

Product Acceptance Service

Guidance Note

Network Rail Safety Technical & Engineering

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1 Purpose

The purpose of this document is to provide clear guidance on the management of the Product Acceptance service, practices to be followed, authorities and policy.

The document is to support the successful delivery of a professional, effective, and transparent Product Acceptance service.

Systems, sub-systems, modules, components, and equipment will be collectively referred to as 'Products' throughout this document.

Term	Definition
NRAP	Network Rail Assurance Panel
TSI	Technical Specification for Interoperability
CSM	Common Safety Method on Risk Evaluation and Assessment
RIDC	Rail Innovation and Development Centre
STE	Safety Technical and Engineering Directorate
IRIS	International Rail Industry Standard
RGS	Railway Group Standard
Hazard Record	The document in which identified hazards, their related measures,
	their origin and the reference to the organisation which has to
	manage them are recorded and referenced;
RIRL	Rail Industry Readiness Level
ISO	International Organisation for Standardisation
SRP	System Review Panel
PADS	Parts and Drawings System. A database owned by SERCO. The data
	is managed by Network Rail Catalogue Management Team (NSC).
	This includes the creation and revision of controlled catalogue
	(PADS) numbers.
Controlled Catalogue Numbers	Numbers allocated to items that are deemed critical and requiring
(PADS Numbers)	approval.
istore	Network Rail's online procurement site for the searching and ordering
	of "controlled or uncontrolled" products. Note: This site is available to Network Rail employees only.
Uncontrolled Catalogue Numbers	Numbers allocated to items within istore that are deemed
Chechtoned Catalogue Numbers	uncontrolled and fall outside of the scope of items that require
	Product Acceptance.
	Note: numbers are applied for and allocated via the istore site.

2 Terms and definitions

3 Scope

This guidance document provides information relating to gaining acceptance of Critical Products that are:

- a new or modified controlled product that, where relevant align with the Network Rail challenge statements, that have been evaluated against the Rail Industry Readiness Levels (RIRL's) where;
 - technology readiness level (TRL) 6 is completed
 - Reliability Readiness Levels (RRL) 7 is completed as outlined in NR/L2/RSE/0005,
- b) a change of application of a controlled product;
- c) a change of manufacturer of a controlled product;
- d) a change of operational environment for a controlled product;
- e) a compatibility issue for Network Rail's infrastructure potentially caused by installation of a product not owned by Network Rail on the infrastructure.

have reached the appropriate readiness levels are assessed for Product Acceptance via the methods described in the Network Rail standards NR/L2/RSE/100/05 and NR/L2/RSE/100/07

Information on the types of products deemed critical and requiring approval, which are based on their risk to the business and currently defined in our guidance document: <u>https://cdn.networkrail.co.uk/wp-content/uploads/2017/11/Guidance-note-How-to-decide-what-needs-product-acceptance.pdf</u>. Please note that ths list is not exhaustive.

Products identified as requiring Product Acceptance are assessed via NR/L2/RSE100/05, this guidance note supports the management of the process.

For further guidance please email us at prodacc@networkrail.co.uk

4 Management

The Network Rail Safety Technical and Engineering Directorate (STE) is responsible for the management of the service.

Roles and responsibilities

Role	Responsibilities	
Applicant (Sponsor)	A suitable Network Rail employee who acts in a sponsorship capacity and demonstrates the business need for the product or change. The Applicant is accountable for submitting the initial product application, liaising with and requesting evidence from manufacturers against the generic and technical requirements and liaison with Route / Infrastructure Projects to arrange any operational trials required.	
Catalogue Management Team	Responsible for the allocation of catalogue numbers and the entry and management of approved product details into the PADS (Parts and Drawings System) database and Network Rail catalogue (istore).	
Category Manager	Responsible on behalf of the Category council to review the PA submission in terms of product and supplier alignment with the appropriate category strategy.	
Duty Holder	Responsible for carrying out a particular duty under the applicable regulations.	
Lead Reviewer	A competent Network Rail or independent engineer with delegated authority from the Professional Head of Asset discipline for setting the approval requirements, assessing, and recommending acceptance of the product.	
Product Acceptance Process Specialist	Delegated authority from NRAP to manage the acceptance process for applications. Liaises with Applicants, engineers and Head of Asset discipline, tracking and reporting the acceptance performance.	
Product Development Panel	Responsible for reviewing evidence from projects/proposals and agreeing RIRL/TRL levels and the associated stage gate actions with projects. Reviews the project investment paper (if applicable at relevant stage gate) and provides recommendations to the R&T Board for endorsement.	
Professional Head of Asset discipline	Delegated authority from NRAP to authorise and sign off the approval of products to be used in or on Network Rail infrastructure.	
Route / Infrastructure Projects	Responsible for making infrastructure available for 'trials'.	
System Review Panel	Delegated authority from NRAP to set and assess requirements for multi- discipline applications.	
Supplier Quality Assurance	Responsible for identification of appropriate assurance controls to the products.	

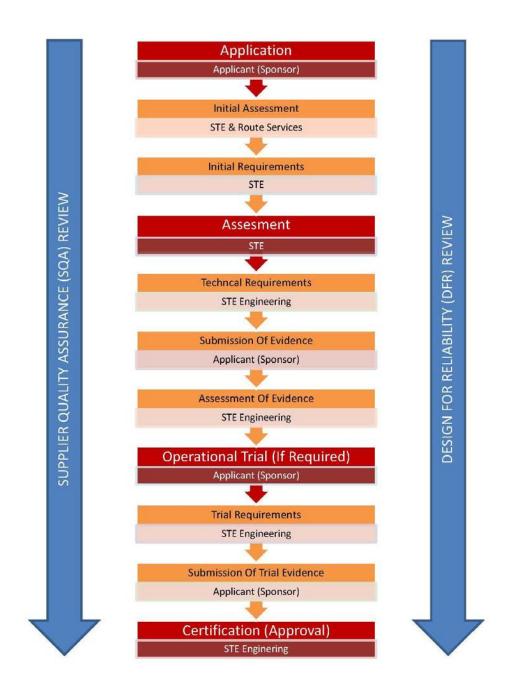
Resources

The resources allocated to the service shall be agreed within the relevant STE Engineering discipline.

STE will offer a service* to applicants seeking to gain approval for the use of a Product on or about Network Rail's infrastructure.

*provision of service is dependent on the applications meeting the requirements of initial reviews and commercial category/ engineering strategy checks. Applications will be rejected if they do not include sufficient detail including robust business case, or are not at the required Rail Industry Readiness Level (RIRL).

5 Process



Application phase

Ref	Stage	Who	Tasks
1.1	Application	Applicant	Submit application
1.2	Initial review	Product Acceptance Process Specialist	 Determine if the Product requires approval. Determine if the Product is critical. Determine or seek clarification that the Product is at the required Technology Readiness (TRL) Level. Determine the lead and any affected asset groups. Determine if review by SRP is required. Progress the application for Category Management, Engineering and SQA review. Issue Generic Acceptance Requirements to Applicant.
1.3	Category Management Review	Category Manager (NSC)	Determine via Category Management check, the business need and whether the Product is in line with any applicable policy; or strategy
1.4	Engineering Review	Asset Group Lead(s)	 Determine whether the Product is in line with any applicable policy; or strategy with that discipline. Determine the Products criticality level. Determine if the Product is an Interoperability constituent. Determine if Design for Reliability (DFR) process applies. Allocate the Lead Reviewer.
1.5	Supplier Quality Assurance Review	Supplier Quality Assurance	Determine whether the Product requires an SQA Audit.

Assessment phase

Ref	Stage	Who	Tasks
2.1	Initiate assessment	Product Acceptance Process Specialist	 Request that the Lead Reviewer sets the product specifieng requirements. Request that Supplier Quality Assurance activities to be carried out if required. Notify Professional Development & Training of the new Product.
2.2	Set requirements	Lead Reviewer	 Review the information provided. Specify product specific engineering requirements for approval. Provide requirements to Applicant. (Affected Asset Groups shall also assign a Reviewer to set any approval requirements)
2.3	Submission	Applicant	Produce a submission providing evidence of compliance against the specific requirements set.
2.4	Assessment	Lead Reviewer	 Review the submission for completeness. Assesses the Customer's submission. (Affected Asset Groups also assess the submission)
2.5	Approval	Lead Reviewer	 Decides whether approval is to be granted or declined Requests catalogue numbers from NSC Catalogue Management for items within the configuration deemed "controlled". Drafts appropriate Approval Certification or provides advice on rejection.
2.6	Professional Head approval	Professional Head of Asset Discipline	Authorises and "signs off" approval.
2.7	Delivery	Product Acceptance Process Specialist	 Issue approval certification (for trial or full approval) or rejection advice to the Customer.

Operational trial phase

If during the approval process it is not possible for Network Rail to be satisfied that the risk of introducing the new or changed Product is acceptable, a trial may be specified.

Applicants shall first consider conducting trials on non-operational infrastructure or within a simulated environment. Trials on the operational infrastructure shall only be considered if demonstrable evidence cannot be obtained from testing or trialling within a simulated or non-operational environment.

Should a trial in operational service (over and above any demonstration, testing, and initial offinfrastructure trialling) is required to be carried out, the applicant or STE (as appropriate) shall liaise with a Network Rail Route to determine a suitable trial location.

Ref	Stage	Who	Tasks
3.1	Trial requirements	Lead Reviewer	Specify requirements and success criteria for the trial.
3.2	Trial	Route/ Project	Undertake trial in operational service.
3.3	Trial report	Applicant/ Route/ Project	 Route/Applicant/Project to produce a trial report providing evidence that the trial requirements have been met.
3.4	Assess trial report	Lead Reviewer	 Lead reviewer assess' the trial report and if satisfied recommends approval.
3.5	Approval	Lead Reviewer	 Decides whether approval is to be granted or declined. Drafts appropriate Approval Certification or provides advice on rejection.
3.6	Final review	Product Acceptance Process Specialist	Undertakes a final review.
3.7	Professional Head approval	Professional Head of Asset Discipline	Authorises and "signs off" approval.
3.8	Delivery	Product Acceptance Process Specialist	 Issue approval certification or rejection advice to the Customer.

6 Review by System Review Panel

The approval of infrastructure schemes or high risk systems, products and complicated multidisciplinary new and novel system or product applications are dealt with in accordance with Network Rail Standard NR/L2/RSE/100/07. This standard is owned by the Network Rail Assurance Panel (NRAP). For most infrastructure schemes and systems requiring assessment, NRAP delegates this to System Review Panels (SRP).

If at initial stages it is agreed that an SRP review by panel is required, the approval process described in NR/L2/RSE/100/07 is to be followed with a NRAP authorised person appointed as Chairperson of the panel, with panel membership comprising competent and independent individuals from each affected asset group.

In order to reach a conclusion, the Chairperson shall seek to achieve a consensus of members present at the meeting.

If a consensus cannot be achieved, the final decision shall be taken by the Chairperson.

The Chairperson of each panel is accountable to NRAP.

In addition to panel members, additional expert advice on specific issues may be called upon.

For further guidance relating to System Review Panels, please email us at prodacc@networkrail.co.uk

Whole life cost

The Product Acceptance process may consider whole life cost in its assessment of a Product.

7 Examples of items that require approval

The following list provides examples of the categories products and types of items that typically require Product Approval, please note that this list is not exhaustive and advice may be required to determine whether your product requires approval.

Signalling Applications

- Signals (mechanical, filament and LED colour light).
- Control Systems (lever frame, panel, VDU, ground frames/ panels)
- Interlockings (mechanical, relay, electronic, disconnection boxes)
- Apparatus Housing (location cases, equipment buildings.
- Train Detection (track circuit, axle counters, treadles)
- Point End (mechanical, clamp lock, machine, HPSS)
- Train Protection (AWS, TPWS, ATP)
- Train Describers (mechanical, electronic)
- Signalling Power Supplies (transformers, UPS, battery, power cables)
- Infrastructure Specific Relays/ Boxes (large plug in, BR930, sub-iniature cradle, shelf type, DCPI)
- Event Logging and Condition Monitoring Systems.
- Line side Signage to Support Signalling (operational and non-operational signage).

Level Crossing Applications

- Control Systems (manually controlled, automatically controlled, passive/ user worked)
- Barriers (manually controlled barriers, automatic barriers)
- Signalling and Communication (road traffic lights, pedestrian warning lights, audible warnings, crossing CCTV cameras, telephones, panel indicators, panel monitors)
- Track Bed (surface, deck, track, drainage, road markings, trespass guards, fencing, rail signage, crossing signage, gates and stiles, vegetation management, CCTV lifting equipment, lighting, electrical supplies)
- Buildings and Civils (lighting and columns, CCTV columns)
- Highway Authority (road signage)

Electrification & Power Applications

- HV Switchgear AC (oil filled, vacuum, SMOS, air, .vacuum GIS).
- HV Cables (solid/ XLPE, oil filled/ paper).
- Contact Systems (OLE and components, CRE and components)
- HV Transformers (standard, auto, booster)
- DC Electrification (oil filled, vacuum, vacuum GIS, transformers/ rectifiers, LV cables)
- Electrical points and Conductor Rail Heating (systems and components, cabling)
- Tools and equipment (live line, non live line)
- Power Supplies (systems, cables, switchgear and transformers, power generation).
- Miscellaneous (electrical equipment enclosures, monitoring and control).

Telecommunications Applications

- Transmission System (transport layers optical and copper, LAN/WAN node/ data network)
- Network Management (hardware, software)
- Trunk Cabling (copper, fibre, immunisation, cable routes)
- Operational Voice Comms (concentrators, public emergency telephone systems, voice recorders, operator MMI, CSR/RETB/NRN/ORN, radio spot scheme, BSS, NSS, cab mobile, GSM-R handheld, FTS, tunnel and lineside telephone systems)
- Sub-surface Station Management Control (customer information system, public address, surveillance CCTV)
- Train Dispatch (DOO CCTV, DOO mirror)
- Power Supply (power supply chargers, earthing, UPS, rectifier, inverter, battery)

Plant Applications

- On Track Plant OTP (MEWPS, RRV, rail lifters, sleeper layers, mobile flashbutt welders, rail clippers, powered trolleys, access platforms, excavation machines, track access systems, grinders, cranes, rollers, dozers, multipurpose vehicles)
- On Track Machines OTM (tampers, rail cutting machines, ballast cleaners, tilting wagons, multipurpose vehicles)
- Manually Propelled Powered Equipment (rail clippers/ clip removers, track jacks, rail grinders, rail stressing equipment, rail straighteners/ benders, welding machines, rail head cleaners, sleeper replacers, rail thimbles)
- Manually Propelled non Powered Equipment (hand trolleys, rail skates)
- Non Rail Mounted Plant or Machinery (chippers, dozers, cranes, scaffold, mowers, lifting beams)
- Tools and Equipment (rail saws, track measuring devices TMD's, detection systems. Cable locators, total stations, rail stressing equipment, testing and diagnostic equipment, data loggers and condition monitoring equipment, generators, train/ track warning systems, grinders, communication systems)
- Non Powered Tools and Equipment (lifting accessories, tension meters, insulated hand tools)

Track Applications

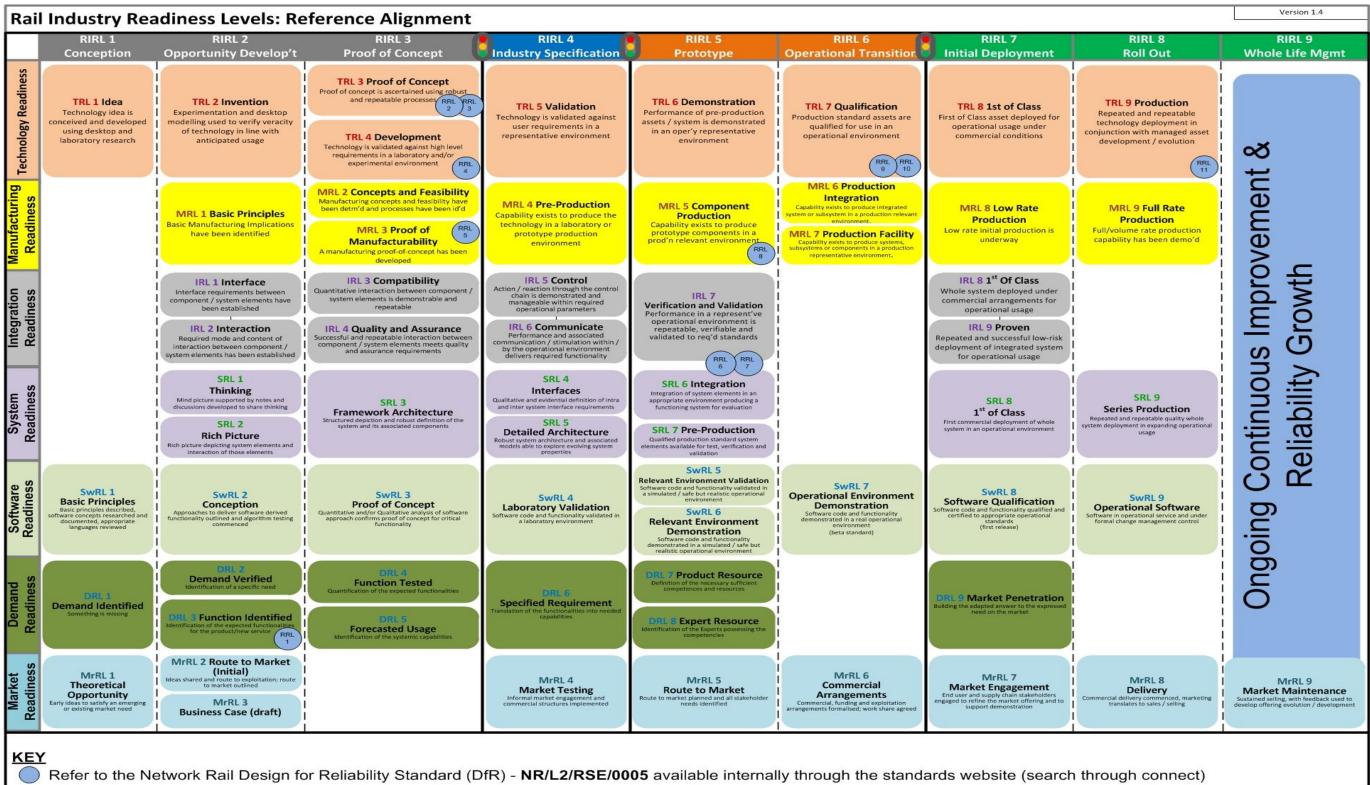
- Plain Line (rail, sleepers, ballast, formation)
- Drainage (drainage, formation)
- Monitoring Systems (temperature, inspection)
- Tools (gauges)
- Welding (track welding processes, welding peripherals)
- Miscellaneous (lubricants, grease distribution units)

S&C (Switches & Crossings) Applications

- S&C (rail, bearers, crossings, half sets sleepers, ballast, formation)
- Drainage (drainage, formation)
- Monitoring Systems (temperature, inspection)
- Tools (gauges)
- Welding (track welding processes, welding peripherals)
- Miscellaneous (lubricants, grease distribution units)

8 Rail Industry Readiness Levels (RIRL's)

Applications should only be submitted for Product Acceptance when the Products or Systems have been fully developed and have reached RIRL 6.



9 Interoperability

Network Rail has a duty to comply with the Railways Interoperability Regulations 2011 (and subsequent amendments) referred to as RIR2011.

This is a European Commission initiative to promote a single market in the Rail sector. The Legislation aims to remove technical barriers to the supply of equipment and the running of trains between member states.

Interoperability is the ability of a system or a product to work with other systems or products without special effort on the part of the customer. Interoperability is made possible by the implementation of standards.

The Railways (Interoperability) Regulations 2006 (RIR) came into force on 1 April 2006 and incorporates the European Directives on railway interoperability into UK Law (Directives 96/48/EC, 2001/16/EC and 2004/50/EC). The Regulations replaced the previous 'High Speed' Regulations (of 2002). They provide a process for the authorization and placing in service of interoperable railway subsystems.

The Purpose of the Directives

- This is to allow common technical standards, Technical Specifications for Interoperability (TSI's) to be applied across Europe's Railways. This is to establish a common European verification and authorisation process for placing new, upgraded or renewed infrastructure into service; and to provide a process for putting certain rail components known as interoperable constituents onto the rail market, without duplication of process in each Member state.
- RIR extends the assessment and authorisation process provided by the High-speed regulations to the conventional rail part of the Trans-European Network (TEN).

Nb - Changes to the infrastructure not subject to authorisation under RIR need to be managed under the provision of ROGS.

How do I know which items of equipment are (or should be) interoperability constituents?

- Interoperability constituents are listed in the applicable TSIs Technical Specifications for Interoperability (TSIs).
- In addition, manufacturers can declare an assembly of listed interoperability constituents as an interoperability constituent. This could be useful where listed interoperability constituents are routinely used together in a defined combination, and by verifying and declaring that combination as sort of "super" interoperability constituent, the workload associated with verification at the sub-system level is further reduced.
- Apart from the point immediately above, there is no freedom to "invent" new types of
 interoperability constituents that are outwith the listed definitions in the TSIs. This does not, of
 course, prevent a manufacturer from developing and marketing all sorts of constituents but
 he cannot declare them to be interoperable if they are not within the scope of the listed
 definitions in the TSIs.

Further information is regarding ICs and TSIs available via the Office Of the Rail Regulator (ORR) website here:

http://orr.gov.uk/what-and-how-we-regulate/health-and-safety/regulation-and-certification/interoperability

10 How to apply for Product Acceptance

To apply for a new item or for a change request* to an existing item, the Network Rail applicant must complete our online application form which is available via the NR corporate website and can be found via the following link:

https://www.networkrail.co.uk/product-acceptance/

The applicant will need to provide justification by demonstrating monetary, safety and / or performance benefits to Network Rail.

The applicant will receive an email notification when we have processed your application successfuly. This will include your unique Product Acceptance reference number and details of the next approval steps.

For further guidance please email us at prodacc@networkrail.co.uk

* Change Requests should be submitted for the following:

- a change to the product configuration (to the actual product or its application)
- a change of manufacturer
- requests for products to be approved outside of already approved geographic locations

This list is not exhaustive and guidance should be sought prior to making an assumption regarding whether the change needs approval.

11 Further guidance

Catalogue Numbers

"**Operational**" means any product / plant / equipment used to directly control, monitor, support and power the railway. In case of uncertainty the Product Acceptance team or relevant Engineering function shall be consulted. Safety Critical items that are required for use on the operational railway are required to be assessed via the Product Acceptance process and will be allocated Controlled catalogue numbers.

"**Controlled**" means catalogue numbers for which Network Rail Engineering asserts control. For any items falling into this category, it is mandatory that the product acceptance process is followed as explained in **NR/L2/RSE/100/05** and this document.

"Uncontrolled" means catalogue numbers for which Network Rail Engineering asserts no control. Products in this category are low risk items that <u>do not</u> require acceptance. The issuing of uncontrolled numbers is managed by the Network Rail Catalogue Management Team.

How to find an approved product

There are more than 85,000 products already accepted for use* on our infrastructure.

The catalogue of accepted products is available on the PADSnet website at: https://www.padsnet.co.uk/

PADS** (Parts and Drawings System) is owned by SERCO and the data is managed by the Network Rail Route Services Catalogue Management team. This includes the creation and revision of PADS numbers.

iStore is Network Rail's online procurement site where you can search for and order products. This site is available to Network Rail employees only via the connect portal.

If you have any queries relating to catalogue numbers or PADSnet, please contact the Catalogue Management team, Route Services) at <u>cataloguequeries@networkrail.co.uk</u>

*Applicants are required to check PADS, prior to the submission of an application for acceptance, to establish whether suitably approved products are already approved for use.

**PADS is not an approval process. Items are registered in PADS after successfully gaining approval via the NR Product Acceptance process.

Network Rail Standards

There are a number of ways for suppliers, principal contractors and subcontractors to access Network Rail standards and the standards awareness briefing report:

Online: SAI Global – a new digital format available for hand-held devices at: <u>http://www.i2isolutions.net/networkrailproducts</u>. Call SAI Global for more details on 01344 636300

Online: IHS Network Rail Standards Online at: <u>http://uk.ihs.com/products/rail/index.htm</u>. Call IHS Customer Services on 01344 328039 for login details.

Hard copy: To buy individual standards, call IHS Customer Services on 01344 328039 or <u>emeastore@ihs.com</u>.