



Engineering Report 123

Issue 2 2013

Guidelines for managing the interfaces between Utility services and Light Rapid Transit Systems

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First published, March, 2003

Amendments since publication

Issue	Date	Amendment
Issue 2	January, 2013	<p>Major revision of Issue 1 to: (i) reflect changes in the standards and engineering documents; (ii) amend clauses where changes to the design, construction, operation and maintenance of LRT systems affect the guidance given in the document; (iii) edit some sections to remove non-essential information.</p> <p>This issue includes the following principal technical changes:</p> <p>Terms and definitions: Definition of “HMRI” deleted, being obsolete, and replaced by “Office of Rail Regulation (ORR) Safety Directorate”, which has replaced the role of the HSE and HMRI.</p> <p>Clause 4.1 Introduction 1st paragraph: Sentence added to state that the Promoter of the LRT System is responsible for establishing the Project Management Plan.</p> <p>Clause 4.1 Introduction 3rd paragraph: Sentence added to highlight that the CDM Regulations require the designer to prepare a design to avoid foreseeable risks to the health and safety of any person and to take steps to eliminate hazards which may give rise to risks and reduce risks from any remaining hazards.</p> <p>Clause 4.2.2.4 Objectives: Sentence added to state the importance of establishing and agreeing at the outset the full extent of the required diversions of Utilities’ services.</p> <p>Clause 5.1 Review of LRT electric traction systems: Clause 5.1 and Clauses 5.1.1 to 5.1.4 deleted as non-essential information.</p>

		<p>Clause 5.2 Outline design of traction system: Sentence added to 1st paragraph to state that the traction system designers discuss with the Electricity Utility to achieve a design that can be integrated into the Utility network in an optimum and cost effective way.</p> <p>Clause 5.3 Stray current issues: Paragraphs 2 to 5 deleted and inserted into Annex A, being informative text and not required in the main body of the document. Clauses 5.3.1 and 5.3.2 added to provide design guidance on mitigating the effect of stray currents on LRT System assets and non-LRT assets, respectively.</p> <p>Clause 6.2.1 Highway construction: Wording of first paragraph revised to remove inference that track slab is normal practice since other construction techniques are used and wording of final sentence expanded to state that decisions on re-positioning of Utility services needs to be carried out in consultation with the Utilities affected in addition to the Highway Authority. Wording of 2nd paragraph amended to state that the Utility will require assurances regarding both safety requirements and future access to the Utility apparatus. Final paragraph added giving guidance regarding any manholes to chambers, etc. that are within or adjacent to the swept path.</p> <p>Clause 6.3 The Positioning of LRT OLE system supports: Wording added to final paragraph to ensure that the rights of the Utility to safeguard supplies and future access to its network are protected and decisions on how best to modify its network should be led by the Utility concerned, in conjunction with the LRT System designers and operators.</p> <p>Clause 6.4 Existing Utility overhead lines: Text expanded to provide more guidance on likely problems to be encountered with existing overhead lines and preferred solutions. Paragraphs 1 & 2 and final sentence reworded to state the lead role of the Electricity Utility to decide on action to take regarding existing overhead lines in the vicinity of a proposed LRT System, subject to agreement with the LRT System designers and operators.</p> <p>Clause 6.5 Existing Utility underground assets and services: New Clause added to provide guidelines for consideration of the requirement for possible diversion of underground assets and services in the proximity of the LRT System.</p> <p>Clause 6.6 Future access: 1st paragraph amended to highlight the Utilities' need for 24 hour access to their networks and that operating and contact procedures must be put in place to guarantee this access requirement. Paragraph added to require procedures to be put in place for ensuring safe working of Utilities' staff (and other parties) when working near an LRT System. Wording of final paragraph amended to reflect that it is the responsibility of the LRT Operator in conjunction with the needs of the Utilities to decide how much risk of disruption it wishes to take.</p> <p>Clause 6.9.1 New supplies: The option of the use an independent Distribution Network Operators (IDNO) to provide a connection added.</p> <p>Clause 7.1 Introduction: Last sentence of paragraph 1 and second paragraph deleted, as it cannot be assumed that current UK practice to install LRT Systems with rail to earth resistance greater than BS EN minimum requirements will continue.</p> <p>Clause 7.6.2 Structures without cathodic protection - anodic interference: Table 1 deleted and all references to it replaced by reference to BS EN 50162, Table 1.</p> <p>Clause 7.6.6 Structures with cathodic protection - cathodic interference: Table 2 deleted and all references to it replaced by reference to BS EN 12954, Table 1.</p>
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		<p>Clause 8.1 Introduction: Wording added to state that it is the responsibility of the LRT System Authority to instigate a monitoring programme on its system and for the programme to be discussed and co-ordinated with the Utilities to ensure maximum benefit to all parties.</p> <p>Details of all other technical, general and editorial amendments are included in the associated Document Amendment Summary for this Issue (available on request from the Operations Directorate of ENA).</p>
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Foreword

This Engineering Report (EREP) is published by the Energy Networks Association (ENA) and comes into effect from date of publication. It has been prepared under the authority of the ENA Engineering Policy and Standards Manager and has been approved for publication by the ENA Electricity Networks and Futures Group (ENFG). The approved abbreviated title of this engineering document is “EREP 123”, which replaces the previously used abbreviation “ETR 123”.

This document replaces and supersedes Engineering Technical Report 123, Issue 1, which was prepared by a multi-party working group in 2003 comprising of representatives from LRT designers, LRT builders, LRT operators, consultants, Highways Authorities, the ENA and Utilities (including electricity distribution network operators, BT and Transco) and other interested parties. The intent was to provide a single document to identify the interfaces between the Utilities and Light Rapid Transport System designers, builders and operators and provide guidance on how these interfaces should be managed through the lifecycle.

This Engineering Report has been brought up to date by the ENA to reflect changes in references, Standards and organisations, however, the original intent of the document has not changed. Where appropriate, the role and responsibilities of various parties have been identified in light of operating experience of LRT Systems.

This document has been prepared with particular reference to the following documents, which provide guidance on how Light Rapid Transit Systems should be constructed and how to deal with stray currents that emanate from such systems:

- a) BS EN 50122-2:2010, *Railway applications. Fixed installations. Electrical safety, earthing and the return circuit. Provisions against the effects of stray currents caused by d.c. traction systems*
- b) Office of Rail Regulation, Railway Safety Publication 2 (RSP 2) *Guidance on Tramways*

Commentary, explanation and general informative material is presented in smaller type, and does not constitute a normative element.

1 Scope

This document provides information and guidance for managing the interface between Public Utility systems and Light Rapid Transit Systems. It aims to identify the main areas of interest for all the relevant parties: designer, builder, and operators of Light Rapid Transit Systems, Public Utilities, Highway Authorities and other parties. The impact of stray currents that emanate from Light Rapid Transit Systems and flow in Public Utility assets is addressed, as are the requirements for the construction, operation and maintenance of these assets. Guidance is given on how all involved parties can best resolve the complex issues of service provision, risk analysis and asset protection.

2 Normative references

The following referenced documents, in whole or part, are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Standards publications

BS EN 12954:2001, *Cathodic protection of buried or immersed metallic structures – General principles and application for pipelines*¹

BS EN 50122-1:2011+A1:2011, *Railway applications. Fixed installations. Electrical safety, earthing and the return circuit. Protective provisions against electric shock*²

BS EN 50122-2:2010, *Railway applications. Fixed installations. Electrical safety, earthing and the return circuit. Provisions against the effects of stray currents caused by d.c. traction systems*³

BS EN 50162:2004, *Protection against Corrosion from Stray Current from Direct Current Systems*⁴

Other publications

[N1] Office of Rail Regulation, Railway Safety Publication 2 (RSP 2) *Guidance on Tramways*

[N2] Electricity Safety, Quality and Continuity Regulations 2002 (and Amendments)

[N3] ENA EREC G80 *Recommendations for the safe working of Utilities' staff and Other Parties near Light Rapid Transit Systems*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

approved

device or written procedure sanctioned by the LRT Operator, statutory authority or other recognised body

¹ English language version of EN 12954:2001.

² UK implementation of EN 50122-1:2011+A1:2011.

³ UK implementation of EN 50122-2:2010.

⁴ UK implementation of EN 50122-2:2010.