Introduction

- All personnel who work on ARTC signalling infrastructure are required to undertake tasks in accordance with ARTC standards

- This induction provides information about the range of ARTC signalling standards documentation

- It details how they can be found

- It also provides details of the structure of the documents and how updates are indicated
Introduction

- All personnel working on ARTC signalling infrastructure shall have an ARTC Signals Statement of Competency.
- Personnel are required to complete this induction, then successfully complete the Signalling Standards Induction Assessment.
  - Note: When completing the standards induction assessment questions will be asked requiring URL links to be copied and pasted. All URLs must be sourced from the extranet, not from search providers i.e. Google.
- This is a prerequisite for gaining an ARTC Signalling Statement of Competency.
Signalling Competency requirement

- Signals staff submitting for the following ARTC Signals Statements of Competency are required to successfully complete the Signals Standards Induction and the Induction Assessment. See EST 20 03.
  - F1 Senior Signal Engineer
  - F2 Signal Design
  - F3 Signal Maintenance / Construction Engineer (Manager)
  - F4 Signal Technician/Maintainer
  - F5 Signal Electrical and Mechanical
  - F6 Signal Installer / Tester
  - F8 Control Systems / Communications Engineer
  - F9 Control Systems / Communications Technician

Applicants for **F7 Signals Mechanical** and **F10 Trades and Assistants** are not required to successfully undertake the Induction and Assessment. However, there are advantages to these staff in understanding the ARTC signalling standards.

Apprentice Signal Technicians are required to undertake the Induction and Assessment.
Purpose and Audience

**Purpose of Induction**
- Assist signalling staff to navigate the ARTC Engineering Extranet
- Help signalling staff to identify and access key signalling standards and supporting documentation
- This is part of the competency assessment for signalling staff who undertake work for ARTC

**Audience**
- Design Engineers
- Construction Engineers
- Commissioning Engineers
- Test Engineers
- Team Leaders
- Project Managers
- Signals Maintenance staff
This induction covers:

- Accessing the ARTC Engineering Extranet
- Recent Change Register
- Signalling Standards and Procedures
  - Forms
- Region based Signalling Standards
- Engineering Policies and Procedures
  - Configuration Management
  - Forms for Engineering Procedures
- Technical Bulletins
  - Engineering Notes/Manuals
  - Engineering Instructions
  - Engineering Bulletins
  - New Equipment and Systems Approvals
  - Waivers
- Drawing Management System

We recommend that you print this out and navigate the ARTC Engineering Extranet while working through this induction. This will help you to become familiar with the layout and content of ARTC’s signalling standards and documentation.
Completing the Induction

- To complete this induction, you will require a computer with access to the Internet.
- Select Infrastructure Standards from the main menu. This will take you to the ARTC Engineering Extranet.
The ARTC is progressively adopting a uniform approach to definitions, numbering and hierarchy of its documents.

Select Help then Document Definitions from the drop down bar.
Accessing the ARTC Engineering Extranet


- All enquiries about the information that appears on the Engineering Extranet can be emailed to the Standards team at standards@artc.com.au

- Technical queries on the application of standards and procedures may be submitted using the Enquiry Form. (Select Help then Contact us from the drop down menu)
Accessing the ARTC Engineering Extranet

- **Note:** The Recent Change Register is available from the Extranet home page and via the Help drop down menu (see following slide).

- It lists recent changes made to standards and other Engineering documents.

- This **must be checked every three months**.

- The changes are recorded in a spreadsheet. Each 3 month period has its own worksheet. Previous worksheets are also stored and accessible.
Accessing the Recent Change Register

- Select Help then Recent Changes drop down menu.
### Recent Change Register

The Recent Change Register is issued every three months. Click here to access the document.

- **Recent Change Register**
- **Click here to access the document**
- **The Recent Change Register is issued every three months**
The Recent Change Register is a Microsoft Excel file. You can save a copy of it to your computer.

The register displays the previous two, three month periods.

The remaining worksheets for previous periods can be viewed by selecting the unhide option.
Signalling Standards and Procedures

- Common signalling standards are standards that apply across the entire ARTC Network. This includes New South Wales, Victoria, Queensland South Australia and Western Australia.

- Common standards should be accessed before state specific standards as these take precedence.

- Common signalling standards cover:
  - design
  - construction
  - maintenance
  - material
  - Configuration and examination
• To access the Signalling Standards page, select **Signals** from the **Infrastructure Standards** main menu.

The signalling standards are numbered and organised in accordance with the details on this page.
This shows the separate sections for Procedures (including Standards), Work Instructions, Forms and Guidelines.

The standards documents are grouped according to these Items.
The documents are listed with the following information:

- Standard number
- Title
- Last Updated and Version
- Document Type
- Commentary available
- Issues Register applicable
- Jurisdiction (state) applicability
### Signalling Standards and Procedures

This indicates that this standard is applicable in South Australia, West Australia, Victoria, New South Wales, CRN and Queensland.

**This indicates that a Commentary is available for the standard.**

**Click on the icon to see the Commentary.**
## Signalling Standards and Procedures

### Material

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</table>
• ARTC is in the process of reviewing all signalling standards and updating them to become common signalling standards.

• The standards that have been reviewed to date are available and are shown as applying in all states.

• Where an issue is raised against a standard, this is listed in the Issues Register. This will also list Waivers against the standard.

• Standards that apply in specific states are legacy standards from previous management of that region. Common Standards take precedence over them.

• They are planned to be reviewed over time to become Common Standards. They may be used as a reference in other regions.
Signalling Standards and Procedures

- For a particular activity or function multiple standards may be applicable.
- The user must check to find all applicable standards.
- For example the following standards would apply to a design of approach locking circuits in NSW:
  - ESD 05 01 Common Signal Design Principles
  - SDS 00 Signalling Introduction
  - SDS 25 Signalling Circuit Design Standards
  - SCP 01 Signalling Control Systems
  - SCP 23 Design of Microlok II Interlockings
PRIME RESPONSIBILITY

- The ARTC signals standards and procedures and support documents provide a framework for the design, installation, commissioning maintenance of a signalling system that is safe to operate.

- There will be individual requirements for a signalling installation that are not exactly the same as the cases in the standards documents. Competent staff are required to undertake the activities to apply the requirements to these cases.

- There is an overriding responsibility for those involved to ensure that the system configuration is safe. This in some instances may require additional or different design or installation or equipment requirements. Those responsible also need to undertake the required Risk Assessments to demonstrate the safety is SFAIRP.
Precedence of Standards Documents

There are various documents that are to be used as the basis for all activities on signalling infrastructure. An update to a standards document may be required due to an issue arising. These updates which are Engineering Signal Instructions (ESI) take precedence over standards and procedures.

Order of Precedence - where items are in conflict

- Engineering Waivers
- ESI Engineering Signal Instruction
- Signals Standards and Procedures - Common applicable to all regions
- Signals Standards and Procedures - region specific
- Work Instructions and Service Schedules
- Guidelines, Technical Notes, Type Approvals

Where the items are not in conflict then the requirements add together.
ARTC has also developed standard forms for use with the Signalling standards and procedures.

To access these forms, select Signals, then Forms from the main menu.

It is best to save the form to your own computer folder. Then open it and use it for individual tasks. (Note: Any saved form will become uncontrolled)
### Forms cover the following areas:

- General
- Design
- Construction
- Maintenance
- Training

These Forms should be used for the tasks covered by the respective procedures.
Regional Signalling Standards

- NSW signalling standards apply to works undertaken in NSW and in Qld from Border Loop to Acacia Ridge.
- To access NSW signalling standards, select Signals > Procedures
- Then choose the standards, procedures or support documents that are applicable to NSW
- Similar processes apply for standards applicable to other states or regions.
### Signalling: Procedures

For assistance, email standards@artc.com.au or visit the Engineering Help pages.

This page contains documents that are currently known as Policies, Procedures, Standards, Engineering Instructions and Specifications.

Where there is conflict between any Standards, Procedures or Specifications published, the Common Standards that are applicable network wide take precedence, unless otherwise indicated.

Engineering Instructions take precedence over Standards, Procedures and Specifications for that particular subject.

Signalling Procedures are published by document category which is based on the life cycle of the infrastructure and then by detail code which groups particular infrastructure elements together.

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<tr>
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### General

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back to top
The commissioning of new or altered signalling infrastructure is a critical activity. Many steps are undertaken to ensure the safety of the operating system.

All activities, testing and certifications are documented in a Commissioning Work Package. This covers all changes to the signalling. The work must be in accordance with the Network Alteration Notice (NAN) and a notice is issued to train operators, drivers and network controllers detailing the new signalling and track arrangements.

Signals staff undertaking these activities must be duly competent and have the appropriate Statement of Competency (commonly known as SOC)

All documentation is recorded and can be accessed through the Drawing Management System.
The following documents are required for a Signals Commissioning.

2. Completed ‘Inspection and Test Plan’ and records.
3. Master Test Copy of all design drawings. This is to be marked up showing that all installed equipment has been tested.
4. Complete ‘Commissioning Work Package’. This is not to have blank template pages.
5. Network Alteration Notice for the proposed works.
6. Notice covering the works and date such as ‘Safe Notice’.
7. Record of Pre-Commissioning Meeting and Commissioning Readiness Review.
Signals Commissioning

Signalling: Procedures

The above common standards and forms apply to all signalling infrastructure commissionings. This includes signalling control systems.
Signalling maintainers keep records of the maintenance activities and the state of operation of the signalling equipment.

Track circuit history cards are used to record the test values of track circuits. The initial entry is at the time of commissioning. Then as they are regularly tested as part of scheduled maintenance activities, the test results are recorded.

These records are of considerable assistance when fault finding or in investigations of incidents.
Signals Maintenance

Various forms and documentation or Work Instructions are provided to assistance in the maintenance of signalling infrastructure.

Service Schedules are also referenced here for scheduled maintenance activities.
Engineering Policies and Procedures

- Engineering process procedures outline the methods used by ARTC Engineering staff to undertake all engineering work activities.

- To access ARTC’s Engineering process procedures, select All and then Procedures from the main menu.
Policies and Procedures

There are a series of Engineering process procedures available under a new numbering scheme. These are grouped into the following categories:

- Clicking on the relevant heading will navigate you to the documents you require.
Policies and Procedures

- EGP-03-01 Rail Network Configuration Management provides tools for the management and implementation of Configuration Management and provides guidance on configuration change and Network Alteration Notices including documentation and approvals.
• EGP0301F-01 Network Alteration Notice is a form used in conjunction with EGP-03-01 Rail Network Configuration Management. It is used to coordinate the notification and authorisation of a change to infrastructure or train operations. It covers the operational capability, infrastructure configuration, documentation or safe working requirements of the ARTC Network and the maintenance of ARTC operational systems.

• A Network Alteration Notice (also known as a NAN) is required for all changes, including minor changes.
• A number of minor changes to the network infrastructure may be on one NAN.

For example upgrade of incandescent signals to LED signals across a section of corridor could be undertaken within a financial year so that the NAN can be cleared out.
Policies and Procedures

The old numbering scheme (PP-100 series), the Engineering process procedures were grouped into the following categories:

- PP-100-109 General Management and Administration
- PP-110-114 Strategic Planning
- PP-115-139 Engineering Services
- PP-140-169 Asset Management
- PP-170-199 Contracts and Supply

The above procedures numbering schemes are slowly moving to the new numbering scheme as procedures are updated.
These procedures are essential for managing and controlling signalling documents and drawings:
Policies and Procedures - Forms

- To access the forms that support ARTC’s policies and procedures, select All, then Forms from the main menu.
• **Engineering Notes and Manuals** are supplementary information to standards. They provide guidance for the application of the standards in particular circumstances. They should be followed in the respective design, maintenance and construction activities.

• **Engineering Instructions** may be one off inspections or standing instructions until practices and procedures are updated. Engineering Instructions take precedence over other standards that relate to the same subject matter. They may cover maintenance, construction, design and signalling equipment.

• **Engineering Bulletins** may be issued to alert staff to particular technical issues. They may highlight specific standards, practices and procedures or maintenance plans that require special attention. They could also include extracts from the findings of Railway Incident Inquiries.
The Signal Engineering Instructions are listed with the Signals Standards and Procedures. They are grouped with the respective standards and procedures that they apply to.
Engineering Instructions /Notes/Manuals

- Engineering Bulletins

These are listed under Guidelines. They are grouped in the same way as the standards and procedures.
ESB-08-01 Signal Circuit Correlation Check provides information about completing a correlation check when undertaking alterations to existing signalling circuits.

These are found in the Guidelines section.
New Equipment and Systems Approvals

- The New Equipment and Systems Approvals page provides details about the equipment and systems that have been approved by ARTC for use on ARTC assets.

- To access the New Equipment and Systems Approvals page, select Type Approvals, then Signalling from the main menu.
New Equipment and Systems Approvals

- This section lists all of the ARTC signalling type approvals.
- It provides a hyperlink to the type approval certificate and conditions of use.

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<td>06-06-10-052</td>
<td>ERDU/Track Lines and Bender Tools</td>
<td>Network wide</td>
<td>02 Feb 2007</td>
</tr>
<tr>
<td>06-06-10-053</td>
<td>Westhouse Rail Supplies Australia Derailing/Convergent Mechanism</td>
<td>Network wide</td>
<td>02 Feb 2007</td>
</tr>
</tbody>
</table>
Grandfather Rights is equipment with no prior approval that:

- may be used, maintained and renewed in its current location
- may not be used in new works or upgraded installations without further ARTC type approval

Predecessor authority equipment approvals fall into three categories:

- listed as approved, but details unknown
- approval document held
- approval document plus supporting information held
New Equipment and Systems Approvals

The Predecessor approval lists all the signalling equipment from predecessor organisations that had been approved. This also gives the conditions of use for these on the ARTC network.
New Equipment and Systems Approvals

The new format type approval certificate is shown. This has details of the:

- item of equipment
- the relevant standards
- Conditions of Approval or use
- Approved Item List
New Equipment and Systems Approvals

The new format Approval Register is shown, note the:

- Track & Civil Tab
- and, Already in Use tab
New Equipment and Systems Approvals

Approval
- New equipment is approved in accordance with EGP-21-01, EGP-21-02 and EGP-21-03.
- Projects should arrange for the submission of required information to Signals Standards for new approvals.

Designs with New Equipment
- The signal design engineer or signal design manager is responsible that all equipment included in a design is type approved.

Commissioning of New Equipment
- The Commissioning Engineer/Commissioning Manager/Tester in Charge is responsible for ensuring that only type approved equipment is installed and commissioned.
Engineering – Waivers

An Engineering waiver is the approval of a product or system to be used in service although it does not conform with Engineering standards. Usually conditions are applied such as location and approval time limitations, with more regular or more stringent inspections during the life of the waiver.
Engineering – Waivers

- EGP-02-01 Engineering Waiver Approval outlines the process for obtaining an Engineering waiver.

- There are four steps that need to be completed in order to obtain an Engineering waiver approval number.
Engineering – Waivers

- **Step 1** - Complete the EGP0201F-01 Engineering Waiver Approval form.
The compilation of an Engineering Waiver or the conduct of a risk assessment for signalling design, construction or maintenance is a technical task covered by the Signals Competency process. Those involved in the process shall be duly qualified under the Signals Competency process.

The ‘Originator’ shall be the person technically responsible for the design, construction, maintenance or operation of the item that is covered by the Waiver.
Engineering – Waivers

- **Step 2** - Complete a risk assessment in accordance with RM-01 Risk Management procedure.

- **Step 3** - Submit to appropriate ARTC Delivery Manager for endorsement.

- **Step 4** - Submit completed and endorsed waiver form, with supporting documentation to standards@artc.com.au for approval.
The Drawing Management System (DataView) is a centralised repository of controlled, up to date, ‘as built’ and historic drawings of rail infrastructure.

ARTC manages engineering drawings and related documentation in a Drawing Management System using the DataViewer software.

Drawings for NSW and South Australia are recorded in this system.

Drawings for Victoria are managed by the Victorian Department Of Transport.

• The Drawing Management System (DataView) is a centralised repository of controlled, up to date, ‘as built’ and historic drawings of rail infrastructure.
• The Engineering Instruction ESI-07-02 Signalling Design Documentation covers the process for management of the signal drawings for New South Wales. This is being reviewed for application in all regions of ARTC.

• The processes are consistent with the Configuration Management processes adopted by ARTC. These processes require approved projects and the authorisation of the issue of drawings. Drawings are issued for a specific purpose or project and may only be used for that purpose.

• When the design, project or other activity is completed, the drawings must be updated, certified and submitted back into the Drawing Management System. Archive records are kept of previous issues of the drawings.

• When a group of drawings is issued for design or a project, then all of the drawings must be resubmitted not just the drawings that were changed. The completed drawings must be duly checked and certified to be As-Built.

• Related copies of the Commissioning documentation and Master Testing copies are also kept as records.
ESI-07-02 covers the following steps:

- Request for engineering project number. This is used to track the issue and return of the engineering drawings.

- Request for Drawings, authorisation of the request and issue of drawings.

- Submission of As-Designed drawings

- Submission of As-Commissioned drawings and commissioning documentation.

- Submission of As-Built documentation and certification records.

- These processes are currently manual and email. The DataViewer system is being enhanced to provide these functions on-line. Details will be issued when the system changeover is completed.
Internal and external signals staff who require access to the Drawing Management System need to apply as per the referenced forms.

This permits viewing of current drawings and identification of drawings to be requested.

The system will also show the status of drawings in projects when the upgrade is completed.
**Drawing Management System**

The procedures that apply to the management of signalling drawings are available on the Drawing Management System page.

Drawing templates are also available.
Signals Competency Requirements

- There are procedures that apply to the management of signalling competency assessment
- EST-20-02 Signalling Staff Competency Assessment
- EST-20-03 Applying for Signals Competency

The document EST-20-03 provides a step by step guideline to applying for signals competency. This process needs to be followed to ensure that all the required information is provided.

- The first step is applying for an ARTC signals competency ID
- The second step is the Signals Standards Induction and Assessment
- This process is being updated to be undertaken on line using the ‘Onsite’ Rail Safety Worker internet portal.

- See www.railsafetyworker.com.au
Signals Competency Assessment

These procedures are at:
Signalling>Procedures>Training

Forms are at:
Forms>Training
The Signals Standards Induction and the Assessment have links On the Guidelines Page.
Thank you for completing this induction.

You are now required to successfully complete the Signalling Standards Induction Assessment.

If you have any questions, please email standards@artc.com.au.