

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

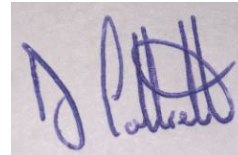
Level 3

Work Instruction

Risk assessing level crossings

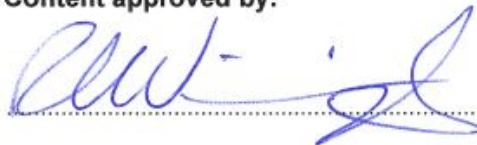
Approvals

Content Approved by:



Darren Cottrell,
Technical Lead

Content approved by:



Rob Wainwright,
Standard and Control Document Owner

Approved for publication by:



John Winniffrith,
Standards and Controls Management Team

This document is the property of Network Rail. It shall not be reproduced in whole or part nor disclosed to a third party without the written permission of Network Rail.
© Copyright 2020 Network Rail.

Uncontrolled copy once printed from its electronic source.

Published and Issued by Network Rail, 2nd Floor, One Eversholt Street, London, NW1 2DN.



Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

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.

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

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 5th September 2020.

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.*

Disclaimer

In issuing this standard/control document for its stated purpose, Network Rail Infrastructure Limited makes no warranties, expressed or implied, that compliance with all or any standards/control documents it issues is sufficient on its own to provide safety or compliance with legislation. Users are reminded of their own duties under legislation.

Compliance with a Network Rail standard/control document does not, of itself, confer immunity from legal obligations.

Where Network Rail Infrastructure Limited has granted permission to copy extracts from Network Rail standards or control documents, Network Rail Infrastructure Limited accepts no responsibility for, nor any liability in connection with, the use of such extracts, or any claims arising there from.

This disclaimer applies to all forms of media in which extracts from Network Rail standards and control documents might be reproduced.

Supply

Copies of standards/control documents are available electronically, within Network Rail's organisation. Hard copies of this document might be available to Network Rail people on request to the relevant controlled publication distributor. Other organisations can obtain copies of this standard/control document from an approved distributor.

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

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

Issue record

Issue	Date	Comments
1	September 2020	Content transferred from NR/L3/OPS/045/3.08

Reference documentation

NR/L2/OCS/031	Assessing and assuring the impact of operational risks relating to changes to the train plan
NR/L2/OPS/100	Provision, Risk Assessment and Review of Level Crossings
NR/L2/SIG/30021	Alterations to Authorised Line Speeds
NR/L3/INF/02226	Corporate Records Retention Schedule
NR/L3/XNG/207	Level Crossing Manager Competence Framework

Legislation

This standard/control document has been reviewed to confirm it complies with the following legislation:

Health and Safety at Work etc. Act 1974

The Management of Health and Safety at Work Regulations 1999

Level Crossing Act 1983

The Railways and Other Guided Transport Systems (Safety) Regulations 2006 (as amended)

Road Traffic Act 1988 & 1991

The Traffic Signs Regulations and General Directions 2016

The Private Crossings (Signs and Barriers) Regulations 1996

Compliance with this standard/control document does not, on its own, provide compliance with the legislation listed.

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

Contents

1 Purpose	7
2 Scope.....	7
3 Roles and responsibilities	7
Table 1 – RACI chart	8
4 Definitions	8
Table 2 – Terms and definitions	8
5 General	9
6 Competence	9
7 Risk assessment frequency	9
7.1 Calculated Frequency	9
Table 3 – Risk assessment frequency and risk categorisation criteria	10
7.2 Calculated risk assessment frequency review	10
7.3 Additional risk assessment triggers	10
8 Risk assessment process – collate information.....	11
8.1 Initial contact with authorised users of User Worked Crossings (UWC)	11
8.2 Follow up contact with authorised users of User Worked Crossings	11
8.3 Prepare for site visit.....	11
8.4 Stakeholder involvement	12
8.5 Carry out site visit	12
8.6 Confirm usage – no users observed	12
Figure 1 – Action to take when no users observed.....	14
8.7 Post site visit follow up.....	15
8.8 Submit data into ALCRM	15
8.9 Check for existing safety benefits	15
8.10 Carry out ALCRM sign-off checks	15
8.11 Sign-off ALCRM risk assessment	15
8.12 Changes to risk assessment frequency	15
9 Risk assessment process – identify risk controls optioneering	16
9.1 Optioneering short and long term solutions	16
9.2 Optioneering interim risk controls	16
9.3 Copy previous options	17
9.4 Analyse results	17
9.5 Carry out Cost Benefit Analysis (CBA)	17
9.6 Final option selection	18

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

9.7 Recommend option(s)	18
9.8 Seek option approval	18
9.9 Option(s) approved	18
9.9.1 Options to be progressed	18
9.9.2 No options to be progressed	18
9.10 Complete a Narrative Risk Assessment (NRA)	19
9.11 NRA quality assurance process	19
Figure 2 – NRS quality assurance process overview	20
9.12 Notify authorised users of risk assessment outcome	20
10 Risk assessment process – implement risk controls	21
10.1 Stakeholder management	21
10.2 Track option implementation	21
10.3 Implement delivered option	21
10.4 Carry over ongoing options	22
10.5 Notify stakeholders	22
10.6 Decide if a new risk assessment is needed	22
11 Level crossing incidents and accidents	22
11.1 Identifying incidents and accidents	22
11.2 Follow up to incidents and accidents	22
11.3 Report reconciliation	23
12 Level crossing risk records	23
Table 4 – Responding to incidents and accidents	26
Appendix A - Risk assessment flowchart	27

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

1 Purpose

This standard provides a process for risk assessing level crossing assets.

It contributes to the control of the following high-level risks:

- a) Level Crossings: vehicle, person or animal on the line at risk of collision; and
- b) Level Crossings – non-collision (with train) incident.

Level crossing risk assessments form part of a multi-disciplinary process that demonstrates that level crossings remain safe, reliable and legally compliant.

2 Scope

This standard describes a method of risk assessing operational level crossings on Network Rail's managed infrastructure. It includes:

- a) the core level crossing risk assessment process;
- b) frequency of risk assessments;
- c) use of the All Level Crossing Risk Model (ALCRM) as the risk model;
- d) monitoring and response to level crossing incidents and accidents; and
- e) level crossing risk records.

It does not apply to authorised walking routes that cross the railway unless they are classified as a staff crossing with white lights. It does not apply to road rail access points or track access points.

A flowchart of the process is shown in Appendix A.

3 Roles and responsibilities

<p>R – Responsible is the person or people who are responsible for performing a certain task or action.</p> <p>A – An Accountable person is one who has overall accountability to make sure that a task or action is completed.</p> <p>C – Consulted people have an input into the task or action, this can be providing information, reviewing documents or attending workshops etc.</p> <p>I – Informed people are those who receive the output of a task or process.</p> <p>* Denotes option for delegation</p>					
5	General	Level Crossing Manager	Route Level Crossing Manager	Risk Assessor	Operations Risk Advisor
		R	AC		

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

6	Competence	R	AC		
7	Risk Assessment Frequency	R	AC		
8	Risk Assessment Process – Collate Information	R	AC		
9	Risk Assessment Process – Identify Risk Controls Optioneering	CI	CI	AR	
10	Risk Assessment Process – Implement Risk Controls	CI	RCI	AR	R
11	Level Crossing Incidents and Accidents	I	I	AR	I
12	Level Crossing Risk Records	R	RA	RA	A

Table 1 – RACI chart**4 Definitions**

Term	Definition
Optioneering	Optioneering is the opportunity to investigate potential safety improvements at a level crossing or its environment. Options that are modelled in ALCRM and selected for progression should be practicable and targeted toward the risks and hazards identified.
Risk Assessor	The Risk Assessor will almost always be the Level Crossing Manager. In certain cases, such as sickness, vacancies or annual leave, these duties may also be undertaken by the Route Level Crossing Manager or Operations Risk Advisor.
Operations Risk Advisor	Where a Route has appointed an Operations Risk Advisor to oversee line management responsibility for Level Crossing Managers, their RACI responsibilities conform to those of the Route Level Crossing Manager.

Table 2 – Terms and definitions

NOTE: This is a generic RACI and Route specific responsibilities may be used – Routes are responsible for briefing such changes to their users.

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

5 General

5.1 Operational level crossings on Network Rail managed infrastructure shall be risk assessed as required by [NR/L2/OPS/100](#).

5.2 Risk assessment of level crossings shall include:

- a) an ALCRM assessment of risk incorporating site visit, census and data collection;
- b) demonstration of collaborative working with stakeholders;
- c) optioneering; and
- d) production of a Narrative Risk Assessment (NRA).

Level crossings shall be risk assessed at the required frequencies (see clause 8).

At hybrid level crossings where separate public and private rights exist, a separate risk assessment shall be conducted for each element of the asset.

NOTE 1: All elements of a level crossing risk assessment should normally be undertaken by the same person.

NOTE 2: An example of a hybrid level crossing is one where a public footpath and private vehicle gates each provide separate means of access across the railway.

6 Competence

6.1 Level crossing risk assessments shall be undertaken by risk assessors who:

- a) have completed the level crossing risk assessment training; and
- b) have demonstrated the capabilities necessary to undertake level crossing risk assessments; or
- c) are under mentorship by someone who is competent to undertake level crossing risk assessments.

NOTE: The level crossing competence framework is shown in NR/L3/XNG/207.

7 Risk assessment frequency

7.1 Calculated Frequency

The frequency of level crossing risk assessments shall be based on the calculated risk for each crossing.

The calculated frequency is the minimum frequency at which crossings shall be risk assessed.

NOTE: The minimum risk assessment frequencies are calculated by ALCRM using the live risk scores. Risk assessment frequencies may be increased, see clause 7.2.

Crossings are placed into one of four categories. The categories, their associated risk assessment frequency and categorisation criteria are shown in Table 3.

The risk assessment frequency for hybrid level crossings shall be determined by the highest risk score.

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

Category	Criteria	Assessment Frequency (Years)
Red	<ul style="list-style-type: none"> Individual risk is A Collective risk is 1 Collective risk is 2 Collision frequency (pedestrian + vehicle) is > 0.01 	1.25
Yellow	<ul style="list-style-type: none"> Individual risk is B Individual risk is C Collective risk is 3 Collision frequency (pedestrian + vehicle) is > 0.001 Sighting time is less than warning time by > 4 seconds <p>NOTE: This does not take mitigations such as whistle boards and telephones into account.</p>	2.25
Double Yellow	Risk score is not M13 and no red or yellow criteria apply	3.25
Green	Risk score is M13	Not assessed

Table 3 – Risk assessment frequency and risk categorisation criteria

NOTE: Level crossing MSTs in Ellipse should align to ALCRM frequencies and be reviewed as part of an annual check of risk assessment frequencies.

7.2 Calculated risk assessment frequency review

The risk assessor shall review the risk assessment frequencies calculated by ALCRM and record their decision when the frequency is increased.

The frequency may be increased where structured expert judgement or limitations in ALCRM's ability to model crossing specific risks are present.

7.3 Additional risk assessment triggers

A level crossing risk assessment shall be carried out:

- at the evaluation stage for new crossings, proposed renewals, or alterations to the type of protection;
- after commissioning of the renewal or safety enhancement of a level crossing;
- within four weeks of a formal expression of concerns from internal or external stakeholders, e.g. TOCs (Train Operating Companies), ORR (The Office of Rail Regulation), highways authority, authorised user;
- before significant timetable changes (as a minimum, optioneering of the impact of timetable change);

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

NOTE 1: See NR/L2/OCS/031 before alterations to permissible line speeds, see NR/L2/SIG/30021.

- e) within four weeks of an incident of misuse, near miss or accident which triggers the requirement for a risk assessment, see Table 4;
- f) before Network Rail responds to planning proposal consultations that indicate a substantial change in traffic volumes, patterns or speeds (as a minimum, optioneering of the impact of traffic volume);
- g) following a report of a significant change in the environment which has an impact on a level crossing;
- h) within four weeks of receiving information of substantial increase in road traffic volume;
- i) before infrastructure changes that affect a level crossing, e.g. new lines / sidings, line closures or the reopening of mothballed lines.

NOTE 2: Risk assessments are also undertaken to support decision making for enhancements projects or stand-alone renewals.

NOTE 3: Apply structured expert judgement when deciding if changes are significant or substantial.

NOTE 4: In the case of very lightly used crossings a small increase in the number of road vehicles will have a greater impact on risk.

8 Risk assessment process – collate information

8.1 Initial contact with authorised users of User Worked Crossings (UWC)

Risk assessors shall use the Level Crossing Sharepoint system to correspond with authorised users. Authorised users of user worked crossings shall be sent the templated authorised user initial letter which includes the authorised user questionnaire. Letters shall be sent between two and three months before the date of the next scheduled risk assessment.

NOTE: Contact with authorised users of user worked crossings is important to support our understanding of risk. It enables us to work jointly with authorised users to improve level crossing safety.

Letters shall be sent with a pre-paid envelope for authorised users to respond.

Authorised users might provide an email address as their preferred means of contact. In these circumstances, authorised user letters should be sent as email attachments.

8.2 Follow up contact with authorised users of User Worked Crossings

Where contact telephone numbers are available, risk assessors shall telephone authorised users to confirm their attendance at the site visit.

8.3 Prepare for site visit

Risk assessors shall prepare for the site visit. As a minimum this shall include:

- a) completing the office based element of the risk assessment;
- b) a review of previous census data;
- c) deciding which type of census will be undertaken and which equipment shall be used;

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

NOTE 1: Factors to take into account include time of day, duration and need for a second census due to seasonal variations.

- d) obtaining crossing usage information held by the controlling signal box e.g. records of requests to use the crossing entered in the occurrence book for user worked crossings, drivers of long or slow moving vehicles, herding animals; and
- e) using appropriate 'smart' sources of information, e.g. local sources of information on crossing usage held in site logs by businesses or reports from residents, Google maps, local authority websites, SMIS (Safety Management Information System).

NOTE 2: See Level Crossing Guidance documents LCG 01 and LCG 02 which are available on the Level Crossings Hub.

8.4 Stakeholder involvement

Risk assessors shall decide if stakeholder representation is needed during the site visit. Arrange to meet stakeholders on site when their attendance is needed.

8.5 Carry out site visit

Risk assessors shall use a mobile device when undertaking the risk assessment site visit.

Risk assessors shall use the mobile device to record site visit inputs to risk assessments. The mobile device shall only be used in a position of safety.

NOTE: The mobile device presents risk assessors with the relevant questions for the crossing being risk assessed. It provides risk assessors with the available fields and options to record the inputs to the risk assessment.

If the mobile device fails, risk assessors can undertake risk assessment site visits using data collection forms.

8.6 Confirm usage – no users observed

At crossings where a quick census is undertaken, no users are observed and there is no visual or other supporting evidence of crossing use:

EITHER:

- a) where possible carry out appropriate local investigations to substantiate usage, e.g. contact the authorised user, speak to nearby residents, check the internet for local walking groups etc...; and
- b) deploy census equipment for a minimum of one month to verify if the crossing is being used.

If the collated information / evidence from investigations support that the crossing is not being used then:

- a) where possible, establish and record if non-usage is temporary or permanent;
- b) record no use as an estimated census in ALCRM and add supporting commentary.

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

NOTE 1: Where permanent non-use has been established, closure should be investigated and if practicable pursued.

NOTE 2: If agreement can be reached with the authorised user, lock crossing out of use until such time as it is needed again.

OR:

- a) if local investigations are not possible;
- b) record no use as an estimated census in ALCRM and add supporting commentary.

Local investigations will generate one of two outcomes:

EITHER:

- a) the crossing is being used and the risk assessment shall be updated with the revised census information and new risk assessment detail and the asset should continue to be risk assessed at the required frequency; or
- b) the crossing is not being used and the M13 risk assessment remains valid. Confirm its M13 status in ALCRM with suitable commentary and continue to monitor for use during asset inspection visits.

If monitoring during asset inspection visits identifies that the crossing is being used, conduct a new risk assessment within four weeks.

If informed that a crossing with M13 status is being used, a new risk assessment shall be conducted within four weeks.

NOTE: Interim measures might be needed before the new risk assessment is conducted.

A flowchart of the action to take is shown in Figure 1.

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

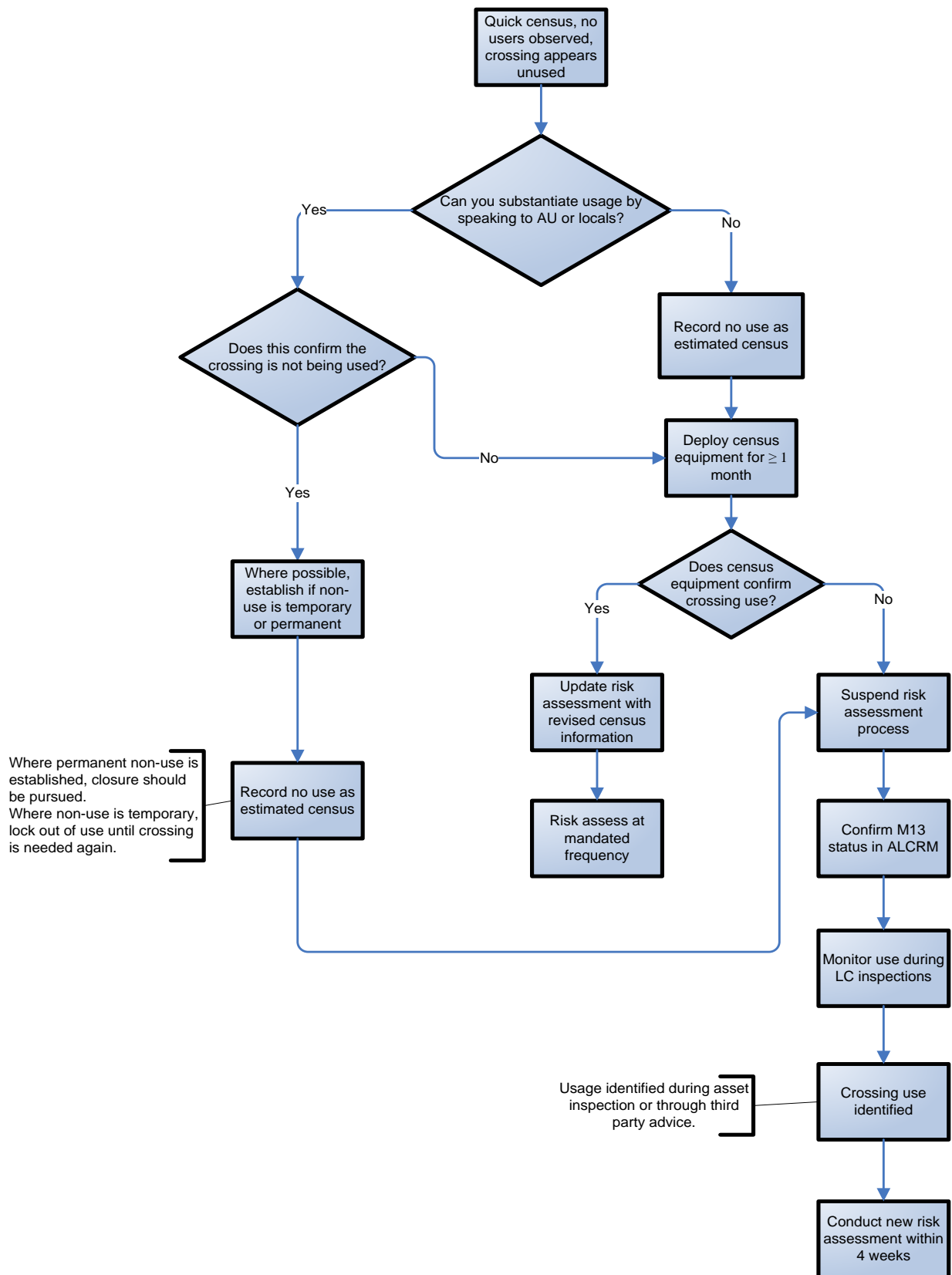


Figure 1 – Action to take when no users observed

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

8.7 Post site visit follow up

After completing the site visit, follow up checks might be needed. These can include:

- a) checking the accuracy of data collected; or
- b) speaking to an outside party, e.g. a local business; or
- c) conducting an additional site visit.

8.8 Submit data into ALCRM

Risk assessors shall upload the data collected for the risk assessment into ALCRM from the mobile device.

NOTE: To avoid loss of data, always upload the data collected where full Wi-Fi is available.

Where risk assessment data is not recorded on the mobile device, e.g. device failure or paper copy used, risk assessors shall manually enter the data into ALCRM.

8.9 Check for existing safety benefits

Check the mitigations tab of the previous risk assessment in ALCRM to determine if any safety benefits have been applied, e.g. spoken alarm or red light safety equipment. Apply the safety benefits to the new risk assessment if still applicable.

8.10 Carry out ALCRM sign-off checks

A sign-off check shall be undertaken for each risk assessment. This shall be conducted by a person who meets the requirements of clause 7.

The person undertaking the check shall focus on key inputs and sense check all data for errors and anomalies. Any issues identified shall be discussed with the relevant risk assessor. Agreement shall be reached on any corrective action to be taken prior to sign off.

8.11 Sign-off ALCRM risk assessment

Risk assessments shall be signed off in ALCRM:

- a) within six weeks of the site visit; and
- b) by a person who meets the requirements of clause 7.

8.12 Changes to risk assessment frequency

ALCRM provides a warning of change in risk assessment frequency.

If the risk assessment frequency has changed, the risk assessor shall arrange for the relevant MST (Maintenance Schedule Task) in Ellipse to be updated.

NOTE 1: Information on changes in risk assessment frequency is held on the Analyse Results page. The change in frequency management report (available on the Level Crossings Hub) can be run periodically to identify changes in risk assessment frequency.

NOTE 2: MSTs are updated by the Systems Support Manager. If the ALCRM score has changed to M13, the MST should be turned off.

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

9 Risk assessment process – identify risk controls optioneering

9.1 Optioneering short and long term solutions

Optioneering shall be undertaken on all risk assessments. Optioneering shall be undertaken within 12 weeks of the site visit. Options to be progressed shall be identified and set to 'recommended' status within this timescale.

Potential risk controls shall be identified taking account of:

- a) the ALCRM outputs;
- b) key risk drivers;
- c) structured expert judgement; and
- d) other sources e.g. advice from other experts or key stakeholders.

Risk controls shall include short and long term solutions as appropriate.

New Level Crossing Orders place requirements on Network Rail and local authorities to agree long term strategies for public road level crossings.

Discussions and agreements shall be referenced in the NRA, see clause 9.10, and recorded in the level crossing file, see clause 12.

NOTE 1: Risk assessors can create a first version of the NRA to assist with identifying risk controls during optioneering.

NOTE 2: The Level Crossing Risk Management Toolkit (LXRMTK) <http://www.lxrmtk.com> and the Level Crossing Risk Management Catalogue are good sources of risk control and human factors information.

NOTE 3: See clause 9.9.2 for action to be taken when risk is deemed to be adequately managed by existing controls and no further mitigations are reasonably practicable.

NOTE 4: It is good practice to agree long term strategies for all public road level crossings and footpath crossings with local authorities. All long term strategies should be developed in consultation with the Route Asset Manager.

9.2 Optioneering interim risk controls

Interim risk controls might be needed in addition to short and long term solutions.

As a minimum, interim risk controls shall be evaluated and progressed in the following circumstances:

- a) deficient sighting; or
- b) where a significant risk would exist pending delivery of short or long term solution(s).

NOTE: See guidance on Managing Interim Risk at Level Crossings. Interim risk controls should be modelled as short term options in ALCRM.

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

9.3 Copy previous options

Relevant options from the previous risk assessment shall be copied onto the new live risk assessment.

Relevant options can include those that:

- a) control risk and have not previously been recommended or approved;
- b) have been previously recommended and are awaiting financial authority to progress to approved stage; or
- c) are approved options awaiting delivery.

NOTE: Previous options being copied should be checked and where needed amended for consistency with the new risk assessment, e.g. census numbers, sighting distances, train service data.

9.4 Analyse results

Modelled options shall be analysed to determine which:

- a) give the greatest safety benefit as measured in Fatalities and Weighted Injuries (FWI);
- b) are effective at controlling and / or reducing risk conditions present at the crossing, e.g. address key risk drivers, known incidents of misuse or potential consequences of an incident or environmental risk; and
- c) are achievable and practicable.

9.5 Carry out Cost Benefit Analysis (CBA)

CBA shall be carried out on options that meet the requirements of 9.4. The CBA shall be completed using the Network Rail CBA tool.

The CBA will give a benefit to cost ratio. CBA shall be used to support the decision when selecting options that will be progressed.

The following can be used to support decision making:

- a) benefit to cost ratio is ≥ 1 : positive safety and business benefit established;
- b) benefit to cost ratio is between 0.99 and 0.5: reasonable safety and business benefit established; and
- c) benefit to cost ratio is between 0.0 and 0.49: weak safety and business benefit established.

CBA might not be needed in all cases, e.g. low cost solutions or remedies for enforcement action. CBA gives an indication of overall business benefit. It should be used to support, not override, structured expert judgement when deciding which option(s) to progress. CBA does not always adequately reflect the safety benefit that can be achieved by implementing an option.

NOTE: Where a business to cost ratio is < 1 , supporting documentation will be needed to progress an option.

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

9.6 Final option selection

Decide which option(s) will be progressed for implementation.

NOTE 1: This could include discussing with and obtaining the support of the wider Route team.

NOTE 2: More than one option can be progressed. Option(s) can include interim, short and long term risk controls.

9.7 Recommend option(s)

All option(s) that are:

- a) being progressed; or
- b) are to be progressed in the future;

shall be set to 'recommended' status in ALCRM.

NOTE: The ALCRM User Guide gives guidance on recommending options. Optioneering guidance is being developed.

9.8 Seek option approval

Obtain approval for the selected option as appropriate.

Seek financial authority for the selected option(s) where needed.

NOTE: This includes obtaining the support of an Investment Panel where appropriate. A sponsor might be appointed.

For technical solutions, establish the high level feasibility of selected option(s).

9.9 Option(s) approved

9.9.1 Options to be progressed

When a feasible option has obtained approval, including financial authority where needed, it shall be set to 'approved' status in ALCRM.

Review the progress of recommended option(s) that have not gained financial authority or where feasibility has not been established within six months. Establish if the option remains viable.

Risk assessors shall revisit option selection if options are not approved or are not viable and evaluate if there are other controls which might be better suited to manage safety.

NOTE: Further information is in 9.1 and 9.2.

9.9.2 No options to be progressed

Risk assessors shall 'recommend', 'approve' and 'implement' a 'no further so far as is reasonably practicable (SFAIRP) mitigation identified' option where:

- a) risk is deemed to be adequately managed by existing risk controls, e.g. at a CCTV level crossing; and
- b) no further safety benefits are reasonably practicable.

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

9.10 Complete a Narrative Risk Assessment (NRA)

The risk assessor shall complete a NRA for the level crossing being risk assessed.

As a minimum a NRA shall contain:

- a) information automatically extracted from ALCRM;
- b) enhanced qualitative narrative to greater articulate the risks present and support decision making;
- c) conclusions relating to the management of risk in the interim, short and long term; and
- d) evidence of risk control option(s) identified, those being progressed and those identified for future progression.

The NRA shall be completed within 12 weeks of the site visit.

NOTE 1: The process for creating and guidance for completing NRAs are available on the Level Crossings Hub.

NOTE 2: The NRA is a risk assessment report for the level crossing. It should be written in report format.

NOTE 3: Review and update the joint long term strategy for all public road crossings when completing the NRA.

9.11 NRA quality assurance process

All Level Crossing Managers (LCMs), Route Level Crossing Managers (RLCMs) and their nominated representatives shall undertake an assurance of the quality and consistency of level crossing risk assessments.

Checks should include:

- a) accuracy of information collected as part of the core ALCRM data collection activity;
- b) consistency of information; tracking for content which conflicts or is ambiguous;
- c) detail of qualitative information; completeness, robustness, appropriateness;
- d) identification of risks and hazards; relative to crossing users and crossing environment;
- e) story board of NRA; content flows from beginning to end – e.g. there are no new hazards denoted in the conclusions section which do not feature earlier in the NRA;
- f) the risk controls considered, recommended or rejected are appropriate to address the risks and hazards identified and are proportionate to these risks;
- g) cost benefit analysis is completed, where this is required, and the BCR supports the recommended action(s) and/or legal, moral and economic considerations together with time, money and effort support proposals;
- h) the language used is consistent with agreed protocols and terminology and would not be considered emotive or inappropriate; e.g. Deliberate misuse and user human error are applied correctly, and 'misuse' is avoided in narratives

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

The NRA assurance process shall be completed within 12 weeks of the site visit.

A flowchart detailing the process overview is shown in Figure 2.

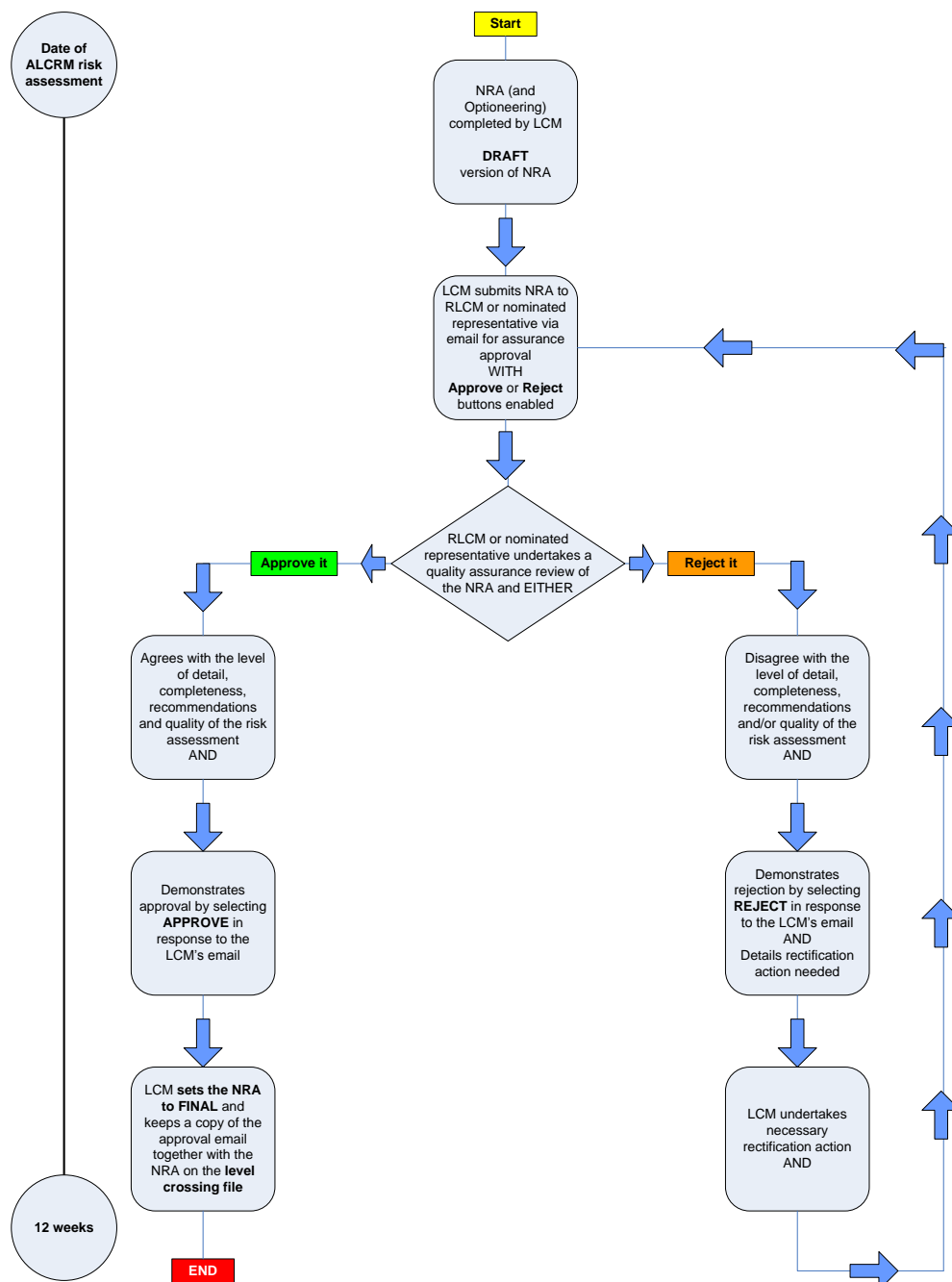


Figure 2 – NRS quality assurance process overview

9.12 Notify authorised users of risk assessment outcome

When the risk assessment is complete, the risk assessor shall send authorised users of user worked crossings the templated authorised user follow up letter and appropriate safe crossing usage information.

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

If the authorised user has provided alternative contact details, e.g. an email address, and confirmed they prefer to be contacted using these details, the letter shall be sent using the alternative contact details.

NOTE: Authorised user letter templates are contained in the Level Crossing Sharepoint.

10 Risk assessment process – implement risk controls

10.1 Stakeholder management

Risk assessors shall:

- a) maintain contact with stakeholders to keep them updated on the progress of approved options;
- b) inform stakeholders that work is due to take place before it commences.

10.2 Track option implementation

Risk assessors shall progress and track option(s) until they are implemented. Liaise with the sponsor and / or delivery agent as needed.

Work closely with teams implementing the works.

Recommended option(s) that have not been progressed within 12 months of the risk assessment date shall be reported six monthly. The report shall be run by the Route Level Crossing Manager (RLCM) / Operations Risk Advisor (ORA).

NOTE 1: The suite of ALCRM management reports includes an optioneering report.

NOTE 2: Risk assessors should review the recommended options report to advise if options are still viable.

10.3 Implement delivered option

Risk assessors shall establish that an option has been implemented and the expected safety benefits are achieved.

Evidence of implementation can include:

- a) site visit;
- b) photographs; and
- c) documentary evidence, e.g. changes to ground plans, Level Crossing Orders etc.

When this has been established the option status shall be set to 'implemented' in ALCRM.

If the crossing is closed, update ALCRM to reflect temporary or permanent closure by implementing an M13 option and changing the core details to the respective status.

Follow the requirements of 8.12 to determine if the risk assessment frequency has changed.

NOTE 1: This will generate a new live risk assessment. The risk assessment date will remain as the date of the site visit on which the implemented option is based.

NOTE 2: Guidance on closing and archiving crossings in ALCRM is given in AUG/CA, which is available on the Level Crossings Hub.

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

NOTE 3: Implementing a risk control option can result in a change to the risk assessment frequency and reduce the FWI.

10.4 Carry over ongoing options

Where more than one option is being progressed, carry over any other ongoing recommended or approved options to the new live risk assessment, see 9.3.

10.5 Notify stakeholders

Notify internal and external stakeholders of implemented options.

10.6 Decide if a new risk assessment is needed

Factors to take into account include:

- a) the time elapsed between the date of site visit and delivery of implemented option; and
- b) the requirements of 7.3.

Restart the process if a new risk assessment is needed.

11 Level crossing incidents and accidents

11.1 Identifying incidents and accidents

Risk assessors shall review daily Route Control logs and SMIS downloads to identify incidents and accidents affecting level crossings for which they are responsible.

Risk assessors shall also act proactively, taking account of other smart sources of intelligence such as red light safety equipment or census cameras, if such sources identify incidents which are not recorded through Route Operations Control.

This includes incidents of misuse, near misses and accidents.

11.2 Follow up to incidents and accidents

Risk assessors shall implement the actions described in Table 4.

When undertaking trigger risk assessments of user worked crossings, risk assessors shall document the method of contact and attempts to contact authorised users in the relevant level crossing file.

Involve other stakeholders in the review of risk assessments, findings and recommended actions arising from incidents and accidents.

Stakeholders include Highway Authorities, Environment Agency, the BTP (British Transport Police), Emergency Services and Road Rail Partnership Groups, etc.

NOTE 1: Risk assessors should keep a record of incidents and accidents on the level crossings for which they are responsible to help identify when the triggers given in Table 2 are reached.

NOTE 2: Risk assessors should identify potential factors that might cause or increase misuse and the controls to address the risks. Risk assessors should maintain regular contact with Community Safety Managers so they are aware of route crime incidents at level crossings.

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

11.3 Report reconciliation

Risk assessors shall reconcile data recorded in the Route Control log and SMIS for each period within one week of receipt of the report. Risk assessors shall inform the Safety Reporting Team) of any discrepancies. Risk assessors shall reach agreement with the Safety Reporting Team on any discrepancies identified and how they will be recorded in SMIS.

NOTE 1: Report reconciliation can be undertaken by technical clerks or other nominated representatives should this better align with individual Routes operating structures.

NOTE 2: Risk assessors might receive other reports or information about incidents and accidents from local sources that can clarify the location or circumstances of incidents.

12 Level crossing risk records

All records shall be retained as per the timescales defined in NR/L3/INF/02226.

Records shall include:

- a) copies of all correspondence sent to the authorised users of user worked crossings;
- b) copies of completed NRAs;
- c) correspondence related to the consideration of and decisions about proposed risk controls;
- d) correspondence relating to actual or potential closures;
- e) long term strategy agreements and proposals;
- f) actions taken as a result of monitoring and in response to incidents and accidents;
- g) general correspondence relating to the risk management of level crossings.

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

Crossing Type	Definition of Misuse	Trigger	Action Required	Definition of Near Miss	Trigger	Action Required	Definition of Accident	Trigger	Action Required
ABCL, AHB, AOCL(+B), AOCL	Crossing of the line during the warning sequence by vehicles or pedestrians Irregular use of the crossing by a long, low or slow moving vehicle	3 times in a period of 12 months	Undertake additional risk assessment unless within 6 months of last routine risk assessment or a risk assessment has already been undertaken in accordance with this table within the last 12 months	Crossing of the line during the warning sequence by vehicles or pedestrians necessitating emergency braking to be initiated by the train driver or too late for avoiding action to be taken	After each reported occurrence	Undertake additional risk assessment unless within 6 months of last routine risk assessment or a risk assessment has already been undertaken in accordance with this table within the last 12 months	Train has struck a vehicle or pedestrian or a vehicle has struck a train	After each reported occurrence (except pedestrian suicides)	Undertake additional risk assessment
MCB type, MG	Crossing of the line during the warning sequence by vehicles or pedestrians Barrier Strikes before the crossing clear button is pressed	3 times in a period of 12 months	Undertake additional risk assessment unless within 6 months of last routine risk assessment or a risk assessment has already been undertaken in accordance with this table within the last 12 months	Barrier Strikes after the crossing clear button is pressed	After each reported occurrence	Undertake additional risk assessment unless within 6 months of last routine risk assessment or a risk assessment has already been undertaken in accordance with this table within the last 12 months	Train has struck a vehicle or pedestrian or a vehicle has struck a train	After each reported occurrence (except pedestrian suicides)	Undertake additional risk assessment

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

Crossing Type	Definition of Misuse	Trigger	Action Required	Definition of Near Miss	Trigger	Action Required	Definition of Accident	Trigger	Action Required
Open	Crossing of the line during the approach of a train (within the minimum required sighting distance)	3 times in a period of 12 months	Undertake additional risk assessment unless within 6 months of last routine risk assessment or a risk assessment has already been undertaken in accordance with this table within the last 12 months	Crossing of the line during the approach of a train by vehicles or pedestrians necessitating emergency braking to be initiated by the train driver or too late for avoiding action to be taken	After each reported occurrence	Undertake additional risk assessment unless within 6 months of last routine risk assessment or a risk assessment has already been undertaken in accordance with this table within the last 12 months	Train has struck a vehicle or pedestrian or a vehicle has struck a train	After each reported occurrence (except pedestrian suicides)	Undertake additional risk assessment
User worked crossing type	<p>Crossing of the line during the approach of a train (within the minimum required sighting distance)</p> <p>Non use of telephone when provided (except incidents of the user failing to call back after use)</p> <p>Crossing when the MSLs are red</p> <p>Gates left open</p>	3 times in a period of 12 months	<p>Undertake additional risk assessment unless within 6 months of last routine risk assessment or a risk assessment has already been undertaken in accordance with this table within the last 12 months</p> <p>Make contact with authorised user to invite them to attend the risk assessment</p>	Crossing of the line during the approach of a train by vehicles or pedestrians necessitating emergency braking to be initiated by the train driver or too late for avoiding action to be taken	After each reported occurrence	<p>Undertake additional risk assessment unless within 6 months of last routine risk assessment or a risk assessment has already been undertaken in accordance with this table within the last 12 months</p> <p>Make contact with authorised user to invite them to attend the risk assessment</p>	Train has struck a vehicle or pedestrian or a vehicle has struck a train	After each reported occurrence (except pedestrian suicides)	<p>Undertake additional risk assessment</p> <p>If appropriate, make contact with authorised user to invite them to attend the risk assessment</p>

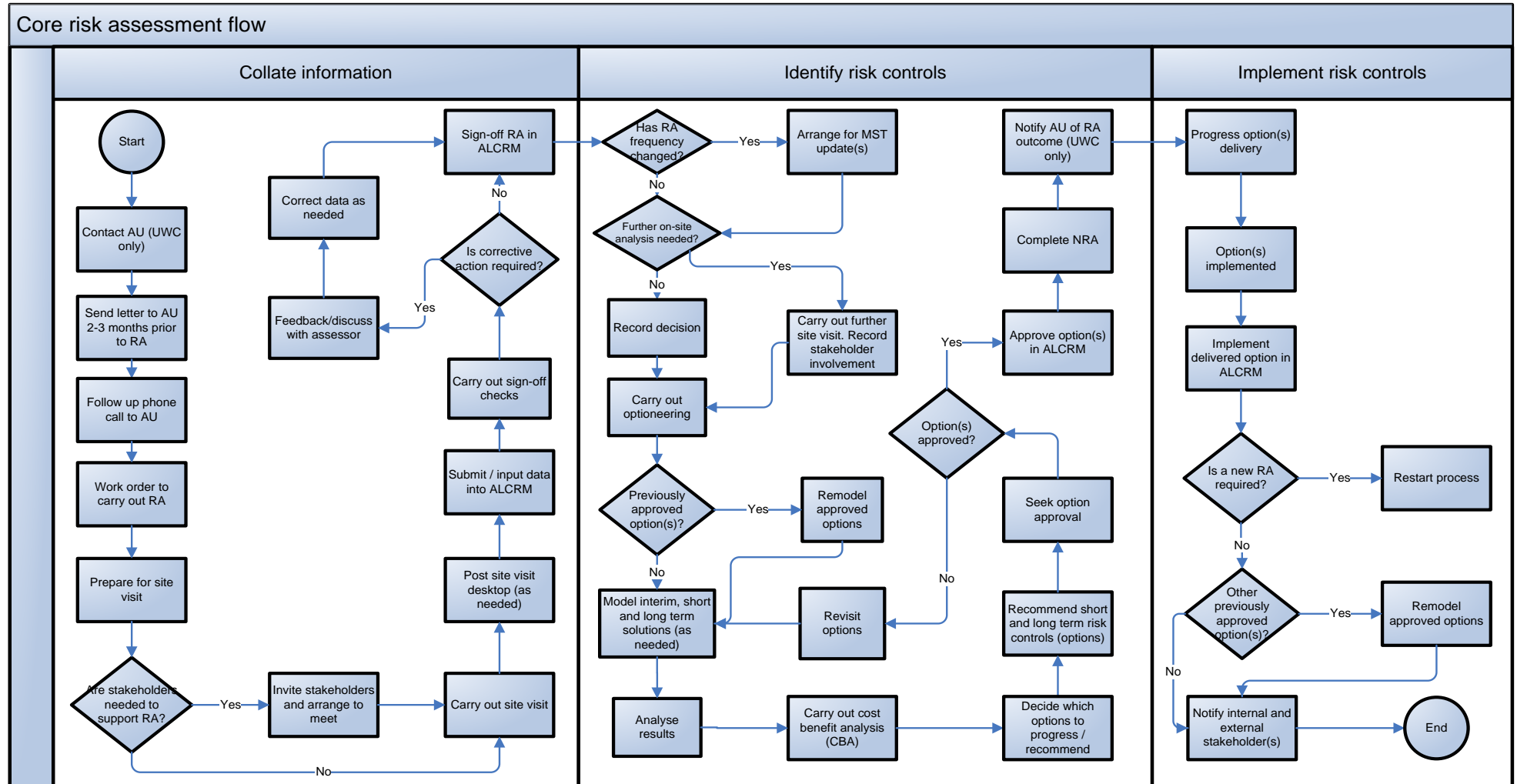
Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

Crossing Type	Definition of Misuse	Trigger	Action Required	Definition of Near Miss	Trigger	Action Required	Definition of Accident	Trigger	Action Required
BW, FP, Station pedestrian crossings	<p>Crossing of the line during the approach of a train (within the minimum required sighting distance)</p> <p>Crossing when the MSLs are red</p> <p>Crossing when the White Light Indicator is extinguished</p>	3 times in a period of 12 months	Undertake additional risk assessment unless within 6 months of last routine risk assessment or a risk assessment has already been undertaken in accordance with this table within the last 12 months	<p>In any of the following circumstances:</p> <ul style="list-style-type: none"> crossing of the line during the approach of a train crossing when the MWLs are red crossing when the White Light Indicator is extinguished necessitating emergency braking to be initiated by the train driver or too late for avoiding action to be taken 	After each reported occurrence	Undertake additional risk assessment unless within 6 months of last routine risk assessment or a risk assessment has already been undertaken in accordance with this table within the last 12 months	Train has struck a pedestrian or horse	After each reported occurrence (except pedestrian suicides)	Undertake additional risk assessment

Table 4 – Responding to incidents and accidents

Ref:	NR/L3/XNG/308
Issue:	1
Date:	05 September 2020
Compliance date:	05 September 2020

Appendix A - Risk assessment flowchart



Standard and control document briefing note

Ref: NR/L3/XNG/308		Issue: 1																					
Title: Risk assessing level crossings																							
Publication date: 05 September 2020		Compliance Date: 05 September 2020																					
Standard/Control Document Owner: Head of Level Crossings																							
Technical lead/contact for briefings: Darren Cottrell, Level Crossing Asset Strategy & Planning Manager			Tel: 07767 644687																				
<p>Purpose: This standard provides a process for risk assessing level crossing assets.</p> <p>It contributes to the control of the following high-level risks:</p> <ul style="list-style-type: none"> a) Level Crossings: vehicle, person or animal on the line at risk of collision; and b) Level Crossings – non-collision (with train) incident. <p>Level crossing risk assessments form part of a multi-disciplinary process that demonstrates that level crossings remain safe, reliable and legally compliant.</p>		<p>Scope: This standard describes a method of risk assessing operational level crossings on Network Rail's managed infrastructure. It includes:</p> <ul style="list-style-type: none"> a) the core level crossing risk assessment process; b) frequency of risk assessments; c) use of the All Level Crossing Risk Model (ALCRM) as the risk model; d) monitoring and response to level crossing incidents and accidents; and e) level crossing risk records. <p>It does not apply to authorised walking routes that cross the railway unless they are classified as a staff crossing with white lights. It does not apply to road rail access points or track access points.</p> <p>A flowchart of the process is shown in Appendix A.</p>																					
<p>Overview of change All content of NR/L3/OPS/045/3.08 has been transferred to this standard. The technical content has not been amended.</p>																							
<p>Detail of change</p> <table border="1"> <thead> <tr> <th>Section(s)/clause(s)</th> <th>Summary of changes</th> </tr> </thead> <tbody> <tr> <td>Throughout</td> <td>Minor editorial changes. No change in technical content.</td> </tr> <tr> <td>9.11</td> <td>Removal of reference to LCG 18 NRA Route self-assurance process.</td> </tr> </tbody> </table>				Section(s)/clause(s)	Summary of changes	Throughout	Minor editorial changes. No change in technical content.	9.11	Removal of reference to LCG 18 NRA Route self-assurance process.														
Section(s)/clause(s)	Summary of changes																						
Throughout	Minor editorial changes. No change in technical content.																						
9.11	Removal of reference to LCG 18 NRA Route self-assurance process.																						
<p>Reasons for change The standard has been published to allow transfer of ownership of all content in NR/L3/OPS/045/3.08 from Operations SCSG to Signals and Level Crossings SCSG. The technical content has not been amended. This transfer has been undertaken to bring level crossing risk management and level crossing competence standards under one framework. This is in line with the level crossing system framework the Technical Authority is moving towards.</p> <p>NR/L3/OPS/045/3.08 has been withdrawn and made historic.</p>																							
<p>Affected documents:</p> <table border="1"> <thead> <tr> <th>Reference</th> <th>Impact</th> </tr> </thead> <tbody> <tr> <td>NR/L3/XNG/308 ISSUE 1</td> <td>New</td> </tr> <tr> <td>NR/L3/OPS/045/3.08 ISSUE 1</td> <td>Withdrawn</td> </tr> </tbody> </table>				Reference	Impact	NR/L3/XNG/308 ISSUE 1	New	NR/L3/OPS/045/3.08 ISSUE 1	Withdrawn														
Reference	Impact																						
NR/L3/XNG/308 ISSUE 1	New																						
NR/L3/OPS/045/3.08 ISSUE 1	Withdrawn																						
<p>Briefing requirements: Will Briefing Management System be used to deliver the briefing to posts listed below? Yes <i>Technical briefings are given to those who have specific responsibilities within this standard/control document.</i> <i>Awareness briefings are given to those who might be affected by the content but have no specific responsibilities within the standard/control document.</i> <i>Details of the briefing arrangements are included in the associated briefing programme.</i> <i>All posts identified for briefing must be as described in OrgPlus.</i> <i>Roles are directly briefed and do not cascade briefings.</i> </p> <table border="1"> <thead> <tr> <th>Briefing (A-Awareness/ T-Technical)</th> <th>Post</th> <th>Function</th> <th>Responsible for cascade briefing? Y/N</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Route Level Crossing Manager</td> <td>Regions</td> <td>Y</td> </tr> <tr> <td>A</td> <td>Level Crossing Manager</td> <td>Regions</td> <td>N</td> </tr> <tr> <td>A</td> <td>Route Asset Manager [Signalling]</td> <td>Regions</td> <td>N</td> </tr> <tr> <td>A</td> <td>Head of Liability Negotiation</td> <td>Technical Authority</td> <td>Y</td> </tr> </tbody> </table>				Briefing (A-Awareness/ T-Technical)	Post	Function	Responsible for cascade briefing? Y/N	A	Route Level Crossing Manager	Regions	Y	A	Level Crossing Manager	Regions	N	A	Route Asset Manager [Signalling]	Regions	N	A	Head of Liability Negotiation	Technical Authority	Y
Briefing (A-Awareness/ T-Technical)	Post	Function	Responsible for cascade briefing? Y/N																				
A	Route Level Crossing Manager	Regions	Y																				
A	Level Crossing Manager	Regions	N																				
A	Route Asset Manager [Signalling]	Regions	N																				
A	Head of Liability Negotiation	Technical Authority	Y																				

OFFICIAL

A	Liability Negotiations Manager	Regions	Y
A	Liability Negotiations Adviser	Regions	N
A	Operations Risk Advisor	Regions	N
A	Programme Manager [Public & Passenger Safety]	Regions	N
A	Head of Corporate Passenger & Public Safety	Technical Authority	Y
A	Health Safety & Environment Director, North West & Central	Regions	N
A	Health Safety & Environment Director, Southern	Regions	N
A	Health Safety & Environment Director, Wales & Western	Regions	N
A	Head of Route Safety Health & Environment	Regions	N
A	Head of Route Safety Health & Environment [North West]	Regions	N

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