

## Information for users

The following document:

NR/L2/TRK/05100  
Issue 2

has had changes made to it, most recently, with effect from **22 October 2015**.

## Instructions for use

It is essential that you first read and understand each letter of instruction pertaining to the standard before proceeding to use the standard. You must then apply the requirements of each letter to the standard.

|                 |         |                 |                       |
|-----------------|---------|-----------------|-----------------------|
| NR/BS/LI/146    | Issue 1 | 31 August 2009  | Proceed to letter ►   |
| NR/BS/LI/185    | Issue 2 | 22 October 2015 | Proceed to letter ►   |
| NR/BS/LI/322    | Issue 1 | 28 March 2014   | Proceed to letter ►   |
| NR/L2/TRK/05100 | Issue 2 | 26 August 2008  | Proceed to standard ► |

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## Level 2

# Management of Fencing and Other Boundary Measures

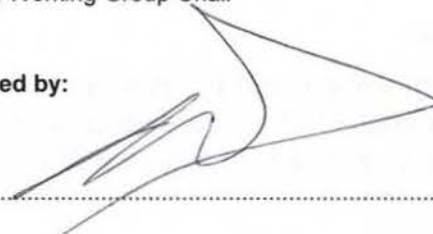
### Endorsement & Authorisation

Endorsed by:



N Strong, Working Group Chair

Authorised by:



A McNaughton, Steering Group Chair

Accepted for issue by:



M. McManus, National Standards Manager

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## Issue record

| Issue | Date         | Comments                                                                                                              |
|-------|--------------|-----------------------------------------------------------------------------------------------------------------------|
| 1     | October 2005 | Replaces RT/CE/S/072 Issue 1 – Prevention of unauthorised access to the lineside and RT/CE/C/030 – Lineside security. |
| 2     | August 2008  | Updated to reflect Phase 2A reorganisation; Letters of instruction 31 and 38 incorporated and withdrawn               |

## Compliance

This Network Rail Standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 26 August 2008.

When this standard is implemented, it is permissible for all projects, which have formally completed GRIP Level 4, to continue to comply with the Issue of any relevant Network Rail Standards current when GRIP Level 4 was reached and not to comply with requirements contained herein unless the designated Standard Owner has stipulated otherwise in the accompanying Briefing Note.

## Reference documentation

See section 3.

## Disclaimer

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## 1 Purpose

To specify the boundary management measures commensurate with assessed risks posed by the adjacent environment and the railway and to incorporate a method of assessing these risks.

## 2 Scope

This Specification applies to the boundary of Network Rail Controlled Infrastructure and excludes unauthorised access by authorised access points, by level crossings (private and public), from bridges, into lineside structures, launching of projectiles and vehicular incursions.

This Specification is relevant to the following Functions;

- Engineering – Sections 5.1, 5.3, 5.4, 6.2, 8.9
- Government & Corporate Affairs – Sections 5.5, 8.7
- Maintenance – all Sections
- Operations & Customer Service – Section 6.1
- Safety and Compliance – Sections 5.1, 6.3, 8.10

## 3 Reference documentation

|                                 |                                                                                                            |
|---------------------------------|------------------------------------------------------------------------------------------------------------|
| <a href="#">NR/L2/OHS/069</a>   | Lineside facilities for personal safety                                                                    |
| <a href="#">NR/L2/TRK/001</a>   | Inspection and maintenance of permanent way                                                                |
| <a href="#">RT/E/S/19608</a>    | Handbook for the maintenance and inspection of level crossings                                             |
| <a href="#">NR/SP/RSC/01401</a> | Route Crime Tool                                                                                           |
| <a href="#">GE/RT8063</a>       | Deterring unauthorised access and vandalism                                                                |
| <a href="#">GI/RT7033</a>       | Lineside operational safety signs                                                                          |
| BS 1722-1:1999                  | Specification for chain link fences                                                                        |
| BS 1722-2:2000                  | Specification for strained wire and wire mesh netting fences                                               |
| BS 1722-5:1999                  | Specification for close-boarded and wooden palisade fences                                                 |
| BS 1722-7:1999                  | Specification for wooden post and rail fences                                                              |
| BS 1722-8:1997                  | Specification for mild steel (low carbon steel) continuous bar fences and hurdles                          |
| BS 1722-9:2000                  | Specification for mild steel (low carbon steel) fences with round or square verticals and flat horizontals |
| BS 1722-10:1999                 | Specification for anti-intruder fences in chain link and welded mesh.                                      |
| BS 1722-12:1999                 | Specification for steel palisade fences.                                                                   |
| BS 1722-14:2001                 | Specification for open mesh steel panel fences                                                             |
|                                 | Network Rail Biodiversity Action Plan                                                                      |
|                                 | Network Rail Management and Legislation database                                                           |
|                                 | Network Rail Environment Guidance Notes                                                                    |

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## 4 Definitions

### Boundary

That which delineates Network Rail property from that of a third party

### Boundary measure

A man-made barrier or 'natural' feature, including but not limited to a ditch, hedge or a watercourse to deter unauthorised access on to the lineside

### Child trespass

Trespass by persons under the age of 16

### Class I barrier

Barrier of types including vertical bar, expanded metal, brick & mortar walls, concrete panel and decorative iron railings

### Class II barrier

Barrier of types including welded mesh, chain link, close-boarded timber and brick & mortar walls

### Class III barrier

Post & wire (including stock netting where appropriate), post & rail (timber or equivalent), dry stone walls and natural features (including ditches, hedges and watercourses)

### Enhancement

Where a fence specification over and above the given specification is required due to the risks posed by Route Crime

### Fence

See Lineside Barrier

### Livestock

Farm animals including, but not limited to, horses, cattle and sheep (does not include large wild animals such as deer)

### Lineside

For this specification Lineside includes the definitions of '*on or near the line*' and '*on the lineside*'

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### Lineside barrier

A physical, man-made, barrier to deter unauthorised access on to the lineside, which shall be continuous, clearly identifiable and of sturdy construction, including but not limited to;

- i. Walls – Constructed from, but not limited to, brick, stone and concrete panels to meet the relevant minimum height specifications according to risk assessment and can be fitted with topping to create an additional deterrent
- ii. Welded mesh – Fences as specified in British Standard BS1722-10:1999
- iii. Expanded metal – Open mesh steel panel fences as specified in British Standard BS1722-14:2001
- iv. Vertical bar – Steel palisade fences as described in British Standard BS1722-12:1999 (note: vertical ribs should face away from Network Rail property), decorative fencing as specified in British Standard BS1722-9:2000
- v. Chain link – As described in British Standards BS1722-1:1999 and BS1722-10:1999
- vi. Timber – As described in British Standards BS1722-5:1999 and BS1722-7:1999
- vii. Post and wire – As described in British Standard BS1722-2:2000 with the number of wire strands dependent on risk assessment. British Standard BS1722-8:1997 provides specification for continuous bar fences for farm animal containment

### Maintenance

Maintaining the integrity of the boundary measure to the same standard as the original installation, e.g. tightening wire, straightening posts, replacing pales

### Mesh 1

General purpose boundary fence defined by British Standard BS1722-10:1999

### Mesh 2

High and Extra High security fence as defined by British Standard BS1722-14:2001

### Neglected land

Land that is uncared for, unmanaged, derelict and often subject to fly tipping yet may be in active use by the public – also known as ‘stray land’

### Park or play area

Somewhere which is often self-contained with equipment for play activity like climbing frames, swings and football pitches – often where children will play unsupervised

### Recreation/leisure land

For example, a country park where there is general public access and children tend to be supervised

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### **Repair**

Repair, to match the specification of the existing boundary measure, of failed components, for example, single wire or post within a stretch of fence

### **Renewal**

Complete renewal of the fence or boundary measure in excess of the measures defined in maintenance

### **Route crime**

Lineside offences with the emphasis on the criminal nature of vandalism and trespass on the railway which can often be a serious threat to passengers and rail staff

### **Route crime hotspot**

A location with very high levels of repeat trespass and vandalism, with potential high consequence, leading to significant risk from train derailment. Route crime hotspots are typified by complex problems at high-risk locations where the normal measures for control of trespass and vandalism are insufficient to adequately control the risks.

### **Special measure**

Extra measure utilised to increase the security over and above usual specification – could include use of, amongst other things, razor wire or anti-scale rollers

### **Stock fencing**

Fencing of a specification suitable to retain livestock

### **Temporary barrier**

A barrier erected to consolidate defective or inadequate barriers of a type and construction commensurate with the risks posed by the railway and adjacent land use

### **Track category**

Highest track category over the length of the record to be used for assessment purposes – track category for each section of route is determined by the Principle Maintenance Support Engineer (Track).

### **Trespass**

The unauthorised access by persons on to the lineside

### **Unauthorised access**

Access by any person(s) not legally at work on the lineside or by any livestock animal

### **Vandalism**

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The unlawful and deliberate act of damaging or destroying any railway property or asset and specifically that associated with trespass, i.e. placing of obstructions on the line, graffiti and damage to lineside assets

### Vertical bar 1

Steel palisade fence as defined by British Standard BS1722-12:1999

### Vertical bar 2

Rivetless steel palisade fence or fences defined by British Standard BS1722-12:1999 using anti-vandal cone nuts or with all pales welded in position

## 5 Inspection

### 5.1 Inspection procedure

#### 5.1.1 Records

At frequencies determined within this Section, inspections of the boundary measures shall take place with a record being kept for each boundary-line in  $\frac{1}{8}$  mile sections.

Changes in likelihood and/or consequence score within an  $\frac{1}{8}$  mile section shall require a new record to be started. Changes in barrier class within an  $\frac{1}{8}$  mile section shall be noted.

#### 5.1.2 Details

Inspections shall record (Appendix A) the following details;

- Date of inspection
- Location (including OS grid reference)
- ELR
- Mileage
- Track ID (plus left/right or up/down)
- Likelihood assessment (Table 1)

**Table 1.** Risk categories for likelihood of unauthorised access

| <i>Risk</i>               | <i>Likelihood of unauthorised access</i>                                                                                                                           |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>V. High</b><br>score 4 | Recorded evidence of trespass or vandalism within last 12 months                                                                                                   |
| <b>High</b><br>score 3    | Significant potential for child trespass or vandalism via neglected land, park/play areas, schools, shopping areas, roads/footpaths; areas used to graze livestock |
| <b>Medium</b><br>score 2  | Back gardens, or industrial areas or recreation/leisure land e.g. country parks                                                                                    |
| <b>Low</b><br>score 1     | Non-grazing agricultural land, remote land, woodland or disused railway                                                                                            |

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- Consequence assessment (Table 2)

**Table 2.** Risk categories for consequence of unauthorised access

| <i><b>Risk</b></i>        | <i><b>Consequence of unauthorised access</b></i>       |
|---------------------------|--------------------------------------------------------|
| <b>V. High</b><br>score 4 | Third/fourth rail electrified, or<br>Track category 1A |
| <b>High</b><br>score 3    | Track category 1 or 2                                  |
| <b>Medium</b><br>score 2  | Track category 3 or 4                                  |
| <b>Low</b><br>score 1     | Track category 5 or 6                                  |

- Higher risk category at a site applies

- Condition rating (Table 3)

**Table 3.** Condition rating and priority

| <i><b>Rating</b></i> | <i><b>Condition</b></i>                                                                              | <i><b>Priority</b></i> |
|----------------------|------------------------------------------------------------------------------------------------------|------------------------|
| <b>Good</b>          | Fit for current use, no work required                                                                | 0                      |
| <b>Poor</b>          | Fit for current use, but maintenance required                                                        | 2                      |
| <b>Very Poor</b>     | Inadequate condition, maintenance <i>or</i> renewal proposal <i>or</i> enhancement proposal required | 4                      |

- Existing boundary measure type(s) and height
- Presence and description of access gates
- Digital photographs showing representative images of barriers, adjacent land use and route crime may be taken

Any details of route crime that has occurred since last inspection shall be reported on to enable the processes within the [NR/SP/RSC/01401](#) Route Crime Tool to be followed.

### 5.1.3 Methods

Inspections shall be carried out along the line of the boundary measure unless vegetation or topography means that physical contact with the barrier is not achievable; in such cases, or where alternative methods are proposed, authorisation must be obtained from the Principal Maintenance Support Engineer (Track)(Appendix B).

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## 5.2 Routine inspections

Routine inspections shall take place once every 12 months where the boundary measure is adequately deterring access. See also Appendix C.

Routine inspections shall record details that have changed since the last inspection to allow updating of records and repairs or renewals to be prioritised. Any evidence of unauthorised access or damage to boundary measures since the last inspection shall also be recorded to enable identification of potential route crime hotspots.

## 5.3 Decrease in routine inspection frequency

Twelve-month routine inspection frequency may be decreased to once every 24 months when it can be demonstrated that a report of a breach of the boundary resulting in trespass or vandalism has not occurred in the last 12 months.

Twenty four-month routine inspection frequency can be decreased to once every 36 months when it can be demonstrated that a report of a breach of the boundary resulting in trespass or vandalism has not occurred in the last 12 months. See also Appendix C.

Disused lines shall be inspected at a frequency of once every 36 months.

Decision to decrease routine inspection frequencies shall be recorded using the form in Appendix B.

## 5.4 Increase in routine inspection frequency (see also Appendix C)

Where there is evidence of a breach of the boundary resulting in trespass or vandalism in the last 12 months, routine inspections shall take place as follows;

- Consequence risk score **4**; inspection frequency once every **3** months
- Consequence risk score **3**; inspection frequency once every **3** months
- Consequence risk score **2**; inspection frequency once every **6** months
- Consequence risk score **1**; inspection frequency once every **6** months

Consideration must be given, at least once every twelve months, to further increasing the frequency of inspections due to additional local risk factors including, but not limited to, seasonal trespass or type of traffic operating over the route.

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Decision to increase routine inspection frequencies shall be recorded using the form in Appendix B.

## 5.5 Additional inspections

An inspection shall take place at locations where reports of any of the following are received;

- Breach of the boundary resulting in trespass or vandalism
- Livestock incursion
- Damage to boundary measures (such that effectiveness is compromised)

Additional inspections shall normally take place at the time of the reaction to the report.

Reports may be received from sources such as, but not limited to, track patrolmen and Community Relations.

Additional inspections shall also be undertaken at sites of particular risk, for example where there is evidence of ongoing trespass or damage.

## 6 Boundary operations

### 6.1 Repairs

Required repairs to failed components of boundary measures (e.g. corroded wires, occasional rotten posts) identified during routine inspections (Section 5.2) shall be reported to Maintenance and assigned a priority as given by Equation 1 (score: 3-6 [low priority]; 7-12 [medium]; 13-20 [high]). The boundary measure shall be made secure as necessary to deter unauthorised access prior to repair.

**Equation 1.** Priority calculation

$$\text{Priority} = \left( \frac{\text{Likelihood}}{(1 \text{ to } 4)} \times \frac{\text{Consequence}}{(1 \text{ to } 4)} \right) + \text{Condition} \quad (2 \text{ or } 4)$$

Repairs identified during additional inspections (Section 5.5) shall be reported to Fault Control and dealt with according to the Control-assigned priority.

### 6.2 Renewal proposal

Where it is identified during routine or additional inspections that a boundary measure requires renewal, a proposal should be made using a priority as given by Equation 1 (Appendix D). The boundary measure shall be made secure as necessary to deter unauthorised access prior to renewal.

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If existing barrier class is inadequate, consideration should be made to renewing to the barrier class appropriate to the likelihood and consequence risks, as given in Table 4. If existing barrier class is adequately deterring unauthorised access, a like-for-like renewal should be carried out, even when this does not align with Table 4.

Barrier class I may be considered for non-Route Crime Hotspot locations which fall outside of the Consequence 4 × Likelihood 4 matrix in Table 4 only with authorisation of the Level 2 Lineside Engineer.