

Network Rail Freedom of Information The Quadrant Elder Gate Milton Keynes MK9 1EN

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25th May 2018

Dear

Information request Reference number: FOI2018/00545

Thank you for your email of 4th May 2018, addressed to our chief executive, Mark Carne, regarding tree felling and biodiversity.

We have processed your email as a request under the Environmental Information Regulations 2004 (EIR) and responses to your questions are provided later in this letter.

At Network Rail, we take very seriously our responsibility to keep the railway and the natural environment around it safe.

In recent media reports, there has been a lot of inaccurate coverage of how Network Rail manages trees and other vegetation that grows alongside the railway. To be clear, we do not have a national tree felling programme and we certainly do not have any plans to cut down all of the trees on our estate.

We believe we can enhance biodiversity whilst still running the railway safely. But it's much more complex than has recently been portrayed. By proactively managing vegetation we think we can find a win-win solution – protecting the environment and meeting our need, reinforced by the regulator, to remove trees and vegetation as necessary to maintain a safe and reliable railway. I have attached a copy of a briefing note which may be helpful.

Further information about our approach and policies is available on our website at these links, including copies of documents:

https://www.networkrail.co.uk/managing-railways-habitats/

https://www.networkrail.co.uk/feeds/working-with-nature-by-the-railway/

https://www.networkrail.co.uk/communities/environment/sharing-railway-wildlife/treesand-the-railway/

I can confirm that we hold some of the information you requested. In response to your questions:

1. Are you confident that Network Rail has adequate processes and checks in place to ensure that all vegetation and tree-felling work is being done within the law and with reference to the Wildlife and Countryside Act?

We have dealt with this question as a general enquiry rather than a request under the EIR because this question asks for our opinion rather than seeking environmental information held in our records.

As one of Britain's largest landowners, we take seriously our responsibilities to the natural environment and the communities we serve. We are confident that we have adequate processes and checks in place to ensure that all vegetation and tree-felling work is being done within the law and with reference to the Wildlife and Countryside Act 1981.

2. The report linked to above states that Network Rail has refused to provide the Guardian with its database of trees or reveal how many of the 10m trees identified alongside the tracks have been earmarked for felling. Is that correct and if so, please can you explain the reasons for refusing to provide this information?

That is not correct. The Guardian report contained a number of inaccuracies. We did not refuse to provide data to The Guardian. We conducted an aerial survey which identified 13 million trees that are within 60 metres of the railway, this includes trees not on Network Rail property. Of these 13 million trees, approximately 6 million are on the Network Rail estate.

3. The Guardian report also states Network Rail has used drones to create an aerial map of its 40,000 hectares of railway and identified "hotspots" where mature trees might cause a problem at an unspecified time in the future. Please can you list the number and location of these "hotspots"?

The Guardian report contained a number of inaccuracies. Network Rail conducted an aerial survey along the railway and 60 metres either side to create an online map.

This map shows us the location and condition of Network Rail's assets. Using this data, we can measure the height of vegetation which helps us to target only those trees that pose a risk to the railway if they were to fall. The aerial survey was done by helicopter; we did not use drones. The Network Rail estate covers 50,000 hectares.

4. How many trees did Network Rail remove in the last 12 months? If the exact number is difficult to calculate, please can you provide a rough estimate?

Operation of the railway network is devolved to eight routes ¹; any management works are planned by the routes and considered in relation to whether trees pose a risk to the safe management and operation of the railway.

Where we have carried out work to manage the trees and other vegetation, we measure this by area of land (in square metres), not by the number of trees. Measuring by area is a standard way of measuring, as used for example by the Forestry Commission. It is therefore not possible to calculate an exact number. However, as a rough estimate, we have cut down approximately 50,000 trees in the last 12 months, which has resulted in estimates of between 1-3 trees per mile. This is less than 1% of the trees on our estate.

5. How much has Network Rail spent on tree removal in the last 12 months?

In the last 12 months, we spent £42 million on vegetation management. This includes <u>all</u> types of vegetation management from tree work to grass cutting and knotweed management.

6. Do Network Rail engineers and contractors consistently commission high quality ecological surveys before clearing trees/vegetation works?

We take our environmental obligations extremely seriously and we manage our lineside to provide healthy biodiversity, advised by experts in the field.

We conduct breeding bird surveys; we also take steps to identify the possible presence of other protected species on our infrastructure and have access to independent ecologists to undertake specific surveys where necessary.

7. What training do Network Rail's frontline workforce receive to enable them to undertake clearing activities? What checks are made on the standard of competence of contractors in relation to biodiversity? Does the training standard include, for

¹ <u>https://www.networkrail.co.uk/running-the-railway/our-routes/</u>

example, the required knowledge to identify the presence of Protected Species, including birds, bats, dormice, badgers, amphibians and reptiles?

We have contracts with a number of suppliers under our ecology framework to undertake surveys of the lineside habitat prior to work being carried out. Our frontline workforce receive 'toolbox talks' to help them identify situations where further advice and assistance is needed. The talks are available at:

https://safety.networkrail.co.uk/home-2/environment-and-sustainabledevelopment/environment/ecology-biodiversity/toolbox-talks/

8. How highly does biodiversity feature in your strategic business plans for the next control period? Given the serious concerns that major improvements are needed, will you be re-evaluating this?

As part of devolution, each of our routes and central functions has a strategic business plan. The summary of the strategic business plan² explains that:

'Our Responsible Railway Plan sets the framework for improving sustainable business performance, delivering social value and maximising opportunities for socio-economic growth. Our programmes to protect the natural environment focus on having a net-positive impact on biodiversity and reducing waste sent to landfill to near zero. Our management of vegetation alongside the railway has the potential to support a wide range of habitats. We are also exploring alternatives to removing trees, such as pollarding. These approaches both support biodiversity and the safe, efficient running of the railway.'

I have attached a copy of the guide to the Responsible Railway Plan.

As you are perhaps already aware, on 10th May 2018 the Rail Minister announced an independent review into the way we manage lineside vegetation on the railway. We welcome this review and, pending its outcome, we have agreed to suspend any non-safety critical vegetation management during the current nesting season in England and Wales.

9. How many metres from the running lines is vegetation supposed to be maintained/removed in the current and next control period, and are checks being made to ensure that the standard is not being exceeded?

² <u>https://cdn.networkrail.co.uk/wp-content/uploads/2018/02/CP6-Strategic-Business-Plan-</u> <u>Comprehensive-Executive-Summary.pdf</u>

We routinely clear vegetation from the area immediately next to the track. Where trains run at higher speeds, in cuttings or embankments, or where there are level crossings or overhead line equipment, we may need to clear vegetation further back, up to 6 metres.

The attached 'Vegetation Management explained' briefing note contains a diagram on page 4 which sets out these requirements. <u>https://cdn.networkrail.co.uk/wp-content/uploads/2018/05/Vegetation-Management-explained.pdf</u>

10. Will Network Rail commit to a like for like replacement of trees lost from the network, planted to benefit local communities?

We have dealt with this question as a general enquiry, rather than a request under the EIR because this question asks to make a commitment rather than seeking environmental information held in our records.

We are adopting the principle of biodiversity accounting, which incorporates metrics and calculations endorsed by DEFRA, so that we can measure the impact that our infrastructure development and maintenance works have on biodiversity. However, we don't have a fixed target for compensating for tree loss, habitat loss, or changes in biodiversity valuation as a consequence of our maintenance or upgrade work.

In November 2017 we launched a new biodiversity accounting tool, the Network Rail Biodiversity Calculator. Projects may adopt local targets to achieve 'no net loss' or 'net gain' biodiversity outcomes, and can use the Biodiversity Calculator to measure any losses and biodiversity score reductions and invest in compensation measures and off-setting arrangements so that there is no loss, or an increase, in natural habitat as a result of that project. We are piloting targets of net positive biodiversity on specific infrastructure projects, including Gospel Oak to Barking and Thameslink. The Thameslink programme was also named by DEFRA as a demonstration project for its part in the national pilot test on biodiversity offsetting.

If you have any enquiries about this response, please contact me in the first instance at FOI@networkrail.co.uk or on 01908 782405. Details of your appeal rights are below.

Please remember to quote the reference number at the top of this letter in all future communications.

Yours sincerely

Danielle Stratton Information Officer

Appeal Rights

If you are unhappy with the way your request has been handled and wish to make a complaint or request a review of our decision, please write to the Head of Freedom of Information at Network Rail, Freedom of Information, The Quadrant, Elder Gate, Milton Keynes, MK9 1EN, or by email at <u>foi@networkrail.co.uk</u>. Your request must be submitted within 40 working days of receipt of this letter.

If you are not content with the outcome of the internal review, you have the right to apply directly to the Information Commissioner for a decision. The Information Commissioner can be contacted at:

Information Commissioner's Office Wycliffe House Water Lane Wilmslow Cheshire SK9 5AF

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Level 2

Manual

Lineside vegetation management manual

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User information

This Network Rail document contains colour-coding according to the following Red–Amber–Green classification.

Red requirements – no variations permitted

- 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.

Amber requirements – variations permitted subject to approved risk analysis and mitigation

- Amber requirements are to be complied with unless an approved variation is in place.
- Amber requirements are presented with an amber sidebar.
- Amber requirements are monitored for compliance.
- Variations can only be approved through the national variations process.
- Non-approved variations will be investigated and corrective actions enforced.

Green guidance - to be used unless alternative solutions are followed

- Guidance should be followed unless an alternative solution produces a better result.
- Guidance is presented with a dotted green sidebar.
- Guidance is not monitored for compliance.
- Alternative solutions should be documented to demonstrate effective control.

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Compliance

This Network Rail standard/control document is mandatory and shall be complied with by Network Rail Infrastructure Limited and its contractors if applicable from 01 April 2019.

Where it is considered not reasonably practicable¹ to comply with the requirements in this standard/control document, permission to comply with a specified alternative should be sought in accordance with the Network Rail standards and controls process, or with the Railway Group Standards Code if applicable.

If this standard/control document contains requirements that are designed to demonstrate compliance with legislation they shall be complied with irrespective of a project's Governance for Railway Investment Projects (GRIP) stage. In all other circumstances, projects that have formally completed GRIP Stage 3 (Option Selection) may continue to comply with any relevant Network Rail standards/control documents that were current when GRIP Stage 3 was completed.

NOTE 1: Legislation includes Technical Specifications for Interoperability (TSIs).

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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¹ This can include gross proportionate project costs with the agreement of the Network Rail Assurance Panel (NRAP).

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Issue record

Issue	Date	Comments		
1	March 2018	New document. Replaces NR/L2/TRK/5201 and NR/SP/TRK/05200.		
Reference	e documentation			
NR/L2/O	CS/095	High risk sites for wrong side track circuit failures in leaf fall areas and for low rail adhesion		
NR/L2/O	PS/021	Weather – managing the operational risks		
NR/GN/E	NV/004	Waste management manual		
NR/L2/C	TM/014	Competence & Training in Overhead Line Engineering		
NR/L3/M	TC/MG0176	Ellipse work management handbook		
NR/L3/M	TC/PL0175	Maintenance planning handbook		
NR/L3/M	TC/PL0215	Communicating with the public		
NR/L3/M	TC/EN0099	Protected sites and species management		
NR/L2/SI	G/10157	Signal sighting		
NR/L2/SI	G/19608	Level crossing infrastructure inspection & maintenance		
NR/L3/T	RK/4041	Maintaining track assets at level crossings		
NR/GN/T	RK/7001	Track Work Information Index		
NR/L3/TI	RK/003/TEF3064	Hazard report for track assets		
NR/L3/TI	RK/003/TEF3076	Leaf fall risk assessment		
NR/L3/TI	RK/003/TEF3077	Tree hazard: risk evaluation and treatment system (threats and threats-nr)		
NR/L3/TI	RK003/TEF3079	Lineside vegetation inspection		
NR/L3/T	RK/003/TEF3211	Fallen tree incident form		
NR/L3/TI	RK/003/TEF3244A	Third party tree notification letter (3PTL)		
NR/L3/TI	RK/003/TEF3244B	Third party tree notification letter (3PTLII)		
NR/L3/TI	RK/003/TEF3245	Tree risk evaluation & control by non- arboriculturist railway personnel (THREATS- NRP)		
NR/L3/T	RK/003/TEF3269	Supervisory inspection of lineside vegetation		
NR/L3/TF	RK/003/TEF3270	Cab ride of lineside vegetation		
External	References			

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 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. 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.

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

Responsible management of vegetation and respecting our neighbours improves the lineside, environment and stakeholder relations.

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.

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

Out of scope for this process are:

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- 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 has to be understood so that appropriate controls can be selected and applied. Risk may be related to safety, performance, 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. Modules 01 and 02 have been published with issue 1 of this standard. Modules 03 to 06 will be published subsequently.

Module	Title	Issue	Publication date
NR/L2/OTK/5201/01	Lineside vegetation inspection and risk assessment	1	March 2018
NR/L2/OTK/5201/02	Lineside vegetation management requirements	1	March 2018

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NR/L2/OTK/5201/03	Ecological and community requirements	1	TBC
NR/L2/OTK/5201/04	Lineside vegetation management codes of practice	1	TBC
NR/L2/OTK/5201/05	Third party hazardous tree notification	1	TBC
NR/L2/OTK/5201/06	Information on legal requirements	1	TBC

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.

Investigations following incidents 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.

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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.

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.

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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;
- 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.

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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
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.
	NOTE: Local Authority websites can be consulted for the locations of conservation areas and the restrictions that apply.
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.
	NOTE : Undertaken to complete an asset repair or return the asset to a safe condition often as a follow up to immediate action undertaken during rapid response.
Cutting slope angle	Steepness of the slope measured from the horizontal.

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Term	Definition
Disused / moth-balled line	A line that is not in use but is still legally available to train and freight operating companies.
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.
Hazardous tree	A tree, which may have significant defects, that poses a risk to either the railway or a third party.
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 species</i>).), poplar (<i>Populus</i>) species – except aspen (<i>P. tremula</i>).
Immediate Response	An initial intervention undertaken to remove the cause of an undesirable condition.
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.
	NOTE: 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 assets	Infrastructure assets on the lineside that require vegetation management.
	NOTE: 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.

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Term	Definition
Maintenance	Activities that keeps vegetation in a compliant state.
Management	Extensive work on vegetation to achieve a compliant profile.
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.
	NOTE: these may include speed restrictions or placing a watchman.
Rapid response	Where teams or individuals are required to react immediately when they discover the matter or it is reported to them.
	NOTE: This will be in response to safety of the line incidents managed through Network Operations.
Reactive inspection	Inspection generated from reports by Network Operations or third parties.
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.
	NOTE: An owner could be the freeholder, leaseholder or a person who exercises powers of management or control over the land.

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Term	Definition
Stump diameter	A measurement recording of the longest straight line across and passing through the centre of a tree stump.
	NOTE: For a coppice stool this includes the full extent of the stool.
Vegetation Inspection	Activity to visually assess the condition of vegetation.
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.
Woody vegetation	Trees and shrubs.
	NOTE: 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 shall apply.

Abbreviation	Description
	Arboriculture and Forestry Advisory Group.
AFAG	NOTE: 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
	British Agrochemical Standards Inspection Scheme.
BASIS	NOTE: An independent organisation (BASIS Registration <i>Ltd</i>) set up to advise the UK Government and to specify and assess standards in the pesticide industry relating to storage, transport and competency.
DBH	Diameter of a tree trunk measured at breast height. With the set of the set
ENV	Environment and Sustainability
FISA	Forest Industry Safety Accord
FMS	Fault Management System, utilised by operations control
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

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Abbreviation	Description
ORCC	Operations Risk Control Coordinator
ОТК	Off-Track
PSR	Permanent Speed Restriction
RAM	Route Asset Manager
SM[OT]	Section Manager [Off Track]
SSSI	Site of Specific Scientific Interest
TEF	Track Engineering Form
THREATS	Tree Hazard: Risk Evaluation And Treatment System
ТМЕ	Track Maintenance Engineer
WAIF	Work Arising Information Form
WO	Work Order

Table 3 – Abbreviations



Standard and control document briefing note

Ref: NR/L2/OTK/5201	Issue: 01			
Title: Lineside vegetation management manual				
Publication date: 03 March 2018	Compliance Date: 01 April 2019			
Standard/Control Document Owner: Head of Lineside				
Technical lead/contact for briefings: Graham Owen Senior Trad	ck & Lineside Engineer Tel: 07515621583			
Purpose:	Scope:			
Lineside vegetation management is a process that uses	This manual contains:			
risk assessment to contribute to the safe running of the railway infrastructure.	a) key principles for the management of risk;			
Risk from lineside vegetation is controlled by inspection,	b) asset knowledge; and			
management and maintenance. These activities protect the Network Rail workforce and third parties against harm	c) the impact of vegetation on other assets.			
Lineside vegetation includes areas on the operational railway, closed lines, non-operational or third party land	The document applies to inspecting, managing and maintaining lineside vegetation and all who are involved in those activities.			
Management of lineside vegetation is a control from the threats identified on bow tie trailway or third party	Out of scope for this process are:			
vegetation affecting safety' and controls or mitigates the following risks:	 d) management of vegetation necessary only for the stability and security of earthworks and structures; 			
 a) trees within falling distance of the track or third party land; 	 e) management and inspection of vegetation in advance or in response to adverse/severe weather 			
b) vegetation affecting:	events which is included within NR/L2/OPS/021 'Weather – managing the operational risks'; and			
1. overhead line equipment;	f) environmental and community requirements for			
2. signal sighting;	vegetation management.			
3. level crossing sighting;				
position of safety/refuge;				
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.				
Cyclical maintenance helps to deliver the most effective management regime once a compliant profile has been achieved.				
Responsible management of vegetation and respecting our neighbours improves the lineside, environment and stakeholder relations.				

What's new/ what's changed:

This is a new standard control document.

This document replaces NR/L2/TRK/5201 ISSUE 4.

The Lineside vegetation management manual introduces the following supporting modules:

- a) NR/L2/OTK/5201/01 Lineside Vegetation and Risk Assessment; and
- b) NR/L2/OTK/5201/02 Lineside Vegetation Management Requirements.

NOTE: It is the duty of those briefed or notified, to read through this document and familiarise themselves with its content.

Document	Summary of Content
Lineside vegetation management manual	 This document contains: a) The principles of lineside management; b) Principles on asset knowledge; and C) An overview of supporting modules and their content.
Lineside vegetation inspection & risk assessment	 This document contains: a) inspection of vegetation on Network Rail operational infrastructure; b) targeted survey of trees to ascertain likelihood of failure; c) considering the impact of vegetation on other assets; d) visual assessment of third party vegetation that has the potential to affect rail safety or performance; and e) inspection of vegetation on Network Rail disused lines, closed lines, and other non-operational land.
Lineside Vegetation Management requirements	 This document contains: a) the requirements for the management of lineside vegetation; b) the extents of the intervention zones, including actions required, form the core of this module; and c) management of vegetation on other assets.

Reasons for change:

The Lineside vegetation management manual provides new profiles that are designed to encourage clearance that will avoid a reactive approach and to manage trees that are large enough to pose a derailment risk. It introduces the requirement to intervene within a specified timeframe where vegetation poses a safety risk.

Affected documents: Reference NR/L2/OTK/5201 ISSUE 1 NR/L2/OTK/5201/01 ISSUE 1 NR/L2/OTK/5201/02 ISSUE 1 NR/L2/TRK/5201 ISSUE 4 NR/L1/TRK/05200 ISSUE 2	Impact New New Withdrawn Withdrawn
Briefing requirements:	

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. Briefing **Responsible for** Post Function cascade briefing? (A-Awareness/ Y/N T-Technical) DRAM Т Route Asset Management Т Route Asset Manager M (responsible for Offtrack) Route Asset Management Y Y Т Senior Asset Engineer (Lineside) Route Asset Management Т Asset Engineer (Lineside) Route Asset Management Ν А IMDM Maintenance Ν IME А Maintenance Ν Track Maintenance Engineer (TME Ν А Maintenance Section Manager (Offtrack) Т Maintenance Y Т Project Manager Offtrack (Wales Route) Υ Maintenance А Infrastructure Maintenance Protection Coordinator Maintenance Ν Y А Works Delivery Manager Works Delivery

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

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NR/L2/OTK/5201

Module 01

Lineside vegetation inspection and risk assessment

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User information

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- Red requirements are to be complied with and achieved at all times.
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- Non-compliances will be investigated and corrective actions enforced.

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- Amber requirements are to be complied with unless an approved variation is in place.
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Green guidance - to be used unless alternative solutions are followed

- Guidance should be followed unless an alternative solution produces a better result.
- Guidance is presented with a dotted green sidebar.
- Guidance is not monitored for compliance.
- Alternative solutions should be documented to demonstrate effective control.

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1 Scope

In scope are:

- a) inspection of vegetation on Network Rail operational infrastructure;
- b) targeted survey of trees to ascertain likelihood of failure;
- c) considering the impact of vegetation on other assets;
- d) visual assessment of third party vegetation that has the potential to affect rail safety or performance; and
- e) inspection of vegetation on Network Rail disused lines, closed lines, and other non-operational land.

Out of scope are:

- a) inspections of third party owned structures to protect or investigate allegations of suspected structural damage due to vegetation growth, the process for which is controlled by Network Rail Legal Services;
- b) Geotechnical inspections of earthworks specifically relating to the stability that might be offered by vegetation; and
- c) environmental and community assessments of proposed lineside vegetation work.

2 Vegetation inspection plan

2.1 Planning protocol

An inspection plan shall be in place for all lineside vegetation.

The inspection plan shall also include visual assessment of third party vegetation where it poses a risk to the railway.

Inspection plans shall be set and progressed from last scheduled dates and not the last performed dates.

Undertake all inspections at the minimum frequencies shown in Table 1.

If the planning interval is exceeded, complete the inspection before the 'maximum interval between inspections' timescale shown in Table 1 has been exceeded.

Vegetation inspections, with the exception of post-incident inspections, shall be planned to take place between 1st April and 31st October.

NOTE 1: The timing of the inspection is important as when vegetation is in leaf defects will be more easily identified.

Vegetation inspections shall be planned in Ellipse.

NOTE 2: Consult NR/L3/MTC/MG0176 for instructions on how to create Maintenance Scheduled Task (MST) or Work Orders (WO).

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Type and TEF	Extent	Method	Minimum Frequency	Maximum Interval between inspections
Vegetation on-foot inspection NR/L3/TRK/003/TEF3079	All Operational ELRs Disused and closed lines, and other non- operational land	On foot	36 months	44 months
Cab ride of lineside vegetation NR/L3/TRK/003/TEF3270	All operational ELRs	Cab or video	12 months	16 months
Tree inspection NR/L3/TRK/003/TEF3077	All Operational ELRs Disused and closed lines, and other non- operational land	On foot	60 months	68 months
	Where a (current) approved remote survey has been carried out the extent can be limited to trees identified as posing a risk			
Leaf fall inspection NR/L3/TRK/003/TEF3076	All Operational ELRs	On foot	60 months	68 months

Table 1 – Inspection frequency

2.2 Review of inspection plans

Review the plan and associated frequencies of inspection annually.

Update any revisions to the inspection plan in ellipse.

NOTE 1: Locations where high risk trees have yet to be mitigated or where vegetation cannot be routinely managed outside of the immediate action zone may indicate that an increase in inspection frequency is required.

NOTE 2: Where growth rates alter, inspection frequencies should be reviewed.

3 Carry out vegetation on foot inspection

3.1 Inspection protocol

Where unsafe situations are found during the inspection, call Control and request protection for the railway or third party. The protection shall remain in place until the unsafe condition has been removed.

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The inspection shall assess risk posed by vegetation within the immediate action, action and alert zones, as shown in Figure 1.



Figure 1 – Intervention zones

Output of the vegetation inspection shall be recorded against every eighth of a mile for each side using NR/L3/TRK/003/TEF3079.

The 'MyWork App' shall be used for carrying out inspections.

NOTE 1: The 'MyWork App' is available from the app catalogue on tablet or smartphone devices.

The vegetation inspection shall be carried out in daylight and on foot.

Locations where lineside vegetation cannot be inspected on foot shall be recorded.

The inspection shall look for vegetation growing out of structures and within the immediate action zone described in 3.2.

Stations, depots and sidings shall be inspected.

NOTE 2: Alternative methods to on foot inspection require prior approval by the RAM responsible for lineside.

Digital photos should be taken to support the inspection and where work is required. This should include where it is necessary to establish the location of follow on activities.

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3.2 Immediate action

3.2.1 Inspection details

The inspection shall assess where vegetation is within the immediate action zone.

This zone describes immediate risks posed by the presence of vegetation that is:

- a) within close proximity of overhead line equipment (OLE) and within its encroachment zones;
- b) encroaching toward or affecting sighting of signals, level crossings or operational signs;
- c) obstructing refuges and positions of safety;
- d) blocking authorised walking routes and cess paths, or presenting a risk for anyone using them; and
- e) close to the running line and in danger of coming into contact with rail vehicles.

This zone does not have dimensions.

3.2.2 Assigning corrective action to vegetation within the immediate action zone

The Inspector shall assign the appropriate response for vegetation in the immediate action zone in accordance with Table 2.

Risk	Immediate response timescale	Corrective action timescale
Obscured sighting of; Signals Level crossings Lineside operational signs	Rapid response	Not applicable
Encroaching of sighting of; Signals Level crossings Lineside operational signs Required visibility for track side worker	No temporary action required	3 months

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OLE encroachment within 300mm		
NOTE: Live line clearance may be considered but only carried out by those competent in the use of live line tools to remove foreign objects from the overhead line equipment. OLE staff may be engaged to carry this out. In all other circumstances isolations of the OLE will be required.	Rapid response	6 months
OLE encroachment between 300mm and 3.5m		
NOTE: Live line clearance may be considered but only carried out by those competent in the use of live line tools to remove foreign objects from the overhead line equipment. OLE staff may be engaged to carry this out. In all other circumstances isolations of the OLE will be required.	1 month	6 months
Vegetation coming into contact with trains	Rapid response	6 months
Weeds obscuring track components within the ballasted area on routes where Plain Line Pattern Recognition is in use.	1 month	12 months

Table 2 – Action timeframes

3.3 Vegetation in the action or alert zones

3.3.1 Inspection details

The inspection shall assess the risk posed by vegetation to the railway and third parties.

The vegetation on-foot inspections shall include checks for:

- a) the presence of trees that pose a risk to the railway or third parties:
- b) the presence of INNS growing or encroaching on Network Rail infrastructure;
- d) vegetation restricting inspections of other infrastructure or assets; and
- e) cut or chipped material that is affecting safe performance or function of an asset.

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3.3.2 Evaluation of trees during vegetation on-foot inspection

While undertaking the vegetation on-foot inspection, look for trees that are within falling distance of the running line or third parties. Any trees identified as being potentially hazardous, with the capability to cause derailment or harm, shall be assessed and recorded.

NOTE 1: Trees or branches of 150mm or greater diameter are known to be capable of causing derailments.

Trees identified as being potentially hazardous shall be assessed and recorded using NR/L3/TRK/003/TEF3245. If the result requires a further arboricultural inspection carry out the inspection using NR/L3/TRK/003/TEF3077 and in accordance with clause 4.

NOTE 2: Competence requirements for those completing NR/L3/TRK/003/TEF3077 are included on the form.

NOTE 3: Appendix A provides an overview of the process to be followed along with the options to be considered.

3.3.3 Assigning corrective action for vegetation not within the immediate action zone

Woody material between 1.25m and 3.0m from the running rail but not affecting sighting or OLE shall be planned for removal within twelve months.

Assess the risk and assign a priority to all other lineside vegetation that will require action before the next planned inspection due to proximity to the running line.

NOTE 1: It should be contained so that it does not pose a safety risk.

A WAIF shall be used to record any work identified during inspections, with priority and action.

NOTE 2: When assessing these conditions consider how growth rate and weather conditions such as wind, rain, snow and ice loading may bring vegetation closer to or within the immediate action area.

3.3.4 Work arising associated with INNS

Where INNS species are found during inspection identify work where risk arises from their location.

Record and assign a priority within its current growth season for giant hogweed that is growing in locations accessible to those on Network Rail land or the public.

4 Tree inspection.

All trees greater than 150mm diameter at breast height that appear hazardous to the railway or third party shall be inspected.

All Network Rail trees greater than 750mm DBH should be inspected.

Record tree Inspections on NR/L3/TRK/003/TEF3077.

The location of trees can be identified by other inspection reports, ad hoc reports, or remote means (typically LIDAR).

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Where a unique identification number is required and does not exist from a previous inspection:

- a) attach a tag to the tree and record the unique identification number on NR/L3/TRK/003/TEF3077; or
- b) record the unique identification number and that access was not possible on NR/L3/TRK/003/TEF3077.

A photo of the tag may be taken and attached to the inspection record.

Undertake the risk assessment on NR/L3/TRK/003/TEF3077 and:

- a) determine the response including any additional risk controls or precautions; and
- b) provide detail of the work required.

For third party trees follow the Third Party Hazardous Tree Notification process in accordance with NR/L3/TRK/003/TEF3244A/B.

5 Leaf fall inspection

Leaf fall inspections shall be carried out to assess the severity of leaf fall expected during the Autumn period on operational lines for each eighth of a mile section.

NR/L3/TRK/003/TEF3076 shall be used to record the results of the inspection for every eighth of a mile section on both up and down sides of the track.

All potential leaf fall shall be taken into account during the inspection.

If the leaf fall risk score is 3, 4 or 5 complete a WAIF stating the work required to reduce the risk score. Table 3 shall be used to assign corrective action timescales for leaf fall sites.

Leaf Fall Category	Description	Corrective Action
5	High risk throughout the leaf fall period	Twelve months
4	High risk during peak leaf fall period and wet conditions	Mitigate by the beginning of the second growing season
3	Moderate risk during peak leaf fall period and wet conditions	Mitigate by beginning of third growing season
2	Low Risk	No mitigation required.
1	Negligible risk	

Table 3 – Leaf fall action

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On completion of the work re-score the site using NR/L3/TRK/003/TEF3076 and update the details in Ellipse.

Consult with the seasonal preparedness teams within the route Infrastructure Support Services for advice on actions to be taken. The Environment and Social team should also be consulted because of the scale of work.

6 Cab ride inspection

Use NR/L3/TRK/003/TEF3270 when undertaking cab ride inspections to record, where identified:

- a) vegetation obstructing sighting of signals and level crossings;
- b) vegetation encroachment on OLE;
- c) location of hazardous trees;
- d) vegetation within the ballasted area;
- e) vegetation leading to blocking or obstructing walkways, cess paths, refuges or places or safety;
- f) INNS; and
- g) vegetation within proximity of contacting rail vehicles.

Cab riding is not required in the year that the vegetation on-foot inspection is carried out.

Video may be used as an alternative to cab ride inspections.

The video shall have been recorded in daylight.

NOTE 1: The video recording should be recent so the image is representative of the state of the asset at the time of inspection.

Cab rides or digital records from video inspections may be also used for:

- a) inspections following reports from control or community relations;
- b) inspections following weather events; and
- c) assessing the priority of work required.

NOTE 2: It is advisable to prepare in advance for cab surveying to allow for recording of location information whilst travelling.

7 Supervisory inspection

Undertake an on foot supervisory inspection and assess effectiveness of vegetation management.

NOTE 1: This should include the SM[OT] or delegated representative accompanying the inspector to a sample of differing locations annually to locations of repeat incident, where work is required or where work is complete.

A plan shall be produced and managed so that repeat visits to the same locations are avoided. The plan shall be reviewed annually.

NOTE 2: The inspection should be at least the extent of the vegetation eighth of a mile asset or limited to the extent of the work undertaken or the extent of work required.
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Particular elements to be considered during the inspection are:

- a) the inspection can be carried out safely with adequate access;
- b) the condition of the asset and risks found are recorded correctly;
- c) works undertaken on site are effective and left safe; and
- d) the work bank is accurate and with the correct priorities.

Record the results of the supervisory inspection on NR/L3/TRK/003/TEF3269.

8 Post-incident inspection

An inspection shall take place where an incident of tree or branch failure occurs and NR/L3/TRK/003/TEF3211shall be completed.

The inspection shall take place within seven working days of the incident occurring.

NOTE 1: To assist with undertaking a post incident inspection the person first responding should be contacted to assist with the investigation.

Complete NR/L3/TRK/003/TEF3064 for incidents that are reportable on this form.

NOTE 2: Fallen trees that are a diameter of 150mm at rail require completion of this form.

9 Ad-hoc and reactive inspection

Use NR/L3/TRK/003/TEF3079 where asset records do not exist after which time the inspection shall be planned on a cyclical basis.

Use NR/L3/TRK/003/TEF3245 where a risk to the railway or a third party from trees is reported. If the result requires a further arboricultural inspection carry out the inspection in accordance with clause 4.

10 Update records

The vegetation asset condition records within Ellipse shall be updated following inspection or any activity that results in a change to the asset within 28 days of the inspection.

Enter all work arising from inspection in Ellipse.

NOTE: the Ellipse Handbook describes the requirements for closing inspection work orders and recording work arising in Ellipse.

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Appendix A - Hazardous tree remediation

A.1 Hazardous tree risk assessment

Any potentially hazardous tree identified during inspection or survey shall follow the risk assessment process as shown below.



Figure A-1 – Hazardous tree risk assessment

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NR/L2/OTK/5201

Module 02

Lineside vegetation management requirements

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1 Scope

In scope for this module are the requirements for the management of lineside vegetation.

The extents of the intervention zones, including actions required, form the core of this module.

The module considers the impact of management of vegetation on other assets

Not included within this module are:

- a) management of vegetation to protect against damage to structures;
- b) management of vegetation to directly assure or improve earthworks integrity and stability; and
- c) environmental and community requirements for vegetation management.

2 Principles of vegetation management

2.1 General principles

Plants including weeds and woody vegetation are able, each year, to produce new shoots. They incrementally increase stem, branch and root growth and expand in size and structural form. They are able to spread and re-colonise areas where previously they have been restricted or removed.

Interventions will disrupt the growth process but not fully eradicate it. Cyclical vegetation management tasks are required to restrict vegetation growth and to limit any negative impact it may have.

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

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

To effectively manage vegetation the following needs to be known:

- a) the habitat type so that any design requirements align to this;
- b) species that require specific controls due to legislation;
- c) species that require specific management plans due to their vulnerability to pest and disease;
- d) species that require specific management plans due to the potential risks to the railway during Autumn leaf fall; and
- e) locations of trees and vegetation that have specific preservation requirements due to ecological or historic importance.

Where management operations are proposed the impact of such work is assessed and information is gathered regarding:

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a) environmental restrictions that prohibit or limit the extent of work;

NOTE 1: Consult with environmental specialists to establish these locations

- b) negative impacts on the public as a result of the vegetation removal;
- c) value provided by trees and vegetation as a visual amenity to the surrounding environment; and
- d) effects on biodiversity.

Consideration is given to the impact on other assets where management or maintenance activities are carried out.

NOTE 2: An example of this is clearance of lineside vegetation on earthworks.

Consult other asset groups regarding how management of lineside vegetation will help with optimal performance for their respective areas.

NOTE 3: An example of this is to establish a cyclical vegetation maintenance regime to assure the performance of drainage assets.

2.2 Safe working

Work on vegetation is undertaken so that it does not compromise the safety of railway operations or affect those who work or live next to the railway.

A safety assessment is required to protect those carrying out the activities and the environment. There is guidance available produced by organisations outside of Network Rail which inform on the safest working methods.

NOTE 1: Work Activity Risk Assessments (WARA) will inform on risk presented by carrying out these tasks.

NOTE 2: Guidance on work site checklists is available from FISA and AFAG.

A specific competence is required for cutting vegetation within close proximity to overhead line equipment when it is live.

NOTE 3: Competence for working close to OLE is defined in NR/L2/CTM/014.

2.3 Analysis of vegetation information

Information received from inspection and reactive reports shall be analysed and the work required shall be determined.

Review rectification timeframes assigned by the Inspector to allow for the work to be scheduled in Ellipse.

NOTE 1: NR/L3/MTC/PL0175 contains guidance for maintenance planning.

A site visit may be arranged to establish the work required.

NOTE 2: Legal requirements will influence vegetation management.

The intervention shall be managed in accordance with Figure 1 and Table 1.

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Figure 1 – Principles and requirements of the intervention zone

Intervention Zone	Requirement
Immediate Action	a) Remove vegetation to, at least, the action zone
Action	a) Intervene where inspection identifies that action is required
	 b) Prevent growth towards the immediate action zone
	c) Manage potentially hazardous trees
	 Prevent trees growing large enough that they would pose a derailment risk
	 e) treat vegetation on a cyclic basis to minimise growth.
	 f) Prevent the establishment of trees within 6metres where they do not already exist.
Alert	 Manage vegetation to protect against specific safety or performance issues to NR or third parties
	b) Control INNS requiring intervention

Table 1 – Required activity within each zone

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2.4 Before commencing any vegetation work

Prior to undertaking any vegetation management activities check:

- b) the proposed method of treatment can be carried out at that location;
- b) the proposed work does not create new risks including material left on site;
- c) any site restrictions or hazards that might impact on the work;
- d) proposed treatments are not prohibited or restricted;
- e) proposed treatment and timing of work will not have a negative impact upon biodiversity; and
- f) that the proposed work does not impact on the function of drainage assets or the stability and security of structures, earthworks and rock faces.

An environmental and social appraisal shall be carried out for all scheduled vegetation clearance work. Requirements from the assessment shall be adhered to.

NOTE 1: The hazard directory and environmental specialists can provide information on environmentally sensitive areas.

NOTE 2: NR/L3/MTC/EN0099 describes the process to be followed for the assessment.

Before any work commences, consider the impact of the removal of vegetation on internal stakeholders and third parties.

Third parties shall be notified where they are affected by the removal of vegetation.

NOTE 3: Permissions may need to be obtained from outside parties or adjacent landowners before work can commence.

NOTE 4: NR/L3/MTC/PL0215 describes the process to be followed for notification.

Where an immediate response is required to remove vegetation, assess specific safety risks which might arise during the work.

2.5 Managing vegetation within the immediate action zone.

Table 2 below shall be complied with where vegetation is within the immediate action zone. The timescales for removal shall be according to Table 2 of NR/L2/OTK/5201/01.

Condition	Action
Vegetation in contact with trains	Manage vegetation back to the action zone (as a minimum)
Vegetation obstructing places of safety or refuges	Manage vegetation so that places of safety and refuges are unobstructed
Sighting requirements – level crossings	Return to minimum sighting requirements detailed in the ALCRM risk assessments completed by Level Crossing Managers
Sighting requirements – signals	Return to minimum sighting requirements as detailed by route Signal Sighting Engineers.

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Sighting requirements – lineside operational signs	Manage vegetation back to the action zone (as a minimum)
Overhead Line Equipment (OLE)	Clear vegetation back to 3.5metres (as a minimum)
Tree at imminent risk of failure (included identified threat category 7 on NR/L3/TRK/003/TEF3077 and NR/L3/TRK/003/TEF 3245)	Follow actions as detailed by the THREATS process contained within NR/L3/TRK/003/TEF3077 and NR/L3/TRK/003/TEF 3245

Table 2 - Responses required where vegetation is growing in the immediate action zone

Contact Network Operations to start the required mitigation if immediate action to make the railway safe cannot be carried out.

Notify the RAM responsible where immediate action has been identified for vegetation growing out of structures.

NOTE: Consulting with the RAM responsible for structures will help avoid damage occurring to the structure when vegetation is removed.

Agree on the extent and method of the immediate work prior to it being carried out.

On receipt of a report of a hazardous tree categorised as 6 or 7 using the THREATS process within NR/L3/TRK/003/TEF3077 or NR/L3/TRK/003/TEF3245, arrange for the removal of the tree within the timeframes detailed within the inspection report.

Emergency and late notice work shall be managed in accordance with 5.5.3 of NR/L3/MTC/PL0215.

2.6 Clearance within the action zone

Manage vegetation within the action zone where it presents a risk.

Upon completion of any vegetation management the person responsible for the work shall confirm:

- a) the required clearance zone has been created;
- b) the work has been effective in removing the risk;
- c) the site is left safe so that the work has not created a further risk to the railway or third parties;
- d) the earthwork or structure upon which the vegetation exists has not been affected by the activity; and
- e) the surrounding environment and protected areas have not been affected by the work.

Identify additional activity required and raise a WAIF where work has not been effective in removing the risk.

NOTE: Site Management Statements are available for sites within SSSI, these provide details regarding the required maintenance activities, the process for gaining permissions and appropriate management of the vegetation within NR estate. These can be found on Connect or from the Route Environmental Specialist.

Ref:	NR/L2/OTK/5201/02
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2.7 Planning maintenance within the action zone limit

Undertake cyclical maintenance activities to prevent weed growth within the ballast area and to prevent the re-establishment of woody vegetation where previously cleared.

Activity to maintain vegetation within the action zone shall be assessed to check it has been effective.

NOTE: This might involve re-assessment after a period of time by checking that clearance zones have been achieved.

2.8 Undertaking maintenance activity within the alert zone

Maintenance work should be carried out to prevent growth into the action zone. It will also include works to prevent:

- a) establishment of invasive plants;
- b) spread of Invasive Non Native Species plants including where it is presenting a nuisance to lineside neighbours; and
- c) re-growth from stumps causing risk to earthworks.

Maintenance may also include removal of undesirable species and replacement with more suitable species.

3 Vegetation management methods

3.1 Chemical treatments of vegetation

A person with BASIS certification shall specify the method of application of the chosen herbicide for the type of vegetation to be treated.

NOTE 1: Prior to selecting a chemical application alternative treatments should be considered.

A competent person shall select the herbicide and dosage rates before work commences.

NOTE 2: Competency is satisfied by holding NPTC PA1 'Safe Use of Pesticides' and NPTC PA6 'Handheld Application'.

NOTE 3: Biological methods for controlling the spread of specific plants are not part of this standard control framework.

The extent of the areas to be sprayed and any restrictions on use shall be provided to the operator in advance of the works.

Vegetation above two metres in height shall not be treated by the weed spraying train.

Complete NR/L3/TRK/003/TEF3069 when applying chemicals.

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3.2 Mechanised methods of vegetation removal

The selected mechanised methods shall be capable of:

- a) clearing the size of vegetation to be removed;
- b) undertaking its intended operation on site and at access and egress points; and
- c) operating within machine clearance zones;

The use of flail machines shall be limited to;

- a) maintaining areas that have been previously cleared of trees and planned cutting has restricted the size and height of woody re–growth; and
- b) maintaining hedge lines, where planned cutting has established a hedge.

3.3 Manual methods of vegetation removal

The safest method of undertaking the manual activity of work shall be adopted having considered and discounted other methods.

4 Protecting other assets when undertaking vegetation management

4.1 Lineside assets

The ground area around lineside assets shall be maintained free of vegetation to a distance of one metre.

NOTE: This is to enable, for example, access, inspection and fire prevention.

4.2 Rock cuttings, soil cuttings and embankments

The RAM who has responsibility for geotechnics shall be consulted where vegetation management will take place on rock cuttings, soil cutting and embankment slopes.

Prior to work commencing consultation with the RAM who has responsibility for geotechnics shall establish:

- a) access onto the site, removal of trees, roots and other vegetation does not compromise the stability of the slope or rock face;
- b) current stability condition of the slope proposed for vegetation removal;
- c) locations of embankments vulnerable to desiccation;
- d) agreement on the extent of work and any restrictions; and
- e) remediation required to manage stumps identified at risk of failing and presenting a hazard.

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Consultation shall review the effects of tree felling and establish;

- a) phases of clearance;
- b) any planting requirements;
- c) any coppicing requirements;
- d) stump treatment requirements;
- e) the preferred extent of vegetation following the works; and
- f) requirements for review one year after operations by a geotechnical engineer.

Consultation is not required where individual trees are being managed on slopes or where cyclical grass cutting, scrub cutting and tree pruning operations are planned.

Stumps remaining shall be assessed. Any categorised as 'at risk' shall have remedial action assigned in accordance with Figure A-1 (Appendix A).

Agree who owns and will carry out the work with the RAM responsible for geotechnics.

NOTE 1: High water demand tree species combined with long dry periods can result in clay shrinkage for susceptible geologies (high plasticity clays). Where trees are close to the track this might result in poor track geometry.

NOTE 2: Tree roots might assist in reinforcing soils on clay embankments, which assists the stability of the slope.

NOTE 3: Further information can be found in NR/L3/CIV/152.

4.3 Specific considerations for rock cuttings

The face of rock cuttings shall be maintained to prevent the establishment of woody vegetation.

NOTE: Tree roots can cause root jacking of blocks of rock on rock cuttings where trees are left to establish root systems.

4.4 Specific considerations for structures

Notify the RAM responsible for structures where vegetation is growing from a structure and needs specialists for removal or could cause damage.

NOTE: This does not remove the need to carry out the immediate action although the scope may be reduced to avoid damaging brick and mortar structures.

5 Leaving sites safe

5.1 Preventing wind-throw risk

Tree removal operations shall be planned so that the risk of wind-throw to the remaining trees is not increased by the work.

5.2 Lineside tidiness - disposing of cut material

5.2.1 Principle of tidiness

Vegetation work should be responsibly managed during the activity and once work has been completed.

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Material or waste created shall not be left on site if it poses:

- a) a safety or performance risk;
- b) a risk to management or inspection of other assets; or
- c) a nuisance to third parties.

5.2.2 Specific tidiness considerations

Cut wood material shall be removed from site following work.

Approval shall be requested from the RAM responsible for the lineside vegetation where material is to be left on site when chipping or removal of cut material is not possible.

Cut material that has been stacked in short section piles shall not be left on slopes with a gradient steeper than or equal to 33 degrees.

NOTE 1: Cut and stacked material can move over time and present a hazard.

NOTE 2: To encourage natural breakdown of cuttings, branch and stem material should be cut into short sections and stacked in piles (known as windrowing). Shorter lengths of branches and logs should be banded to prevent vandalism.

Wood chippings shall not be left on site where there is a risk to property, assets or the operational railway. Any remaining chipped material shall be:

- a) a minimum of three metres from any running rail; and
- b) clear of any watercourses and drainage systems.

NOTE 3: these include open ditches that may not be immediately visible at the top of a cutting slope..

Chipped material shall be spread evenly to a depth no greater than 100mm.

5.3 Management of stumps

5.3.1 General principles

The type of management required for stumps will be dependent on their location and their effects on the earthwork, structure or drainage asset.

The removal or grinding of stumps on slopes, within drainage channels or on structures shall be done in consultation with the RAM responsible for the asset.

Use Table 3 when stumps have been created and cannot be removed or ground out.

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Table 3 – Stump treatment

5.3.2 Coppicing / pollarding

Trees / stools to be coppiced or pollarded shall be cut no lower than 150mm above ground level with a sloping face.

This is to allow water runoff.

NOTE: For previously coppiced stools retain one stem on the stool as long as its retention does not affect any other part of this standard

6 Invasive Non Native Species (INNS)

6.1 Principles

INNS shall be managed (including entry in Ellipse) where:

- a) there is a risk posed to the safe operation of the railway;
- b) their presence inhibits other railway activities being carried out;
- c) they might impact on lineside neighbours; and
- d) their presence or growth poses an environmental risk.

6.2 Managing sites where INNS have been identified

A register of INNS shall be kept in Ellipse.

A schedule of works shall be contained in Ellipse for the management of INNS plants on Network Rail land.

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Prioritisation of remediation works should be undertaken using guidance detailed in Table 3.

Consult with the MPC where encroachment is likely to occur from third party land.

Action shall be taken to control the spread and prevent further invasion where a notice has been served.

Follow up visits shall be carried out to check the effectiveness of any treatment.

6.3 Removing INNS material

INNS shall be treated as hazardous/special waste and disposed of through a Network Rail approved method where removal is required.

Priority	Descriptors	Action	Why
1	INNS within seven metres of the outside running rail	Treatment cycle to begin at timescales defined by BASIS advice.	To reduce impact on track renewals.
2	INNS within seven metres of third party land	Treatment cycle to begin at timescales defined by BASIS advice.	To prevent the need for a <i>Species</i> <i>Control Agreement</i> or a <i>Species</i> <i>Control Order.</i>
3	INNS present on both sides of the boundary	Contact adjacent land owner to agree management plan.	Proactive approach to prevent a <i>Species</i> <i>Control Order</i> being imposed on Network rail and/or the third party landowner.
4	INNS on third party land, within seven metres of the boundary	Contact adjacent land owner to agree management plan.	Proactive approach to prevent a <i>Species</i> <i>Control Order</i> being imposed on the third party landowner.
5	INNS on third party land, more than seven metres from the boundary	Contact adjacent land owner to inform presence of injurious and invasive plants.	Proactive approach to assist with the control of an invasive non- native species.

NOTE: NR/GN/ENV/004 describes the approved method for waste disposal.

Table 4 – Prioritising	INNS control
------------------------	--------------

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7 Grazing for vegetation management

Grazing of livestock on the lineside might be permitted where special arrangements are in place with a specific management objective and where site conditions and security measures allow.

8 Planting and re-seeding

Planting shall be taken into account where planned clearance work will result in a loss of connected woodland or scrubland.

Planting and re-seeding should be considered where:

- a) the establishment of suitable species enhances the stability of earthworks;
- b) trees would be replaced in urban environments; and
- c) opportunity exists to enhance biodiversity.

NOTE: Lineside experts within RAM teams or the Environment and Sustainability department can provide advice on the species to be used.

9 Updating records

The planner shall update the asset records in Ellipse within 28 days of work completion with:

- a) work that has been undertaken; and
- b) any changes in the risk score of leaf fall and assessed trees arising from the work.

The forms identified in this process should be completed electronically.

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Appendix A - Process for stump management

A.1 Cuttings



Figure A-1 – Consultation process for cuttings

Network Rail position statement regarding Jo Johnson, Rail Minister's suspension of "all felling during the current nesting season, except where safety critical"



Network Rail undertakes vegetation control to enable the operation of a safe and efficiently performing railway. Those plans should continue, in accordance with Network Rail's Standards and as set out below, which is in line with the recent instruction from the Rail Minister that all tree clearance activities in England and Wales must cease unless permitted by the guidance within this document.

Where work is continued as part of this instruction Network Rail will be required to maintain a count of the trees removed during works. Network Rail has also committed to undertake additional assurance to support this instruction.

Definitions have been derived from forestry legislation relating to felling licences and NR internal standard for vegetation management (NR/L2/OTK/5201). Current nesting season is defined in NR guidance as 1st March to 31st August.

	Minimum activity necessary to maintain safe operations					
Management scenario	Fell trees	Selective thin trees <50%	Remove trees	Lopping, topping, pruning, pollarding		
	>10cm dbh	<10cm dbh only	<8cm dbh only	All sizes.		
Safety critical tree hazard / condition						
Category 5, 6 and 7 trees		n/a	n/a			
Category 1, 2, 3 and 4 trees		n/a	n/a			
Safety critical due to vegetation affecting railway infrastructure and operations						
Leaf fall / known adhesion problem sites						
Within 300mm of overhead line equipment						
Blocked signal sighting						
Blocked operational sign sighting						
Blocked level crossing sighting						
Branches contacting with trains						
Construction activities						
Clearance for fencing work						
Inspection of structures / earthworks						
Activities as defined can proceed following breeding bird surveys and all other required environmental checks						

environmental checks
 Activities should normally be planned to take place outside of nesting season. If activities must take place, only those highlighted can take place following breeding bird surveys and all other required environmental checks. Work shall be the minimum necessary during the nesting season.
 Felling activities shall not take place between 1st March and 31st August

<u>Notes</u>

- Category 1, 2,3, 4, 5, 6 or 7 trees defined using <u>NR/L3/TRK/003/TEF3077</u> 'Tree Hazard: Risk Evaluation and Treatment System'; modelled tree risk assessments (e.g. POLESTORM, FAILSAFE) require use of TEF3077 to confirm Category 5, 6 or 7 before safety critical tree removal.
- Selective thin (<50%) removal of up to 50% of stems <10cm dbh within an area of woodland. If used in leaf fall risk areas, number of leaves capable of causing issues will be reduced.
- *dbh* diameter of tree measured at 1.3m up the trunk [diameter at breast height]
- Breeding bird surveys forms and guidance available on Safety Central (Biodiversity)
- Environmental checks if required framework ecological consultants contact details are available on Safety Central (Biodiversity)

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2018 guide to the Responsible Railway Plan





Contents

The Responsible Railway Plan projects sit within five key areas of Environment and Sustainable Development:



Integrating Sustainability





•



Introduction



Dear colleagues,

At Network Rail we have a sustainable approach to what we do and we are keen to always understand how our activities affect the environment locally as well as globally. At the same time, we drive social responsibility and actively seek to reduce community risks and maximise opportunities to create social value. The Responsible Railway Plan which has just been introduced plays a key role in this journey and in our aim to achieve our vision of a "Railway Fit for the Future".

In January 2018, the Government released its 25 year environment plan, outlining its commitment to having an infrastructure that has Environmental and Sustainable Development Principles at its heart. Network Rail, through our Strategic Business Plans for CP6, has committed to being a 'green' organisation that plays a major role in sustainable travel. I am very keen to help ensure we fulfil our commitments with regards to environment and sustainability and to demonstrate this commitment both internally to our employees and externally to our key stakeholders.

We are continually working to integrate sustainable development into business processes and, although we are making progress, our overall environmental and social performance needs to improve significantly. We are one of the largest power consumers in the UK and one of the largest land owners. This places a big responsibility on the company and I am keen that, through our activities and continued sustainability work, we leave a positive legacy for future generations which we can be proud of.

The Responsible Railway Plan is the national portfolio of key projects that will most effectively help us to responsibly manage our natural environment and add social value to the communities we serve to help us achieve our vision of a "Railway Fit for the Future". These projects are aligned with key improvement programmes identified in Network Rail's Sustainable Development Strategy and have been selected through a process involving a risk impact assessment; financial benefit and improvements in legal compliance. Our plan plays an important part in delivering measureable environment and sustainability benefits for the business.

The Responsible Railway Plan has been created using the same LEAN principles and governance structures as The Home Safe Plan, and is driven from the central Environment and Sustainable Development team in the QHSE Department. Business engagement and cross-collaboration is essential to delivering an ambitious programme of works.

I hope you will all support a successful delivery of the projects in the Responsible Railway Plan and take part in placing environment and sustainability just as high on the agenda as Health and Safety. Please do not hesitate to contact me or one of the team members if you have any questions to the plan.

Best regards

sent trace a

Lisbeth Fromling Chief Quality, Health, Safety and Environment Officer



What do people say about the Responsible Railway Plan?



"The Responsible Railway Plan is our commitment to building and managing a railway fit for the future. This plan is essential to ensuring that we manage our impact on the environment responsibly, that we maximise opportunities to create social value, and that we drive responsible business best practice across all our routes and functions."

Mark Carne, Chief Executive, Network Rail





"The Responsible Railway Plan is about joined up working between Network Rail, our supply chain and the industry as a whole. We are becoming 'greener' all the time, and the new sustainable procurement process ensures that every £1 of tax payers money that is spent on railway works can be traced back to one of our sustainability themes. We know our suppliers are doing some great work, but we need to be better at managing our supply chain against sustainability KPIs. As sustainability leaders, we need to identify, share and promote best practice. Through the Responsible Railway Plan we have the ability not only influence 40,000 people within Network Rail, but to influence our supply chain and society as a whole. We are, after all, building a railway fit for the future."

Susan Cooklin, Route Services Director, Network Rail

"The Responsible Railway Plan is crucial to designing and delivering infrastructure projects that will benefit this country for years to come. With unprecedented investment going into our railways, ensuring that the needs and aspirations of the British public are at the forefront of this development is key to it delivering maximum value. I fully support this plan and I am confident that, in partnership with the Environment and Sustainable Development team, we can address the challenges identified in this plan and succeed in building a railway fit for the future."

Francis Paonessa,

Managing Director, Infrastructure Projects, Network Rail





(Right) Mural produced under one of Network Rail's arches on Stoney Street, Southwark by street artist Jimmy C. Forming part of our social value framework, dedicated to the victims of the London Bridge terror attacks in June 2017.





(Above) Birmingham New Street Station uses heat and electricity from a Combined Heat and Power (CHP) system, linked to a district heating scheme through Birmingham. The new CHP plant is located on the station roof and is much more efficient than conventional forms of heat and electricity provision.



(Above) Dawlish, February 2014 showing how important our weather resilience and climate change adaptation plans are at preventing incidents like this



(Left) Consideration of animals and plants, including the habitat they live in is vital when we plan vegetation clearance and undertake work on our infrastructure

Project Name: Environment and Social Management System ISO14001

For Network Rail to make effective continual improvements to its environmental and social performance, having a management system in place is key. This project seeks to integrate and align environment and social management system content with ISO14001 into Network Rail's Integrated Management System (IMS). The project is closely linked to the IMS programme in the Home Safe Plan.

ISO14001 is an internationally recognised Environmental Management System standard and we are committed to managing both environmental issues and social performance in alignment with ISO14001. This project aims to develop the appropriate framework to provide an efficient and consistent approach to implementing our new Environment and Social Management System (ESMS) Standard.

The main deliverables are:

- Environment and Social Performance Strategies.
- Framework aligned with ISO14001:2015 and Network Rail's Integrated Management System.
- Compliance evaluation framework.

In order to meet the requirements of Network Rail's ESMS standard and its objectives of being environmentally and socially responsible, this project looks to develop the framework and supporting tools. This will enable different elements of the business to maintain or establish local management system content in a standard manner and drive a consistent message, enhancing our management of environment and social issues in everything we do.

The project will begin with a gap analysis of the existing systems and procedures in all business areas and will determine the work required to bring all elements together into a consistent approach. Key areas being addressed are, aspects and impacts, compliance obligations; evaluation of compliance, operational control, assurance and management review.



To ensure alignment with the IMS, many of the requirements will feed into IMS common requirements where collaboration and more efficient ways of working can be sought. IMS project timescales will be factored into the development of this project.

What are the business benefits?

- Improved compliance leading to improved environment and social performance.
- Improved regulator perception.
- Improved public perception and reputation on environmental and social performance issues.
- Greater buy-in to environmental and social performance issues by all employees.
- Reduced probability of environmental incidents.
- Better understanding of environment and social issues and more effective planning and decision making as a result.

Who will benefit most from the project?

Integrating environment and social management into IMS will create a more informed workforce, benefitting all Network Rail employees and contractors. It will also benefit planners and decision-makers in determining their responsibilities and help guide environmental and social compliance. The environment and social management system content will also provide ExCom and senior managers with an assurance and management review process that will highlight risk, drive continual improvement and commitment to the system and meet the requirements of ISO14001.

Project Name: Creating a Social Value Framework

Running Britain's railway is not just about transporting passengers from 'A' to 'B'; it is a vehicle for connecting communities, creating jobs, regenerating areas of social deprivation and driving socio-economic growth. Network Rail's social performance strategy aims to create social value through design, be a considerate constructor during railway works and leave a positive legacy for future generations.

By improving our impact on society, we improve our social performance. The only way of knowing how successful we have been is to measure the amount of social value we have created as part of our decisions and operations. Network Rail does not currently have a social value measurement framework, which means the impact of our works on social value cannot be captured, measured, or used to improve practices. This project will address this gap and create a framework that will enable the business to identify opportunities to create social value and evaluate the impact of this work.

This project has been created to provide the business with a comprehensive social value framework that will have the capacity to inform, and direct, investment decisions to consider how social value can be built into the delivery of projects. The framework will be supported by tools and guidance that will enable social data to be captured and the impact of social value measured.

The main deliverables are:

- Create a comprehensive and auditable framework for the management of social value across Network Rail.
- Build the tools needed to capture social data and measure the impact and value created.
- Create a defined process for the reporting of social value, including benchmarks, metrics and targets for business units.
- Define a process for building social value into investment decisions.

What are the business benefits?

A structured social value framework will be embedded across all business units. As a result, there will be a defined process for integrating social value into investment decisions, which will improve Network Rail's reputation, customer confidence and satisfaction scores. It will demonstrate increased value for every £1 invested in Britain's railways, and will improve individual understanding of community risks, and how to mitigate these through the delivery and legacy of projects. The impact of works on social value will be captured, measured, and evaluated to feed best practices from across the business into decision making processes.

Who will benefit most from the project?

Business units will be able to identify, assess and maximise opportunities for improving the impact that Network Rail has on social value, whilst mitigating community risks. There will be widespread improved business understanding of both quantitative and qualitative social benefits that accompany railway works. The needs of local communities interacting with Network Rail's works will be effectively taken into consideration at all stages of a project's lifecycle, creating opportunities to maximise social value for passengers and the wider community.



7

Project Name: Energy Management System ISO50001

Energy usage in Network Rail is a significant part of our expenditure and our environmental footprint. Consequently, its effective management is key to our corporate responsibility. New ambitious financial and environmental targets are in place and reducing consumption and costs is needed to meet these targets. The development, implementation and maintenance of energy management as part of the Network Rail Integrated Management System (IMS) will include standards, processes, strategies and plans to help the business achieve effective energy, carbon and cost savings.

ISO50001 is the internationally recognised Energy Management System standard and this project aims to develop the appropriate framework to guide all areas of the business through a structured process devised specifically to achieve effective and sustained energy, carbon and cost reductions and reach published targets.

The main deliverables are:

- A delivery framework aligned to both ISO50001 and Network Rail's IMS.
- Completed elements within the framework, for those items of a corporate nature – for example overarching policy and strategy.
- A guidance manual to assist business units to complete the remainder of the framework.

Operational energy use costs Network Rail around £60m each year and results in over 300,000 tonnes of carbon dioxide (CO₂) emissions into the atmosphere, contributing to global warming and climate change. Many opportunities exist to reduce energy use but these are, on the whole, unexploited. Implementing the Energy Management System will provide the necessary tools and drivers to achieve significant savings in energy, cost and CO₂.

What are the business benefits?

- Improved compliance.
- Improved regulator perception.
- Reduced energy use and carbon emissions.
- Reduced cost.
- Improved regulator perception.

- Greater buy-in to energy awareness by all employees.
- Better and wider understanding of energy management and more effective planning and decision making as a result.

Savings on energy costs of around 15-20 % could be achieved and the benefits increase as energy prices rise as the increases are avoided.

Additional benefits exist, for example improved knowledge of energy assets and availability of information bring safety and business efficiency benefits by avoiding site visits.

Who will benefit most from the project?

Routes will benefit by reducing their energy costs, and staff in buildings where energy efficiency measures are introduced will benefit from improved environmental conditions. There are also benefits to the taxpayer in terms of minimising Network Rail's costs in relation to energy use.



Project Name: Managing Carbon in Infrastructure

There are a wide range of well understood carbon emissions associated with the creation, operation and eventual decommissioning of infrastructure assets. Carbon emissions provide a good indicator of efficiency so looking at ways to reduce carbon will often reveal opportunities to improve efficiency and reduce costs.

The purpose of this programme is to enable Network Rail to achieve life-cycle carbon efficiency and value for money benefits from the creation, operation and decommissioning of rail infrastructure, and to demonstrate the business's contribution to Government climate change commitments.

In 2014, the RSSB selected a carbon accounting platform on behalf of the rail sector. Since then, relatively few Network Rail development projects have actively considered carbon efficiency during the design or construction. The slow uptake of carbon assessment in projects is believed to be linked to; absence of stated client requirements, limited resources, limited familiarity/competence and failure to appreciate carbon efficiency as an attribute of project value management. There are also complex challenges in defining the baseline carbon figures against which carbon reduction achievements can be benchmarked.

The main deliverables are:

This programme will:

- Align Network Rail's carbon management approach to the PAS 2080:2016 standard.
- Embed carbon accounting into core project management processes.
- Establish a framework for collating, reporting and targeting infrastructure carbon reduction achievements, including establishing an agreed baseline.

What are the business benefits?

The project will enable carbon reduction and related cost savings through good design and construction logistics and will enhance Network Rail's reputation for responsibly managing greenhouse gas emissions.

Who will benefit most from the project?

Infrastructure project teams will be able to demonstrate enhanced environmental benefits and cost savings. Routes will benefit from reduced operational energy costs once projects are fully delivered.



Project Name: Managed Station Recoveries and Metering

Utilities usage in our managed stations is complex. Numerous users, both internal and external to Network Rail, rely on the supply of utilities to undertake their operations. These include retail tenants and Train Operating Companies (TOCs). The organic changes to the managed stations over the years have led to a spaghetti of wiring, supplies and sub-supplies which have become difficult to trace and monitor. This means that recovering costs from third parties for utilities that they have used is inaccurate and very little exists in terms of documentation or even accurate meter labelling in order to establish a correct charging regime.

The Managed Stations Recoveries and Metering project aims to tackle this issue through a series of in-depth surveys, establishment of a robust meter/tenant management system and alignment of Network Rail's utility billing system to assure accuracy. In addition, the project will appraise options for a long-term sustainable solution which will minimise the risk of utilities knowledge and cost recovery becoming untenable again once the project is finished.

The main deliverables are:

- Surveys of all managed stations to establish liability for utilities use, initially in retail tenant areas and then broaden out to encompass other areas of each station, including Quantitative Expenditure (QX) areas.
- Align Network Rail's tenant billing system (a module of Energy-Link) to accurately reflect liability for utilities to enable correct recovery of costs – this will increase income from tenant billing for the Routes.
- Establish and implement a sustainable solution to this long-standing issue through the installation of automatic meter readers (AMR) to the sub-meter estate in all managed stations.

What are the business benefits?

The business will be enabled to maximise recoveries for costs spent on utilities in managed stations, and will achieve a vastly improved understanding of utilities use in each station. As automatic metering is enabled and rolled out, business efficiencies will be realised as the numerous meters in the managed stations will not need to be read manually, which will also bring safety benefits as many meters are in restricted or dangerous areas.

Retail tenants will also benefit through improved billing and information, with AMR enabling detailed information to be available to them which will, in turn, encourage energy reduction throughout the retail tenant areas, reducing energy consumption and carbon emissions across the managed stations estate.

Who will benefit most from the project?

Routes will benefit by maximising cost recoveries, reducing their overall utility costs and by better managing utilities use in all managed stations.



Project Name: Update Route Weather Resilience and Climate Change Adaptation Plans

Adverse and extreme weather conditions significantly impact the reliability of our assets and the performance and safety of the railway. Weather related delays cost £50-100m per year with the cost rising to £200-300m when the impact of cancellations, repairs and socio-economic impacts are accounted for. Climate change will affect our understanding of risk by shifting weather patterns and our historic records of likelihood and severity, thereby amplifying the impact of adverse and extreme weather on the railway. It will become increasingly more challenging to become resilient and to manage potentially catastrophic safety risks.

This project will enable Routes to update the Weather Resilience and Climate Change Adaptation (WRCCA) Plans which outline methods for enhancing resilience in CP5. The aim is to ensure that the updated strategies align to the new WRCCA policy, reflect CP6 business plans, are based on the latest science and analysis and enable enhanced prioritisation and investment planning.

Through a series of facilitated workshops and provision of data and analysis, Routes will develop long term strategies for managing weather resilience and adapting the railway to climate change.

The main deliverables are:

- Clear long term strategic direction for each Route in managing WRCCA.
- Framework for updating plans including a template and analysis on climate change impacts in each Route.
- Approved, measurable plans with prioritised WRCCA investment requirements for each Route for CP6, CP7 and beyond.

The project will also enable better sharing of information and best practice between different parts of the business and engage a wider audience in the WRCCA discussion which has typically focussed on the Geotechnics and Drainage asset functions in the past. The plans will feed into an update of the national WRCCA Strategy and Network Rail's third Adaptation Report to Defra under the Climate Change Act (2008).



What are the business benefits?

Proactively managing the risks weather and climate change pose to our assets, safety and performance will have significant business benefits. The strategic management of WRCCA will be better integrated into business planning enabling a much more proactive approach to managing the risks to feed into planning for CP7 and beyond. It will also improve our ability to track and report our level of resilience and WRCCA investment activity which will provide assurance to regulators and the public that we are effectively managing the risk.

Who will benefit most from the project?

Route Businesses will benefit from the ability to make more effective and informed investment decisions that account for weather and climate change and will see the associated financial, safety and reputational benefits. As the plans are implemented, the travelling public will experience reduced delay and disruption due to adverse and extreme weather as the railway becomes more resilient.

Project Name: Biodiversity Information and Risk Management

Network Rail has widespread scope for interacting with biodiversity through infrastructure development, asset renewals and maintenance schedules, placing biodiversity management as a high risk to the business. The risks relate primarily to unexpected costs or delays if ecological constraints are inadequately planned into works, possible legal action if allegations of legal non-compliance are brought, and reputational consequences from perceptions of not managing biodiversity responsibly in line with the regulatory framework or government objectives.

The Biodiversity Information and Risk Management project has been created to improve the planning and management of biodiversity impacts before works (development projects, asset renewals and maintenance) and reduce risks. Network Rail's ability to manage biodiversity across the network is dependent upon access to, and interpretation of, information, making that a central focus of this project.

The main deliverables are:

- Processes to capture and collate biodiversity data from internal and external sources.
- Projection and visualisation of historic and contemporary biodiversity records through an approved geospatial mapping platform.
- Biodiversity risk management and accounting embedded into GRIP and equivalent maintenance processes.

The resultant improvements in works planning will also demonstrate implementation of Network Rail's revised Environment and Social Policy (NR/L1/ENV/100) which states "We will manage our land sustainably including consideration of our impacts on biodiversity". Enhanced project and maintenance planning and decision-making around biodiversity will also demonstrate commitment to support the Government's 25 year environment plan 'A Green Future: Our 25 Year Plan to Improve the Environment', published in 2018.



What are the business benefits?

The enhanced data capture and mapping solutions will enable improved decision-making, risk awareness and resource planning for constraints, risks and opportunities. The revision of GRIP and allied maintenance processes will clarify roles and responsibilities and the phasing of risk management activities through all stages of project or maintenance works.

The successful delivery of this project will enable improvements in the efficient planning of work, use of resources and cost predictability. Risk of legal non-compliance and adverse reputational impacts will be reduced. Relationships with lineside neighbours will be improved, and regulator and stakeholder confidence in Network Rail's response to government biodiversity targets will be enhanced.

Who will benefit most from the project?

Project and maintenance teams will more easily take account of biodiversity constraints and opportunities when planning works which cannot currently be done. Appropriate biodiversity mitigation measures will be anticipated and planned before work begins which will strengthen the efficiency of works delivery, avoid unexpected costs and delays, and reduce legal risks.

Project Name: Waste Management

Waste management costs are very high and rising. We currently spend an estimated £60m on waste management each year. Waste often causes land/water pollution and can have negative reputational impacts, especially if waste is managed incorrectly which can incur large fines and clean-up costs. The lack of focus and understanding around waste handling means that the business regularly incurs avoidable costs, often due to time constraints and poor planning. Inconsistent compliance assurance on our waste contractors has led to legal breaches; fines, clean-up costs and negative reputational impacts.

This project aims to reduce waste costs for the business with several key focus areas including; reduce waste to reduce management costs; maximise reuse/recycling rates, create a consistent approach to using existing waste frameworks across the business, improve verification that our contractors are complying with relevant waste legislation and to improve waste data for assurance purposes.

The main deliverables are:

- Optimised use of SCO waste/material facilities which will give us the opportunity of reducing costs and keeping that expenditure within the company rather than expending it outside of Network Rail.
- Improve our waste data to have an accurate baseline for analysis and identification of trends and opportunity areas.
- Improve waste assurance activities so Network Rail, our contractors and subcontractors can prove they are legally compliant.

This project will enable Network Rail to achieve the commitment in the Environment and Social Policy (NR/L1/ENV/100) which states 'We will reduce the amount of material we use and minimise the amount of waste we produce.'

What are the business benefits?

- Reduced waste costs.
- Reduced risk of fines and legal prosecution.
- Enhanced reputation and trust in the railway's ability to manage its estate and its wider environmental impacts.
- Improved accuracy and assurance of waste data.
- Reduced risk of land/water pollution.
- Increased reuse/recycling rates (including maximising opportunities to create recycled products which can be sold to generate revenue for Network Rail).

Who will benefit most from the project?

Network Rail employees and contractors will be able to make more efficient decisions regarding waste, as well as having the ability to "advertise" surplus materials/equipment to the wider business. Through this, there will be more robust assurance mechanisms that can be used by the business as a whole. As a result, employees will have access to improved waste and cost data to enable more informed decisions.



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Vegetation management explained



Summary

With 20,000 miles of track and millions of trees growing along the railway, managing vegetation is hugely important to us. If not managed well, trees and fallen leaves can pose a risk to the safe running of the railway and cause delays to trains.

The UK's climate, the variety of trees and the sheer number of trains running on our network mean that the UK faces more serious challenges than most other countries. Incidents caused by vegetation can cost the railway upward of £100 million a year.

We are mindful that clearing vegetation can have an impact on local communities. We always try to strike the right balance, but accept it's a challenge we may not always get right. We will continue to work alongside communities and experts in the field to minimise the impact of our vegetation management while ensuring the continued safe and reliable operation of the railway.
How does vegetation cause problems?

Just last year, storms, rain and wind caused trees to disrupt the network over 1,200 times and caused over 400 instances (34%) of trains coming into contact with trees or large branches. Such incidents can be serious and have the potential to cause accidents. Blocked lines can also cause severe delays to trains and passengers using the railway.

Trees and plants growing on the railway can hamper our ability to maintain a safe railway in other ways too. Lineside trees and bushes can obscure signals, get blown onto the tracks, or grow to an extent where our track workers do not have a safe place to wait while trains pass. In autumn, train acceleration and braking can be affected by the fallen leaves of broadleaf trees.

How do you consider the ecology and biodiversity of the railway?

We take our environmental obligations extremely seriously and we manage our lineside to provide healthy biodiversity, advised by experts in the field. We make our policies in this area public and work with environmental organisations to help us get it right.

Where possible, we protect and maintain the local environment the railway runs through. However, there are some safety critical instances when we must prune or remove trees during nesting season. When we have to do this, we carry out thorough ecological surveys and inspections before starting any work.

Where there is enough room and it is safe to do so, after pruning or removing trees, we leave smaller branches as habitat for wildlife, such as hedgehogs and amphibians. Depending on species and availability of space we may allow tree stumps to regrow, or treat them with herbicide to stop unwanted regrowth, thereby enabling more diversity in ground flora to grow.

Where is vegetation management required?

We routinely clear vegetation from the area immediately next to the track. Where trains run at higher speeds, in cuttings or embankments, or where there are level crossings or overhead line equipment, we may need to clear vegetation further back.

We remove trees that are, or could be, dangerous or negatively affect the reliability of services that over 4.5 million passengers rely on every day.

As well as maintenance of our railway, there are times when we need to clear areas of vegetation to help our trackside teams examine or repair earthworks and structures or as part of larger programmes of work, such as to prepare for overhead line electrification.

To reduce the problems caused by leaves falling on the railway in the autumn, we target the maintenance or removal of certain broadleaf tree species such as poplar and sycamore.

By proactively managing the trees along the railway, we are able to keep people safe and prevent unnecessary delays.



This image shows how we evaluate the threat of trees and other vegetation to the railway:

Does Network Rail have a policy to replant trees?

We are adopting the principle of biodiversity accounting, which incorporates metrics and calculations endorsed by DEFRA, so that we can measure the impact that our infrastructure development and maintenance works have on biodiversity. However, we don't have a fixed target for compensating for tree loss, habitat loss, or changes in biodiversity valuation as a consequence of our maintenance or upgrade work.

In November 2017 we launched a new biodiversity accounting tool, the Network Rail Biodiversity Calculator. Projects may adopt local targets to achieve 'no net loss' or 'net gain' biodiversity outcomes, and can use the Biodiversity Calculator to measure any losses and biodiversity score reductions and invest in compensation measures and off-setting arrangements so that there is no loss, or an increase, in natural habitat as a result of that project. We are piloting targets of net positive biodiversity on specific infrastructure projects, including Gospel Oak to Barking and Thameslink. The Thameslink programme was also named by DEFRA as a demonstration project for its part in the national pilot test on biodiversity offsetting.

Does Network Rail need permission to fell trees?

As the management of trees is generally on Network Rail land, permission is not usually needed. Where there is a Tree Preservation Order or the location is within a Conservation Area, we work with the Local Planning Authority.

Where Network Rail land has been designated as a Site of Special Scientific Interest, or has other statutory protection, we work with the regulators to make sure that our work is in accordance with the legislation.

How often do you check the trees on the railway?

The Network Rail estate covers 50,000 hectares and routine maintenance is constantly carried out across the rail network to prevent trees encroaching on the tracks. Ongoing management promotes safety and is more costeffective than reacting to damage and delays caused by a fallen tree.

In addition to this, every three years we formally inspect lineside vegetation to check that it meets the standards required to safely and reliably operate the railway. This requires the assessment of over 6,000 miles of lineside on average each year.

How does Network Rail keep track of the millions of trees along the railway?

We use aerial surveys along the railway and 60 metres either side to create an online map which shows us the location and condition of Network Rail's assets. Using this tool, we can measure the height of vegetation which helps us to target only those trees that pose a risk to the railway.

This targeted, planned approach reduces risks, improves safety and reduces costs by reducing the number of teams manually checking all of the trees and identifying problems before they cause incidents.



What does it look like when Network Rail has cleared trees?

On the South East Route, vegetation management has been a key part of our £300m investment to improve performance and punctuality. On the Brighton Main Line, we have completed over 70 miles of vegetation management since September 2017.

Before any work started, the team carried out a desk based ecology survey, site ecology visits and had an arboriculturalist assess the sites. We sent over 3,300 notification letters to residents along the whole of the Brighton Main Line in advance of this work taking place, and responded to any queries they had. Over the whole period, we received only two complaints from lineside neighbours.

Statement from the Tree Council



The Tree Council works with Network Rail and their neighbours to help improve trackside management of trees, hedgerows and other vegetation. As a 'critical friend', we advise Network Rail on ways they can manage their trees to create wildlife corridors whilst they carry out the important vegetation management needed to keep the railways safe.

Network Rail is the fourth largest landowner in Britain. Therefore, working with them to get things right can have a massive positive impact for wildlife across the UK. Some trees will always have to be removed for safety reasons but others can be pollarded, coppiced or even laid as hedges. That's better for the environment, better for wildlife, better for local communities and, in our experience, could cost less than current techniques. With large numbers of ash trees growing on the railway, as Ash Dieback spreads, these issues will become even more important over the next 10 years.

We are running trials with Network Rail over the coming autumn which will lead to a better understanding of the various management options. As a result, we hope that Network Rail employees at every level will receive even more training in tree management and that their contractors will receive clear instructions. Network Rail is a huge organisation, with thousands of employees, working on eight different lines across England, Scotland and Wales, so it's important to continue constructive discussions until new practices are fully embedded.

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