Ref:	**NR/L2/OTK/5201/01**
Issue:	4
Date:	05 December 2020
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NR/L2/OTK/5201

Module 01

Lineside vegetation inspection and risk assessment

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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.

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- 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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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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Contents

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 may 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).*

Type and Form	**Extent**	**Method**	**Minimum Frequency**	**Maximum Interval**
Vegetation on-foot inspection NR/L2/OTK/5201/F3079 *Lineside vegetation inspection*	All Operational ELRs Disused and closed lines, and other non-operational land	On foot	**36 months**	**44 months**
Cab ride of lineside vegetation NR/L2/OTK/5201/F3270 *Cab ride of lineside vegetation report*	All operational ELRs	Cab or video	**12 months**	**16 months**
Remote Survey	All Operational ELRs Disused and closed lines, and other non-operational land	Remote survey facilities To identify trees within falling distance of the railway and outside party land	**60 months**	**68 months**
Tree inspection NR/L2/OTK/5201/F3077 *Tree hazard risk evaluation and treatment system*	All Operational ELRs Disused and closed lines, and other non-operational land	On foot	**30 months**	**36 months**
Leaf fall inspection NR/L2/OTK/5201/F3076 *Leaf fall risk assessment*	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 to assess if the frequency of inspection is sufficient to control tree risk.

The presence and spread of pathogens, pest and disease such as Ash Die Back known to affect tree health should be established when assessing inspection frequency.

Update any revisions to the inspection plan in Ellipse.

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.

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

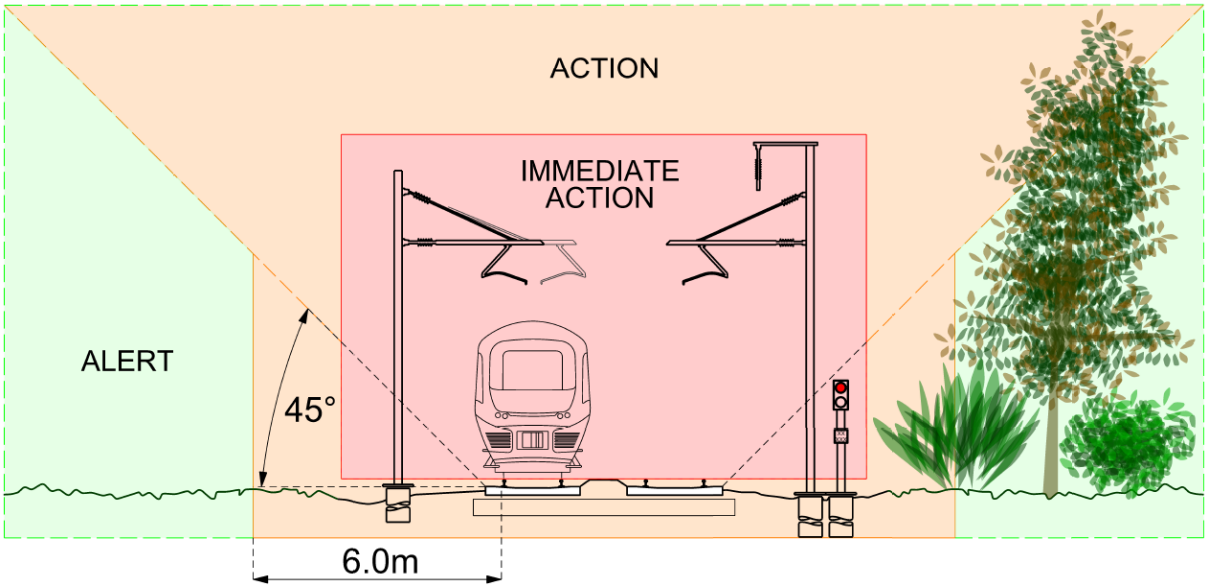

Figure 1 – Intervention zones

Output of the vegetation inspection shall be recorded against every eighth of a mile for each side using NR/L2/OTK/5201/F3079 *Lineside vegetation inspection*.

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.

3.2 Immediate action

3.2.1 Inspection details

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

This zone does not have pre-determined dimensions.

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.

3.2.2 Assigning immediate and corrective action timescales

The Inspector shall assign the appropriate response for vegetation in accordance with Table 2. The minimum clearance requirements are described in NR/L2/OTK/5201/MOD02.

***NOTE**: Corrective action includes work to achieve clearance requirements following immediate action or where work is required to prevent encroachment becoming an immediate response.*

Risk	**Immediate response timescale**	**Corrective action timescale**
Obscured sighting of; Signals Level crossings Lineside operational signs	Rapid response	Not applicable
Encroaching the sighting of; Signals Level crossings Lineside operational signs Required visibility for track side worker	No temporary action required	3 months
Encroachment within 300mm of OLE	36 hrs	6 months
Encroachment within 1m of OLE	28 days	6 months
Encroachment within 2.75m of OLE	no temporary action required	6 months

Vegetation touching Return Conductor (RC)	36 hrs	6 months
Encroachment within 300mm of Return Conductor (RC)	28 days	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.	28 days	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;

c) the presence of vegetation within 3.5 metres of OLE.

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.

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: *Potentially hazardous can include trees that have already uprooted or where stems and branches have become dislodged.*

NOTE 2: *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/L2/OTK/5201/F3245 *Tree risk evaluation and control by non arboriculturalists*. If the result requires a further arboricultural inspection carry out the inspection using NR/L2/OTK/5201/F3077 *Tree hazard risk evaluation and treatment system* and in accordance with clause 3.4.

NOTE 3: *Competence requirements for those completing NR/L2/OTK/5201/F3077 Tree hazard risk evaluation and treatment system are included on the form.*

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.

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.

3.4 Undertaking tree inspections

A tree inspection shall be carried out on all trees greater than 150mm diameter at breast height that appear hazardous to:

- the railway and its infrastructure and
- outside party property.

Record tree Inspections on NR/L2/OTK/5201/F3077 *Tree hazard risk evaluation and treatment system*, the results of which shall be recorded in ellipse.

Use THREATS NR section provided within NR/L2/OTK/5201/F3077 *Tree hazard risk evaluation and treatment system* to evaluate trees that are a threat to the railway.

Use the THREATS section provided within NR/L2/OTK/5201/F3077 *Tree hazard risk evaluation and treatment system* to evaluate trees that are a threat to outside party property.

Trees that are recognised or have the potential to be nationally important, legally protected or of local importance shall be recorded.

NOTE: NR/L2/OTK/5201/04 provides information on protected, nationally important and locally important trees.

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

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/L2/OTK/5201/F3077 *Tree hazard risk evaluation and treatment system*; or

b) record the unique identification number and that access was not possible on NR/L2/OTK/5201/F3077 *Tree hazard risk evaluation and treatment system*.

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

Undertake the risk assessment on NR/L2/OTK/5201/F3077 *Tree hazard risk evaluation and treatment system* and:

a) determine the response including any additional risk controls or precautions; and

b) provide detail of the work required.

Where trees have been identified as hazardous on outside party land the notification process detailed in NR/L2/OTK/5201/MOD04 shall be followed.

3.5 Undertaking leaf fall inspections

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/L2/OTK/5201/F3076 *Leaf fall risk assessment* 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.

On completion of the work re-score the site using NR/L2/OTK/5201/F3076 *Leaf fall risk assessment* 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.

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

4 Cab ride inspection

Use NR/L2/OTK/5201/F3270 *Cab ride of lineside vegetation report* 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.*

5 Supervisory inspection

Undertake an on foot supervisory inspection to 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.*

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/L2/OTK/5201/F3269 *Supervisory inspection of lineside vegetation report*.

6 Post-incident inspection

An inspection shall take place where an incident of tree or branch failure occurs and NR/L2/OTK/5201/F3211*Fallen tree incident form* shall be completed.

NOTE 1: *Hazard ratings are calculated using this form to assist with the ranking of wrong side failures.*

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

NOTE 2: *To assist with undertaking a post incident inspection the person first responding should be contacted to assist with the investigation.*

NOTE 3: *Fallen trees that are a diameter of 150mm at rail require completion of this form.*

7 Ad-hoc and reactive inspection

Use NR/L2/OTK/5201/F3079 *Lineside vegetation inspection* where asset records do not exist after which time the inspection shall be planned on a cyclical basis.

Use NR/L2/OTK/5201/F3245 *Tree risk evaluation and control by non arboriculturalists* 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 3.4.

8 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.*

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.

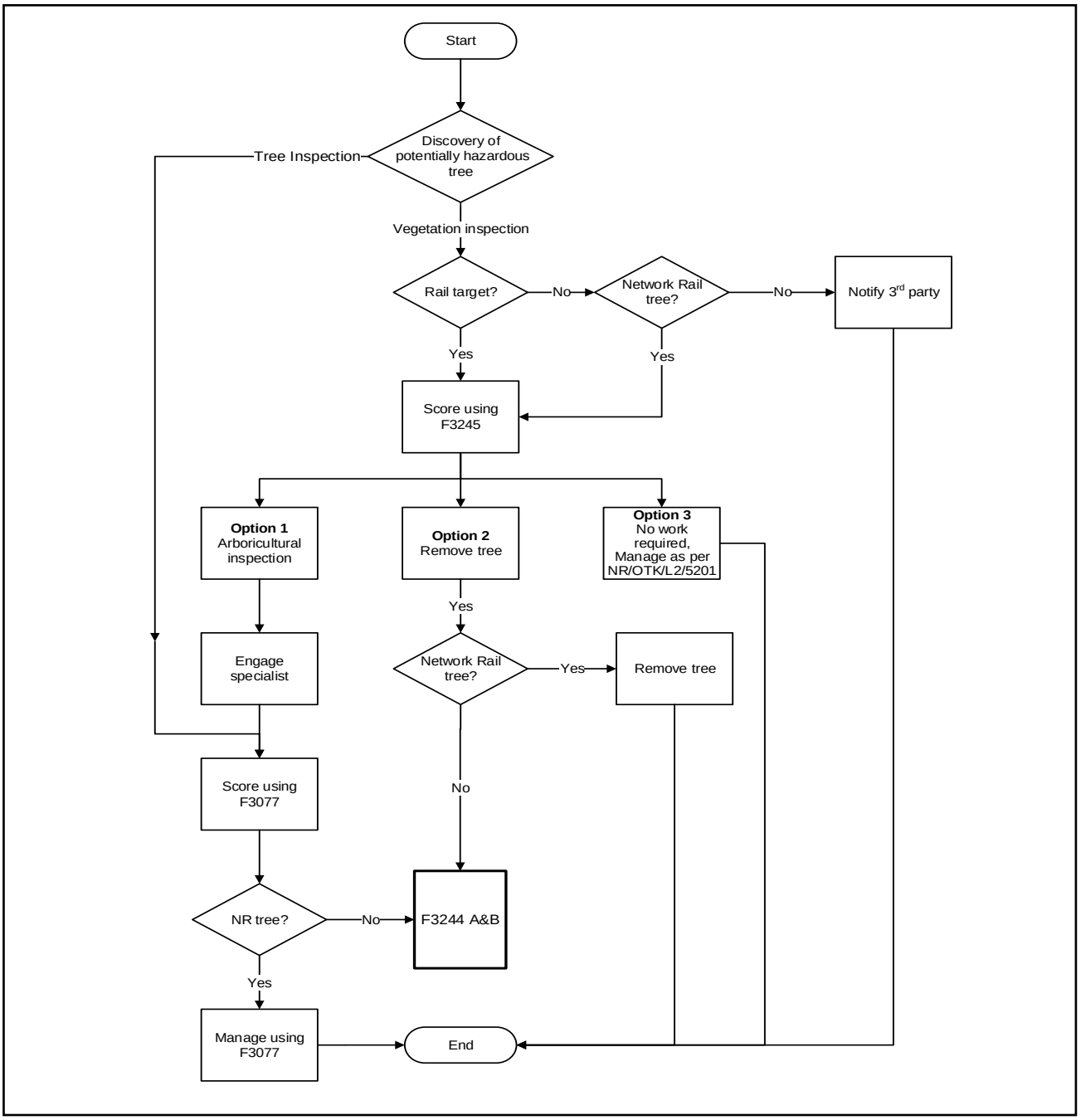

Figure A-1 – Hazardous tree risk assessment