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[NR/L2/INI/02009](#) Issue 6

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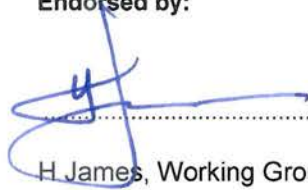
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Level 2

Engineering Management for Projects

Endorsement and Authorisation

Endorsed by:



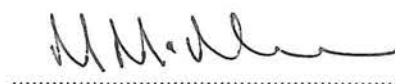
H. James, Working Group Chair

Authorised by:



I Mitchell, Steering Group Chair

Accepted for issue by:



M McManus, National Standards Manager

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User information

This Network Rail standard contains colour-coding according to the following Red–Amber–Green classification.

Red requirements – *No variations, could stop the railway*

- **Red requirements shall** always be complied with and achieved.
- Red requirements shall be presented in a red box **with the word “shall” or expressed as a direct instruction**.
- Accountability for the efficacy of red requirements lies with the Professional Head/Standard Owner.
- Red requirements are monitored for compliance.
- Corrective actions shall be enforced if variations are discovered through functional checks (e.g. engineering verification visits, audit or Operations Self-Assurance).

Amber requirements – *Controlled variations, approved risk analysis and mitigation*

- **Amber requirements shall** be complied with unless variation has been approved in advance.
- Amber requirements shall be presented with an amber sidebar **and with the word “shall” or expressed as a direct instruction**.
- Accountability for the efficacy of these requirements lies with the Professional Head/Standard Owner, or their nominated Delegated Authority.
- Amber requirements are monitored for compliance.
- Variations **may** be permitted. Variations are approved by the Standard Owner or through existing Delegated Authority arrangements.
- Corrective actions shall be enforced if **non-approved** variations are discovered through functional checks (e.g. engineering verification visits, audit or Operations Self-Assurance).

Green – *Guidance*

- Guidance is based on good practice. Guidance represents supporting information to help achieve **Red** and **Amber** requirements.
- Guidance shall be presented with a dotted green sidebar **and with the word “should” (usually in notes) or as a direct instruction**.
- Guidance is **not mandatory** and is not monitored for compliance.
- Alternative solutions may be used. Alternative solutions do not need to be formally approved.
- Decisions made by a competent person to use alternative solutions should be backed up by appropriate evidence or documentation.

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Issue record

Issue	Date	Comments
1	March 1996	First Issue
2	October 2001	Supersedes RT/E/P/02009, Issue 1 This revision was necessary in order to include new definitions and responsibilities for key roles (Asset Engineer, DEM, PM, DPE and Sponsor's Agent), the requirements for design Approval and inclusion of the method statement review and acceptance process.
3	December 2008	Supersedes RT/E/P/02009, Issue 2 This revision was necessary in order to bring this standard up to date to conform to the current organisational structure of Network Rail, Company Procedures, Group Standards and current legislation.
4	December 2009	Supersedes NR/L2/INI/02009, Issue 3 This revision extends the scope of the standard to all Network Rail projects and makes amendments to the definition of 'Acceptance', 'Contractor's Engineering Manager' and 'Contractor's Responsible Engineer'. It also changes the term 'Approval' to 'Technical Approval' with a new definition. It brings alignment with NR/L2/INI/CP0047 – 'Application of the Construction, Design and Management Regulations to Infrastructure Investment Projects'. It amends Figure 1 'Engineering Team Relationships' and includes clarifications requested during the cascade briefing process most notably to define the project engineering interface management processes.
5	June 2011	Supersedes NR/L2/INI/02009, Issue 4 This revision aligns the standard with changes to assurance processes as a result of the Efficient Project Governance transformation work stream, which focuses on the management of engineering risk, clearer accountability for assurance activities and improvements in the engineering management of suppliers. It also incorporates minor changes to support new and modified standards such as GRIP and transfers responsibility for assessment of

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contractor processes from project teams to the Director Contracts and Procurement. Appendices contained within Issue 4 have been transferred into Forms; details of individual forms are located with the “Reference documentation” section.

6 September 2015

Supersedes NR/L2/INI/02009, Issue 5

This revision strengthens the statements of responsibility for safety in design, for management of interfaces and interoperability between project outputs and the railway system. It incorporates specific updates to design responsibilities under CSM-RA, and Designer competence under CDM. In addition, the methods of defining, assessing and storing records of competence, including generic engineering management competence, are revised. Various minor modifications are made to demonstrate compliance with GRIP and January 2014 revision to Clienting Guidelines. Explicit consideration to the allocation of roles for Projects discharged under Alliance arrangements.

Standard split into modular format; each module has been allocated Issue number 01.

Compliance

This Network Rail standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 5 March 2016.

When this standard is implemented, it is permissible for all projects that have formally completed GRIP Stage 3 (Option Selection) to continue to comply with the issue of any relevant Network Rail standards current when GRIP Stage 3 was completed and not to comply with requirements contained herein, unless stipulated otherwise in the scope of this standard.

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Reference documentation

Construction (Design and Management) Regulations

Railways and Other Guided Transportation Systems (Safety) Regulations 2006

Railways (Interoperability) Regulations 2011 (RIR2011)

Network Rail Health and Safety Management System

NR/L1/INI/PM/GRIP/100, Governance for Railway Investment Projects (GRIP) – Policy Manual

NR/L2/INI/02009/01 Roles, Responsibilities and accountabilities

NR/L2/INI/02009/02 Authority to Work (AtW) Competence Requirements

NR/L2/RSE/100/01 Network Rail Acceptance Panel

NR/L2/RSE/100/02 Safety Verification

NR/L2/RSE/100/03 Compliance with Interoperability Regulations for Infrastructure Projects

NR/L2/OHS/0047 Application of the Construction, Design and Management Regulations to Network Rail Construction Works

NR/L2/INI/CP0075 Procedure for the Entry into Operational Service of Railway Infrastructure

NR/L2/EBM/STP001 Network Rail Standards Management – Process Requirements

NR/L2/SIG/30003 Engineering Assurance Arrangements for Signalling Engineering Schemes and Services

NR/L2/CIV/003 Engineering Assurance of Design and Construction of Building and Civil Engineering Works

NR/L2/TRK/2500 Engineering Assurance Arrangements for Track Engineering Projects

NR/L2/ELP/27311 Engineering Assurance Requirements for Design and Implementation of Electrical Power Engineering Infrastructure Projects

NR/L2/TEL/30022 Engineering Assurance Arrangements for Communications Engineering Schemes and Services

NR/SP/ERG/24020 Incorporating Ergonomics Within Engineering Design Projects: Requirements

NR/L2/INI/02009/F0037 Appointment of Departmental Engineering Manager

NR/L2/INI/02009/F0038 Appointment of Designated Project Engineer

NR/L2/INI/02009/F0039 Appointment of Contractor's Engineering Manager

NR/L2/INI/02009/F0040 Appointment of Contractor's Responsible Engineer

NR/L2/INI/02009/F0041 Identification of Network Rail Project Team Engineering Requirements

NR/L2/INI/02009/F0042 Register of Network Rail Project Engineering Team

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NR/L2/INI/02009/F0043 Declaration of the Appointment of Competent Network Rail Staff

NR/L2/INI/02009/F0044 Document Review Notice

NR/L2/INI/02009/F0045 Certificate of Interdisciplinary Review

NR/L2/INI/02009/F0046 Certificate of Interdisciplinary Check

NR/L2/INI/02009/F0047 Combined Interdisciplinary Check / Interdisciplinary Review Certificate

NR/L2/INI/02009/F0048 Engineering Compliance Certificate (ECC)

NR/L2/INI/02009/F0049 Technical Query Form

NR/L2/RSE/070 Engineering Verification

NR/L2/INF/02202 Records Management of Health and Safety Files

NR/L3/MTC/RCS0216 Risk Control Manual

NR/L3/MTC/089 Asset Management Plan

Network Rail Sponsors Handbook

Letter of Instruction NR/BS/LI/345 Common Safety Method

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1 Purpose

This issue primarily seeks to align Network Rail engineering practices with UK and EU legislative instruments specifically the Construction (Design and Management) Regulations and the Common Safety Methods for Risk Evaluation and Assessment.

This issue also seeks to develop the roles, responsibilities, accountabilities and competence of key engineering roles, many of which contribute the discharge of legal obligations under the specific legislative instruments.

2 Scope

2.1 Applicability

This standard applies to all projects and the organisations working on projects that change, renew, enhance or remove Network Rail infrastructure assets.

It applies to all phases of a project as applicable under GRIP. All types of project are applicable including, but not limited to:

- a) feasibility studies;
- b) design;
- c) construction;
- d) testing and commissioning;
- e) maintenance;
- f) asset protection;
- g) asset recovery;
- h) de-commissioning and demolition;
- i) projects which protect Network Rail's asset when a party other than Network Rail carries out work on, over or under Network Rail property;
- j) projects carried out by an Alliance between Network Rail and another party / other parties (refer to Clause 5 for further information);
- k) temporary works;
- l) emergency works (once the immediate requirements to make the railway safe have been met).

NOTE 1: This issue of the standard is an interim measure pending the development and application of the future Integrated Engineering Lifecycle (IELC), Engineering Handbook and outcome of the Business Critical Rules review.

NOTE 2: The proposed Engineering Handbook and IELC will seek to absorb engineering management concepts and other lifecycle elements to provide an integrated systems approach with appropriate levels of management control.

2.2 Exclusions

The requirements contained within this standard do not apply where projects are undertaken by Network Operations and fall within the categories specified in a) to c):

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- a) the works do not physically replace existing assets and do not alter the configuration of assets;
- b) the works are limited to the direct replacement of individual components, and those items are physically and functionally directly compatible with the items being replaced;
- c) the works are limited to the “efficient recovery of redundant assets” (ERORA) and the changes have been authorised by the Route Asset Manager (RAM) [Signalling].

Additionally, there are a number of Engineering Management concepts and practices that this issue does not address namely (list not exhaustive):

- a) Identification of engineering delivery risks/opportunities;
- b) Interface with engineering management programme;
- c) Engineering project lifecycle;
- d) Requirements, change and configuration management;
- e) Assumptions management;
- f) Assurance including stage gate process, independent design/peer reviews, verification and validation and on-site assurance;
- g) Management of outsourced design
- h) Engineering governance including, but not limited to, meeting structure and KPIs
- i) Lessons Learned Process

2.3 Standard Structure

NR/L2/INI/02009 now presents itself in a modularised format; the contents / currency of each individual module are as listed in Table 1.

Ref	Title	Issue No	Publication Date
NR/L2/INI/02009	Engineering Management for Projects	06	September 2015
<u>NR/L2/INI/02009/01</u>	Roles, responsibilities and accountabilities	01	September 2015
<u>NR/L2/INI/02009/02</u>	Authority to Work (AtW) Competence Requirements	01	September 2015

Table 1 – Standard Module Details

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3 Definitions

For the purpose of this standard, the following terms and definitions apply.

Phrase or Title	Definition
Acceptance	Acknowledgement by Network Rail that, following a risk based review, the submission is satisfactory. Acceptance by Network Rail: a) indicates that the submission complies with the specified requirements including applicable standards and legislation. b) indicates that the submission has been produced in accordance with the relevant engineering assurance processes. does not remove or alter any duties or responsibilities placed on the party making the submission by the Contract, standards or statutory regulations.
Approved For Construction (AFC) Design	Design that has: a) been prepared, checked and approved by competent persons in accordance with all applicable Contract requirements and standards. b) successfully completed an Interdisciplinary Check (IDC) process. c) successfully completed the Network Rail Acceptance process.
Asset Management Plan (AMP)	A project deliverable describing the arrangements for maintenance of new and changed assets during works delivery and on transition into operational use.
Check	The act of reviewing the work done by a designer to determine that all statutory, mandatory and client functional process and technical requirements have been applied to a design or element of a design to the expected level of quality.
Contract Requirements – Technical (CR-T)	A form of agreement and specification for Works, appended to a Contract, which creates and defines obligations between a project and a design and / or construction organisation, in the form of technical requirements.

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Phrase or Title	Definition
Delivery Group	A body within a Network Rail Function (i.e. Regions, National / Major Programmes, Network Operations Delivery Services) accountable for the delivery of single or multiple projects (programmes of work).
Departmental Engineering Manager	A professional Engineer appointed, at Delivery Group level, to act as the proxy for the Senior Engineer on a Project or Programme of Projects and who is responsible for appointing the Designated Project Engineer.
Designated Project Engineer	A Professional Engineer appointed, to a Project or Programme of Projects, by Network Rail to lead the acceptance of engineering designs prepared for, and on behalf of, Network Rail.
Design	Approved plan or convention for the construction/ manufacture/assembly of an object or system/parts of a system and includes all plans, elevations, schematics, calculations, software, quality, safety, materials and other key elements which verify that requirements have been met.
Designer	“Designer” means any person (including a Client, contractor or other person referred to in the CDM Regulations) who in the course or furtherance of a business: (a) prepares or modifies a design; or (b) arranges for, or instructs, any person under their control to do so, relating to a structure, or to a product, mechanical or electrical system intended for a particular structure, and a person is deemed to prepare a design where a design is prepared by a person under their control.
Design Organisation	Any organisation that prepares or modifies a design or arranges for, or instructs any person under their control, to do so. It includes: a) Design Consultants – Single or Multi-Discipline b) Network Rail Design Organisations
Design Risk Assessment	Risk assessment carried out on the proposed use of the finished works by all proposed end user groups/stakeholders, operators, maintainers, passengers, third parties etc. Focus on development of engineered controls to control risk to a qualitative ALARP level.

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Phrase or Title	Definition
Detailed Route Requirements Document (DRRD)	Transformation of the Route Requirements Document (RRD), at output of the development stage, into a detailed technical set of requirements to deliver the solution that satisfies the route requirements.
Discipline Lead	A discipline specialist within a Delivery Group responsible for provision of discipline application guidance to project engineering posts.
Discipline Management	A process applied within certain Network Rail functions to provide consistent management of the people, process and performance aspects of a discipline.
Discipline Manager	A person responsible within a Function for the discipline management within a competence framework.
Document Review Notice (DRN)	A form (NR/L2/INI/02009/F0044) used to record the review, and approval (if appropriate) or other outcome, of an Acceptance Review associated with an Engineering Design or Deliverable.
Engineering Compliance Certificate (ECC) (formerly Certificate of Compliance)	A document which includes: a) one or more statements (section 1 of NR/L2/INI/02009/F0048) by the CEM confirming that all engineering deliverables comply with the appropriate technical specifications (e.g. CR-T) for the works, or confirming partial compliance and detailing all non-compliances; b) a statement by the DPE, required by NR/L1/INI/PM/GRIP/100, confirming that all engineering deliverables comply with the Detailed Route Requirements Document (Project Requirements Specification for legacy projects), or confirming partial compliance and detailing all non-compliances.
Engineering Management Plan (EMP)	The EMP defines the accountabilities, responsibilities, roles and processes applicable to engineering staff working within a Delivery Group or project.
Entry into Operational Service (EIS)	As defined in NR/L2/INI/CP0075.
Governance for Railway Investment Projects (GRIP)	As defined in NR/L1/INI/PM/GRIP/100.

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Phrase or Title	Definition
Hazard Record	A management tool, which may be a spreadsheet, database, document or specific software, used for identifying, analysing and managing risks on a particular project. It contains details of design and construction hazards and records the control measures implemented to manage the residual risk to an acceptable level. It is initially produced prior to the first design decision being made and is maintained through the life cycle of a project. Upon completion of the project it forms part of the Health and Safety File.
Interdisciplinary Check (IDC)	An assessment undertaken by the Design Organisation to confirm that the information included in the design is compatible and conforms to the requirements of all other designs with which the design is expected to interface.
Interdisciplinary Review (IDR)	A review undertaken by the DPE to confirm that the information included in the design submitted for Acceptance appears to be compatible and conform to the requirements of all other designs with which the design is expected to interface.
Interoperability Regulations	As defined in NR/L2/RSE/100/03.
National Specialist Team (NST)	A national team established to provide specialist guidance and advice on engineering deliverables in a specific area (e.g. electromagnetic compatibility, ergonomics, acceptance services etc).
Network Rail Acceptance Panel (NRAP)	As defined in NR/L2/RSE/100/01.
Project Requirements Specification (PRS)	Project Requirements Specification documents have been superseded by three related requirements documents, namely: Client Requirements Document (CRD), Route Requirements Document (RRD) and Detailed Route Requirements Document (DRRD).
Safety Verification	As defined in NR/L2/RSE/100/02 and the Network Rail Health & Safety Management System.
Sponsor	A Network Rail person who acts as the single point of contact between the client and the Project Manager (or Development Manager).
Sponsor's Instruction / Remit	As defined in the Sponsors Handbook. <i>NOTE: Sponsors Handbook reference within the Infrastructure Projects Integrated Management System is (IMS 4122).</i>

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Phrase or Title	Definition
System Definition	A formal document, required by CSM-RA, recording the overall project engineering scope and design, focusing on safety and interoperability.
System Safety Plan	A Plan responding to the requirements of NR/L1/RSE/100/01 compliance with CSM-RA.

Table 2 – Definitions

Document Title: System Safety Plan