause 3.2.1.12 above).

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4. Detailed Arborist Inspections – these are programmed to be undertaken by a suitably qualified and experienced arborist(s) every 5 years, with the focus on all mature woodland areas and other mature trees on or adjacent to the network. In practical terms the arborist(s) should be inspecting all trees that due to their size and/or location present a possible risk to the public (on or off the network), any member of staff (contracted or permanent), any property, vehicle or equipment and the infrastructure of the road itself. By utilising the information held within the Landscape Inventory the arborist(s) will know the location of all those trees that require special attention. These inspections provide the opportunity to assess the health of individual trees to determine if there is any sign of weakness, failure or stress that might constitute a potential hazard. The arborist(s) shall file a report for each tree inspected including any proposed actions and a priority rating (see clause 3.2.1.12 and 3.2.1.13 above).

Whilst each report prepared every five years is a new piece of work, each one should be related to the previous report by reviewing the available records and assessing any signs of deterioration or significant changes in local environment/circumstances.

5. Landscape Opportunities Inspections – As part of their contracted duties the approved chartered landscape architect for each unit is required to undertake inspections covering the whole unit with the period between inspections no greater than 12 months. The purpose of the inspections is to gain an understanding of the wider landscape character and local environment of the road corridors within the unit and determine opportunities to enhance the landscape resource or introduce specific management interventions where appropriate. Whilst not specifically intended to identify potential hazards, these inspections do provide the specific opportunity for additional professional observation of the landscape resource of the roads, including management of the vegetation, which may flag up areas of potential concern related to larger trees.

6. Ad hoc Inspections – In addition to the inspections by the landscape architect, other staff within each Operating Company have a responsibility to be aware of issues on the network during the course of their work and to make a report of any potential problems observed. The general public are also encouraged to report any concerns related to the trunk road network and these must be followed up promptly with the appropriate level of investigation and action, if required.

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It is crucial that appropriate records are kept of all inspections undertaken and that these are logged in the relevant system within the required timescale. The reports should detail all observations made, any actions taken or proposed (with an appropriate priority rating) and recommendations for any follow up inspections/action, including relevant timescales.

Training and equipment

- 3.2.1.32 Many signs of possible disease, trauma and general weakness in trees are easily recognisable and most of the network inspections do not require to be undertaken by specialists with specific tree-related qualifications. Basic inspections can be undertaken from the ground although it may be advisable to use a monocular/binoculars to observe the upper levels of taller trees.
- 3.2.1.33 If it is not possible to get a good impression of the state of a particular tree from the ground it may be necessary to complete the inspection by climbing or from a lift or hoist. In such circumstances, operatives need to be properly trained and follow all required safety guidelines.
- 3.2.1.34 Although no specific training is needed for most tree inspections, it would be sensible for the Operating Company to prepare toolbox guidance for inspectors so that they have the best opportunity of understanding and recognising the more common signs of tree/branch weakness/failure.
- 3.2.1.35 For detailed inspections it is advisable to utilise the skills and experience of an inspector who has undergone specific training related to trees and what to look for during examinations. As a minimum requirement inspectors undertaking detailed inspections related to trees within the trunk road network should have undergone the Basic Tree Survey and Inspection award and the Highway Tree Inspection award, both provided by LANTRA. There are many different levels and types of qualification relevant to tree inspection knowledge but a qualified arborist should be a member of a recognised trade or industry body, such as the Arboriculture Association or the International Society of Arboriculture.
- **Arboriculture Association:** Members of this association must take an assessment every five years.
 - **The International Society of Arboriculture:** Members of this association can either opt to take an assessment or not. There are two separate logos depending on which level of member they are.

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3.2.1.36 There are various qualifications available, from college-based diplomas, SVQs and HNDs in arboriculture to short (single or multiple days) vocational training leading to accreditation. As a minimum requirement arborists undertaking inspections related to trees within the trunk road network should have undergone the Professional Tree Inspection award provided by LANTRA. Above all, any individual carrying out detailed inspections of trees on/adjacent to the trunk road network must be experienced and competent to do so. For the 5 year arborist inspections, the individual(s) must additionally hold a recognised and up to date, fit for purpose qualification in arboriculture.

3.2.1.37 Most knowledge of tree issues comes from visual observation (of the tree itself or local conditions/circumstances etc.). However, it is sometimes appropriate to use more physical means of investigation, whether mechanical, electronic and/or invasive. There are many different products available to assist with tree surveying including borers, microdrills, probes, sounding mallets, video endoscopes and other electronic measuring equipment. It is also possible to collect data using non-invasive, digital, decay-detection equipment such as the PiCUS range (sonic tomography, electrical resistance, tree motion sensors and tree pulling equipment).

If any such equipment is to be employed as part of tree inspections on the trunk road network they must be operated by fully competent and trained individuals.

Prioritising resources

3.2.1.38 The Operating Company is responsible for data collection and undertaking inspections across the whole network taking account of a range of defined elements and associated attributes. With a network consisting of over 3,700 miles of road, this represents a considerable on-going task that requires effective management of resources. Trees are found in varying numbers throughout most of the trunk road estate although there are significant lengths of road where there are no trees. Not all trees on or adjacent to the network will be of a size, age or location to present a potential hazard to people, property or infrastructure in the event of failure. In terms of identifying such hazards it should be possible to focus inspections on those areas where there are known trees of a size that could cause a significant incident if they were to fall or shed a limb etc. By utilising the information held in the Landscape Inventory the Operating Company can develop a logical, systematic and diagnostic approach to identifying the location and condition of any trees that may constitute a hazard to the network.

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- 3.2.1.39 To supplement this assessment approach the Operating Company could establish a set of criteria together with a graded reporting mechanism, perhaps based on a simple traffic light management system – Red (significant potential hazard), Amber (possible hazard) and Green (no discernible hazard). Those trees noted as being ‘red’ or ‘amber’ would be flagged for action and/or further investigation. Clearly, this process will only be effective if the data held within the Landscape Inventory is fully accurate and up to date.
- 3.2.1.40 In this way the Operating Company can develop and maintain a picture of the most vulnerable trees or areas of trees across the trunk road network which, in turn, can generate a prioritised programme of action to ensure the obligation to operate a safe and reliable road network is being met, as far as this is reasonable and practicable.

Decision making

- 3.2.1.41 All management decisions in relation to trees must be based on accurate facts and competent advice. It is crucial that the trunk road authority takes all reasonable steps to reduce the likelihood of tree-related incidents. However, trunk road trees represent a valuable resource both to the network and the wider landscape and it is also important that this resource is protected and nurtured through sustainable management. We must seek to avoid being overly precautionary and removing trees or carrying out severe pruning operations where there is little or no qualifying reason. The ultimate purpose of an effective tree inspection regime is to determine if there is a foreseeable likelihood that a particular tree may fail in some respect and, if so, what are the likely implications.
- 3.2.1.42 In order to arrive at such a determination the inspection regime needs to consider the following:
- I. Size and location of tree
 - II. Tree condition
 - III. Species and age
 - IV. Local conditions

I. Size and Location – the section above describes how the Landscape Inventory can help identify those trees or areas of woodland that are most likely to present a potential hazard in the event of a failure.

II. Tree Condition – the inspection needs to consider any available visual evidence that the tree may be susceptible to failure. This can be broken down into three parts:

- I. physical evidence of damage or failure – for example; broken branches/limbs, cracking to the stem and or branches, significant sized wounds (fresh or old) etc.
- II. visual evidence of stress or disease – for example; bulging stems, cankers and fungi, die-back of outer branches, discolouration etc.
- III. tree form – for example; leaning or lop-sided trees, top-heavy branches, abrupt bends in branches (sometimes due to earlier pruning), major forks in the stem (particularly lower down), gaps in the crown/poor crown condition, ground-heave and/or cracking etc

III. Species and age – some trees are more predisposed to aspects of failure than others, whether due to their growth habit, form or nature.

IV. Local Conditions – changes in the local environment can often be a significant factor in the on-going health and stability of the tree.

3.2.1.43 Trees may be susceptible to windthrow where previous shelter is removed (e.g. adjacent tree clearance) whilst changes to the ground conditions, such as flooding/waterlogging, drying out/shrinkage and landslips can all affect root stability. Changes in soil level around a tree can impact on its health e.g. local excavations and/or dumping of additional soil or other material around the base of the tree. Inspectors should be aware of recent construction activities adjacent to trees in the event that the works have had a negative impact on the roots. There may also be evidence of failure in nearby trees, whether of the same or differing species, and this should indicate the need for further investigation in the vicinity.

3.2.1.44 Whilst a tree may fail at almost any time there are obvious climatic conditions and weather related events that may lead to an increased potential of tree-related failure, for example; periods of heavy or persistent rain, heavy snowfall and strong winds (especially gusting and from a non-prevailing direction). In addition, extended periods of hot and dry weather can create problems for trees through a general lack of water and possible ground shrinking.

The Operating Company's tree management procedures should take account of such conditions and events and ensure early inspections are made of any vulnerable trees post event.

Summer Branch Drop (SBD) – this is a phenomenon that is not fully understood but can result in branches, often of considerable size and weight, suddenly falling from seemingly healthy large trees where there was previously no visible sign of stress and no obvious cause. This makes early detection of this type of event very difficult to identify. Fortunately, research would suggest this is not a particularly common occurrence and there is probably not a significant number of large mature trees on or adjacent to the Scottish trunk road network that would be susceptible to SBD, (although there will be some). SBD has been reported as occurring in a number of species including some that are native to the UK. Species include: *Quercus*, *Populus*, *Salix*, *Ulmus*, *Fagus*, *Fraxinus*, *Pinus*, *Platanus*, *Aesculus* and *Cedrus*.

There are certain signs to look out for – SBD generally only affects some large mature trees, often with very large, heavy horizontal branches and there is evidence to suggest it mainly occurs after extended periods of drought followed by heavy rain.

Tree diseases

- 3.2.1.45 Like any living organism, trees can be susceptible to various diseases which can have a range of affects from minor and/or temporary to severe and permanent, sometimes resulting in the death of the tree. Many such diseases or pathogens are commonly occurring within the UK whereas others are unplanned introductions from other parts of the world which, occasionally, can have devastating impacts on native species. The European Elm population within the UK has been decimated by Dutch Elm Disease (a fungus of the genus *Ophiostoma* which is spread by the European elm bark beetle, *Scolytus multistriatus*). In the late 1960s a particularly virulent strain of the disease arrived on a timber shipment from North America and in the intervening years the UK has lost over 25 million elms. Today there are many more diseases and pathogens that are threatening our native vegetation with three significant examples noted below:

Chalara hymenoscyphus (fraxinae) – (Ash die-back). As with Dutch Elm Disease, Ash die-back is caused by a fungal infection which is especially destructive for our native ash (*Fraxinus excelsior*). The disease was first noted in Poland in 1992 and 20 years later in 2012 it was recorded in the UK. Since then, the number of trees discovered with the inflection has risen significantly and once infected trees are highly likely to die (either directly through this pathogen or by

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their resistance to other diseases being weakened). Some ash trees have shown a genetic tolerance or resistance to *Chalara*, particularly some older, more mature specimens which can survive infection for longer.

Unless the Forestry Commission or other relevant body issue a statutory Plant Health Notice (sPHN) there is no specific requirement to remove infected ash trees. However, any evidence of the disease should be reported to Transport Scotland and a record made via the Landscape Inventory. It is also important to keep an eye on any infected trees as the disease progresses to ensure they or and their branches do not constitute a hazard to people, property or infrastructure.

Transport Scotland issued guidance on *Chalara* to the supply chain in 2013 (including to the operating companies) whilst further guidance on the disease and its management is included on the UK Government website:

<https://www.forestresearch.gov.uk/tools-and-resources/pest-and-disease-resources/chalara-ash-dieback-hymenoscyphus-fraxineus/>

Dothistroma septosporum - (Dothistroma Needle Blight, DNB). Another fungal infection that is now endemic across the UK. It is found in a number of conifer species but predominantly in pines including Lodgepole, used extensively in commercial forestry enterprises and, more recently, in the native Scots Pine. Symptoms of the disease are a discolouring of older needles which looks like red-coloured banding. This is followed by significant needle drop leaving the branches looking like 'lion's tails' with tufts of recently infected new needles at the end of otherwise bare branches. The disease eventually weakens the tree and can lead to its death.

The Forestry Commission is monitoring the spread and development of the disease and it is important that they receive as much information as possible on new outbreaks and the Operating Company should pass on records via Transport Scotland whilst also recording these in the Landscape Inventory. One of the main concerns is to try to avoid any infection within the remnant population of the Caledonian Pine Forests and the Operating Company should be particularly aware of signs of DNB in close proximity to these areas. Further information can be found on the UK Government website:

<https://www.forestresearch.gov.uk/tools-and-resources/pest-and-disease-resources/dothistroma-red-band-needle-blight/>

Phytophthora ramorum - (sometimes known as Larch tree disease). The disease is known in the USA as 'sudden oak death' but the strains of *P. ramorum* found in Britain have had little effect on British native oak species. However, the disease has spread rapidly amongst larch trees in the UK and large numbers have been affected. In 2011 it was first found in South West Scotland in the Larch plantations and this is now a major area for the pathogen. Evidence suggests that the disease can be spread over several miles in mists, air currents and watercourses although the main vector is via footwear, dogs' paws, bicycle wheels, tools and equipment etc. Movement of infected plants is also a key means of spreading it over long distances. There is no known cure so the best adopted control is to prevent or minimise any further spread. The Forestry Commission is carefully monitoring the disease and has issued a number of statutory Plant Health Notices (sPHN) requiring landowners to fell any infected trees and dispose of the arisings (usually by burning or transport to a licensed waste site).

Transport Scotland, through its supply chain, will respond to any such sPHN as soon as possible but it is also important for the Operating Company to keep vigilant for signs of *P. ramorum* and to report these promptly (ensuring the Landscape Inventory is kept up to date). Clearly, considering the main concerns are leaf litter (needles) and contaminated soils, it is very important to adopt and follow good biosecurity measures amongst all those working on the trunk road soft estate, particularly when associated with tree works and/or when within any areas of known infection (of any tree disease). See the section below on Biosecurity.

Further information on *P. ramorum*, including the management zones determined by the Forestry Commission) can be found on the UK Government website:

<https://www.forestresearch.gov.uk/tools-and-resources/pest-and-disease-resources/ramorum-disease-phytophthora-ramorum/>

Biosecurity

- 3.2.1.46 Biosecurity measures are practical steps designed to minimise the risk of introducing or spreading pests and diseases. Such measures need to be understood by all operatives and they need to be employed before any work on

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site takes place. It is no good arriving at a site and then setting up the biosecurity measures – by then the damage may already be done. It is not always possible to see pests and diseases and they can be transmitted accidentally by people moving between different sites. One of the most common vectors is within soil or organic material, such as plant debris, that can be carried on footwear or by the wheels of vehicles and forest machinery. Diseases may also be spread via the equipment used for tree work.

Further advice on good biosecurity is available through the UK Government website:

<https://www.gov.uk/guidance/prevent-the-introduction-and-spread-of-tree-pests-and-diseases>

Attachment 3.3 Grassland Report

Table 3.3.1 Grassland Report

- 3.3.1.1 The Landscape Architect shall prepare the grassland report for inclusion in the annual landscape management report.
- 3.3.1.2 Grassed areas, in the various categories recorded, make up the largest single landscape element of the Unit and the management and maintenance of these areas requires the commitment of a considerable level of resource during each Annual Period. In the grassland report, the Operating Company's Landscape Architect shall identify the general condition of the grassed areas of the Unit in order that the appropriate maintenance Operations undertaken meet the objectives of the area as recorded in the Landscape Strategy.
- 3.3.1.3 As well as any location specific objectives that may have been determined, the Landscape Architect shall identify more general objectives including:
- (i) safety,
 - (ii) integration with the wider landscape,
 - (iii) encouragement of ecological diversity, and
 - (iv) visual interest and amenity.
- 3.3.1.4 It is not intended that the report will record every individual area of grass under each category but rather provide an overview of the broad condition of the grass within defined character zones and in response to specific areas of interest, such as junctions, settlements and the like.
- 3.3.1.5 The grassland report shall include:
- (i) general description of existing grassland of the Unit,
 - (ii) grassland areas,
 - (iii) current maintenance regime,
 - (iv) issues arising from historic maintenance regime,
 - (v) high amenity grass areas,
 - (vi) amenity grass areas,
 - (vii) general grass,
 - (viii) rough grass,

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- (ix) specific issues,
- (x) sward health,
- (xi) sight line areas,
- (xii) weed content,
- (xiii) erosion/over-run,
- (xiv) bulbs, and
- (xv) specific opportunities for amending grass maintenance regimes.

Attachment 3.4 Annual Invasive or Injurious Species Management Plan

Table 3.4.1 Annual Invasive of Injurious Species Management Plan

- 3.4.1.1 As part of the Contract requirements, the Operating Company shall prepare an Annual Invasive or Injurious Species Management Plan to be submitted as part of the Annual Landscape Management Report. The Plan shall detail the location, nature and extent of the invasive or injurious species infestations that can be found within the Unit and the success or otherwise of the measures taken by the Operating Company to reduce the area and extent of the known infestations, as well as proposals for future management.
- 3.4.1.2 The Annual Invasive or Injurious Species Management Plan is intended to provide a framework for the effective management of such species across the whole extent of each Unit, supported by an annual programme of prioritised actions.
- 3.4.1.3 The Plan shall reflect the requirements of this Contract, including the Specification and Trunk Road Information Manual, and incorporate details of both non-native as well as native species, where either have an impact on the Unit, and ensure compliance with relevant legislation on invasive species control.
- 3.4.1.4 Control of invasive and injurious species is a Core Operation. Any impact that Invasive or Injurious Species may have on road signs, visibility splays and forward visibility is considered a Category 1 Defect and shall be dealt with accordingly.
- 3.4.1.5 An effective management plan needs to be based on accurate data and it is vital that the full extent of all invasive or injurious species (including, as a minimum, those species named in the Specification) is accurately recorded in the landscape inventory and regularly inspected, in accordance with the Contract requirements.
- 3.4.1.6 The Annual Invasive or Injurious Species Management Plan should include the following information:

Survey information

- Record and details of the species concerned
- Description of the relevant site-specific details
- Information relating to the surrounding context – e.g. any active livestock grazing, public access, conservation or high amenity areas, watercourses etc.
- Consideration of potential vectors / pathways
- Photos/maps to supplement landscape inventory record

Situation analysis

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- Likely type and level of impact – economic, social, environmental etc.
- Risk assessment based; on current situation – potential future development – likelihood of further spread – legal/regulatory context (neighbouring interests etc.).

Management considerations

- Review of any access issues (including Traffic Management)
- Potential for integration with or effect on other maintenance obligations or operations
- Seasonality issues (especially for efficacy of treatment)
- Assessment of earlier actions (see below)
- Proximity of other similar infestations
- Main objectives – prevention; suppression; eradication; control etc.

Potential consultation

- Need to liaise with other – neighbours; local authority; statutory environmental bodies; general public etc.
- Potential for partnership working

Methodology considerations

- Consideration of control method(s) – cutting; hand-pulling; excavation; burial; herbicide application; seed removal; biological control etc.
- Likelihood for repeat visits (within a season or annually)
- Realistic annual reduction/control targets (taking account of Contract requirements and legal/regulatory context).

On completion of each treatment activity a record shall be recorded against each inventory item along with a date/time stamp and notes detailing the nature of the treatment.

Relevant notes may include:

- Treatment carried out
- List and details of any chemicals used (the Pesticide Record forms in the Specification must be completed)
- An assessment of the effectiveness of any previous treatment to the same area
- Any impact from the Invasive Species on any adjacent assets or 3rd party interests
- Disposal notes – information on treatment of arisings, including where taken.

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- Any other relevant notes or information

3.4.1.7 By collating and considering the above issues the Operating Company will be able to prepare and submit a prioritised plan of action for control of invasive or injurious species over the subsequent annual period, supplemented with a clear delivery programme. The Contract requires the Operating Company to prevent the spread of invasive or injurious species and to deliver a minimum reduction in total area of 10% across all named species. The Plan is to be submitted as part of the Annual Landscape Management Report.

3.4.1.8 The Overseeing Organisation shall consider the report and, where appropriate, consent to the Operating Company's targets for reducing infestations of invasive or injurious species during the next Annual Period. All areas of infestation of invasive or injurious species shall be recorded within the landscape inventory and updated annually after each maintenance visit and/or Detailed Inspection.

Attachment 3.5 Deer Management Plan

Table 3.5.1 Deer Management Plan

- 3.5.1.1 The Code of Practice for Deer Management (for the purposes of this Attachment 3.5 called the Code") was introduced by the Wildlife and Natural Environment (Scotland) Act 2011. The Code applies to all land owners and managers of land where wild deer are found, that includes areas of the Unit.
- 3.5.1.2 The fundamental objective of the Code is to set out recommended action for sustainable deer management and to make provision for collaboration between landowners and managers, thereby ensuring that any negative impacts of deer on the public interest are minimised as far as practicable and deer welfare is safeguarded. This shall form the basis of the annual Deer Management Plan.
- 3.5.1.3 The Code clearly stresses the importance of managing deer collaboratively - of talking to neighbours and of planning together as far as practicable. The Code advises that there is a difference between collaboration in the deer management planning process and cooperation in sharing practical deer management tasks.
- 3.5.1.4 While some direct action associated with deer management may be required by the Operating Company in order to meet its Contract obligations, the majority of deer management proposals are likely to be part of a collaborative process and will be subject to approval from the Overseeing Organisation through the usual processes.
- 3.5.1.5 The Landscape Architect shall prepare the Deer Management Plan (DMP) for inclusion in the Annual Landscape Management Report. Chapter 4 of the Code sets out useful information for the development of a practical and effective DMP.
- 3.5.1.6 Any proposals and recommended actions proposed in the DMP shall be assessed and prioritised by the Operating Company and should inform the Landscape Strategy, with priority works delivered via the Landscape Development Plan.
- 3.5.1.7 The DMP shall be prepared in accordance with this Appendix and the provisions of the Code. The Operating Company shall structure the document on the following basis:
- (i) Strategy – a broad strategy covering the general approach adopted by the Operating Company to managing deer across the Unit. This section should identify the general areas of the Unit where wild deer may come into conflict with the road network (specifying the areas involved); include good practice proposals for collaborating in deer management planning with adjacent

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landowners or other interested parties, and recommend methods to be employed for meeting the requirements of the Code.

(ii) Part A – this shall form a record of work undertaken and achievements made by the Operating Company over the preceding Annual Period in respect of deer management for the Unit. This may include the planned installation or maintenance of specific deer mitigation facilities, liaison with adjacent landowners or other interested parties, action to resolve Incidents or reports received concerning deer accessing the Unit and general comment on the efficacy of current mitigation measures in place for the Unit.

(iii) Part B – this shall form proposals and actions intended to be implemented during the following Annual Period in accordance with the Operating Company's Deer Management Plan strategy. This may include areas to be targeted for deer management, details of deer mitigation proposals and the likely actions involved and proposals for future liaison and collaboration with adjacent landowners and other interested parties.

- 3.5.1.8 In terms of possible organisations with whom collaboration or liaison may be required in respect of deer management, the Operating Company shall consider approaching as a minimum the local deer management group(s) (if applicable), Scottish Natural Heritage, the Forestry Commission, National Trust for Scotland, local authorities and the like in addition to any relevant local individual landowners or estates, although this shall not be considered an exhaustive list.
- 3.5.1.9 In order to collate as accurate a record as possible of deer activity associated with the roads within the relevant Unit, the Operating Company shall access data from reliable third party sources as well as relying on its own observations. This data should help build a picture of the areas most affected by deer activity and, therefore, where there may be the greatest potential for Deer Vehicle Collisions (DVCs). This information, should be analysed by the Operation Company, helping to identify areas for particular attention (hotspots) and informing the development of prioritised practical mitigation proposals for inclusion in the Landscape Development Plan and consideration by the Overseeing Organisation.
- 3.5.1.10 It should be noted that the DMP is not intended as a means to reproduce information, readily available elsewhere, regarding the broader issues of deer in Scotland. It is primarily required to identify route-specific deer issues and to explore practical, sustainable and cost-effective solutions to managing, on a prioritised basis, any conflicts between road users and deer welfare.

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Attachment 3.6 Procedure for Accessing, Maintaining, Inspecting & Testing of Shared Electrical Assets

Table 3.6.1 Accessing, Maintaining, Inspecting & Testing of Shared Electrical Assets

Access and Isolation of Supply in Shared Electrical Equipment Cabinets

- 3.6.1.1 Where access to shared electrical equipment is required by any of the parties, it shall be undertaken in accordance with the following access procedure.
- 3.6.1.2 Access to any shared enclosure shall be only by the use of a standard triangular key. Under no circumstances shall additional locks be added other than to prevent danger. Should such additional locks be fitted, this must be a temporary arrangement and in this situation:
- i. all parties shall be correctly and immediately informed as to the reason,
 - ii. agreed emergency attendance procedures to carry out isolation must be in place, and
 - iii. warning labels with contact details shall be affixed to the external door of the enclosure.
- 3.6.1.3 Should one of the parties sharing the equipment enclosure require access to a shared enclosure to undertake work on a circuit served from that cabinet or pillar, that party shall firstly ensure that the circuit can be isolated for the expected period of the work without any detrimental effect on other parties. Once this has been ascertained, the circuit shall be isolated by the party using a correctly rated isolating device such as an in-circuit switch-disconnector or other suitably rated protective device such as a double-pole miniature circuit breaker. The device chosen shall then be physically locked in the off (open) position using a unique key, held only by the part responsible, in such a way as to prevent inadvertent re-energisation of the isolated circuit.
- NOTE: The method of disconnection and prevention of inadvertent re-energisation shall satisfy the requirements of Regulations 12 and 13 of the Electricity at Work Regulations 1989. The Health and Safety Executive publication HSG85 Safe working Practices gives further relevant guidance.
- 3.6.1.4 Circuits that are taken out of service under shall have a warning label attached to the relevant circuit isolating device indicating 'caution'. At the point of work, further notices shall be displayed adjacent to the isolated circuit. Where adjacent circuits remain energised at the point of work, a 'danger' notice at the point of work shall be

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displayed on those live circuits. All notices shall clearly state the work being done on the circuit, the person carrying out the work, contact details, telephone number, employing organisation and the like.

3.6.1.5 Only the circuits isolated and being worked on should be labelled within the cabinet. Where a complete cabinet is isolated, this shall be indicated by means of warning labels attached to both the exterior and interior of the cabinet. Unless isolation is to prevent immediate danger, full agreement must be obtained by all the sharing parties. All notices shall clearly state the work being done on the circuit, the person carrying out the work, contact details, telephone number, employing organisation and the like.

3.6.1.6 In the event that the party working on the circuit is unable to complete the work and this results in the continued isolation of a specific circuit or circuits, a laminated message board shall be left in the cabinet or pillar indicating that under no circumstances should these circuits be re-energised without first contacting that party, whose telephone number shall be shown on the message board. Additionally, the party working on the circuit shall inform the contact person of the other party as quickly as possible of the situation and provide an indication of the work required to be undertaken and the likely time for completion.

Responsibility for Maintenance

3.6.1.7 Where shared electrical equipment is situated outwith the Unit, the local roads authority is responsible for maintenance except where the equipment is located on a road section on which new work by others is in progress or the road section is covered by previous maintenance arrangements arising from such work.

3.6.1.8 At junctions in remote areas where there is no local roads authority lighting, maintenance of the Trunk Road lighting network shall be extended into the local road by the Operating Company to ensure a safe level of illumination at the junction.

Inspection

3.6.1.9 Any of the sharing parties can undertake visual inspections of shared electrical equipment at any time, irrespective of the location of such equipment and without notification. This inspection shall not involve operation of any shared disconnection or protection devices relating other parties' equipment. Under the terms of British Standard 7671, this shall be considered as the non-intervention part of Routine

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Checks – see BS 7671:2008+A3:2015 and associated Guidance Note 3 (Inspection and Testing, 18th Edition).

3.6.1.10 Where such an inspection identifies defective equipment located within the area of responsibility of the party undertaking the inspection, that party shall undertake any appropriate repairs, having informed the other parties in writing of the nature, extent and timing of such repairs.

3.6.1.11 Where such an inspection identifies defective equipment located outwith the area of responsibility of the party undertaking the inspection, that party shall inform the responsible party in writing of the nature of the Defect. The party responsible for maintenance of the equipment shall then undertake any appropriate repairs, informing the other parties of the nature, extent and timing of such repairs.

Testing

3.6.1.12 Electrical testing as described in BS7671 Requirements for Electrical Installations shall be undertaken jointly by all parties.

3.6.1.13 The timing of such testing shall follow the existing timetables used by the local authority. The Operating Company shall be responsible for liaising with the local authority regarding the timing of such tests.