

# New Equipment & System Approval

EGP-21-01

## Applicability

ARTC Network Wide
SMS

## Publication Requirement

Internal / External
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1.7	14 Aug 20	Standards	Stakeholders	Manager Signalling Standards	General Manager Technical Standards 27/08/2020

## Amendment Record

Amendment Version #	Date Reviewed	Clause	Description of Amendment
1.0	02 Sep 11		Supersedes PP-122 version 2.1. Amendments to remove references to redundant positions and committee resulting from organisational restructure and minor editorial changes.
1.1	20 Jan 15		Document rebranded. Update to approval authorities, reference documents, and other minor editorial updates.
1.2	06 Mar 15	3, 4 & 7	Reference to RISSB Rail Equipment Type Approval Standard added.
1.3	26 Nov 15		Track and Civil and Structures items requiring product acceptance specified.
1.4	28 Mar 18	3, 6, 7, 8 & 9	Reference docs added (EGP2101F-02, EGP-01-01 & EGP0101F-02); Definitions added (Endorser, Equivalent Item,

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			Trial Type Approval & Type Approval Categories for Existing Products); Procedure section updated to note EGP2101F-01 and EGP0101F-02 to be completed, and that GM Technical Standards approves minor Type Approvals, also added Regulator Notification requirement; Updated flow chart; Type approval process overview added.
1.5	18 Jun 18	9	Endorser's position title updated.
1.6	16 Apr 20	All	Scope updated for signalling and minor update to procedure.
1.7	14 Aug 20	2, 9, 10	Flow chart updated for current position titles

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## 1 Introduction

### 1.1 Purpose

The purpose of New Equipment and System Type Approval is to ensure that any new equipment and systems introduced into the ARTC network are appropriate with regard to technical and safety performance, and suitability and compatibility with existing equipment.

## 2 Scope

The scope of this procedure is limited to the ARTC assets that comprise the ARTC owned, leased or managed Network.

For Signalling, it covers:

- Any Safety Critical systems.
- Non-safety critical signalling and communication items not covered by ARTC specifications and standards.

Note: Items which are commercial of the shelf (COTS) products, complying to ARTC specifications, applicable national and/or international standard may not require type approval. Final determination of whether any item requires type approval will be made by ARTC.

- For Track and Civil including Structures it covers:
- Rail specific items not covered by Australian Standards or ARTC Specifications.
- Non-railway specific items that are safety critical for risks associated with the operation of trains or affect the performance of the track.

## 3 Reference Documents

The following documents support this procedure:

- Infrastructure System Maps, Various issue dates
- RSK-PR-001 Risk Management Procedure
- EGP-03-01 Rail Network Configuration Management
- FPR-PR-024 Purchasing Materials Procedure
- EGP2101F-01 New Equipment & System Approval Proforma
- EGP2101F-02 Equipment Feedback Form
- EGP-01-01 Engineering Document Control
- EGP0101F-02 Engineering Document Change Approval EDCA
- AS7702 Rail Equipment Type Approval
- IEC 61508 Functional safety: Safety-related systems

## 4 Responsibilities

The Manager Standards and Manager Signalling Standards are responsible for the approval process for new equipment and systems.

The Supplier of the equipment is responsible for providing information for the equipment to allow it to be assessed for type approval.

## 5 New Equipment and Systems

Rail infrastructure is constantly being maintained to ensure its continuing suitability for use.

New components, equipment and systems are constantly being developed by industry.

Introduction of these components, equipment and systems requires careful management.

Rail infrastructure owners both nationwide and internationally are engaged in this process.

### 5.1 Rail Infrastructure Assets

Rail infrastructure assets comprise:

- Bridges and Structures (B)
- Communications (C)
- Level Crossings (X)
- Mobile Plant (M)
- Right of Way (R)
- Services (E)
- Signalling (S)
- Track (T)
- Turnouts (L)

## 6 Definitions

The following terms and acronyms are used within this document:

Term or acronym	Description
Endorser	The authority supporting the need for new equipment and systems into the ARTC network based on business benefit assessment. Refer to clause 9.
Equivalent item	Item which has the same acceptable performance of all the functions, and ability to interface in the same way to other items that comprise the equipment or system.
Minor Approval	<ol style="list-style-type: none"> <li>1. Equivalent item to that already approved but provided by the same or an alternate supplier except where it is the first approved item from a supplier.</li> <li>2. Updated or upgraded item to that already approved with no significant changes in functionality or design.</li> <li>3. Variation to an existing item that provides alternate functionality but with no significant change in materials or process (generally an extension of a range or family of products).</li> <li>4. Item that only affects efficiency of infrastructure and does not directly contribute to safety or operational performance.</li> <li>5. Support systems for equipment including: non-destructive testing device for non-safety critical systems; design aids/software for non-safety critical systems; tools with non-safety critical applications.</li> </ol> <p>Safety Critical Item - "An item whose proper specification, configuration control, performance and maintenance is required to prevent a risk to rail safety that cannot be tolerated. No single failure in the item shall result in the risk arising, and all single failures shall be detectable by operators or maintainers before a further failure in the item occurs."</p>
Significant Approval	<ol style="list-style-type: none"> <li>1. First item from a new supplier.</li> <li>2. New Technology or equipment.</li> <li>3. Existing equipment with major upgrade or new technology or change to system software.</li> <li>4. Major Safety system that requires fail safe philosophy.</li> <li>5. Tools for Safety Critical systems including design tools and software; testing tools for safety critical performance.</li> <li>6. Any item for which there is no ARTC Standard or no Australian Standard or equivalent set of requirements.</li> <li>7. Where an interface exists between new and old technology.</li> <li>8. When regulator notification is required.</li> </ol>

Term or acronym	Description
Trial Type Approval	<p>A Trial Type Approval may be granted for a trial installation to evaluate the installation, operation, compatibility and reliability of a new or improved product. This will generally be for a specified location, duration, and will have conditions of approval including (but not limited to) feedback on the outcomes of the trial before assessing for ARTC type approval.</p>
Type Approval Categories for Existing Products	<p>Grandfather Rights Equipment with no known prior approval that:</p> <ul style="list-style-type: none"> <li>• May be used, maintained and renewed in its current location; but</li> <li>• May not be used in new works or upgraded installations without further ARTC type approval.</li> </ul>
	<p>Legacy Approvals</p> <ul style="list-style-type: none"> <li>• May continue to be used in current installations;</li> <li>• Can be replaced with the same item of equipment during maintenance or renewal activities; but</li> <li>• Shall not be used in new installations.</li> </ul>
	<p>Predecessor Rights Predecessor authority equipment approvals fall into three categories:</p> <ul style="list-style-type: none"> <li>• Listed as approved, but details unknown;</li> <li>• Approval document held; or</li> <li>• Approval document plus supporting information held.</li> </ul> <p>For all three categories, it is proposed that equipment with Predecessor Approval:</p> <ul style="list-style-type: none"> <li>• May be used and maintained in its current location;</li> <li>• May be used in applications equivalent to an existing installation.</li> </ul> <p>An ARTC type approval will supersede any predecessor approval. However, Equipment may continue to be used in accordance with the Predecessor Approval even where such use conflicts with the conditions of the ARTC Type Approval.</p>

## 7 Procedure

The process for identifying the need for, and introducing new equipment and systems is:

1. Corridor Managers, Project Managers or Area Managers identify the need for the new component, equipment or system (refer to clause 9). Endorsement from the relevant business unit is required. This could be driven by:
  - Asset performance analysis, e.g. Signal Fault Reduction Strategy initiative etc.
  - Industry development of components, e.g. new rail fastening, LED signal head etc.

- Infrastructure enhancement, e.g. new crossing loop, new signalling system, timber to concrete sleeper upgrade etc.
- Other rail system introduces new equipment or system.

Consideration should also include the following:

- New spares that may need to be catalogued and warehoused.
  - Management of existing inventory.
2. EGP2101F-01 New Equipment & System Approval Proforma and EGP0101F-02 Engineering Document Change Approval (EDCA) prepared in conjunction with Standards representative.

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*Note: For a minor amendment to an existing approval, only the EDCA is to be completed and submitted for approval along with the marked up Type Approval Certificate and any other supporting documents.*

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3. Standards & Procedures Administrator allocates number to type approval and registers EGP0101F-02 Engineering Document Change Approval (EDCA).
4. Manager Standards / Manager Signalling Standards reviews submission, identifies as a significant or minor change, and recommends for approval or rejects. If recommended for approval, General Manager Technical Standards reviews submission. Minor change accepted or rejected, documented and filed and with formal advice to the Operational Safety & Environment Review Committee on a monthly basis. Significant change is referred to the process outlined below.
5. The Supplier of the equipment provides detailed technical information to allow it to be assessed against operational and technical requirements. Provision of a Product Information Pack in accordance with AS7702 is the default requirement for ARTC. Suppliers may request to vary from this with supporting reasons.  
ARTC, at its discretion, may accept or decline the submission or terminate the type approval process at any stage, with or without explanation.
6. The system or equipment is assessed for technical and safety performance (including WHS issues), suitability for the task and environment and compatibility with other interfacing systems or equipment. Safety information may include as appropriate:
  - Failure Mode Effects and Criticality Analysis (FMECA).
  - Proof of safety and safety in design.

Geographic and maintainability considerations may also have a bearing on the assessment.

Section 4 of AS7702 provides more information on evaluation requirements, process, and cross-acceptance.

7. Previous assessment and approval of the system or equipment by another major infrastructure owner may be taken as a positive assessment of the system or equipment by ARTC.
8. Recommendation on the system or equipment to be trialled or introduced is made if the assessment is positive.
9. A Review Panel is nominated by the Manager Standards / Manager Signalling Standards consisting of relevant stakeholders (e.g. maintainers and/or operators and/or signal sighting



committees - as appropriate) and their acceptance is sought. Ordinarily the stakeholders might include;

- a. Representative from the relevant business unit
  - b. Work Health and Safety (if any WHS issues are identified)
  - c. Procurement
  - d. Standards
10. Recommendation for approval is made by the Manager Standards / Manager Signalling Standards to the General Manager Technical Standards via submission of the EDCA and all supporting documents. Recommendations shall include any conditions of approval and identification of the equipment and separable parts including configuration or version.
11. The General Manager Technical Standards confirms if Regulator Notification is required in accordance with the ARTC SMS (Manage Accreditation – Variation & Change).

If Regulator Notification is required, the notification shall be carried out in accordance with the ARTC SMS. It is the responsibility of the endorser to prepare the notification.

The person responsible for the Regulator Notification shall advise [standards@artc.com.au](mailto:standards@artc.com.au) of:

- the date on which the Regulator was notified
- the date the notification period ends
- Notification to the regulator includes a specified notification period, generally 28 days.

A Type Approval requiring Regulator notification will not come into effect until the end of the required notification period unless early acceptance is received.

The New Equipment & System Approval Register is updated, Certificate is published, and the Standards & Procedures Administrator issues a Type Approval notification.

12. If approval is granted, implement the new system or equipment, with formal advice to the Operational Safety & Environment Review Committee. The implementation of the new equipment on the ARTC rail network shall be planned by Business Units so that the following issues are addressed:
- a. Determination of the status of old equipment (replace now or leave in place).
    - The need to retain spares of old items
    - Alternatively, they need to use spares of old items before using new item
    - Other considerations regarding old equipment as required by business unit
  - b. Training needs analysis and competency
  - c. Spare parts holding (complete items, breakdown spares).
  - d. Impact on tools needed.
  - e. User Manuals/Illustrated Parts Breakdown.
  - f. Provision of documentation to support asset management including Reliability Availability Maintainability Safety (RAMS).
  - g. Budget implications.

Gaining Type Approval is not implementation approval. The decision to implement new Type Approved equipment rests with Business Units.

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**If approval is not granted, refer back to Step 5 above.**

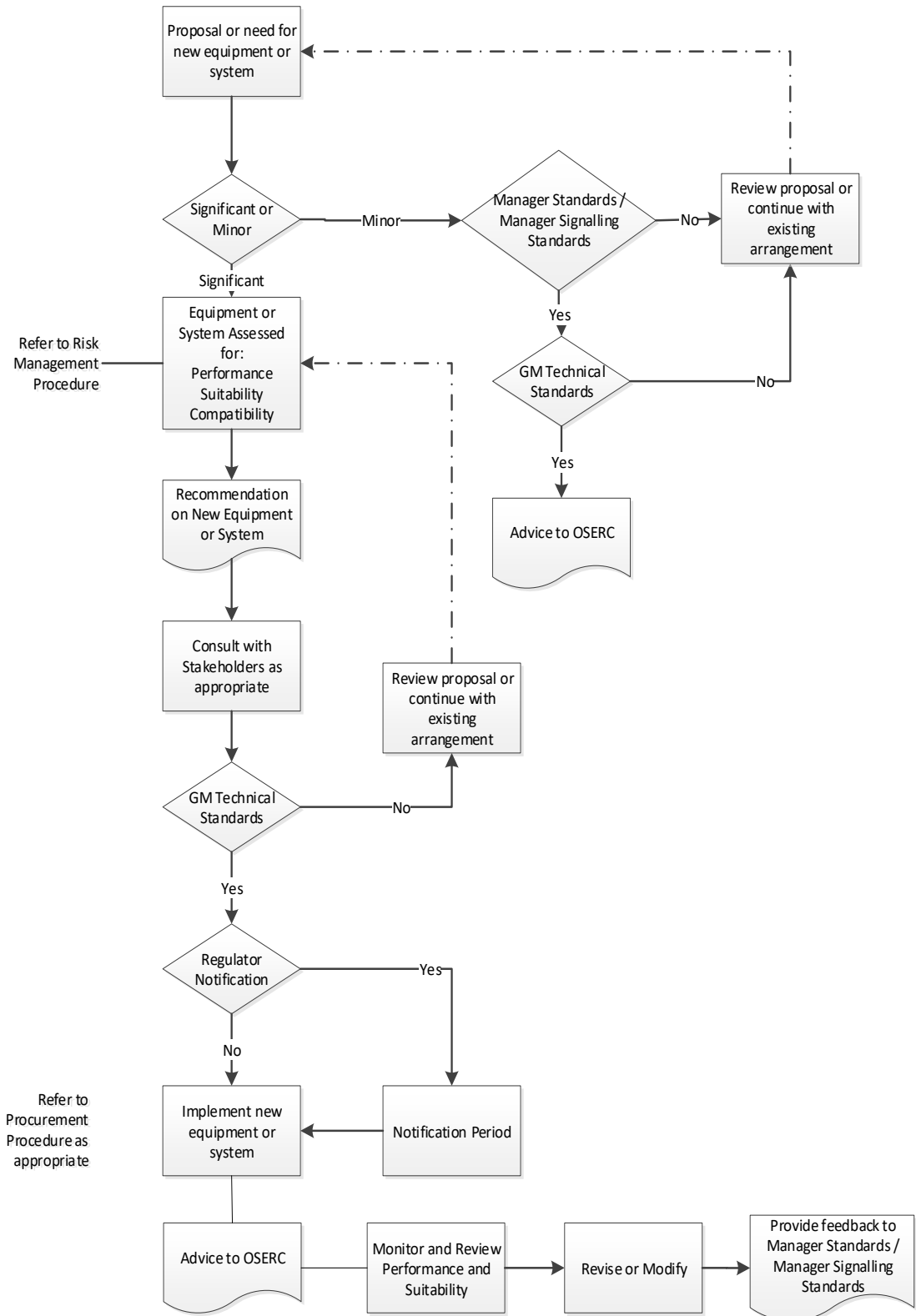
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13. New system or equipment performance is monitored to ensure performance, suitability and compatibility is as stated in assessment (Step 5).
14. New system or equipment is possibly modified or revised resulting from in service performance (Step 12).
15. Feedback on performance, suitability and compatibility is provided to the Manager Standards / Manager Signalling Standards, supplier or contractor and stakeholders (maintainers or operators).
16. Approval of the system or equipment can be withdrawn based on unsatisfactory performance, lack of support from manufacturer/supplier or other reasons. Refer Section 7 AS7702 Rail Equipment Type Approval for further information on withdrawal.

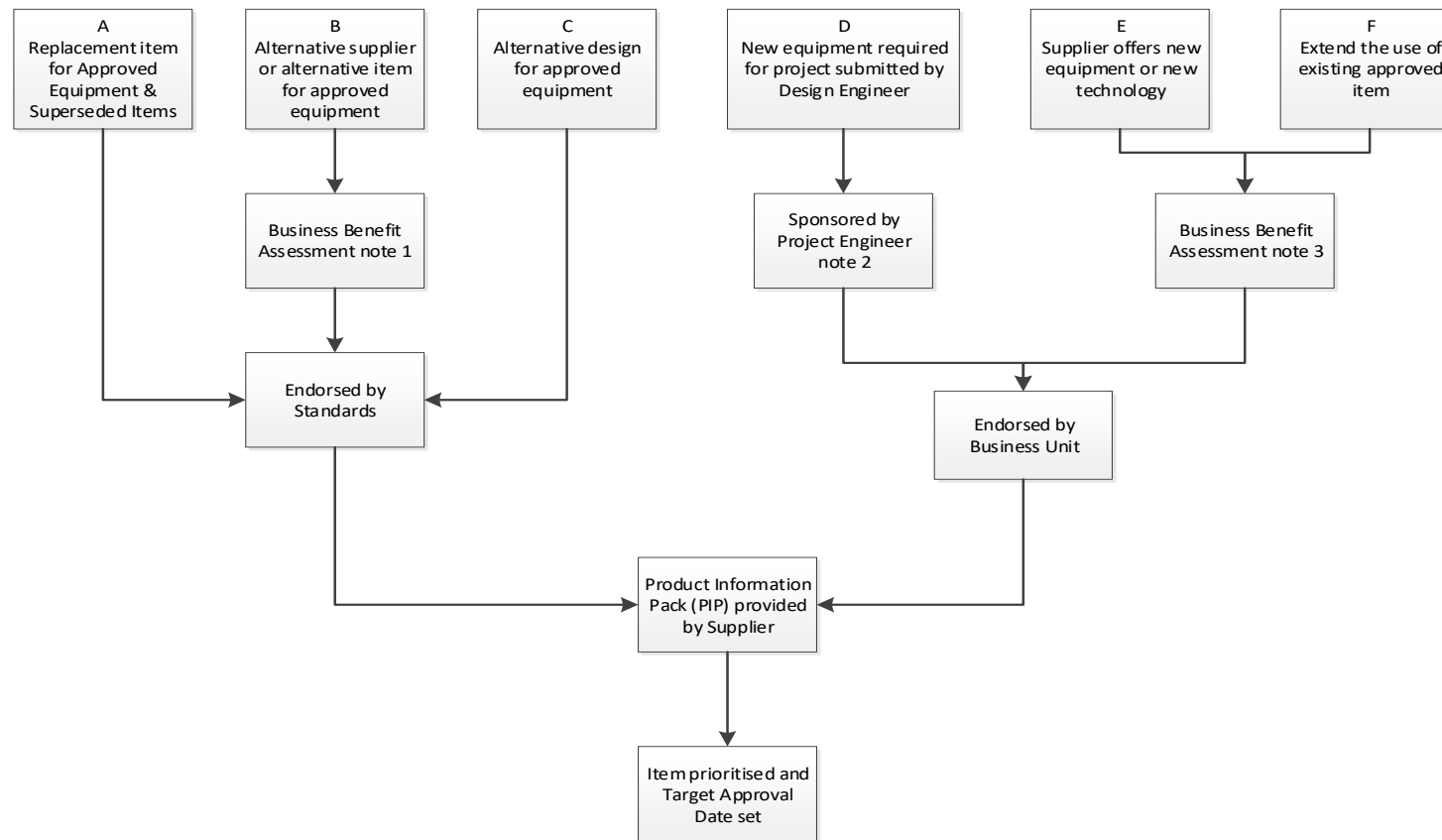
## **8 Signalling System or Equipment developed for ARTC**

Signalling system or equipment being specifically developed for ARTC are required to be developed under a regime of quality and safety assurance and to recognised applicable International/Australian standards. This will inherently include the procedure and documentation that is required to be demonstrated or produced to meet the type approval requirement. Formal acceptance of such system or equipment shall include type approval for use in the specific application for which the system or equipment has been developed.

### 9 Flow Chart – New Equipment & System Approvals



### 10 Proposal or Need for New Equipment or System



## Notes:

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- 1) *Business Benefit Assessment is based on the information provided in the New Equipment Preliminary Assessment Request provided by the Supplier. The Standards section will engage with stakeholders to assess the Business Benefit.*
  - 2) *The Project Engineer works with the Design Engineer to confirm the Business Benefit of the new system/equipment. Business Benefit Assessment is based on the information provided in the New Equipment Preliminary Assessment Request provided by the Supplier or as otherwise determined by the Designer.*
  - 3) *Business Benefit Assessment is based on the information provided in the New Equipment Preliminary Assessment Request provided by the Supplier. The Stakeholder representative provides input into the assessment. The Standards section may be requested by stakeholders to assist in assessing the Business Benefit.*
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