An Coimisiún Sábháilteachta Iarnróid
Railway Safety Commission

RSC-G-010-A
Third Party Guidance on Railway Risk
Volume 1 Planning and Development

CONTENTS

The Railway Safety Commission is grateful for the help of Sotera Risk Solutions Ltd. (www.sotera.co.uk) in the drafting of these Guidelines.

1 INTRODUCTION

1.1 WHO HAS PUBLISHED THIS GUIDANCE AND WHY?

This document has been published by the Railway Safety Commission to show all external parties how their various activities might affect railway safety. It also deals with how these risks can be controlled.

1.2 WHO SHOULD READ THE GUIDANCE?

The guidance covers all passenger and third party actions that might affect the safety of the railway, or the safety of those undertaking such actions. These third parties include those planning and developing near to the railway.

1.3 WHAT DOES THE GUIDANCE COVER?

The guidance is applicable to the mainline railway, Luas, heritage railways and the Bord na Móna industrial railway system (where it comes into contact with public areas).

1.4 PASSENGER AND THIRD PARTY RISK

Some railway dangers are solely the responsibility of the railway company. Examples include collisions between trains and derailments. However, the risk from such types of accident accounts for only about 10% of the total safety risk. Third parties and passengers must play their part to control the remainder of risk on the railways.

1.5 PASSENGER AND THIRD PARTY GUIDANCE

Volume 1: Developers.
Volume 2: Neighbours.
Volume 3: Crossing the Railway.
Volume 4: Passengers.
Volume 5: Emergency Services.

A risk rating has been provided, for each activity and hazard, using a thermometer symbol. The higher the thermometer level, the higher the risk involved. The document is intended to give guidance to facilitate communication with the railway company; it is not intended to supersede their requirements. See overleaf to find the relevant guidance for you, your activities and the railway company affected.

Figure 1 Planners/Developers – page number for guidance on each activity

	Person							
Activity	Planner	Designer	Construction	Road Authority	Utility	Waterway maintainer	Industry	Event Organiser
Siting facilities for vulnerable groups	8	8						
Siting facilities with high risk	8	8						
Siting facilities that increase traffic flow across the railway	9	9						
Planting or removing vegetation	10		10	10				
Changing drainage arrangements	11	11	11	11	11			
Granting water extraction licences	11							
Road signage and lighting		13	13	13	13			13
Design of structure		13						
Design of separation from the railway		14						
Maintaining equipment or structures		14		26				
Temporary works and scaffolding		15	15					
Working near to the track			18					
Locating materials, plant and site offices			18					
Demolition, excavation and general construction			18	18	18			
Lighting of construction site			20					
Storage of equipment/materials near to the running line			20					
Working near railway overhead line equipment			21					
Operation of cranes and lifting equipment			21					
Site security arrangements			22					
Operation of electrical equipment			22					
Resurfacing road at bridge under railway				25				
Resurfacing road or adding a footpath at bridge over railway				25				
Traffic diversions				26				
Designing road layout near level crossings				26				
Advance signage				27				
Licence work on the road				27				
Protecting the railway from the road				27				
Accessing utilities at bridge under/over the railway or at level crossings					31			
Accessing equipment on railway land					31			
Accessing equipment on third party land through railway infrastructure					32			
Laying of services on railway land					32			
Repair/relaying of services on railway land					32			
Draining and maintaining a waterway						33		

Figure 1 Planners/Developers – page number for guidance on each activity (cont'd)

	Person							
Activity	Planner	Designer	Construction	Road Authority	Utility	Waterway maintainer	Industry	Event Organiser
Preparing emergency response plan	34	34	34	34	34		34	34
Responding to incident affecting railway	35	35	35	35	35		35	35
Responding to gas release incident	35	35	35	35	35		35	35
Responding to incident where ESB power lines are down or damaged	36	36	36	36	36		36	36
Organising an event								37

Figure 2 Planners/Developers – page number for guidance for railway companies

	Person						
Activity	Planners	Designers	Construction	Road Authority	Utility	Industry	Event Organiser
Works near to Luas Infrastructure	38	38	38	38	38	38	38
Works near to Iarnród Éireann Infrastructure	41	41	41	41	41	41	41
Works near to Heritage or Bord na Móna Railway Infrastructure	42	42	42	42	42	42	42

2 THIRD PARTY SPECIFIC GUIDANCE

2.1 WHO SHOULD USE THIS VOLUME?

This guide is for ***authorities, companies and individuals*** when they are planning, altering or maintaining ***buildings, structures, premises or land use*** that may ***directly*** or ***indirectly*** affect the ***railway***.

Authorities, companies and individuals include city, county and borough councils, engineers, architects, builders, utilities, local and national road authorities and major hazard industries.

Examples of ***buildings, structures or premises*** include roads, bridges, tunnels, schools, hospitals, sports facilities, shops, housing, car parks, pipes, services and masts.

Direct effects on the ***railway*** include the impact of development activities next to the railway.

Indirect effects include activities that cause:

- Increased use of railway ***crossings***,
- Changes to the type of vehicles using railway crossings,
- Increased levels of trespass or vandalism, or
- ***Airborne intrusions***.

For the purposes of this guide, the term ***railway*** is used to describe tramways, passenger and freight railways and heritage railways.

Crossing includes level crossings, bridges, tunnels and viaducts.

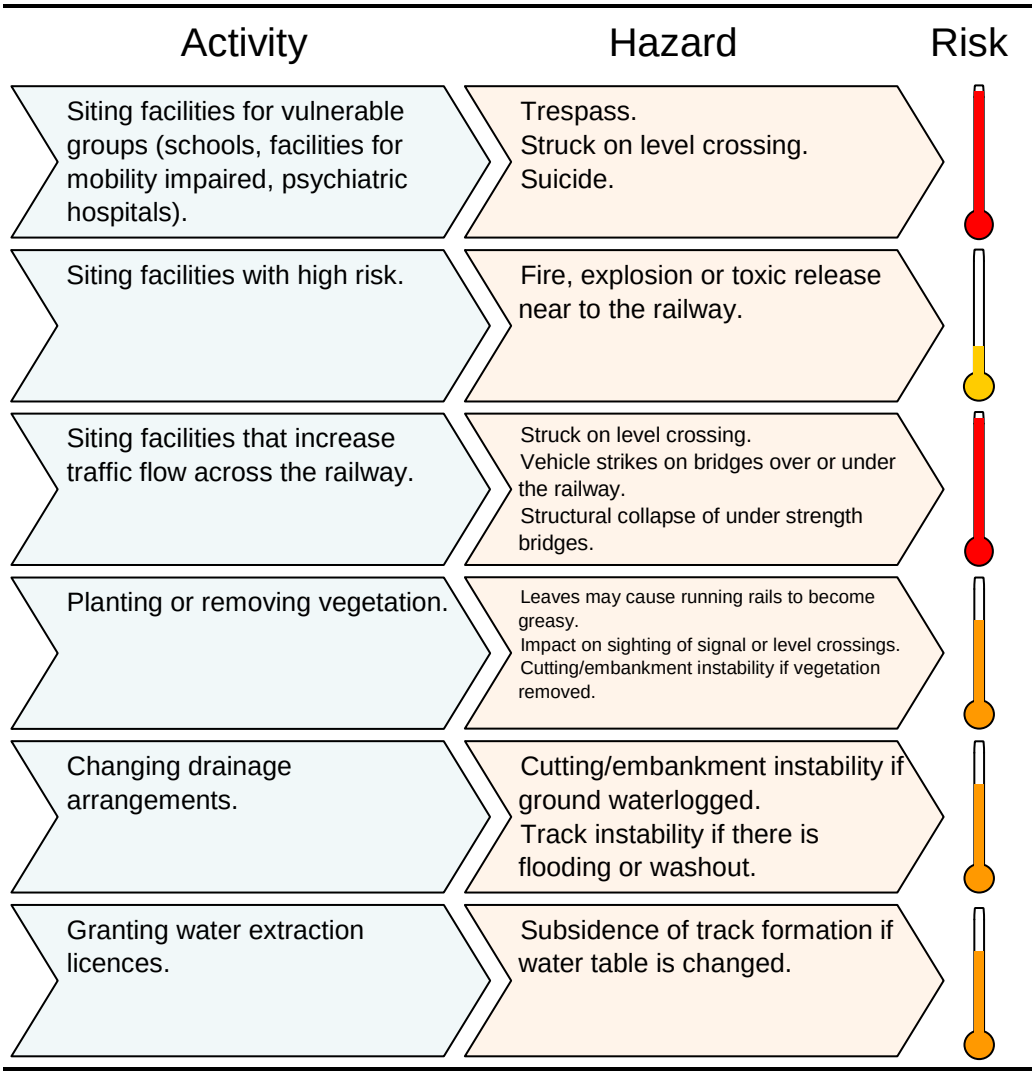
Airborne intrusions include balloons, gliders, planes, gun club activities, helicopters, model aircraft and birds.

2.2 PLANNING AUTHORITY

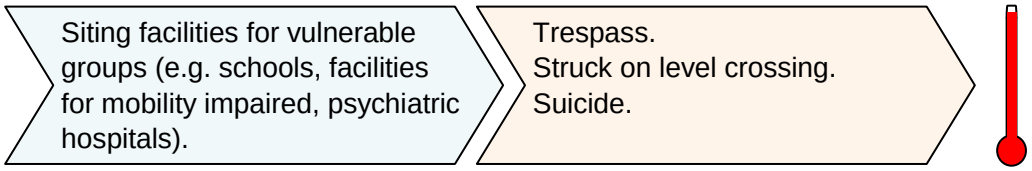
The main activities and hazards for a planning authority with respect to the railway are summarised in *Figure 2*. Guidance then follows for each activity. **In each case, you should get permission from the railway company about the planned change.**

The point of contact for Iarnród Éireann is the appropriate Divisional Engineer. For the Luas, contact the Railway Procurement Agency (see *Section 4* for contact details).

Figure 2 Planning Authority Activities and Hazards



Siting Facilities for Vulnerable Groups



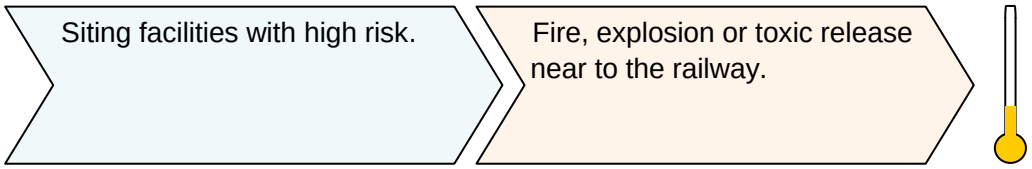
Facilities for vulnerable groups may give rise to increased risk from railway hazards. The developer should consult with the Railway Company if there are plans to site any facilities where users may have increased exposure to railway hazards, such as:

- Psychiatric hospitals – in order to control the suicide risk.
- Schools – in order to control the risk of children taking shortcuts, playing on the line or otherwise trespassing on the railway.
- Establishments for those with sensory impairments, in order to control the increased exposure to level crossing hazards.
- Establishments for those with learning difficulties.

The practicality of siting such facilities close to the railway should be considered together with the risk controls that might be required such as fencing and separation, appropriate level crossing types or education programs for those exposed to the risks.

The contact points are the Divisional Engineer for Iarnród Éireann and the Alignment Design Section of the Rail Procurement Agency for the Luas. See Section 4 for contact details.

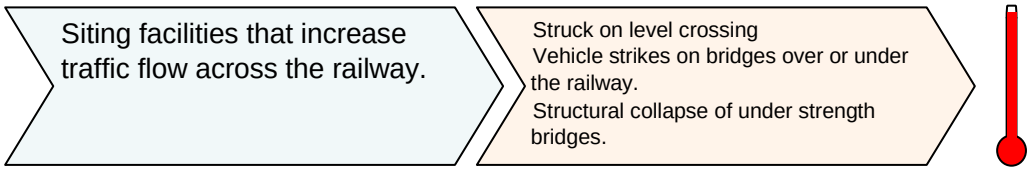
Siting Facilities with High Risk



The risk to train passengers from fires or leaks alongside the railway is low. However, fires or leaks can be very disruptive to the service. Care should be taken with all facilities with a higher risk and not just those classified under the Seveso II directive (1).

(1) Ref [C]: Seveso II Directive.

Siting Facilities that Increase Traffic Flow Across the Railway



Developments of interest are not just those in the immediate vicinity of the railway. Those that could greatly affect the quantity or type of traffic flow across the railway are also significant. This is particularly the case if the increase in traffic:

- Is across or under a height, weight or width restricted bridge,
- Makes the level crossing type unsuitable for the quantity/type of road traffic,
- Is of a type that is 'large or slow' or 'long and low'.

The problem with 'large or slow' vehicles is that they might not have enough time to clear the crossing before the train arrives. The hazard with 'long and low' vehicles is their greater propensity to ground on crossings.

Height, Weight or Width Restricted Bridges
Planners, and those involved in the design of a development, should ensure that the risk from traffic, traversing height-, weight- or width-restricted bridges, is suitably controlled. Traffic should be considered during construction, as well as the subsequent operation of the development.

Bridge heights on a route should be checked. Clearances at arch bridges are available only at a restricted width as indicated on the bridge by '*Goal Posts*'. Iarnród Éireann maintains a list of bridges with restrictions. A list of bridges with height restrictions on National Primary and Secondary Roads in major towns and cities is available on their website: www.irishrail.ie. This list does not contain bridges outside major towns and cities and therefore should not be seen as comprehensive. There is also a map of height-restricted bridges available on application to the following email address: bridgemaps@irishrail.ie.

Where a bridge has a height or weight restriction, there is a requirement for regulatory signs to be present. Up-to-date lists of height- or weight-restricted bridges are available from the Iarnród Éireann Principal Engineer: Track and Structures (see *Section 4* for contact details).

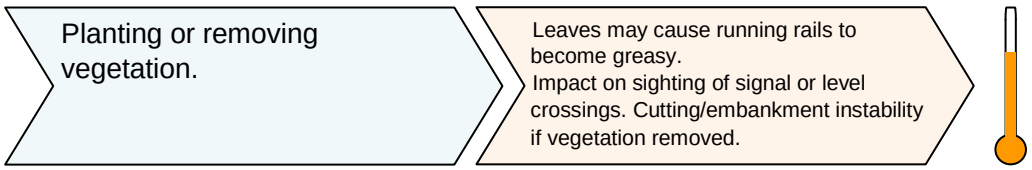
Where the traffic from a development is likely to cross the railway by height-, weight- or width-restricted bridges, the developer should consult with the Third Party Coordinator (see *Section 4* for contact details) for Iarnród Éireann. There are currently no such bridges in the case of the Luas.

Level Crossing Type Suitability and Traffic Type
A developer should be aware of the location of level crossings where these are likely to be used by traffic using the proposed development. Some types of level crossing are not suitable for high levels of road use (design requirements change dependent on the quantity and type of use). The conditions for level crossing suitability are described in the draft Railway Guidance (2). There are particular concerns if the traffic using the crossing is large, slow, long or low to the ground.

Where the traffic from a development is likely to use level crossings of a type that has road traffic restrictions (only full four barrier type crossings are suitable for all traffic densities), the developer should consult with the Divisional Engineer, Iarnród Éireann (see *Section 4* for contact details).

Regarding tall vehicles, the maximum safe headroom for a crossing with railway overhead lines is 5m.

Planting or Removing Vegetation

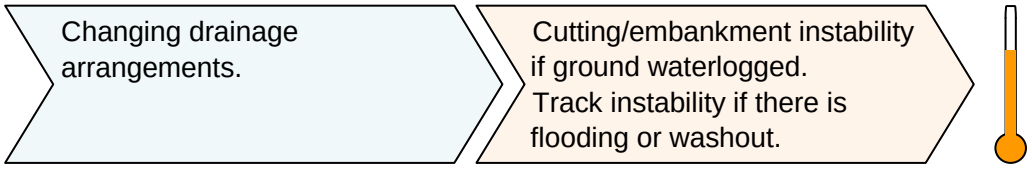


Cuttings and embankments depend on vegetation to bind the soil. This helps prevent erosion and subsidence. Leaves from trees and bushes may make the track slippery in autumn. Some types of vegetation make this effect worse. When planting vegetation near to the railway, you should ensure that vegetation is of the appropriate type.

For Iarnród Éireann, you should get permission from your local Divisional Engineer in advance of planting or removing vegetation alongside the railway. For the Luas, contact the Veolia Contract Manager. See *Section 4* for contact details.

(2) Ref [B]: Section 5.3.2.3 of Draft Guidelines for the Design of Railway Infrastructure and Rolling Stock.

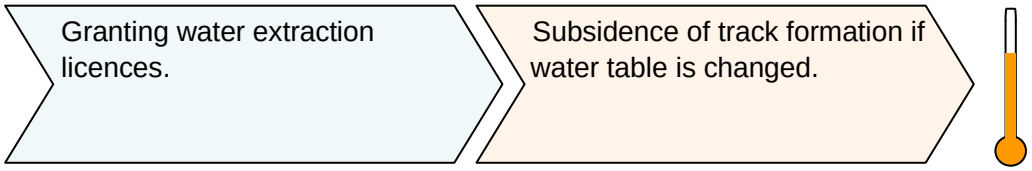
Changing Drainage Arrangements



Sloped ground next to the railway is vulnerable to changes in water drainage, flooding or digging/excavation. If the ground begins to slip, the track may be undermined or material might fall onto the running line. The stability of the track is also dependent on the adequacy of the drainage from the railway.

Drains sited near the railway should not be altered and railway drainage facilities should not be used without the permission of the railway company. If you are considering altering drainage arrangements in any way, you should get permission from the local Divisional Engineer (Iarnród Éireann) or the Veolia Contract Manager (the Luas) as appropriate. See *Section 4* for contact details.

Granting Water Extraction Licences



Water extraction can lower the water table and lead to subsidence of the railway formation, a loss of stability of the track and the potential for a train derailment even if the extraction is some distance from the railway. You should consult with the railway company before granting any water extraction licences near to the railway. Contact the local Divisional Engineer (Iarnród Éireann) or the Veolia Contract Manager (the Luas) as appropriate. See *Section 4* for contact details.

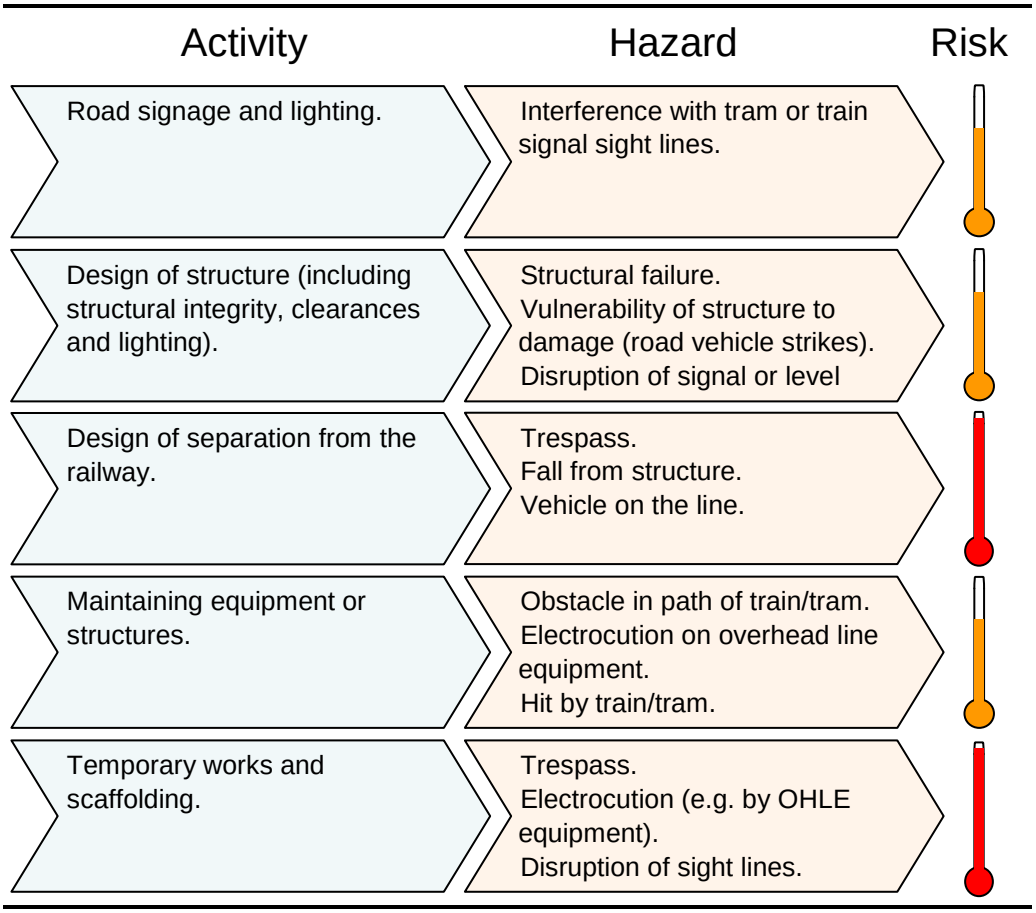
2.3 DESIGNER

The main activities and hazards for designing a structure near the railway are summarised in *Figure 3*. Guidance then follows for each activity. **In each case, designers should get permission from the railway company and ensure its requirements are incorporated.**

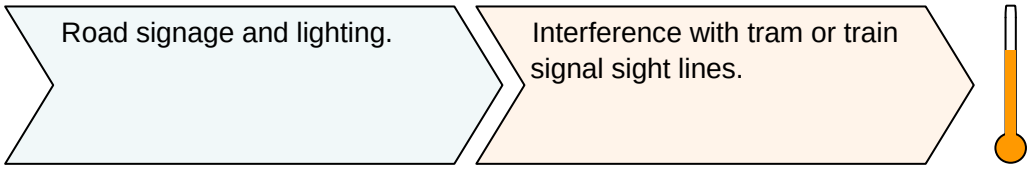
Designers should also be aware of the construction hazards described in *Section 2.4* and aim to minimise them in the design and implementation process.

Designers should also refer to the previous section for guidance on "***Siting Facilities that Increase Traffic Flow Across the Railway***" on page 9.

Figure 3 Designer Activities and Hazards

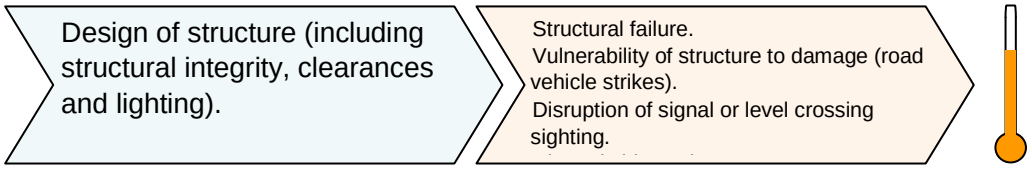


Road Signage and Lighting



Tram and train signals and their sight lines should be considered when placing either temporary or permanent road signage, road lighting or any other structure. For roads running alongside the mainline railway, it should be remembered that train drivers have to "pick" signals from quite long distances. It is difficult to do this if the train driver's view is cluttered with lights alongside the railway.

Design of Structure



In general, whenever work is to take place over or next to the railway, the designer must get permission from the railway company relating to all design and construction standards before the work begins. This section summarises some of the likely requirements, although these may be added to or amended by the railway company.

- The structural design standards shall not be less than those approved by the Department of the Environment and the National Roads Authority.
- The design and construction of structures should meet the design requirements of applicable railway guidelines (3).
- The design and construction of over-line bridges shall take into account the requirements of the section on tunnels (4).
- Safety barriers shall be erected on the approaches to bridges, in compliance with National Road Authority standards and requirements of the railway company.
- Bridge clearances and dimensions, bridge structure, parapets, and lighting shall conform to the requirements of the railway company's standards, specifications and other requirements.

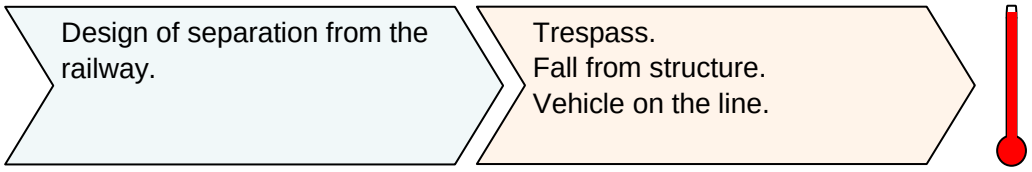
(3) Ref [D]: Draft Guidelines for the Design of Railway Infrastructure and Rolling Stock: Section 1 Permanent Way, Earthworks and Structures.

(4) Ref [D]: Draft Guidelines for the Design of Railway Infrastructure and Rolling Stock: Section 1 Permanent Way, Earthworks and Structures.

- The design should take into account the transport company's obligations for accessibility [5][6].

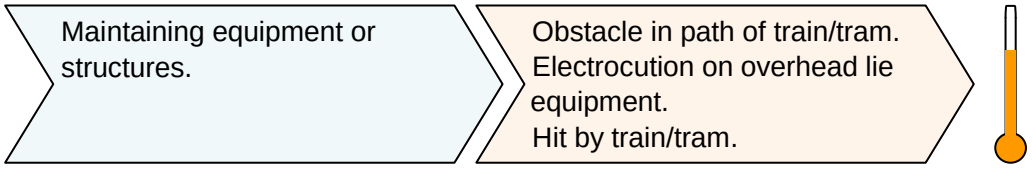
For Iarnród Éireann, railway company requirements are available from the Third Party Coordinator. For the Luas, both the Railway Procurement Agency and the Veolia Contract Manager should be contacted. See *Section 4* for contact details.

Design of Separation from the Railway



The facility should be designed to minimise the risk of trespass onto the railway, or a road vehicle reaching the railway line even in accidental conditions. Bridges over the railway should be designed to minimise the risk of falls to the railway environment. The requirements of the agreed codes and standards should be followed. Suitable precautions should be considered for the construction phase as well as the lifetime of the structure.

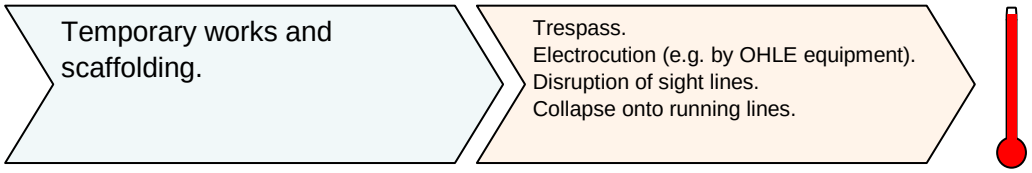
Maintaining Equipment or Structures



The exposure of maintainers to the railway environment and, in particular, the presence of overhead railway lines should be considered when locating any equipment or structures that will require ongoing maintenance. Maintenance activities such as inspection of structures, cleaning windows, changing bulbs and accessing equipment should be considered at the design stage, and the exposure of maintenance workers minimised and, where unavoidable, suitable controls put in place.

(5) Ref [N] : Disability Act 2005 - Part 3.
(6) Ref [O]: Recommended Accessibility Guidelines for Public Transport Operator in Ireland.

Temporary Works and Scaffolding



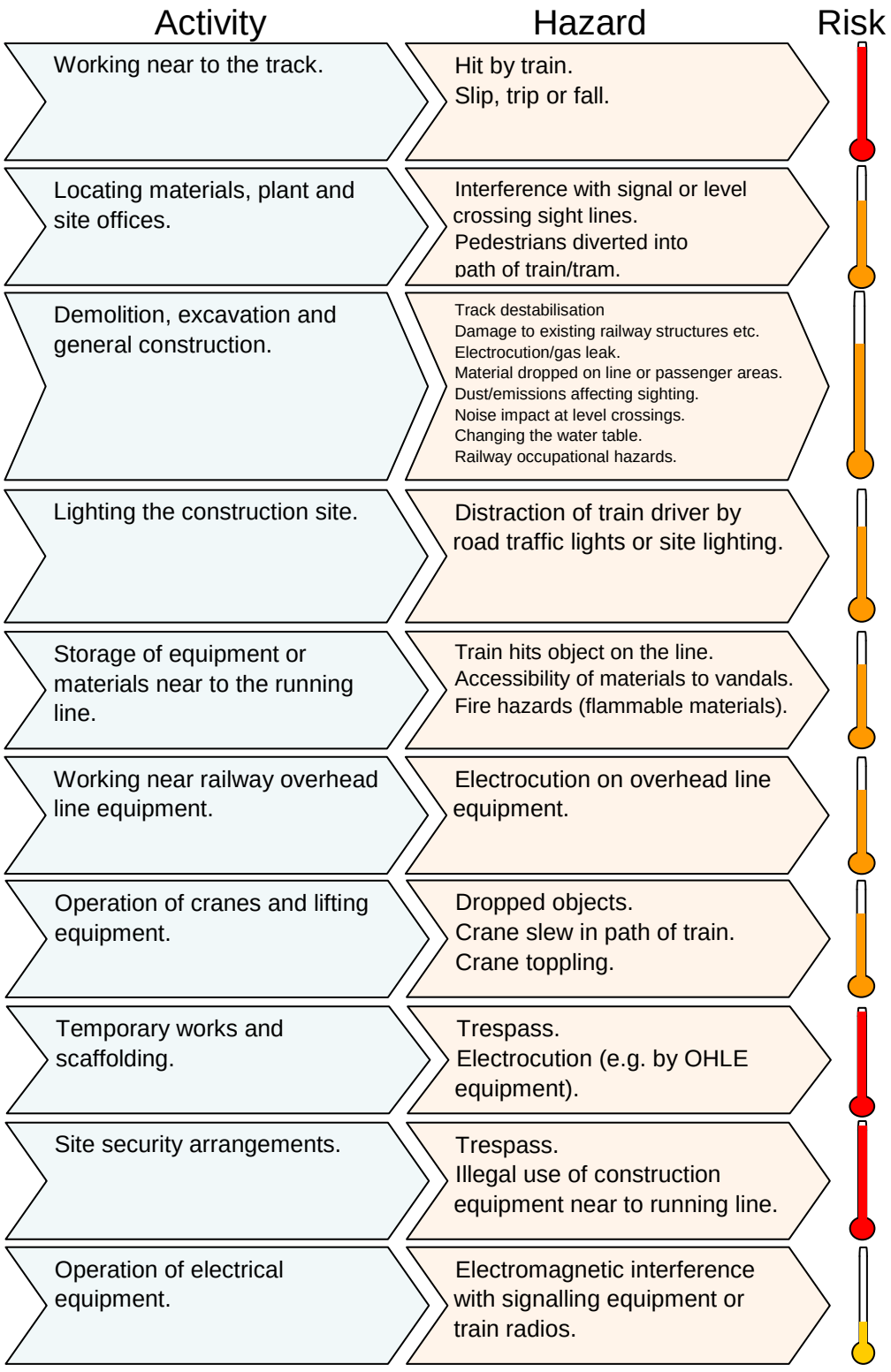
Temporary works and scaffolding should be subject to appropriate detailed construction planning and approval from the railway company. Particular care needs to be taken if work is to take place near the operational railway. It is important not to disrupt the train driver views of signals, the views from level crossings or to risk collapse of the temporary structure onto the railway running line. It is also important not to introduce lighting that can be seen by the train driver as this makes it difficult to pick out signals. Temporary works should also consider the needs of passengers, including those with physical or sensory impairments, and should avoid blocking exits of stations/stops and should not divert pedestrians into the path of the train/tram. An accessible route should always be provided, including appropriate signage and colour contrast.

2.4 CONSTRUCTION CONTRACTOR

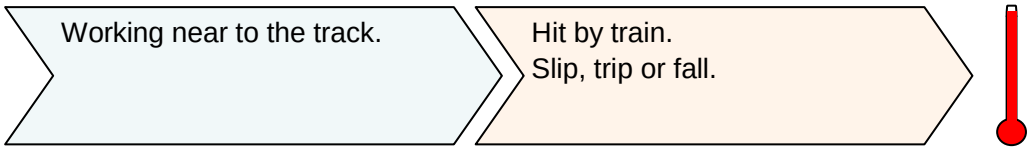
The main activities and construction hazards particular to the railway are summarised in *Figure 4*. Guidance then follows for each activity. **In each case, you should consult with the railway company and ensure that its requirements are incorporated.** The construction, method statement and safety management should be agreed through a process specified by the railway company.

For Iarnród Éireann, railway company requirements are available from the Third Party Coordinator. For the Luas, contact the Veolia Contract Manager. See *Section 4* for contact details.

Figure 4 Construction Activities and Hazards



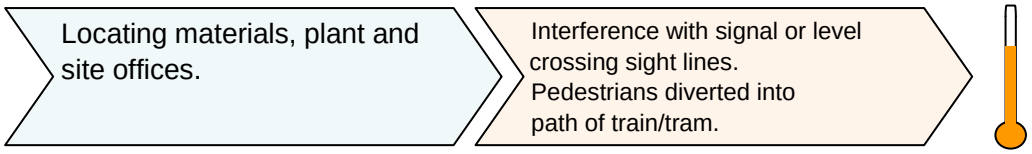
Working Near the Track



The risk from site work hazards should be reduced through agreement with the railway company on a safe system of work for the protection of personnel near to the track.

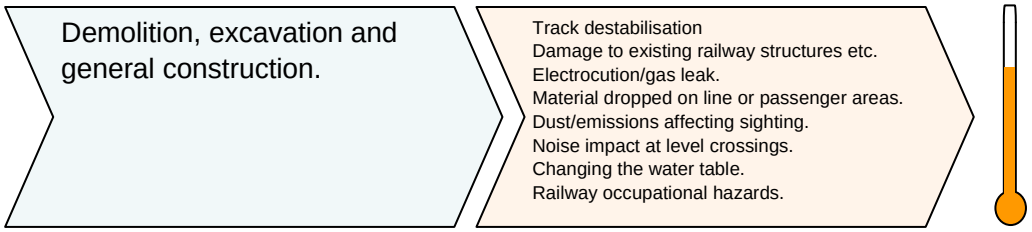
For some activities, a '*Possession*' is required for safe working.

Locating Materials, Plant and Site Offices



Materials, plant or site offices etc, should be located so that sighting distances, visibility of railway signals and viewing of the railway from level crossings are not impaired. Equipment should be located so that pedestrians are not diverted into the swept path of the train. Materials should be securely stored to minimise the likelihood of items being blown onto the railway.

Demolition, Excavation and General Construction



Interference with existing infrastructure should be controlled through agreement with the railway company on suitable precautions, including the following:

- Adherence to the HSA Code of Practice for Avoiding Danger from Underground Services (7).
- Arrangement for excavation in the proximity of a railway line open to traffic.
- Protection for culverts, drains, pipes, cables, overhead wires or any other services, including trackwork.

(7) Ref [P]: Code of Practice for Avoiding Danger from Underground Services.

- Knowledge of the location of all underground services alongside/under the railway.
- Precautions to ensure that there is no interference with signals or to signal control and telephone cables, fences, drains, rights-of-way, level crossings, catch points, or other property.
- Where required by the railway company, a monitoring system will be set up for the construction site, in order to check for destabilisation of the track formation.
- Control measures to:
    - prevent material being dropped onto the railway line.
    - ensure the safety members of the public who might pass near the construction site.
    - ensure that dust and emissions generated during construction does not affect the ability of the train driver to sight signals or level crossings.

Where construction is taking place in a station or other passenger areas, control measures should be put in place to ensure the safety of passengers and all other users of the area. Passengers exits should not be blocked and pedestrians should not be diverted into the path of the train/tram. An accessible route should always be provided, including appropriate signage and colour contrast.
Level crossing users rely on being able to hear a train as well as seeing it. If you are carrying out noisy activities near a level crossing, you should you should get permission from the railway company and ensure that its requirements are carried out.

Water extraction can lower the water table and lead to subsidence of the railway formation, a loss of stability of the track and the potential for a train derailment. You should get permission from the railway company if you are affecting the water table even if this is some distance from the railway.

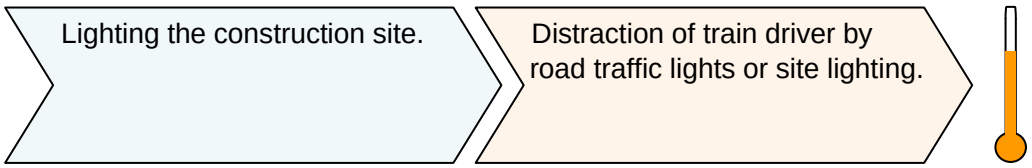
There are also various occupational hazards associated with working on or around the railway such as:

- Contaminated land – especially in the areas of former or existing large sidings or depots, may be contaminated with dangerous substances. This should always be reported to the railway company and appropriate measures put in place if the soil is to be disturbed or altered in any way.
- Asbestos – The use of asbestos (in all its various forms) was extensive throughout the railway industry in previous years.

- Lead – Railway bridges, structures and some buildings may have protective and decorative coatings containing substantial quantities of lead.
- Cadmium that has been used as anti-corrosion plating on some metal products (nuts for rail fastenings, for example) on or about the railway.
- Leptospirosis (Weils Disease) from contamination by rats.
- Timber Sleepers – Some timber sleepers used on the railway are treated with creosote, which is carcinogenic.
- Hepatitis A associated with discharge of toilet waste from trains on tracks.
- Infection from discarded needles that have been dumped on railway land.

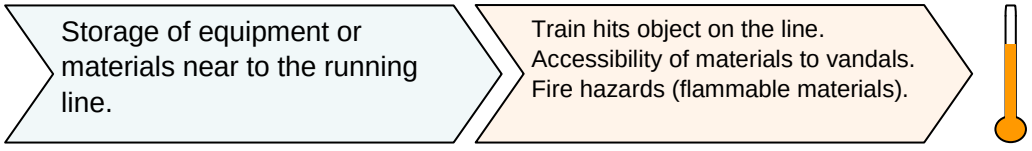
You should make sure that you are aware which hazards are present at your workplace and that you take precautions to meet the requirements of the railway company and to minimise the exposure of personnel.

Lighting of the Construction Site



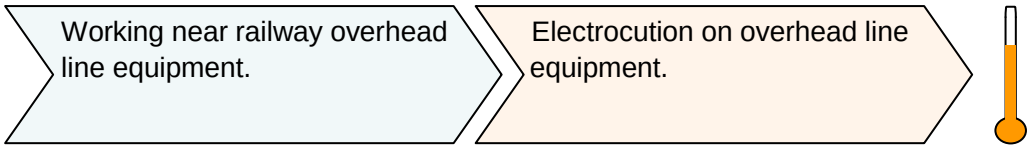
Lighting on the side of the railway interferes with the train driver's ability to sight signals from distance when travelling at high speed. Screening should be put in place to ensure that road traffic signals, public lighting and road vehicle lights do not interfere with the views of the train driver.

Storage of Equipment or Materials Near to the Running Line



Minimum approach distance of plant, machinery or material to the running edge of any railway line open to traffic should be established. Care should be taken when moving equipment around site not to breach approach distances. The site security arrangements described on page 22 should be carefully observed so that trespassers and vandals cannot use equipment or machinery. Materials should be securely stored to minimise the likelihood of items being blown onto the railway.

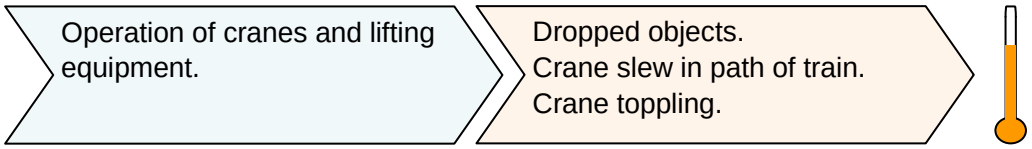
Working Near Railway Overhead Line Equipment



The risks associated with working near high voltage overhead lines should be minimised by taking suitable precautions, as agreed with the railway company, including the following:

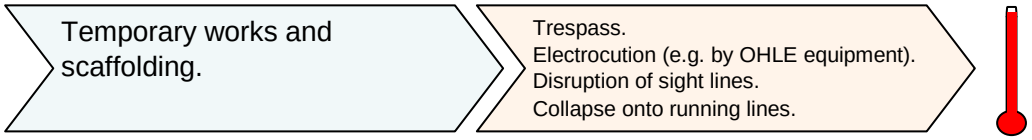
- Safe distances of work from the overhead lines and equipment.
- Suitable precautions to ensure that encroachment into prohibited area is avoided (e.g. crane stops, fencing, warning notices, etc).
- The use of non-conducting materials for ladders and tools.
- Special competence for personnel making any disturbance of or attachment to any equipment forming part of the overhead line equipment.
- Avoidance of the use of acids or other substances that could damage the overhead lines or equipment.

Operation of Cranes and Lifting Equipment



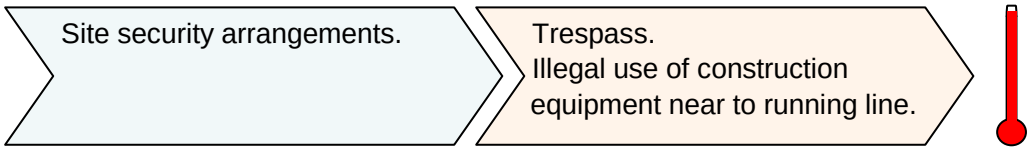
Lifting equipment that is operating near to the railway and might impact the railway while lifting, slewing, or by potential collapse needs to be controlled with suitable precautions (e.g. licensing of lifting equipment, crane stops, training of personnel in railway hazards, use of possessions). The type of equipment that needs to be controlled includes tower cranes, crawler rigs, piling rigs and other large plant.

Temporary Works and scaffolding



Guidance is located in on page 15.

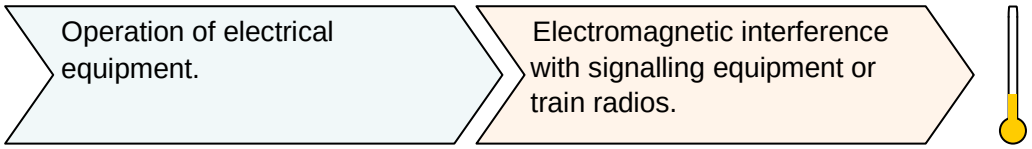
Site Security Arrangements



The risk from site work hazards should be minimised through agreement with the railway company on suitable precautions, including the following:

- Fencing.
- Security personnel.
- Precautions to prevent vandalism while the work is in progress.
- Arrangements to ensure that construction plant and machines are immobilised when not in use.
- Removal of debris from the site.

Operation of Electrical Equipment



Precautions should be put in place to ensure that construction materials, machines, plant and equipment do not cause electro-magnetic interference to the signal or telephone system, or to the train-to-base or guard-to-driver communications systems.

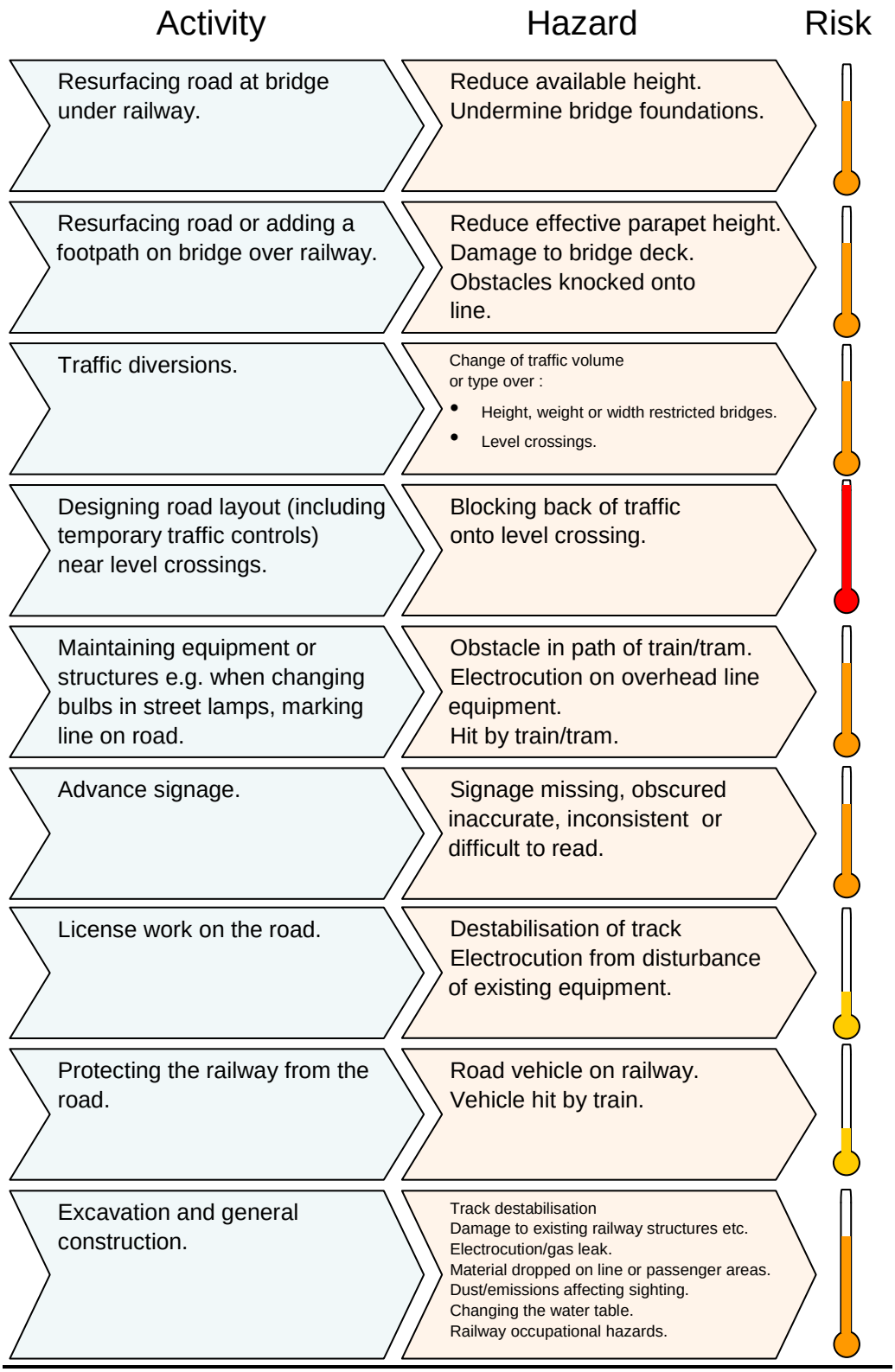
2.5 ROAD AUTHORITIES

You must consult with the railway company at least three weeks before any works take place near the railway (Railway Safety Act, S 113) (8). Those involved in the works must make sure that the safety of the railway is not affected.

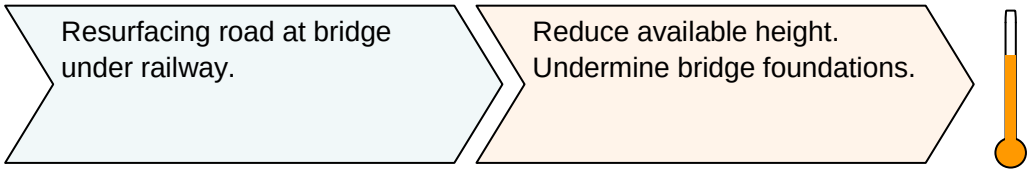
The main activities and hazards for a road authority are summarised in *Figure 5*. Guidance then follows for each activity. **In each case, you should ask the railway company for detailed guidance.** The point of contact for Iarnród Éireann is the appropriate Divisional Engineer; for the Luas, it is the Veolia Contract Manager (see *Section 4* for contact details).

(8) Ref [A]: Railway Safety Act 2005.

Figure 5 Road Authority Activities and Hazards



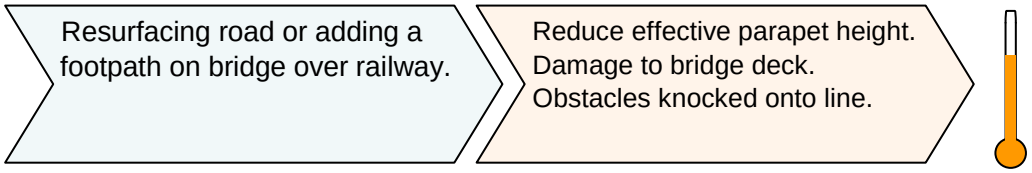
Resurfacing Road at Bridges Under Railway



There is potential to alter the road height when a road under a bridge carrying the railway is being resurfaced. This has the potential to introduce a height restriction or make a height restriction worse if the level is put back higher then before. Alternatively, there may be a desire to "improve" a height restriction by digging down further than the original level. This can have the effect of undermining the bridge foundations. **You must never alter the clearance under a railway bridge without first consulting with the railway company.**

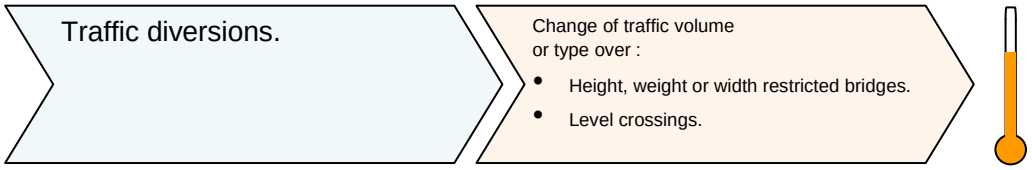
There can be a greater density of services and utilities buried in footpaths and under road surfaces in bridge crossings. You should also follow the advice for excavations (see construction contractor in *Section 2.4* for details). Services and pipework may also be located under the bridge deck and may be vulnerable to impact/damage from equipment working or travelling underneath it (e.g. excavator arms or raised truck bodies).

Resurfacing Road or Adding Footpath on Bridge Over Railway



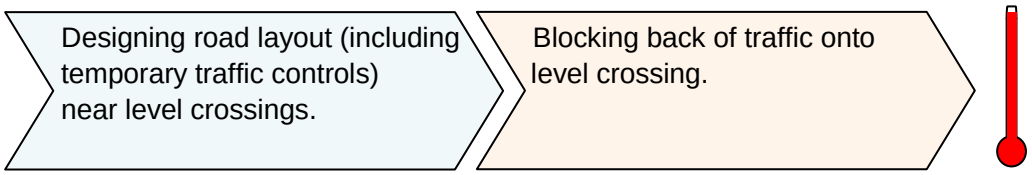
Raising the height of the road surface or introducing a footpath at the side of the bridge may reduce the effective parapet height increasing the likelihood of pedestrians falling onto the railway. If work of this nature is being performed, you should get permission from the railway company.

Traffic Diversions



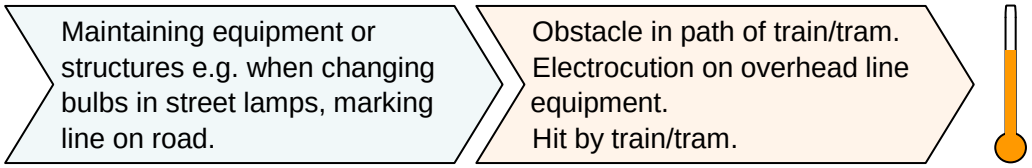
The adequacy of the infrastructure should be considered when making traffic diversions. Diversions including height, weight or with restricted bridges should be avoided particularly if there is a high proportion of heavy goods traffic. The type of level crossing should also be considered. Only full four barrier crossings are suitable for all traffic moments.

Designing Road Layout Near Level Crossings



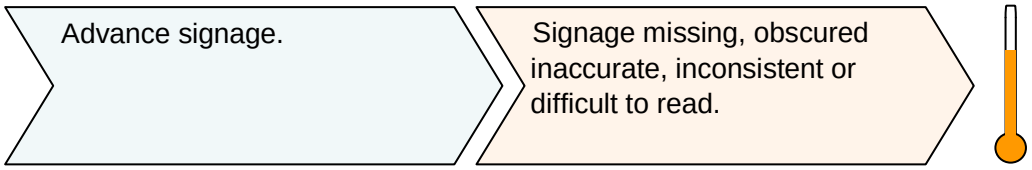
It is dangerous when traffic is forced to queue across a level crossing, particularly if the crossing does not have barriers all the way across the road or the crossing is of the “iron-gate” type (see *Volume 3* for details). Road designers should try to give priority to vehicles using the crossing at nearby intersections so that “blocking back” does not occur at the crossing. These considerations apply to temporary works as well.

Maintaining equipment or structures



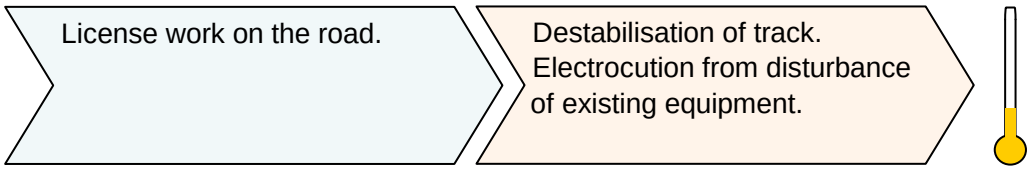
The exposure of maintainers to the railway environment and, in particular, the presence of overhead railway lines and the movement of trams should be considered when locating any equipment or structures that will require ongoing maintenance. Maintenance activities such as marking roads, changing bulbs and accessing equipment should be considered at the design stage, and the exposure of maintenance workers minimised and, where unavoidable, suitable controls put in place (see also page 14).

Advance Signage



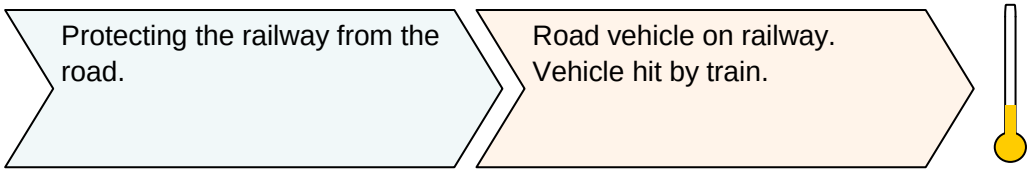
The road authority should maintain clear accurate signage in good condition to warn all road users, including those with disabilities, of railway hazards ahead including level crossings and bridges with restrictions of any sort.

License Work on the Road



A third party wishing to carry out work on a public road must get the permission of the road authority. Where this work is near the railway, the road authority must consult with the railway company (9) and consider its requirements before any works take place near to the railway. It should be noted that where traffic flow across level crossings is substantially affected, there is a requirement for consultation with the railway company even if the actual works are some distance from the railway.

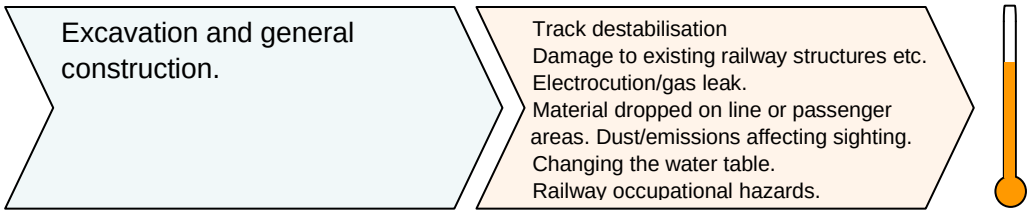
Protecting the Railway from the Road



Roads should be designed to minimise the likelihood of a road vehicle reaching the railway line even in accidental conditions. Bridges over the railway should be designed to minimise the risk from falls to the railway environment. Suitable precautions should be considered for the construction phase as well as the lifetime of the structure.

(9) Ref [A]: Section 113, Railway Safety Act 2005.

Excavation and General Construction

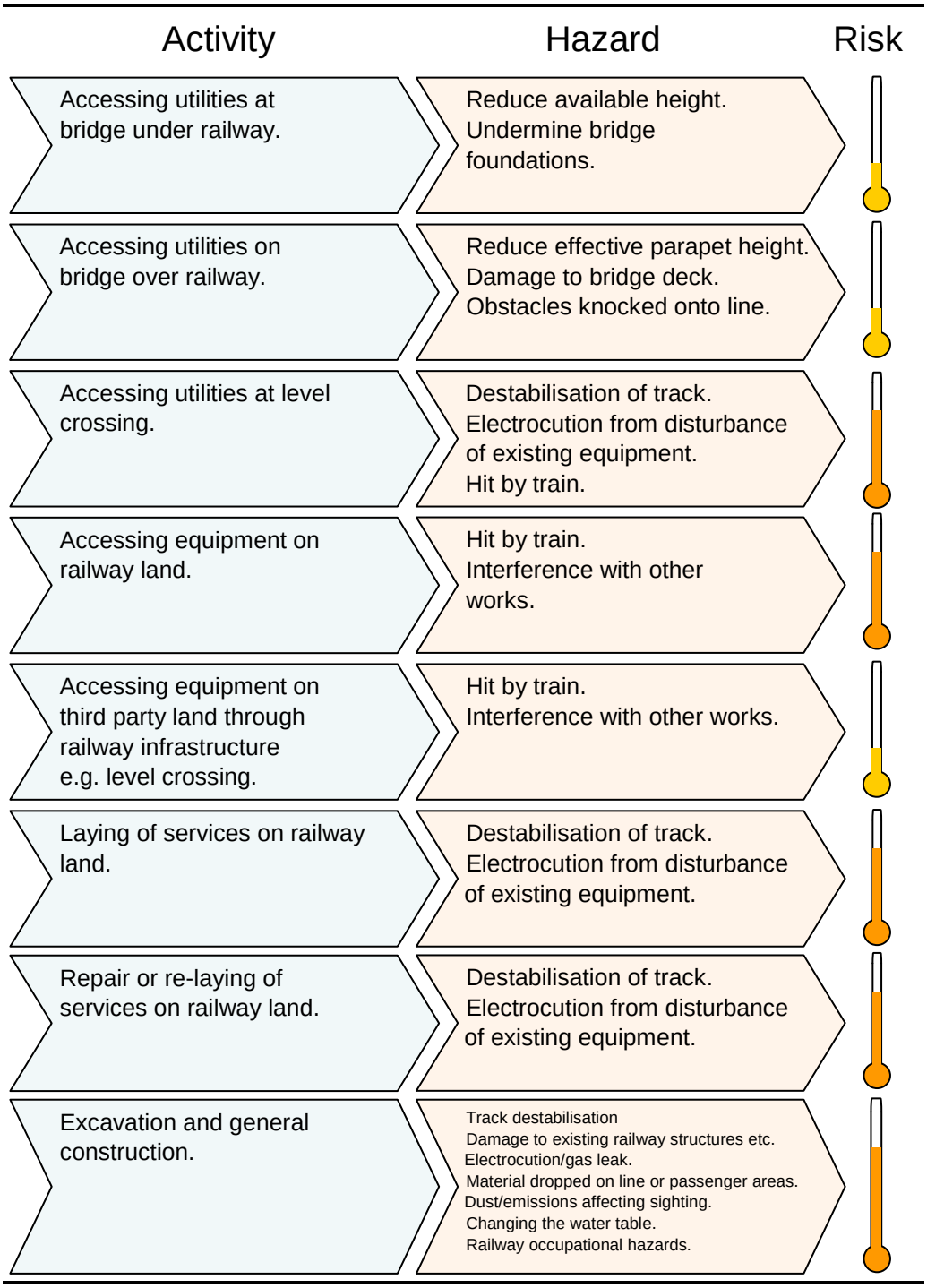


You should follow the advice for a construction contractor (see *Section 2.4*).

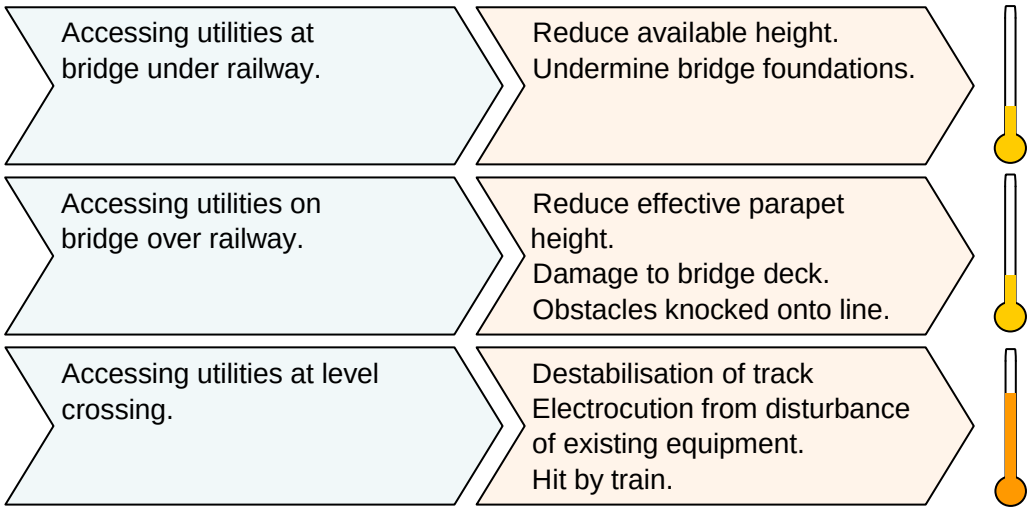
2.6 UTILITY COMPANIES

This section covers access to equipment that has already been installed or minor works such as crossing the railway with new ducts or pipework. If you are installing new equipment, see *Sections 2.3* and *2.4* as well as the company specific guidance in *Section 3*. The main activities and hazards for a utility company are summarised in *Figure 6*. Guidance then follows for each activity. **In each case, you should ask the railway company for detailed guidance prior to carrying out any work.** The point of contact for Iarnród Éireann is the appropriate Divisional Engineer; for Luas, it is the Veolia Contract Manager (see *Section 4* for contact details).

Figure 6 Utility Company Activities and Hazards

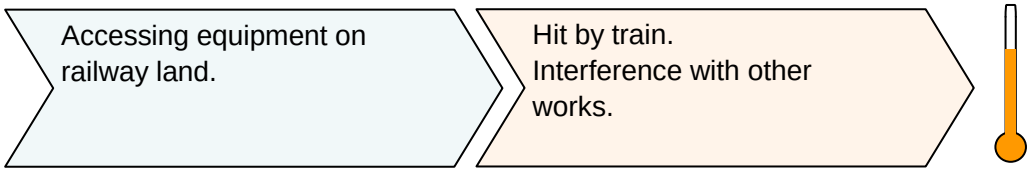


Accessing Utilities at Bridge Under/Over Railway or at Level Crossings



Where you need to carry out works on a public road, you must notify the road authority. The road authority must, in turn, consult with the railway company (10) and consider its requirements before any works take place near to the railway. Those involved in the works must make sure that the safety of the railway is not affected. There can be a greater density of services and utilities buried in footpaths and under road surfaces at railway crossings. You should also follow the advice for excavations (see construction contractor in *Section 2.4* for details). Services and pipework may also be located under the bridge deck and may be vulnerable to impact/damage from equipment working or travelling underneath it (e.g. excavator arms or raised truck bodies). There are additional hazards of being hit by a train or electrocution from OHLE equipment when accessing utilities at a level crossing.

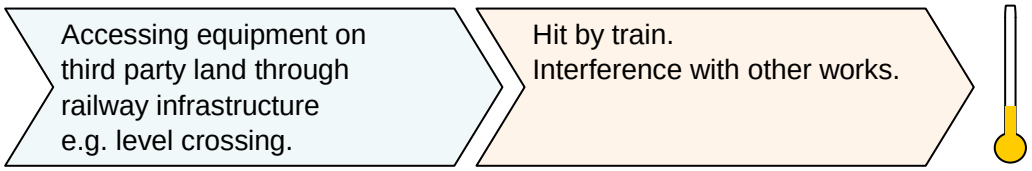
Accessing Equipment on Railway Land



Where you need to access railway land for maintenance works, you should get permission of the railway company in advance.

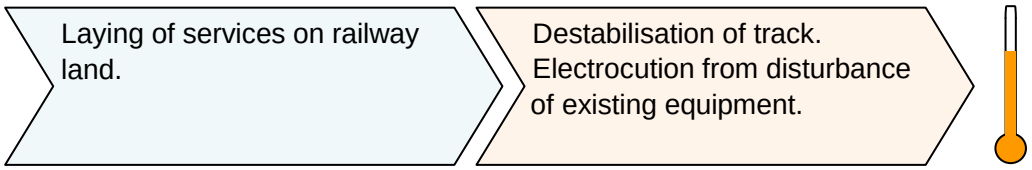
(10) Ref [A]: Section 113, Railway Safety Act 2005.

Accessing Equipment on Third Party Land through Railway Infrastructure



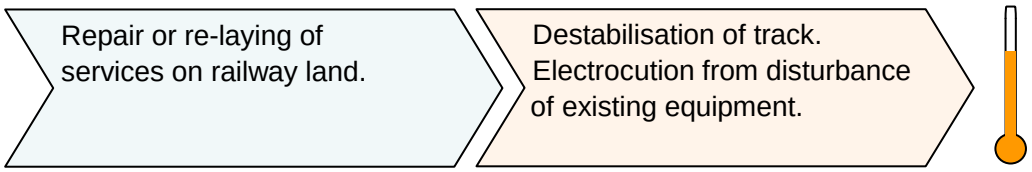
It may be necessary to use railway infrastructure such as a field level crossing to access equipment. Field crossings are for the use of the landowner carrying on their normal business and not for a third party use. If you need to use such a crossing, you should get permission from the appropriate Iarnród Éireann Divisional Engineer and the owner of the land before carrying out any work. Field crossings are normally locked, with the keys held by Iarnród Éireann and the landowners.

Laying Services on Railway Land



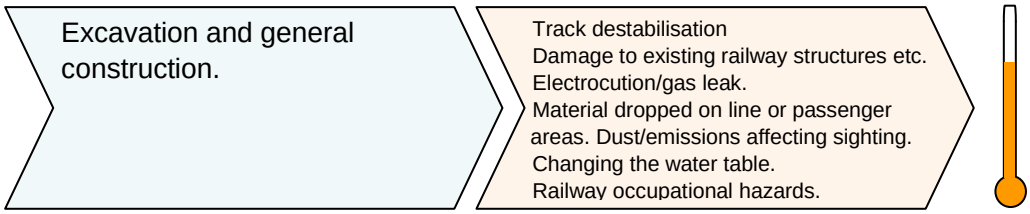
You will need to get appropriate legal permission and wayleaves from the Railway Company and suitable precautions will be required as for a construction contractor (see *Section 2.4* for details).

Repair or Relaying of Services on Railway Land



You will need to agree any work near the railway with the Railway Company and suitable precautions will be required as for a construction contractor (see *Section 2.4* for details).

Excavation and General Construction

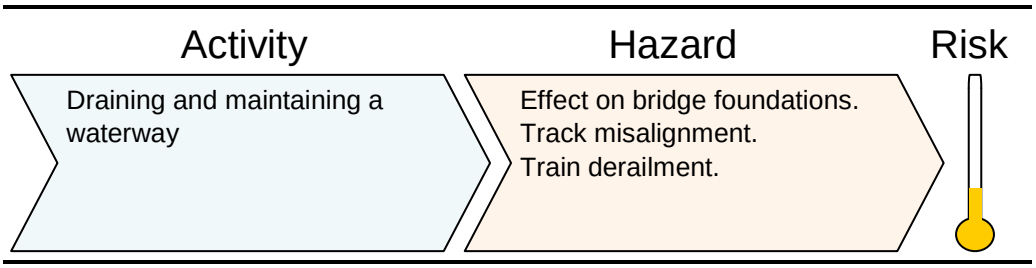


See *Section 2.4*.

2.7 WATERWAY MAINTAINER

The main activities, hazards and guidance for recreational activities are summarised in *Figure 7*. Guidance then follows for each activity.

Figure 7 Waterway Maintainer Activities and Hazards



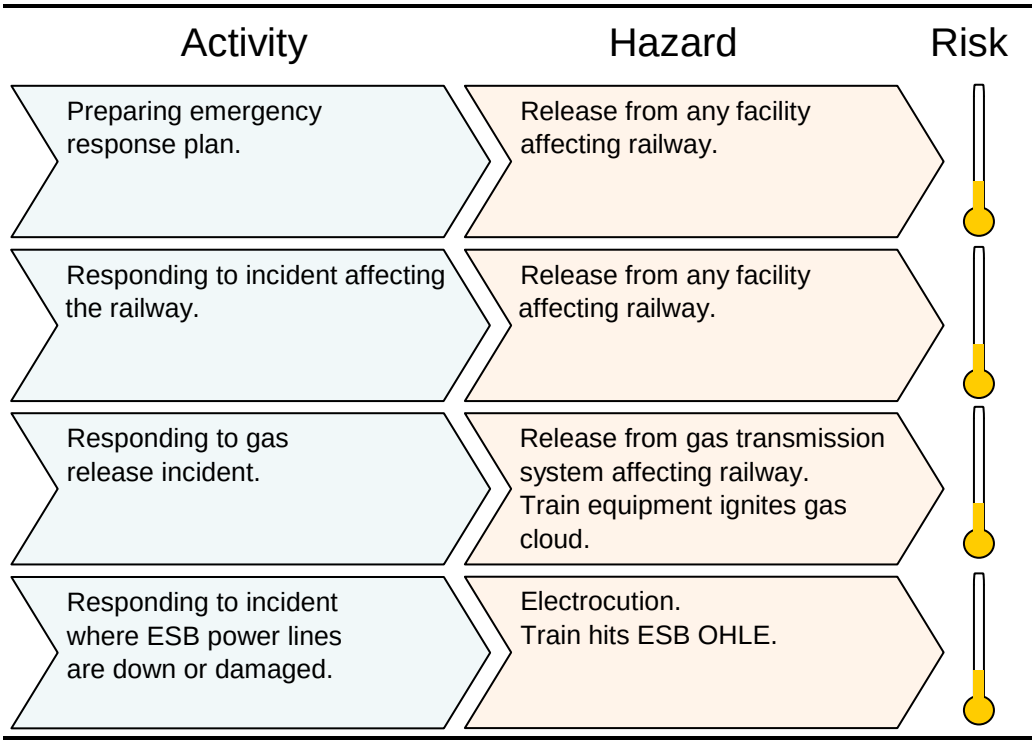
Draining and maintaining a waterway

Prior to draining a waterway or carrying out maintenance works near a railway bridge, the waterway maintainer should consult with the railway company. The contact point for Iarnród Éireann is the appropriate Divisional Engineer and for Luas it is the Veolia Contract Manager (see *Section 4* for contact details).

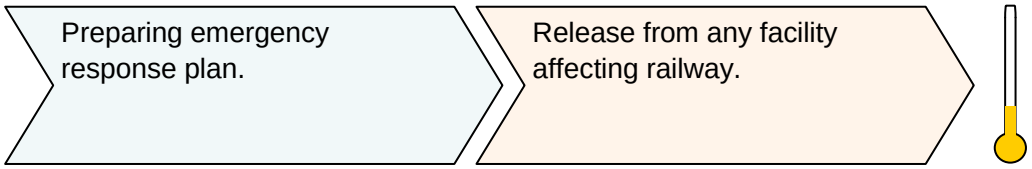
2.8 INDUSTRY

The main activities and hazards for industry are summarised in *Figure 7*. Guidance then follows for each activity.

Figure 7 Industry Activities and Hazards



Preparing Emergency Response Plan



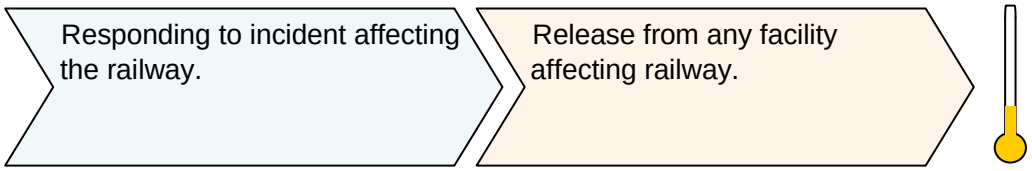
Anyone with a facility or carrying out an activity that may affect the railway should create an 'emergency plan'. This should set out how to alert the railway as quickly as possible, in order to minimise the risk to passengers and disruption to the network.

Major hazard industries have specific requirements for emergency planning under major hazard legislation (11). Where a major hazard facility is sited close to the line, co-ordination with the railway should be covered in the site's Major Accident Prevention Policy/Safety Report and Emergency Response Plan.

(11) Ref [C]: Seveso II Directive.

The first point of contact for emergency planning is the Iarnród Éireann Chief Safety & Security Officer, or the Luas Safety Manager (see *Section 4* for contact details).

Responding to Incident Affecting Railway

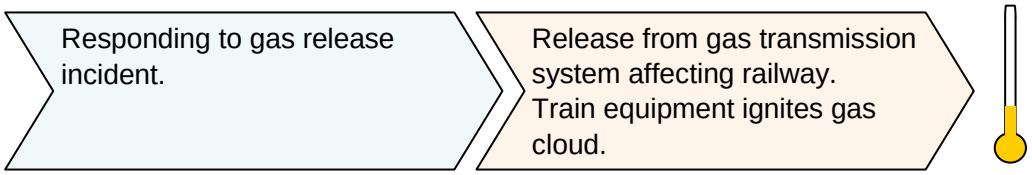


If an incident with the potential to affect any railway line or premises has occurred, the number for the appropriate central traffic control should be used (see *Section 4* for Contact details), in addition to any local co-ordination that is necessary.

If you are reporting an emergency, you should do so as follows:

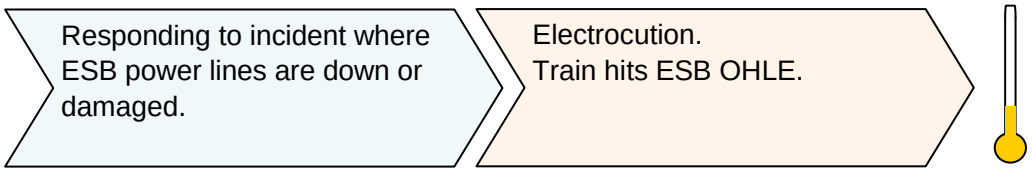
1) Identify yourself, your location and your status (e.g. contractor, level crossing user etc.)
2) Confirm who you are talking to
3) State "This is an emergency call"
4) Clearly state:
   - Location by reference to a station, signal, level crossing, bridge or other unambiguous reference also direction of travel of train if applicable
   - Nature of emergency e.g. debris on line, collision, fire
   - Required actions e.g. call ambulance, turn off power, stop trains
4) Give your name and contact details in case further information is required.

Responding to Gas Release Incident



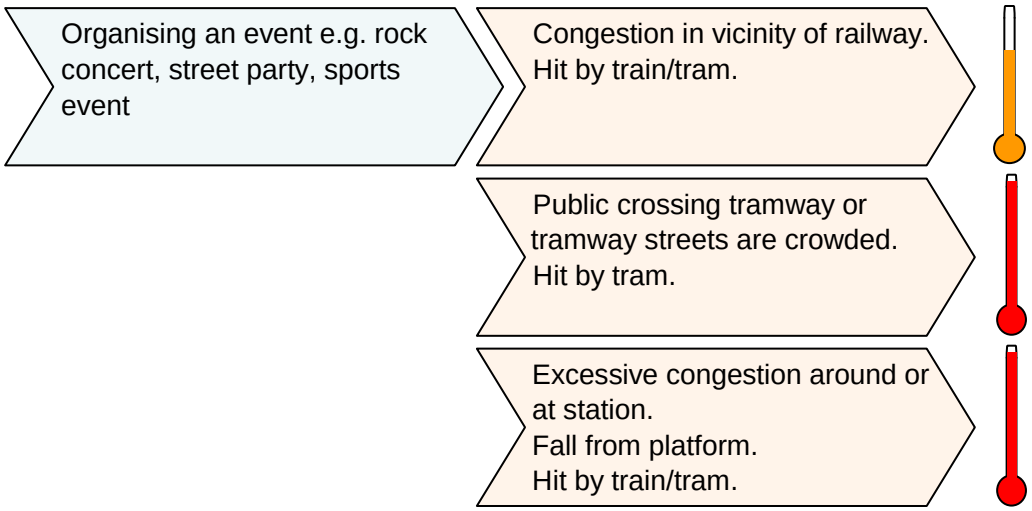
In addition to alerting the railway central traffic control of the presence of a gas release, you should also contact the Bord Gáis 24-hour Emergency Line (see *Section 4* for Contact details). Bord Gáis have statutory powers to enter land and property to find and secure gas leaks.

Responding to Incident where ESB Power lines are Down or Damaged



If the emergency relates to damaged overhead ESB power lines near to the railway, you should contact railway central traffic control and the ESB Networks emergency telephone number (see *Section 4* for Contact details).

2.9 ORGANISING EVENTS NEAR THE RAILWAY



Relevant events include those that are licensed though the local authority and those that are unlicensed. Major events can create significant problems with overcrowding near the railway, particularly at the beginning and end of the event as crowds disperse. Additional train services require planning on behalf of the railway company and require a substantial lead time. Organisers should hold discussions with the railway company well in advance, so that appropriate planning and arrangements can take place. Relevant information includes the number expected to attend the event, the start and finish times and how the event might affect the railway. The contact point for event organisers is the appropriate General Manager for Iarnród Éireann, and the Communications Manager for the Luas (see *Section 4* for contact details).

3 RAILWAY COMPANY SPECIFIC GUIDANCE

Guidance is given to the process used by each of the railway companies in *Sections 3.1* and *3.2*.

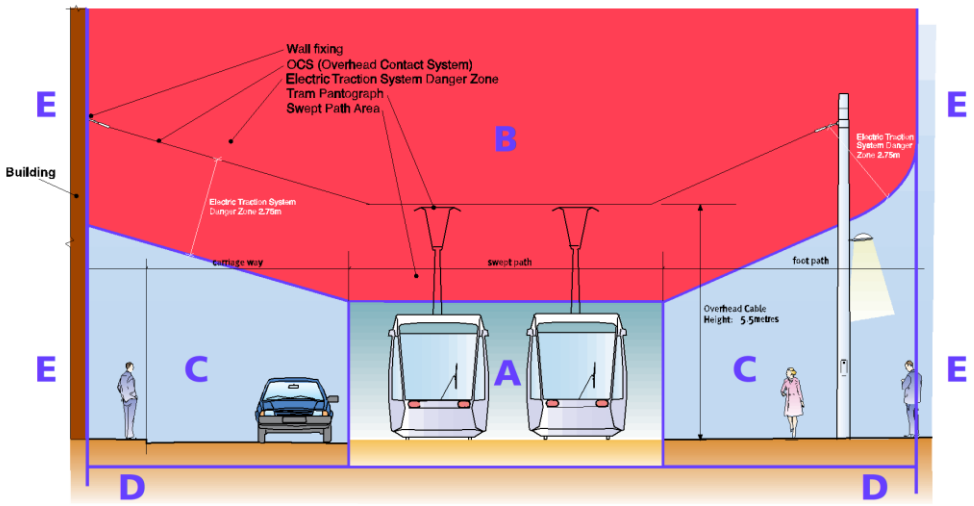
3.1 WORKS NEAR TO LUAS INFRASTRUCTURE

Should you be planning an activity near the Luas, you may need to get permission from the Luas operator. This will depend on the nature of the works and how near it is to the Luas Tramway.

You will need to contact the Veolia Contract Manager (see *Section 3*) if you are planning a construction or maintenance activity of the following nature:

- Any works within the Electric Traction System Danger Zone (See Zone B of *Figure 9*).
- Any works within the 'swept path' (See Zone A of *Figure 9*).
- Any works that could fall onto railway overhead line cables.
- Any works causing vibrations that may affect the tramway such as any foundation construction works. Any such activities that are outside the Swept Path must also follow the directions of the relevant local authority.
- Any trenchless methods of tunnelling beneath the trackslab.
- The movement of any high loads under the overhead power lines or supports.

Figure 9 Electric Traction System Danger Zone



Zone	Inspection	Work with Hand Tools	Work with Powered Plant
A	Inform Luas Operator. Restrictions likely	Authority from the Luas Operator is necessary. Restrictions likely	Authority from the Luas Operator is necessary. Possession & isolation likely.
B	Only if possible remotely. Inform Luas Operator. Restrictions unlikely.	Authority from the Luas Operator is necessary. Possession & isolation likely.	Authority from the Luas Operator is necessary. Possession & isolation likely.
C	Inform Luas Operator. Restrictions unlikely.	Inform Luas Operator. Restrictions unlikely.	Inform Luas Operator. Restrictions likely.
D	Only if possible remotely. Inform Luas Operator. Restrictions unlikely.	Inform Luas Operator. Restrictions unlikely.	Authority from the Luas Operator is necessary. Restrictions likely.
E	Notification not required. Restrictions unlikely.	Notification not required. Restrictions unlikely.	Notification not required. Restrictions unlikely.

Figure 9 gives an overview of when to inform the Luas operator and whether restrictions are likely. This is meant to be a guide only. Further details may be found in:

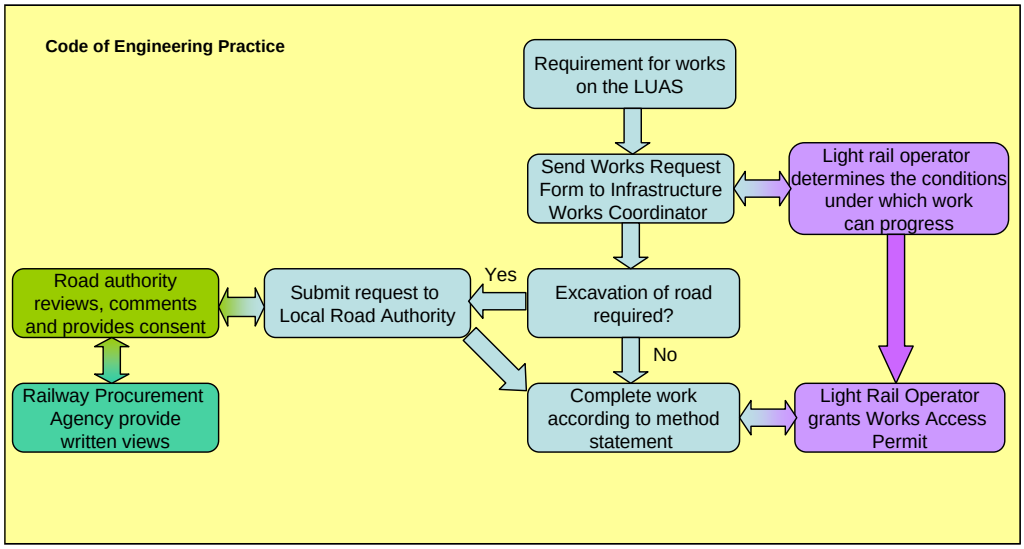
- Bye-laws (12) that set out the regulation of works affecting the Luas.
- A Code of Engineering Practice, (13) that provides guidance for anybody proposing to undertake work on or near the Luas.

(12) Reference [E]: Light Railway (Regulation of Works) Bye-Laws 2004.
(13) Reference [F]: Code of Engineering Practice.

The Code of Engineering Practice sets out the process to get approval for works as shown in *Figure 10*. It also gives information on precautions to be taken in accordance with current legislation and Luas operating procedures.

The bye-laws, the '*Code of Engineering Practice*' and the '*Works Request Form'* are available on the Luas website www.luas.ie under '*Luas Works Safety Permit*'.

Figure 10 Process for 3rd Party Works in Vicinity of Luas



3.2 WORKS NEAR TO IARNRÓD ÉIREANN INFRASTRUCTURE

Overall Process

Should you be planning any activity near the main line railway, you will need to contact Iarnród Éireann. The part of Iarnród Éireann that is responsible for the track and general infrastructure is directed by the Chief Civil Engineer, Infrastructure. Three divisions report to the Chief Civil Engineer, Infrastructure. Each division is managed by a Divisional Engineer, with principal offices in Dublin, Limerick and Athlone (see *Section 4* for details). Divisional Engineer staff usually handle 'minor' works directly. No third party is allowed onto Iarnród Éireann property without the written approval of the appropriate divisional engineer. 'Major works' are handled by the Third Party Co-ordinator (see *Section 4* for contact details).

Examples of minor works projects include:

- Insertion of a small diameter pipe under the railway.
- Erection of a cable over the railway.
- Construction of new boundary fencing or wall.

Examples of major works include:

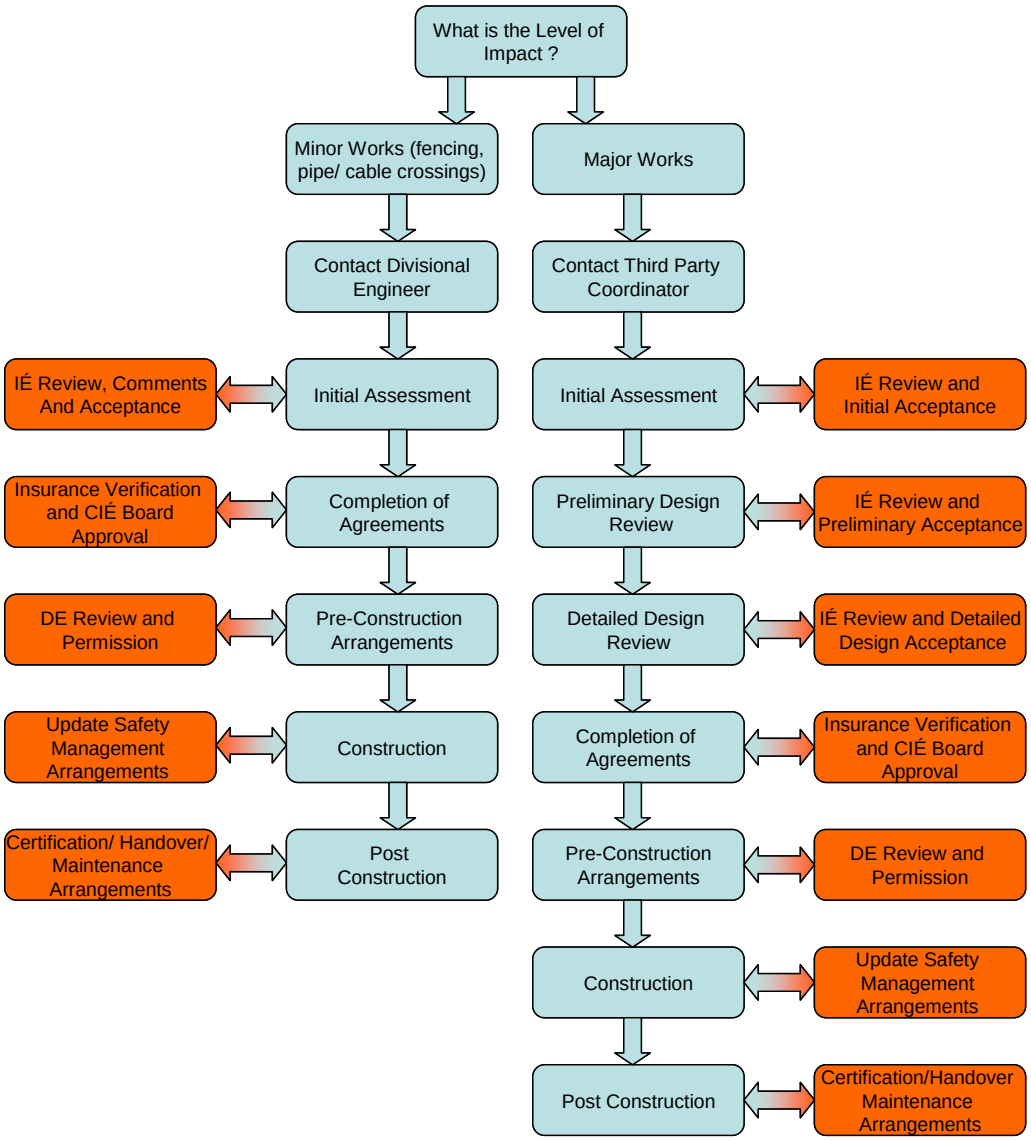
- Construction of a new over-line bridge or under-line bridge.
- Construction of a new structure, next to the track, with foundations which could affect track stability.
- A new station, requiring changes to the OHLE and/or new signalling.

An overview of the processes involved in carrying out third party works is shown in *Figure 11.* It should be noted that activities may run in parallel and that all are subject to the requirements of Iarnród Éireann.

Guidance relating to the approval process and safety for third parties carrying out works near to the railway is given in a Railway Standards [14][15]. Documentation and information may be obtained from the Third Party Co-ordinator at Iarnród Éireann (see *Section 4* for contact details) and the Iarnród Éireann website www.irishrail.ie.

(14) Reference [G]: Guidance on Third Party Works.
(15) Reference [Q]: Third Party Works: Railway Safety Requirements.

Figure 11 Process for 3rd Party Works near to Iarnród Éireann



3.3 *WORKS NEAR TO HERITAGE OR BORD NA MÓNA RAILWAY INFRASTRUCTURE*

The railway company should be contacted well in advance in order to get permission. Contact details are shown in *Section 4*.

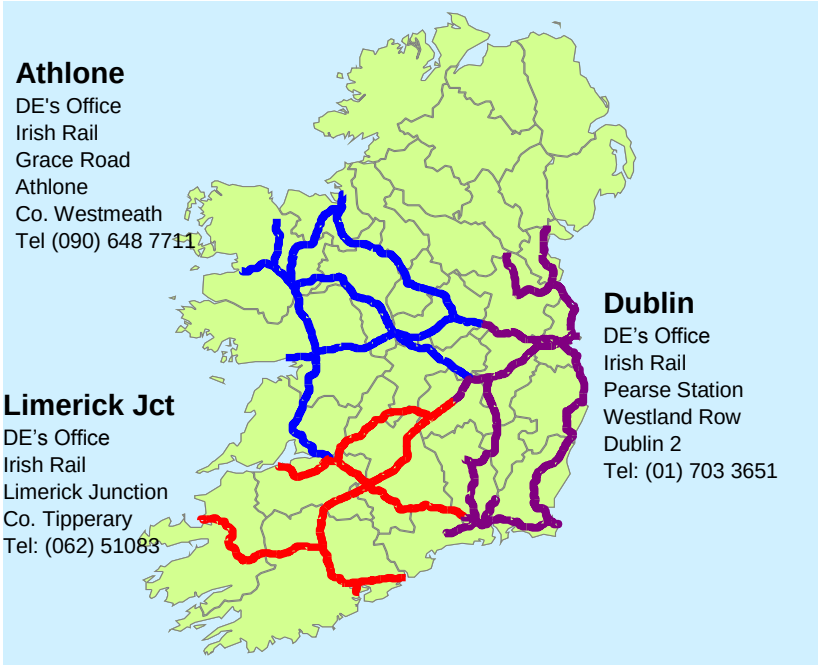
4 KEY CONTACT POINTS

General
Emergency services (24-hour): 999 on any public or fixed land line or 112 on a mobile telephone.
Railway Safety Commission
Information Officer Railway Safety Commission Trident House Blackrock County Dublin Ireland info@rsc.ie www.rsc.ie Tel : (01) 206 8110 Fax : (01) 206 8115
Bord Gáis
Bord Gáis 24-hour Emergency Line: Tel: 1850 20 50 50
ESB Networks
ESB Networks Emergency Line (24-hour): Tel: 1850-372-999
Iarnród Éireann
Iarnród Éireann Central Traffic Control (24-hour Emergency Number for reporting an immediate danger) (01) 855 5454
Iarnród Éireann Electrical Control - DART area (Emergency Number for reporting an immediate danger) (01) 878 7035
Third Party Co-ordinator Iarnród Éireann Track and Signals HQ Inchicore Dublin 8 Tel: (01) 703 4494
Principal Engineer Track and Structures Iarnród Éireann Track and Signals HQ Inchicore Dublin 8 Tel: (01) 703 4207

Chief Safety & Security Officer
Iarnród Éireann
Connolly Station
Dublin 1
Tel: (01) 703 2370

Accessibility Officer:
http://www.iarnrodeireann.ie/about_us/contact_disabled_access.asp
Email: access@irishrail.ie
(01) 703 2634

Divisional Engineer (DE) as appropriate:



General Manager via switchboard (01) 836 3333 as appropriate:

General Manager DART for the area bounded by Greystones, Howth and Malahide
General Manager Intercity & Commuter Network for all other areas

Luas

Luas – Central Traffic Control (24-hour Emergency Number for reporting an immediate danger):
(01) 467 3040

Veolia Contract Manager
Veolia Transport Ireland Limited
Luas Depot
Red Cow Roundabout
Clondalkin
Dublin 22
Tel: (01) 461 49 10
Email: maintenance@veolia-transport.ie.

Safety Manager Veolia Transport Ireland Limited Luas Depot Red Cow Roundabout Clondalkin Dublin 22 Tel: (01) 461 49 10
Alignment Design Railway Procurement Agency Parkgate Business Centre Parkgate St Dublin 8 Tel (01) 6463400 or FREEFONE 1800 67 64 64
Communications Manager Veolia Transport Ireland Limited Luas Depot Red Cow Roundabout Clondalkin Dublin 22 Email: Luascustomercare@veolia-transport.ie Tel: (01) 461 49 10 Freefone: 1800 300 604 Fax: (01) 461 4992
Heritage or Bord na Móna
Bord Na Móna http://www.bnm.ie/
Fintown Railway http://www.antraen.com
Irish Steam Preservation Society Limited http://www.irishsteam.ie/
Lartigue Monorailway http://homepage.eircom.net/~lartiguemonorail/Page%202.htm
Railway Preservation Society of Ireland http://www.rpsi-online.org/
Tralee & Dingle Railway http://www.tdlr.org.uk/
Waterford & Suir Valley Railway http://www.wsvrailway.ie/
West Clare Railway http://www.westclarerailway.com/

5 GLOSSARY OF TERMS

Catch Points	A pair of sprung trailing points usually located in gradients steeper than 1 in 260. Their purpose is to derail any train running backwards without authority or out of control.
Central Traffic Control (CTC)	Main control room from which the passage of trains is controlled.
Clearance	Gap between the 'swept path' of the train and the railway infrastructure.
Connex	Former name of Veolia Transport, the operator of the Luas.
Culvert	Small bridge or pipe carrying a stream under a railway or road.
DART	Dublin Area Rapid Transit. An area of electrified commuter mainline railway running from Greystones in the South to Howth and Malahide in the North.
Electromagnetic interference (EMI)	This is a type of electromagnetic radiation, produced from the operation of a primary equipment item. It is normally associated with electrical circuits that carry rapidly changing signals as a by-product of their normal operation. It is also sometimes called Radio Frequency Interference (RFI).
Height restricted bridge	Bridges are considered to have a height restriction if they do not provide a vertical clearance of 5.03m (16’6”) for a 40’ vehicle.
Heritage railway	A railway which is run as a tourist attraction and seeks to re-create railway scenes of the past.
Iarnród Éireann	The infrastructure provider and train operator of the mainline railway.
Industrial Railway	Private railway used exclusively to serve a particular industry – the largest industrial railway in Ireland belongs to Bord na Móna.
Luas	Tramway in Dublin.
Mainline railway	Railway operated by Iarnród Éireann. Excludes tramways such as the Luas.
Major Accident Prevention Document (MAPP)	Document required under major hazard legislation made under the Seveso II Directive.
Moment	In the context of “traffic moment”, it refers to the product of the number of rail vehicle movements and the number of road vehicle movements at a level crossing.
Overhead line equipment (OHLE)	Equipment suspended over the railway for supplying electricity to electric trains. Sometimes called the overhead conductor system (OCS).

Overhead conductor system (OCS)	Equipment suspended over the railway for supplying power to electric trains. Sometimes also called overhead line equipment (OHLE).
Over-line bridge	A bridge where the railway runs below another route (e.g. a road).
Parapet	Bridge side wall.
Railway	Means of transport where vehicles run on iron rails. In this booklet, the term includes both the mainline railway and tramways.
Railway airspace	The airspace above railway land.
Railway company	A company that is responsible for tracks and other railway infrastructure, or which operates trains/trams (or both).
Railway infrastructure	Fixed equipment and structures on and around the railway including track, bridges, signals, stations, platforms, buildings and level crossings.
Railway Safety Commission (RSC)	The body responsible for regulating/enforcing railway safety and investigating/reporting on railway incidents.
Railway Procurement Agency (RPA)	The company responsible for the design and build of the Luas.
Running Rail	The rail on which a train's wheels sit.
Safety Report	Document required under major hazards legislation for the sites with large quantities of major hazard materials.
Signal	Similar to a road traffic light. Used to control the safe separation of trains.
Signal sighting	Ability of the train driver to see the signal at the correct distance.
Swept path	The volume of space swept through by a train in motion. It takes account of overhang on curves, tilting, etc.
Track formation	The material underneath the track and ballast that provides support.
Track destabilisation	Loss of track support.
Third Party	Anyone not working for the railway company or travelling on the railways as a passenger.
Under-line bridge	A bridge where the railway runs over another route (e.g. a road or a river).
Veolia Transport	The company responsible for operating the Luas.
Wayleave	A wayleave gives a right to use the land of another for a special purpose. Unlike a lease, a wayleave does not give the holder a right of "possession" of the property, only a right of use
Wheelbase	The distance between the front and back wheels of a vehicle.

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[T] BS8502:2003, Graphical symbols and signs. Creation and design of public information symbols. Requirements.
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