

Ref:	NR/L2/OTK/5201
Issue:	5
Date:	05 December 2020
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## Level 2

## Manual

# Lineside vegetation management manual

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- Red requirements are to be complied with and achieved at all times.
- Red requirements are presented in a red box.
- Red requirements are monitored for compliance.
- Non-compliances will be investigated and corrective actions enforced.

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**NOTE 2:** The relationship of this standard/control document with legislation and/or external standards is described in the purpose of this standard.

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## Issue record

Issue	Date	Comments
1	March 2018	New document. Replaces all draft versions of NR/L2/TRK/5201 and NR/SP/TRK/05200
2	March 2019	Updated TEF forms to OTK forms
3	September 2019	Updated modules 1 & 2
4	March 2020	Introduction for module 3
5	December 2020	Introduction to module 4

## Reference documentation

NR/L2/OCS/095	High risk sites for wrong side track circuit failures in leaf fall areas and for low rail adhesion
NR/L2/OPS/021	Weather – managing the operational risks
NR/L2/CIV/086/013	Management of vegetation on earthworks
NR/GN/ENV/004	Waste management manual
NR/L2/CTM/014	Competence & Training in Overhead Line Engineering
NR/L3/MTC/MG0176	Ellipse work management handbook
NR/L3/MTC/PL0175	Maintenance planning handbook
NR/L3/MTC/PL0215	Communicating with the public
NR/L2/ENV/122	Biodiversity manual
NR/L2/SIG/10157	Signal sighting
NR/L2/SIG/19608	Level crossing infrastructure inspection & maintenance
NR/L3/TRK/4041	Maintaining track assets at level crossings
NR/GN/TRK/7001	Track Work Information Index
NR/L3/TRK/003/TEF3064	Hazard report for track assets
NR/L2/OTK/5201/F3076	Leaf fall risk assessment
NR/L2/OTK/5201/F3077	Tree hazard: risk evaluation and treatment system (threats and threats-nr)
NR/L2/OTK/5201/F3079	Lineside vegetation inspection
NR/L2/OTK/5201/F3211	Fallen tree incident form
NR/L2/OTK/5201/F3244A	Third party tree notification letter (3PTL)
NR/L2/OTK/5201/F3244B	Third party tree notification letter (3PTLII)
NR/L2/OTK/5201/F3245	Tree risk evaluation & control by non-arboriculturist railway personnel (THREATS-NRP)
NR/L2/OTK/5201/F3269	Supervisory inspection of lineside vegetation
NR/L2/OTK/5201/F3270	Cab ride of lineside vegetation
NR/L2/OTK/5201/F3069	Pesticide application form

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## External References

BS3998  
BS5837

Recommendations for Tree Work  
Trees in relation to design, demolition and  
construction. Recommendations.

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## 1 Purpose

Lineside vegetation management is a process that uses risk assessment to contribute to the sustainable management of the lineside estate and the safe running of the railway infrastructure.

Risk from lineside vegetation is controlled by inspection, management and maintenance. These activities protect the Network Rail workforce and third parties against harm.

Responsible management of vegetation and respecting our neighbours improves the resilience of lineside environments and stakeholder relations.

Lineside vegetation includes areas on the operational railway, closed lines, non-operational or third party land.

Management of lineside vegetation is a control from the threats identified on bow tie 'railway or third party vegetation affecting safety' and controls or mitigates the following risks:

- a) trees within falling distance of the track or third party land;
- b) vegetation affecting:
  - 1. overhead line equipment;
  - 2. signal sighting;
  - 3. level crossing sighting;
  - 4. position of safety/refuge;
  - 5. railway vehicles by damage to rolling stock;
  - 6. railway access;
  - 7. inspection of assets;
  - 8. renewal of other assets; and
  - 9. enhancement projects;
- c) leaf fall affecting the railway;
- d) injurious and invasive weeds; and
- e) damage to railway infrastructure or third parties.

Planned maintenance helps to deliver the most effective management regime once a compliant profile has been achieved.

## 2 Scope

This manual contains:

- a) key principles for the management of risk;
- b) asset knowledge; and
- c) the impact of vegetation on other assets.

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The manual applies to inspecting, managing and maintaining lineside vegetation and all who are involved in those activities.

Out of scope for this process are:

- a) management of vegetation necessary only for the stability and security of earthworks and structures;
- b) management and inspection of vegetation in advance or in response to adverse/severe weather events which is included within NR/L2/OPS/021 'Weather – managing the operational risks'; and
- d) environmental and community requirements for vegetation management.

### 3 Key principle for the management of risk

The key principle that underpins this standard is that risk from lineside vegetation should be understood so that appropriate controls can be selected and applied. Risk may be related to safety, performance, loss of habitat, cost or reputation.

Risks from lineside vegetation are identified, assessed and action is taken to control them. This is a continuous process, using the results of inspections and the full range of lineside vegetation information available.

### 4 Asset Knowledge

Ellipse contains the vegetation asset register and is used when creating the inspection and management plans. It stores the following asset information:

- a) compliance with the requirements of this standard;
- b) output from inspections;
- c) work arising reports for lineside vegetation; and
- d) any work carried out on lineside vegetation.

Accurate and current asset information is required to produce credible inspection and management plans.

### 5 Summary of modules

#### 5.1 Overview

Table 1 provides an overview of modules in this manual.

Module	Title	Issue	Publication date
NR/L2/OTK/5201/MOD01	Lineside vegetation inspection and risk assessment	4	December 2020
NR/L2/OTK/5201/MOD02	Lineside vegetation management requirements.	3	September 2019

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NR/L2/OTK/5201/MOD03	Route vegetation management plans	1	March 2020
NR/L2/OTK/5201/MOD04	Tree Management	1	December 2020

**Table 1 – Module summary**

## 5.2 Lineside vegetation inspection and risk assessment – Module 01

This module prescribes requirements for inspection frequencies, minimum actions and maximum timescales.

This module prescribes the production and implementation of an inspection plan that covers all lineside vegetation.

The purposes of cyclical inspection are to:

- a) assess where vegetation requires action or will require action before the next planned inspection;
- b) assess the risk from trees that are within falling distance of the railway or a third party location;
- c) assess the risk to the railway from Autumn leaf fall;
- d) identify and assess the risk from injurious non-native plants; and
- e) assess lineside vegetation that might be vulnerable during extreme weather events.

This module prescribes the process for investigations following incidents which inform on the cause of failure and whether the asset poses a wider risk.

This module details:

- a) types of inspection – vegetation, tree, leaf fall, cab ride, supervisory, post incident, and reactive;
- b) vegetation inspections procedure;
- c) corrective actions arising from inspection;
- d) management requirements once the inspection has been completed;
- e) updating records; and
- f) hazardous tree remediation process.

## 5.3 Lineside vegetation management requirements – Module 02

### 5.3.1 Principles of management

Lineside vegetation is kept clear to a specified distance from the running line to allow for the safe operation of the railway. Planned maintenance avoids the need for the immediate response and reactive work.



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Lineside vegetation is managed to allow other assets to be inspected and maintained. Management also allows certain assets, for example drainage, to function safely.

Output from inspections, asset information, analysis and local knowledge is used to carry out management work to meet safety, performance and cost targets.

Legislative and environmental restrictions are followed when managing lineside vegetation.

Vegetation management should encourage the establishment of desirable lineside conditions that add value not only to the lineside but also to the surrounding environment in terms of:

- a) connecting environments;
- b) promoting and providing biodiversity;
- c) protecting areas of ecological and historical importance; and
- d) improving the resilience of the vegetation.

Actions to manage vegetation will depend on the zone it grows within.

Zones for the management of vegetation are immediate action, action and alert as described in 5.3.2 – 5.3.4.

### 5.3.2 Immediate action

The Immediate Action Zone describes the area where vegetation is acted upon due to:

- a) contact with trains;
- b) affecting sighting of signalling;
- c) affecting sighting for users of level crossings;
- d) disrupting or damaging overhead line equipment;
- e) obstructing places of safety and safe walking routes; and
- f) trees that pose a risk to safety.

### 5.3.3 Action

The Action Zone profile describes the area where vegetation requires assessment and management for:

- a) tree failure affecting safety;
- b) leaf fall during Autumn; and
- c) encroachment towards the Immediate Action Zone.

### 5.3.4 Alert

The Alert Zone profile describes the area which requires maintenance to provide safe operating conditions for the railway and mitigates the risk posed by:

- a) trees growing to a height and diameter that pose a derailment risk;

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- b) the density of leaf fall; and
- c) vegetation growing towards an area that requires an actionable response.

Continual cyclic vegetation tasks are required to restrict vegetation growth and to limit any negative impact it might have.

This module details:

- a) the vegetation management procedure;
- b) analysis of information;
- c) requirements of intervention;
- d) treatments – chemical, mechanical and motor/manual;
- e) managing vegetation on rock faces and other earthworks;
- f) disposing of cut material and managing tree stumps;
- g) managing invasive non-native species;
- h) updating records and asset information; and
- i) environmental treatments – grazing, planting and re-seeding.

#### 5.4 Route vegetation management plans - Module 03

This document provides the requirements for route asset managers to develop vegetation management plans and sectional asset plans to support the sustainable management of the lineside estates and its habitats.

This module details:

- a) The requirements contained within a route vegetation management plan; and
- b) the requirements contained within a sectional asset plan.

#### 5.5 Tree Management – Module 04

This document provides the requirements for collecting data to establish the level of tree risk, to assign interventions and to understand the impact of intervention so that informed decisions can be made for tree management.

This module details:

- a) The requirements for collecting data during survey and inspection;
- b) the requirement for selecting the intervention type;
- c) the methods for assessing the impact of tree management;
- d) the requirements for identifying and applying protection measures to protected and important trees;
- e) the requirements selecting appropriate tree work interventions; and
- f) the requirements for setting out a tree planting plan.

Trees might fall and cause injury to people or damage to property either on Network Rail land or on adjacent land.

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It is important that the risk posed by trees is understood so that actions can be undertaken to avoid safety related incidents.

It is important that any works carried out on trees apply reasonable care and take necessary steps to avoid adversely affecting some of the benefits claimed for trees.

## 6 Definitions

Term	Definition
Arisings	Material resulting from management and maintenance operations which requires control or removal.
Ballasted area	Between the outside edges of the ballast shoulders, including the four foot, six foot and ten foot.
Banded / banding	With respect to logs using, for example, steel fencing wire and staples to secure small dimension timbers to reduce the risk of logs moving to unwanted locations
Biodiversity	The variability of plant and animal species within lineside habitats
Cambium	A layer that exists between the bark and the wood that assists in the growth of the tree.
Cess	The ground from the outer edge of the ballasted area to 3 metres from the running rail.
Cess Strip	The ground area 3 to 5 metres from the running rail.
Closed line	A line that is legally closed but where land is still in ownership of Network Rail.
Conservation Areas	Designated areas within settlements where consent from the Local Planning Authority is required for a greater range of development activities than is the case elsewhere.  <b>NOTE:</b> Local Authority websites can be consulted for the locations of conservation areas and the restrictions that apply.
Consents	Approval of conditions set out under licence application or written authorisations placed by an authority or landowner.

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Term	Definition
Coppice regrowth	The production of new growth from a cut tree stump.
Corrective action	An intervention designed to fully restore the asset to the desired operating condition. <b>NOTE:</b> Undertaken to complete work as a follow up to temporary measures undertaken during an immediate response.
Cutting slope angle	Steepness of the slope measured from the horizontal.
Disused / moth-balled line	A line that is not in use but is still legally available to train and freight operating companies.
Diameter Breast Height (DBH)	Diameter of a tree trunk measured at breast height using a specialist tape that provides the diameter of the tree by taking a measure round its circumference.  <b>NOTE:</b> Measured at 1.3 metres above ground level – when trees on slopes are measured, this should be done from the ‘up-slope’ side of the tree
Ellipse	Network Rail data management system
Flail	Using a flail mower, a type of powered agricultural equipment, which is used to deal with heavier grass/scrub.
Forest Industry Safety Accord	Forest Industry accredited good practice for raising the standard of health, safety and welfare in the work place.
Habitats	The environment where plant and animal species normally live
Hazardous tree	A tree, which may have significant defects, that poses a risk to either the railway or a third party.

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Term	Definition
High risk leaf fall species	Sycamore ( <i>Acer pseudoplatanus</i> ), ash ( <i>Fraxinus excelsior</i> ), sweet chestnut ( <i>Castanea sativa</i> ), horse chestnut ( <i>Aesculus hippocastanum</i> , lime ( <i>Tilia</i> species).), poplar ( <i>Populus</i> ) species – except aspen ( <i>P. tremula</i> ).
Immediate Response	An initial intervention undertaken to mitigate a safety or performance issue. <b>NOTE:</b> Undertaken within a specified timeframe to prevent the safety or performance issue getting worse
Intervention	Action taken to make an improvement or prevent the condition of vegetation getting worse.
Invasive Non Native Species	Relevant plants listed in The Weeds Act 1959, The Wildlife and Countryside Act 1981 (as amended), Wildlife & Natural Environment (Scotland) Act 2011 for Scotland and Invasive Alien Species Regulations 2014. <b>NOTE:</b> This includes other railway 'problem plants' not specifically listed in legislation, including horsetail and buddleia.
Lineside	The area between the ballasted area and the boundary measure.
Lineside estate	The extensive area of land that falls within the ownership boundary.
Lineside assets	Infrastructure assets on the lineside that require vegetation management. <b>NOTE:</b> These include but are not limited to the following: cess paths, walking routes, troughing/cable routes, access steps, access roadways, location cabinets/rooms, lineside buildings, equipment housing, signalling gantries, and overhead line equipment stanchions.
Lineside operational signs	Those that provide instruction or information to train drivers, train crew or those working on the railway.
Maintenance	Activities that keeps vegetation in a compliant state.
Management	Extensive work on vegetation to achieve a compliant profile.

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Term	Definition
Manual operations	The use of hand held tools for the management of vegetation and boundaries.
Mechanical operations	The use of plant and machinery for the management of vegetation.
Network Operations	This term refers to Route Operations Control for older locations, and Rail Operating Centre for newer
Operational Control measures	Actions separate to the removal of vegetation that lower the risk. <b>NOTE:</b> <i>these may include speed restrictions or placing a watchman.</i>
Rapid response	Where teams or individuals are required to react immediately when they discover the matter, or it is reported to them. <b>NOTE:</b> <i>This will be in response to safety of the line incidents managed through Network Operations.</i>
Reactive inspection	Inspection generated from reports by Network Operations or third parties.
Habitat resilience	The capability of vegetation to recover from an intervention positively.
Rock cutting	Steep sided excavation through rock, chalk or interbedded rock and soil.
Selective felling	Individual trees within a group of other trees that are identified and removed.
Species Control Agreement	An agreement made between an environmental authority and an owner of premises that sets out operations that are required to be taken against an invasive non-native species or formerly resident native species. <b>NOTE:</b> <i>An owner could be the freeholder, leaseholder or a person who exercises powers of management or control over the land.</i>
Stump diameter	A measurement recording of the longest straight line across and passing through the centre of a tree stump.

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Term	Definition
	 <p><b>NOTE:</b> For a coppice stool this includes the full extent of the stool.</p>
Vegetation Inspection	Activity to visually assess the condition of vegetation.
Tree	For risk management purposes trees are recorded where they are identified as 150mm diameter and above at breast height and have grown to a height of 3 metres and above.
Vegetation management plan	The activities required to achieve and maintain the desired vegetation profile over a given length of time.
Windrowing	Linear piles of branch and stem material, often used when access issues prevent use of a chipper; may be specified as part of environmental conditions creating biodiversity habitat.
Wind-throw	Uprooting or breakage of trees caused by strong winds, resulting in fallen trees with the root plate attached or broken parts of trees on the ground.
Woodland	Trees and shrubs that have grown naturally or through management, into a collection of trees, in locations adjacent to or within land set aside or managed for woodland or forestry.
Woody vegetation	Trees and shrubs. <b>NOTE:</b> This includes Other weeds that can be harmful such as brambles or weeds of a size and density that could cause obstruction where they are found up to 3 metres from the running rail and 1 metre around lineside assets.

Table 2 – Terms and definitions

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## 7 Abbreviations

For the purpose of this standard the abbreviations in Table 3 apply.

Abbreviation	Description
AFAG	Arboriculture and Forestry Advisory Group. <b>NOTE:</b> AFAG is an advisory group of the Health and Safety Executives (HSE's) Agriculture Industry Advisory Committee (AIAC).
ALCRM	All Level Crossing Risk Assessment Model
AWR	Authorised Walking Route
BASIS	British Agrochemical Standards Inspection Scheme. <b>NOTE:</b> An independent organisation (BASIS Registration Ltd) set up to advise the UK Government and to specify and assess standards in the pesticide industry relating to storage, transport and competency.
ENV	Environment and Sustainability
FISA	Forest Industry Safety Accord
FMS	Fault Management System, utilised by operations control
GIS	Geographical Information System
HSE	Health and Safety Executive
IC	Incident Controller
INNS	Invasive Non-Native Species
LiDAR	Light Detection and Ranging
IMPC	Infrastructure Maintenance Protection Coordinator
MST	Maintenance Scheduled Task
NR	Network Rail
OLE	Overhead Line Equipment
ORCC	Operations Risk Control Coordinator
OTK	Off-Track
PSR	Permanent Speed Restriction
RAM	Route Asset Manager
SM[OT]	Section Manager [Off Track]
SSSI	Site of Specific Scientific Interest
OTK/F	Off Track Form



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<b>Abbreviation</b>	<b>Description</b>
THREATS	Tree Hazard: Risk Evaluation and Treatment System
TME	Track Maintenance Engineer
WAIF	Work Arising Information Form
WO	Work Order

**Table 3 - Abbreviations**

## Standard and control document briefing note

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<b>Title:</b> Lineside Vegetation Management Manual	
<b>Publication date:</b> 05 December 2020	<b>Compliance Date:</b> 05 June 2021
<b>Standard/Control Document Owner:</b> Professional Head Drainage Off-track & Asset Protection	
<b>Technical lead/contact for briefings:</b> Graham Owen	<b>Tel:</b> 07515621583
<p><b>Purpose:</b></p> <p>Lineside vegetation management is a process that uses risk assessment to contribute to the sustainable management of the lineside estate and the safe running of the railway infrastructure.</p> <p>Risk from lineside vegetation is controlled by inspection, management and maintenance. These activities protect the Network Rail workforce and third parties against harm.</p> <p>Responsible management of vegetation and respecting our neighbours improves the resilience of lineside environments and stakeholder relations. Lineside vegetation includes areas on the operational railway, closed lines, non-operational or third party land.</p> <p>Management of lineside vegetation is a control from the threats identified on bow tie 'railway or third party vegetation affecting safety' and controls or mitigates the following risks:</p> <p>a) trees within falling distance of the track or outside party land;</p> <p>b) vegetation affecting:</p> <ol style="list-style-type: none"> <li>1. overhead line equipment;</li> <li>2. signal sighting;</li> <li>3. level crossing sighting;</li> <li>4. position of safety/refuge;</li> <li>5. railway vehicles by damage to rolling stock;</li> <li>6. railway access;</li> <li>7. inspection of assets;</li> <li>8. renewal of other assets; and</li> <li>9. enhancement projects;</li> </ol> <p>c) leaf fall affecting the railway;</p> <p>d) injurious and invasive weeds; and</p> <p>e) damage to railway infrastructure or third parties.</p> <p>Planned maintenance helps to deliver the most effective management regime once a compliant profile has been achieved.</p>	<p><b>Scope:</b></p> <p>This manual contains:</p> <ol style="list-style-type: none"> <li>a) key principles for the management of risk;</li> <li>b) asset knowledge; and</li> <li>c) the impact of vegetation on other assets.</li> </ol> <p>The manual applies to inspecting, managing and maintaining lineside vegetation and all who are involved in those activities.</p> <p>Out of scope for this process are:</p> <ol style="list-style-type: none"> <li>a) management of vegetation necessary only for the stability and security of earthworks and structures;</li> <li>b) management and inspection of vegetation in advance or in response to adverse/severe weather events which is included within NR/L2/OPS/021 'Weather – managing the operational risks'; and</li> <li>d) environmental and community requirements for vegetation management.</li> </ol>
<p><b>Overview of change</b></p> <p>Introduction of module 04 to the Vegetation Management Manual.</p> <p>This module details:</p> <ul style="list-style-type: none"> <li>• The requirements for collecting data during survey and inspection;</li> <li>• the requirement for selecting the intervention type;</li> <li>• the methods for assessing the impact of tree management;</li> <li>• the requirements for identifying and applying protection measures to protected important trees;</li> <li>• the requirements for selecting appropriate tree work interventions; and</li> <li>• the requirements for setting out a tree planting plan.</li> </ul> <p>This module sets out the steps required for undertaking the management of trees.</p> <p>Update to Module 01 Lineside Inspection and Risk Assessment to update the tree inspection process.</p> <p>This update includes:</p> <ul style="list-style-type: none"> <li>• The introduction of remote survey and its frequency;</li> <li>• an update to the on foot tree inspection frequency; and</li> <li>• an update to the annual review of inspection plans.</li> </ul> <p>To align the frequency of tree inspection with the requirements set out in module 04.</p>	

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**Reasons for change**

This change is to address inconsistencies applied to collecting data on trees and how the data is used for undertaking work on trees.

**Affected documents:**

*Impact*

NR/L2/OTK/5201 ISSUE 4	Superseded
NR/L2/OTK/5201/01 ISSUE 3	Superseded
NR/L2/OTK/5201/04 ISSUE 1	New

**Briefing requirements:**

**Will Briefing Management System be used to deliver the briefing to posts listed below? No**

*Technical briefings are given to those who have specific responsibilities within this standard/control document.*

*Awareness briefings are given to those who might be affected by the content but have no specific responsibilities within the standard/control document.*

*Details of the briefing arrangements are included in the associated briefing programme.*

*All posts identified for briefing must be as described in OrgPlus.*

*Roles are directly briefed and do not cascade briefings.*

<b>Briefing</b> <i>(A-Awareness/ T-Technical)</i>	<b>Post</b>	<b>Function</b>	<b>Responsible for cascade briefing? Y/N</b>
T	Regional Engineer [Track]	Southern Region	Y
T	Regional Engineer [Track]	Wessex Region	Y
T	Regional Asset Manager [Track and Lineside]	Scotland Region	Y
T	Regional Asset Manager [Track]	Wales & Western Region	Y
T	Route Engineer [Drainage & Off Track]	Eastern Region	Y
T	Principle Route Engineer [Drainage & Off Track]	North West & Central Region	Y
T	Senior Asset Engineer (Support) [Lineside]	Scotland Region	Y
T	Senior Asset Engineer (Support) [Lineside]	Southern Region	Y
T	Senior Asset Engineer (Drainage and Lineside)	Wales & Western Region	Y
T	Senior Asset Engineer [Drainage & Off Track]	Region	Y
T	Asset Engineer [Drainage & Off Track]	Region	Y
T	Asset Engineer (Support) [Lineside]	Region	Y
T	Project Manager (Works Delivery) [Off Track]	Region	Y
T	Track Maintenance Engineer [Off Track]	Region	Y
T	Section Manager [Off Track]	Region	Y
T	Works Delivery Manager	Region	Y
T	Programme Manager (Works Delivery) [Off Track]	Region	Y
A	Route Asset Manager [Geotechnics]	Region	N
A	Track Maintenance Engineer	Region	N

**NOTE:** Contractors are responsible for arranging and undertaking their own Technical and Awareness Briefings in accordance with their own processes and procedures.