

# **SIGNAL ENGINEERS LICENSING EXAM**

**Version 2.1**

**Issued February 2012**

Owner: Principal Engineer Signalling Competency

Approved by: Warwick Allison  
Chief Engineer  
Signals & Control Systems

Authorised by: Jim Modrouvanos  
General Manager  
Chief Engineers Division

## Document control

| Version | Date                            | Summary of change   |
|---------|---------------------------------|---|
| 1       | 18 <sup>th</sup> February, 2011 |   |
| 2       | 13 April 2011                   | LC - Process updated to show "Other" as a possible criteria under "Expression of Interest" column |
| 3       | 3 February 2012                 | JD – Updates relate to 2012 information.  |

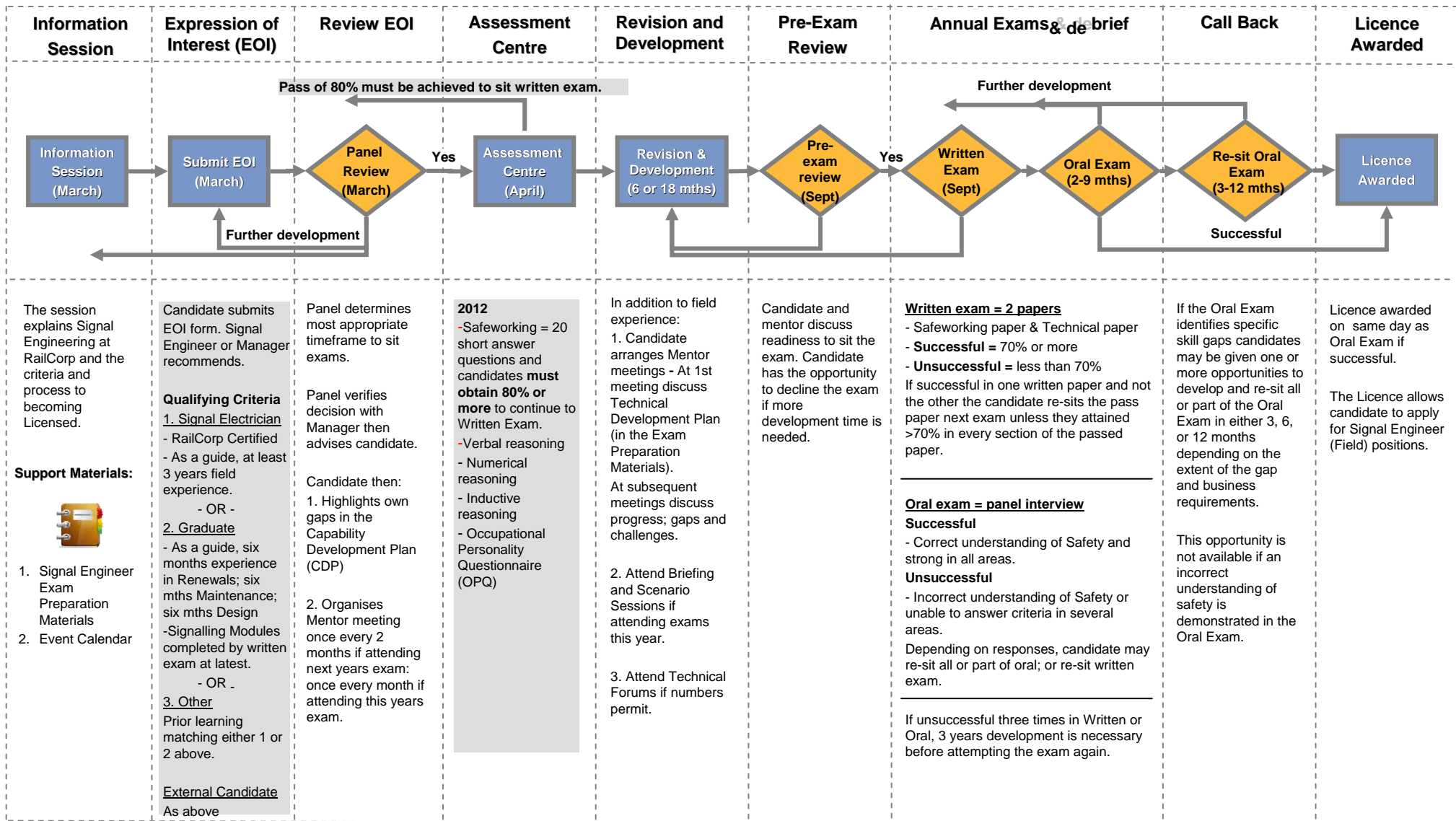
## Contents

|          |  |           |
|----------|--|-----------|
| <b>1</b> | <b>Signal Engineer Licensing Process .....</b>             | <b>4</b>  |
| <b>2</b> | <b>Signal Engineer Licence – 6 Month Revision.....</b>     | <b>6</b>  |
| <b>3</b> | <b>Signal Engineer Licence – 12 Month Study Plan .....</b> | <b>8</b>  |
| <b>4</b> | <b>Log Book – Signal Engineer Preparation .....</b>        | <b>10</b> |
| <b>5</b> | <b>Capability Development Plan.....</b>                    | <b>15</b> |

**1.**

## **Signal Engineering Licensing Process**

# Signal Engineer Licensing Process



**2.**

## **Signal Engineer Licence**

### **6 Month Revision**

# SIGNAL ENGINEER LICENCE - 6 Month Revision

| 6 MONTHS TRACK  | APRIL<br>REVISE & REFRESH  | MAY<br>REVISE & REFRESH   | JUNE<br>REVISE & REFRESH  | JULY<br>REVISE & REFRESH   | AUGUST<br>REVISE & REFRESH  | SEPTEMBER<br>REVISE & REFRESH                                |
|---|--|---|---|--|---|--|
| <b>7-11 SERIES</b>  | 0711.1 Roles & Responsibilities<br>0711.2 Documentation  | 0711.4 Insp Test Procedures   | 0711.5 Typical Inspection/Test  | 0711.6 Interface Requirements & Procedures for Alterations   | 0711.7 Standard Forms   | 0711.9 Like for Like Renewals                                |
| <b>READ AND UNDERSTAND</b>                                      |  |   |   |  |   |  |
| <b>MANUAL J.<br/>READ AND UNDERSTAND</b>                        | J002 Bridging or False Feeding of Signalling Circuits  | J003 Accidents or Derailments   | J011 Precautions Associated with Renewals   | J022 Testing Interlockings   | J042 Safety Issues for Signalling Personnel   | J036 Level Crossings   |
|   | J006 Release of Track Locking or Indication Locking  | J004 Failures   | J030 Facing Point Lock & Detection Testing [particularly Claw Lock & Sphero]  | J032 Solid State Interlocking  | J007 Apparatus Seldom Used<br>J009 Disconnection of Signalling Aparatus   | J045 Surveillance Inspections                                |
|   | J014 Document Control Signal Plans & Circuit Books   | J021 Minor Signalling Works   | J044 General Signalling Maintenance Management, Admin & Supervision   | J008 Booking Signalling Equipment Out of Use   | J049 Signal Engineering Waivers   | J046 Temp Record, Monitoring & Logging on Signalling Systems |
| <b>SIGNALLING DESIGN PRINCIPLES; STANDARDS &amp; GUIDELINES</b> | ESG 100.1 Signals  | ESG 100.2 Headway   | ESG 100.4 Overlaps  | <ul style="list-style-type: none"> <li>ESG 100.10 Locking Arrangements</li> <li>ESG 100.11 Approach Locking</li> </ul> | Revise these Guidelines: <ul style="list-style-type: none"> <li>Temperature control</li> <li>Air Systems</li> </ul> | ESG 100.12 Route Holding                                     |
|   | ESG 100.17 Track Circuits  | ESG 100.3 Braking Distance  | Revise Surge protection installation Guidelines   | AS4292.4 Section 4. Signalling and Telecommunications systems & equipment  | Read AS4292.6 - Railway Interface with Other Infrastructure   | Revise Power Supply adjustment Guidelines                    |
| <b>REVISE TRAINING NOTES</b>                                    | <ul style="list-style-type: none"> <li>ST32 Track Circuits (EI15)</li> <li>ST33 E.P. Points &amp; Circuits (EI13)</li> <li>Review Basic Elec theory</li> <li>Sig Principles 1,2 &amp; 3</li> </ul> | <ul style="list-style-type: none"> <li>ST46 Signalling Inspection &amp; Testing</li> <li>Review all Engineering Instructions</li> </ul> | <ul style="list-style-type: none"> <li>ST31 Relay Interlocking (EI14)</li> <li>ST41 Route Locking (EI16)</li> <li>Grasp concepts of Relay Functions ie USR, UCR, etc</li> </ul> | ST11 Mechanical Locking  | ST43 Safeworking Practices & Maintenance Proceedures (EI40)   | ST21 Level Crossing Protection (WW39)                        |
| <b>SPECIFICATIONS; INSPECTION &amp; TESTING</b>                 |  | SPG 0709 Traction Return Track Insulation & Bonding (read in conjunction with J025/026/027)   | SPG 0703 Specification Signalling Documtation & Drawings  | ESG 005 Signalling Operator Interface  | SPG 0706 Spec - Installation of Trackside Equipment   | Oral Exam Preparation See Licensing Checklist                |

## Suggested Mentor discussions; On The Job Practice; Briefings & Forums

- You book mentor appointments (1 x 2hr appointment every month)
- Access the Technical Forum notes below and ask your mentor any questions/discuss steps on how they would think through the issue. Available by accessing Engineering Intranet> Signals> Signals Technical Forums
- Ask for clarification about the readings listed above

|  |  |   |  |   |  |  |
|--|--|---|--|---|--|--|
| <b>MENTOR DISCUSSIONS</b><br>Meet once a month, see across for discussion ideas >>             | Read, discuss and practice J043 (Irregularity Inspection to Determine Cause).  | <ul style="list-style-type: none"> <li>Meet mentor to discuss Technical Forum Dec 11&gt; Signal Assurance Issues</li> <li>Ask for clarification on the readings or anything you're not sure about.</li> </ul> | <ul style="list-style-type: none"> <li>Technical Forum Mar 12&gt; Signal Assurance Issues (e.g. failures, level crossing, relays)</li> <li>Ask for clarification on the readings or anything you're not sure about.</li> </ul> | Pick a junction randomly. Pretend there's been a de-railment. Discuss each step you would take and certifying back. | <ul style="list-style-type: none"> <li>Technical Forum Jun 12&gt; Signal Assurance Issues (e.g.SPADs)</li> <li>Discuss Signalling Technical Maintenance Plans - Asset life cycle; maintenance objectives etc.</li> </ul>     | <ul style="list-style-type: none"> <li>Practice electrical calculations - Ohms law, capacitive coupling, voltage drop</li> <li>Ask for clarification on the readings or anything you're not sure about.</li> </ul> |
| <b>ON THE JOB PRACTICE</b><br>This is in addition to the extensive experience you already have | Secondment to C&CS if possible   | Secondment to Engineering if possible   | Secondment to Design if possible   | Secondment back to the area your least confident in either Renewals or Maintenance. Ask questions!                  |  |  |
|  | <ul style="list-style-type: none"> <li>Undertake Commissioning/testing on weekend works and ask questions</li> <li>Practice reading and verifying microlocks on the job (in conjunction with reading J038 Microlock).</li> </ul> |   |  |   |  |  |
| <b>BRIEFINGS &amp; FORUMS</b>  |  |   | Engineers Forum (numbers permitting)   | Half day briefing: Plan & Manage Construction Job from start to finish  | Half day briefings: <ul style="list-style-type: none"> <li>Signalling Technology</li> <li>Signal Design Principles</li> <li>Inspection &amp; Testing</li> <li>Signalling Safeworking &amp; Maintenance Procedures</li> </ul> |  |

### If time permits

|   |  |  |   |  |  |  |
|---|--|--|---|--|--|--|
| <b>SIGNALLING DESIGN PRINCIPLES</b>             |  | ESG 100.9 Signal Design Principles - Time Releases | ESG 100.13 Signal Design Principles - Local Control | ESG 100.15 Signal Design Principles - Trainstops |  | ESG 100.18 Sig Design Principle - Level Crossings        |
| <b>SPECIFICATIONS; INSPECTION &amp; TESTING</b> |  | SPG0712 - Spec Lightning & Surge EPR Protection    | SPG0712 Lightning & Surge Protection                | SPG0710 Type Approval...                         |  | SPG0724 Level Crossing Protection Equipment Installation |

### Other relevant training - Ask your manager if this can be included on your Performance Development Plan:

|                         |                |  |  |  |  |  |
|-------------------------|----------------|--|--|--|--|--|
| Asset Management Course | 1/2 day Course | Organised through Technical Capability: Jennifer Duxbury 8922 0177 |  |  |  |  |
|-------------------------|----------------|--|--|--|--|--|

### **3.**

## **Signal Engineering Licence 12 Month Study Plan**

# SIGNAL ENGINEER LICENCE - 12 MONTH STUDY PLAN

|   | APRIL & MAY  | JUNE & JULY   | AUGUST & SEPTEMBER  | OCTOBER & NOVEMBER   | DECEMBER & JANUARY  | FEBRUARY & MARCH   |
|---|--|---|---|--|---|--|
| <b>7-11 SERIES</b>  | 0711.1 Roles & Responsibilities<br>0711.2 Documentation  | 0711.4 Insp Test Procedures   | 0711.5 Typical Inspection/Test  | 0711.6 Interface Requirements & Procedures for Alterations   | 0711.7 Standard Forms   | 0711.9 Like for Like Renewals                                |
| <b>READ AND UNDERSTAND</b>                                      |  |   |   |  |   |  |
| <b>MANUAL J.</b><br><b>READ AND UNDERSTAND</b>                  | J002 Bridging or False Feeding of Signalling Circuits  | J003 Accidents or Derailments   | J011 Precautions Associated with Renewals   | J022 Testing Interlockings   | J042 Safety Issues for Signalling Personnel   | J036 Level Crossings   |
|   | J006 Release of Track Locking or Indication Locking  | J004 Failures   | J030 Facing Point Lock & Detection Testing [particularly Claw Lock & Sphero]  | J032 Solid State Interlocking  | J007 Apparatus Seldom Used<br>J009 Disconnection of Signalling Apparatus  | J045 Surveillance Inspections                                |
|   | J014 Document Control Signal Plans & Circuit Books   | J021 Minor Signalling Works   | J044 General Signalling Maintenance Management, Admin & Supervision   | J008 Booking Signalling Equipment Out of Use   | J0049 Signal Engineering Waivers  | J046 Temp Record, Monitoring & Logging on Signalling Systems |
| <b>SIGNALLING DESIGN PRINCIPLES; STANDARDS &amp; GUIDELINES</b> | ESG 100.1 Signals  | ESG 100.2 Headway   | ESG 100.4 Overlaps  | <ul style="list-style-type: none"> <li>ESG 100.10 Locking Arrangements</li> <li>ESG 100.11 Approach Locking</li> </ul> | Revise these Guidelines: <ul style="list-style-type: none"> <li>Temperature control</li> <li>Air Systems</li> </ul> | ESG 100.12 Route Holding                                     |
|   | ESG 100.17 Track Circuits  | ESG 100.3 Braking Distance  | Revise Surge protection installation Guidelines   | AS4292.4 Section 4. Signalling and Telecommunications systems & equipment  | Read AS4292.6 - Railway Interface with Other Infrastructure   | Revise Power Supply adjustment Guidelines                    |
| <b>REVISE TRAINING NOTES</b>                                    | <ul style="list-style-type: none"> <li>ST32 Track Circuits (EI15)</li> <li>ST33 E.P. Points &amp; Circuits (EI13)</li> <li>Review Basic Elec theory</li> <li>Sig Principles 1,2 &amp; 3</li> </ul> | <ul style="list-style-type: none"> <li>ST46 Signalling Inspection &amp; Testing</li> <li>Review all Engineering Instructions</li> </ul> | <ul style="list-style-type: none"> <li>ST31 Relay Interlocking (EI14)</li> <li>ST41 Route Locking (EI16)</li> <li>Grasp concepts of Relay Functions ie USR, UCR, etc</li> </ul> | ST11 Mechanical Locking  | ST43 Safeworking Practices & Maintenance Procedures (EI40)  | ST21 Level Crossing Protection (WW39)                        |
| <b>SPECIFICATIONS; INSPECTION &amp; TESTING</b>                 |  | SPG 0709 Traction Return Track Insulation & Bonding (read in conjunction with J025/026/027)   | SPG 0703 Specification Signalling Documentation & Drawings  | ESG 005 Signalling Operator Interface  | SPG 0706 Spec - Installation of Trackside Equipment   |  |

**For the next 6 months refer to "Study Plan - 6 month revision"**

## Suggested Mentor discussions; On The Job Practice; Briefings & Forums

|  |  |  |  |   |  |   |
|--|--|--|--|---|--|---|
| <ul style="list-style-type: none"> <li>You book mentor appointments (1 x 2hr appointment every 2 months)</li> <li>Access the Technical Forum notes below and ask your mentor any questions/discuss steps on how they would think through the issue. Available by accessing Engineering Intranet&gt; Signals&gt; Signals Technical Forums</li> <li>Ask for clarification about the readings listed above</li> </ul> |  |  |  |   |  |   |
| <b>MENTOR DISCUSSIONS</b><br>Meet once every 2 months, see across for discussion ideas >>  | Read, discuss and practice J043 (Irregularity Inspection to Determine Cause).  | <ul style="list-style-type: none"> <li>Meet mentor to discuss Technical Forum Dec 11&gt; Signal Assurance Issues.</li> <li>Ask for clarification on the readings or anything you're not sure about.</li> </ul> | <ul style="list-style-type: none"> <li>Technical Forum Mar 12&gt; Signal Assurance Issues (e.g. failures, level crossing, relays)</li> <li>Ask for clarification on the readings or anything you're not sure about.</li> </ul> | Pick a junction randomly. Pretend there's been a de-railment. Discuss each step you would take and certifying back. | <ul style="list-style-type: none"> <li>Technical Forum Jun 12&gt; Signal Assurance Issues (e.g.SPADs)</li> <li>Discuss Signalling Technical Maintenance Plans - Asset life cycle; maintenance objectives etc.</li> </ul> | <ul style="list-style-type: none"> <li>Practice electrical calculations - Ohms law, capacitive coupling, voltage drop</li> <li>Ask for clarification on the readings or anything you're not sure about</li> </ul> |
| <b>ON THE JOB PRACTICE</b><br>This is in addition to the extensive experience you already have   | <b>Secondment to an area of Maintenance you've not been before. Ask questions!</b>   |  |  | <b>Secondment to an area of Renewals you've not been before. Ask questions!</b>                                     |  |   |
|  | <ul style="list-style-type: none"> <li>Undertake Commissioning/testing on weekend works and ask questions</li> <li>Practice reading and verifying microlocks on the job (in conjunction with reading J038 Microlock).</li> </ul> |  |  |   |  |   |
| <b>BRIEFINGS &amp; FORUMS</b>  | Information Session:<br>So you want to be a Signal Engineer  | Half day briefing:<br>Plan & Manage Construction Job from start to finish  | Half day briefings: <ul style="list-style-type: none"> <li>Signalling Technology</li> <li>Signal Design Principles</li> <li>Inspection &amp; Testing</li> <li>Signalling Safeworking &amp; Maintenance Procedures</li> </ul>   |   | Engineers Forum (numbers permitting)   | Engineers Forum (numbers permitting)  |
| <b>If time permits</b>   |  |  |  |   |  |   |
| <b>SIGNALLING DESIGN PRINCIPLES</b>  |  | ESG 100.9 Signal Design Principles Time Releases   | ESG 100.13 Signal Design Principles - Local Control  | ESG 100.15 Signal Design Principles - Trainstops  |  | ESG 100.18 Sig Design Principle - Level Crossings   |
| <b>SPECIFICATIONS; INSPECTION &amp; TESTING</b>  |  | SPG0712 - Spec Lightning & Surge EPR Protection  | SPG0712 Lightning & Surge Protection   | SPG0710 Type Approval...  |  | SPG0724 Level Crossing Protection Equipment Installation  |
| <b>Other relevant training - Ask your manager if these can be included on your Performance Development Plan:</b>   |  |  |  |   |  |   |
| Asset Management Course  |  |  |  |   |  |   |
| 1/2 day Course: Organised through Technical Capability: Jennifer Duxbury 8922 0177   |  |  |  |   |  |   |



## **4.**

### **Log Book**

### **Signal Engineer Preparation**

# LOG BOOK – SIGNAL ENGINEER PREPARATION

## Maintenance

\_\_\_\_\_ *Name*

**Mar Jun Sep Dec** \_\_\_\_\_ **Year**  
*circle applicable*

This Log Book is for use as part of your preparation to become a Signal Engineer. You do not need to complete every action; this is just a record to help you notice your strengths and where you may need to develop. Please take this to your Mentoring sessions to discuss what you are doing/learning on the job and where/how you can gain further relevant experience.

| Please tick if completed   |  | Comments | Person in charge |
|--|--|----------|------------------|
| Follow-up and Investigate Failures & SPADs   |  |          |                  |
| Analyse Trends for Maintenance, Failures and Irregularities - Determine Corrective Action to Ensure Acceptable Safety and Reliability Levels |  |          |                  |
| Conduct Surveillance Inspections/Audits  |  |          |                  |
| Conduct Signal Sighting Inspection   |  |          |                  |
| Manage Compliance of Safety Critical/Safety Significant Maintenance Tasks  |  |          |                  |
| Arrange request for Signal Engineering Waivers   |  |          |                  |
| Review TMP's and Service Schedules   |  |          |                  |
| Maintain Documentation Control   |  |          |                  |
| Manage Temporary Repairs   |  |          |                  |
| Manage Contaminated Rail Register  |  |          |                  |
| Compile Reports and Performance Indicators   |  |          |                  |
| Manage Relay Change Program  |  |          |                  |
| Manage Insulation Test Program   |  |          |                  |
| Participate in Practical Completion / Final Acceptance Inspections   |  |          |                  |
| Other (specify)  |  |          |                  |

\_\_\_\_\_  
*Name*  
*Mentor*

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Signature*  
*Employee*

# LOG BOOK – SIGNAL ENGINEER PREPARATION

## Safe Working

\_\_\_\_\_ *Name*      **Mar**   **Jun**   **Sep**   **Dec**   \_\_\_\_\_ **Year**  
*circle applicable*

| Please tick if completed   |                          | Comments | Person in charge |
|--|--------------------------|----------|------------------|
| Attend Derailments/Irregularities, assess situation, make safe   | <input type="checkbox"/> |          |                  |
| Commission New & Altered Signalling Infrastructure   | <input type="checkbox"/> |          |                  |
| Test & Certify New & Altered Signalling Infrastructure   | <input type="checkbox"/> |          |                  |
| Test & Inspect Operational Signalling Infrastructure   | <input type="checkbox"/> |          |                  |
| Releasing Track Locking  | <input type="checkbox"/> |          |                  |
| Authorise Temporary Bridging - Operational Signalling  | <input type="checkbox"/> |          |                  |
| Arrange & Authorise Trainstop Suppression  | <input type="checkbox"/> |          |                  |
| Master Staff & Keys  | <input type="checkbox"/> |          |                  |
| Test & Certify Relay / CBI Interlocking  | <input type="checkbox"/> |          |                  |
| Test & Certify Mechanical Interlocking (Full)<br>Note: "open mechanical certificate" required for > 8 levers | <input type="checkbox"/> |          |                  |
| Test & Certify Mechanical Interlocking<br>(Ground Frame, Annett Locks, ESML, EOL, Notice Boards, etc)        | <input type="checkbox"/> |          |                  |
| Other (specify)  | <input type="checkbox"/> |          |                  |

\_\_\_\_\_  
*Name*  
**Mentor**

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Signature*  
**Employee**

# LOG BOOK – SIGNAL ENGINEER PREPARATION

## Renewals & Construction

\_\_\_\_\_ Name

**Mar Jun Sep Dec** \_\_\_\_\_ Year  
*circle applicable*

Projects worked during period:

\_\_\_\_\_

\_\_\_\_\_

| Please tick if completed  |                          | Comments      | Person in charge |
|---|--------------------------|---------------|------------------|
| Relay / Equipment / Wiring Analysis   | <input type="checkbox"/> |               |                  |
| Wire / Null Counting  | <input type="checkbox"/> |               |                  |
| Bell Continuity Testing   | <input type="checkbox"/> |               |                  |
| Strap & Function Testing  | <input type="checkbox"/> |               |                  |
| Through Testing   | <input type="checkbox"/> |               |                  |
| Correlation Testing   | <input type="checkbox"/> |               |                  |
| Insulation Testing  | <input type="checkbox"/> |               |                  |
| Test/Commission Interlocking (computer based / relay / mechanical)          | <input type="checkbox"/> | Specify type: |                  |
| Test/Commission Remote Control Systems (all types)                          | <input type="checkbox"/> | Specify type: |                  |
| Test/Commission Signals (LED / Lamp)  | <input type="checkbox"/> | Specify type: |                  |
| Test/Commission Trainstops (JA / JAH / JAE)                                 | <input type="checkbox"/> | Specify type: |                  |
| Test/Commission Track Circuits (all types)                                  | <input type="checkbox"/> | Specify type: |                  |
| Test/Commission Level Crossings (all types)                                 | <input type="checkbox"/> | Specify type: |                  |
| Test/Commission Points (Elec / EP – Conventional / Claw Lock / Sphero Lock) | <input type="checkbox"/> | Specify type: |                  |
| Test/Commission Other (specify)   | <input type="checkbox"/> |               |                  |

Any of these

\_\_\_\_\_  
Name  
Mentor

\_\_\_\_\_  
Signature

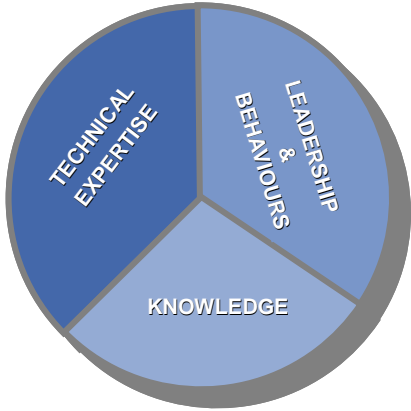
\_\_\_\_\_  
Signature  
Employee



## 5.

# Capability Development Plan

# Capability Development Plan Signal Engineer (Field)



## Overview

This Development Plan is to assist in achieving your challenging career goal to become a licensed Signal Engineer. It addresses the General Engineering Knowledge; and Technical and Behavioural Capabilities needed.

Each capability listed in this plan has a number of suggested development activities aligned to it. Some of the knowledge-based activities are training courses, briefings and readings. Once you have gained this foundational knowledge the development activities are more related to on the job learning and mentoring.

To begin, please read through this Plan. Highlight areas where you have knowledge or skills gaps. Talk to your Mentor about your views and see if you need to change or add anything.

Fill in the Technical Development Plan at the end of this document and record your development as you go along. You must present a copy of the completed Technical Development Plan, along with the Signal Engineer Log Book two months prior to the exam to demonstrate your readiness to attend the Signal Engineer Exam.

It is important to recognise that the development activities will need to be driven by you with support from your Mentor, Manager and Technical Capability.



# Contents

To become a licensed Signal Engineer you need to develop and be competent in these areas:

| <b>1. General Engineering Knowledge</b>                | <b>2. Specific Technical Capabilities</b><br>The written Signal Engineer Exam focuses on these competencies: | <b>3. Behavioural Capabilities</b> |
|--|--|------------------------------------|
| 1.1 Basic Electrical Engineering theory                | 2.1 Detailed knowledge of signalling hardware & systems  | 3.1 Accountability & Effectiveness |
| 1.2 Inspection & auditing; asset condition assessment  | 2.2 Detailed knowledge of Signalling Safeworking   | 3.2 Building Capability            |
| 1.3 Incident investigation                             | 2.3 Signalling maintenance methods & procedures  | 3.3 Building Relationships         |
| 1.4 Engineering Safety Management                      | 2.4 Signalling installation & construction practices   | 3.4 Communication                  |
| 1.5 Configuration Management                           | 2.5 Signalling equipment set-up, testing & certification   | 3.5 Ethics                         |
| 1.6 Management and control of infrastructure records   | 2.6 Signalling commissioning procedures & documentation  | 3.6 Innovation and Improvement     |
| 1.7 Principles of Asset Management                     | 2.7 Principles of Railway Safeworking & Signalling design  | 3.7 Negotiation and Influence      |
| 1.8 Failure Analysis and Fault Finding                 | 2.8 Reading and interpretation of Signalling Plans   | 3.8 Safety                         |
| 1.9 Application of Human Factors to Design & Operation | 2.9 Testing of small interlockings   | 3.9 Strategic Thinking             |
| 1.10 Analysis of Engineering Systems                   | 2.10 Data logs   | 3.10 Teamwork                      |
| 1.11 Project Management Scoping and Budget             | 2.11 Electrical calculations   | 3.11 Understanding self and others |
| 1.12 Communication of Technical Information            | 2.12 Emergency response management   |                                    |
|  | 2.13 Testing Irregularities SPADS / derailments  |                                    |

# 1. General Engineering Knowledge

| Knowledge Acquisition  | Skill Acquisition  | Skills Consolidation   |
|--|--|--|
| <b>1.1 Basic Electrical Engineering theory</b>   |  |  |
| <i>Circuit theory, power, electric machines, digital electronics, and communications. Required for fault finding, diagnostics, integration of technical knowledge. Application of knowledge to real life situations.</i>   |  |  |
| <ul style="list-style-type: none"> <li>• Post Trade Electrical Engineering</li> <li>• Join the Engineering Technical Sharepoint site</li> </ul>  | <ul style="list-style-type: none"> <li>• Seek coaching/mentoring in Signalling Field</li> </ul>  | <ul style="list-style-type: none"> <li>• Coach/mentor</li> <li>• Attend Relevant Technical Forums</li> </ul>                                   |
| <b>1.2 Asset Inspection &amp; Auditing; Asset condition assessment</b>   |  |  |
| <i>Understand Australian standards - prepare for audits, documentation, and process. Understand audit requirements for 'Technical Signals audit'.</i>  |  |  |
| <ul style="list-style-type: none"> <li>• Seek coaching / mentoring. Shadowing maintenance engineer when undertaking 2 yearly surveillance inspections</li> <li>• Seek coaching/mentoring. Shadowing Project Engineer when undertaking Site Integrity Agreement Inspection</li> <li>• Download &amp; read AS4292 (Railway Safety Management) using the link on RailCorp Homepage</li> <li>• Help Source audit requirements for signals</li> </ul> | <ul style="list-style-type: none"> <li>• Under guidance, conduct surveillance inspection</li> <li>• Under guidance, conduct Site Integrity Agreement Inspection</li> </ul>   |  |
| <b>1.3 Incident investigation</b>  |  |  |
| <ul style="list-style-type: none"> <li>• Manual J043; J003</li> <li>• Just Culture</li> <li>• Incident Management Framework (given by Mentor)</li> <li>• Level 5 and 4 on line incident investigation</li> <li>• RailCorp Incident Investigation Course. (3 days)</li> </ul>   | <ul style="list-style-type: none"> <li>• Undertaking a level 5 investigation and complete report</li> <li>• Write a lessons learnt report</li> </ul>   | <ul style="list-style-type: none"> <li>• QR Derailment Course</li> <li>• Shadow an investigator undertaking a level 3 investigation</li> </ul> |
| <b>1.4 Basic understanding of Engineering Safety Management</b>  |  |  |
| <ul style="list-style-type: none"> <li>• Safety Risk Management</li> <li>• Safety Change Management</li> </ul>   | <ul style="list-style-type: none"> <li>• Undertake a project that incorporates engineering change. Hazard identification, safety plan, SCARD</li> <li>• Conducting a pre work briefing on a SWMS or a SWI</li> <li>• Carry out risk assessment on a non routine activity such as change of work methods, change of roster</li> </ul> |  |
| <b>1.5 Configuration Management</b>  |  |  |
| <i>Process of knowing the assets, set up of the asset, managing the processes by which changes are introduced.</i>   |  |  |
| <ul style="list-style-type: none"> <li>• Briefing from Configuration Data Management Group</li> <li>• Engineering Intranet</li> </ul>  | <ul style="list-style-type: none"> <li>• Progress a project or change through CCB</li> </ul>   |  |
| <b>1.6 Management and control of infrastructure records</b>  |  |  |
| <i>Understand the role of a Signal (Field) Engineer in the process and what you have to manage including document control.</i>   |  |  |

| Knowledge Acquisition  | Skill Acquisition   | Skills Consolidation   |
|--|---|--|
| <ul style="list-style-type: none"> <li>• Access and familiarise yourself with the Quality Signal Design Procedures</li> <li>• Manual J. TMG J014</li> <li>• Shadowing experienced Signal Engineer</li> </ul> | <ul style="list-style-type: none"> <li>• Training / briefings from Asset Information on 'Asset Management tools, including Signal Job Document Control'</li> </ul>  |  |
| <b>1.7 Principles of Asset Management</b><br><b>1.8 Failure Analysis, Fault Finding</b>  |   |  |
| <ul style="list-style-type: none"> <li>• Asset Management for Engineers</li> <li>• Asset Management Course (Email: SignalEngineersExam@railcorp.nsw.gov.au to book)</li> </ul>                               | <ul style="list-style-type: none"> <li>• Complete on-the job assignment (assessment task)</li> <li>• Shadow Maintenance Engineer to analyse failures and carry out investigations and follow up activities</li> <li>• Undertake trend analysis of components, or depots to reduce failures</li> </ul> |  |
| <b>1.9 Application of Human Factors to Design &amp; Operation</b><br><i>Awareness of Human Factors principles and how they relate to engineering</i>   |   |  |
| <ul style="list-style-type: none"> <li>• Human Factors Integration</li> <li>• Briefing by Human Factors team</li> </ul>  | <ul style="list-style-type: none"> <li>• Shadowing on a SPAD, Signal Sighting committee Inspections, or Front of Cab Inspection. Ask questions!</li> </ul>  |  |
| <b>1.10 Analysis of Engineering Systems</b><br><i>Conceptual thinking. .For instance making the transition to analysing the root cause of the fault</i>  |   |  |
| <ul style="list-style-type: none"> <li>• Post Trade Electrical Engineering</li> </ul>  | <ul style="list-style-type: none"> <li>• Seek coaching/mentoring in Electrical Field</li> </ul>   | Attend relevant conferences / seminars to keep updated with industry changes |
| <b>1.11 Project Management and Scoping Budget</b>  |   |  |
| <ul style="list-style-type: none"> <li>• Attend RPMM Awareness (MD47)</li> </ul>   | <ul style="list-style-type: none"> <li>• Take on the management of a small project, under supervision</li> <li>• Review RPMM process and templates</li> </ul>   |  |
| <b>1.12 Communication of Technical Information</b><br><i>Communicates engineering instructions, changed standards, lessons learnt.</i>   |   |  |
| <ul style="list-style-type: none"> <li>• Communication and team briefing</li> <li>• Engineering website (Sig Tech Forum, instructions, standards)</li> </ul>   | <ul style="list-style-type: none"> <li>• Attend; present and/or conduct team briefings</li> <li>• Present at Signal Technical forum or other appropriate forum</li> </ul>   |  |

## 2. Specific Signal Engineer Technical Capabilities

| Knowledge Acquisition   | Skill Acquisition   | Skills Consolidation  |
|---|---|---|
| <b>2.1 Detailed knowledge of signalling hardware &amp; systems</b>  |   |   |
| <i>Will have acquired through Sig Elec training and on the job experience</i>   |   |   |
| <ul style="list-style-type: none"> <li>• Completion of Signalling modules</li> <li>• Claw Locks</li> <li>• Microlock (external)</li> <li>• Spherolock</li> </ul>  | <ul style="list-style-type: none"> <li>• Seek coaching/mentoring in Signal Engineering field</li> <li>• Attend Signal Engineers forum</li> <li>• Practice reading and verifying logs with your mentor or while onsite with a Signal Engineer</li> </ul>   | <ul style="list-style-type: none"> <li>• Coach/mentor a colleague in developing teams</li> <li>• Attend Technical Forums</li> </ul> |
| <b>2.2 Detailed knowledge of Signalling Safeworking procedures</b>  |   |   |
| <ul style="list-style-type: none"> <li>• Training course in Signalling Safeworking - ST43 (E140)</li> <li>• Understanding of Network Rules &amp; Procedures; NLAs; OSPs as they relate to Signalling Safeworking</li> <li>• Ensure re-accreditation is up to date</li> <li>• Attend Signal Engineer Exam briefing session</li> </ul>                | <ul style="list-style-type: none"> <li>• Shadow maintenance engineer to attend second line faults, irregularities and incidents. Ask questions!</li> <li>• Shadow a project/commissioning engineer to see how testing in a project environment is undertaken. Ask questions</li> <li>• Undertake booking in/out procedures</li> </ul> |   |
| <b>2.3 Awareness of Signalling maintenance methods &amp; procedures</b>   |   |   |
| <i>Principles, TMP's service schedules</i>  |   |   |
| <ul style="list-style-type: none"> <li>• Signal Technical Website</li> <li>• Asset Management for Engineers</li> <li>• Attend Signal Engineer Exam briefing session</li> </ul>  | <ul style="list-style-type: none"> <li>• (for Construction) Shadow maintenance team. Ask questions!</li> </ul>  |   |
| <b>2.4 Signalling installation &amp; construction practices</b>   |   |   |
| <ul style="list-style-type: none"> <li>• Attend Signal Engineer Exam briefing session</li> </ul>  | <ul style="list-style-type: none"> <li>• Mentored Learning</li> <li>• Run a small construction project (not like for like)</li> <li>• Shadow Project Engineer</li> </ul>  |   |
| <b>2.5 Signalling equipment set-up, testing &amp; certification</b>   |   |   |
| <ul style="list-style-type: none"> <li>• ST46 Signalling Inspection &amp; Testing</li> <li>• Refer to 711 series (see Study Plan)</li> <li>• Track Circuit certification Manuals and Equipment Manuals – show how to set up and adjust equipment</li> <li>• Shadow test engineer</li> <li>• Attend Signal Engineer Exam briefing session</li> </ul> | <ul style="list-style-type: none"> <li>• Participate in commissioning in various roles; points, tracks, signals and changeovers</li> <li>• Conduct correlation check</li> <li>• Annotate testing plans</li> </ul>   |   |

| <b>2.6 Signalling commissioning procedures &amp; documentation</b>   |   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li>Refer to 711 series (see Study Plan)</li> <li>Signalling Standards</li> </ul>   | <ul style="list-style-type: none"> <li>Review Commissioning Engineers Details Checklist; identify gaps in your understanding. Discuss and query with technical experts.</li> <li>Undertake role of Assistant Commissioning Engineer throughout Commissioning process. Ask questions!</li> </ul> |  |
| <b>2.7 Awareness of the Principles of Railway Safeworking &amp; Signalling design</b>  |   |  |
| <i>e.g. overlaps, headways</i>   |   |  |
| <ul style="list-style-type: none"> <li>Modules from GHD course for Signal Engineers</li> <li>Attend Signal Engineer Exam briefing session</li> </ul>   | <ul style="list-style-type: none"> <li>Formal training</li> </ul>   |  |
| <b>2.8 Reading and Interpretation of Signalling Plans</b>  |   |  |
| <i>Control tables, circuit books, and data</i>   |   |  |
|  | <ul style="list-style-type: none"> <li>Undertake a correlation of signalling plans to ground installation</li> <li>Participate in signalling plan certification (part of commissioning)</li> </ul>  |  |
| <b>2.9 Testing of Small Interlockings</b>  |   |  |
| <ul style="list-style-type: none"> <li>Mechanical Interlocking</li> </ul>  | <ul style="list-style-type: none"> <li>Assist with interlocking tests and/or work through examples with your Mentor</li> <li>Shadow maintenance engineer</li> </ul>   |  |
| <b>2.10 Downloads, preservation and interpretation of data logs</b>  |   |  |
| <ul style="list-style-type: none"> <li>Training on interpretation of logs e.g. reading SSI data, Microlock, ATRICS, Cerberus</li> <li>Reading and interpreting Boolean data expressions</li> </ul> | <ul style="list-style-type: none"> <li>Read a time sequence based on given data</li> <li>Interpret interlocking conditions from Boolean data</li> </ul>   |  |
| <b>2.11 Electrical calculations</b>  |   |  |
| <ul style="list-style-type: none"> <li>Including Ohms law, series and parallel resistance and impedance</li> </ul>   | Practice calculations and discuss your answers with your Mentor to check your method and answers  |  |

### 3. Signal Engineer (Field) Behavioural Capabilities

| 3.1 Accountability and Effectiveness  |   |  |  |
|---|---|--|--|
| <p><b>Provide personal leadership:</b> Allocate work in alignment with budgets, approved plans, performance objectives and policies. Give direct reports full responsibility and accountability for achieving results and provide constructive feedback and appropriate resources to increase the likelihood of a successful outcome. Develop, manage and complete concurrent projects to high standards and tight deadlines. Encourage, value and reward individual and team efforts and contributions. Involve individuals and teams in the decision making process. Conduct business in a way that is consistent with RailCorp standards and values. Provide a positive role model for others through high standards of personal presentation and performance.</p>   |   |  |  |
| Capability Level  | Knowledge Acquisition   | Skill Acquisition  | Skill Consolidation  |
| Guiding   | <ul style="list-style-type: none"> <li>Managing Time as Leader</li> </ul>   | <ul style="list-style-type: none"> <li>Improve your IT skills by completing online courses</li> <li>RailCorp Just Culture</li> <li>RailCorp Health</li> <li>Seek coaching/mentoring from a highly accountable and effective colleague/manager</li> </ul>   | <ul style="list-style-type: none"> <li>Coach/mentor a colleague</li> <li>Initiate a project which analyses how time is spent within the team, and how this aligns with team goals. Discuss discrepancies with the team, and determine how time can be better managed to deliver on team goals</li> <li>Ask team members to research and share a new time-saving IT tip at each team meeting</li> </ul>   |
| 3.2 Building Capability   |   |  |  |
| <p><b>Develop individuals</b><br/>Encourage individuals to be proactive in furthering their professional development. Be aware of individual strengths and areas for development. Collaboratively identify learning opportunities which meet specific development needs, and develop and implement targeted and holistic learning plans. Where possible, align development plans to business and individual career plans. Provide, support and resource workplace learning opportunities, such as shadowing, buddying and role rotation. Treat mistakes as learning opportunities, and coach individuals through the learning process. Recommend staff for special assignments, such as secondments and projects, to foster development. Provide or arrange training, coaching or mentoring assistance where relevant, ensuring an appropriate level of skill in delivery. Where appropriate, delegate full responsibility for a task or project in order to develop a specific capability.</p> |   |  |  |
| Leading   | <ul style="list-style-type: none"> <li>Manage People and Performance</li> <li>Leading Teams</li> <li>RailCorp Organisational Capability Tool Kit</li> <li>RailCorp Organisational Development website</li> <li>Attend RailCorp Masterclasses</li> </ul> | <ul style="list-style-type: none"> <li>Use the RailCorp Organisational Capability Tool Kit to identify team capability levels, gaps and recommended development activities</li> <li>RailCorp Performance Development Process</li> <li>RailCorp PDP E-Learning</li> <li>RailCorp Leadership &amp; Management Courses (see intranet&gt; myMR&gt; Learning and Development&gt; Courses)</li> <li>Seek coaching/mentoring in developing teams</li> </ul> | <ul style="list-style-type: none"> <li>Attend training courses and conferences and share learning with team members</li> <li>Nominate key development roles for key people</li> <li>Rotate roles whenever possible</li> <li>Use negative events and incidents as learning</li> <li>Implement succession planning to ensure knowledge and experience are retained within the team</li> <li>Start a knowledge network on your team's area of specialisation</li> <li>After each training session you attend, make time to share your learning with your team members, and discuss how you will apply it in the workplace. Support team members to do the same</li> </ul> |

### 3.3 Building Relationships

Implement policies to ensure that people are treated with integrity and respect, and that RailCorp's social, ethical and business standards are used to develop and maintain effective relationships. Guide, counsel and support team members to adjust their interpersonal style to suit other people and situations, and to resolve work relationship difficulties. Facilitate collaboration amongst others and use understanding of others and self to work more effectively together and actively resolve conflicts. Expand own business and technical networks within and outside RailCorp, and use these relationships to build RailCorp's knowledge and expertise and assist RailCorp to achieve business objectives.

| Capability Level | Knowledge Acquisition  | Skill Acquisition   | Skill Consolidation   |
|------------------|--|---|---|
| Guiding          | <ul style="list-style-type: none"> <li>Leading Teams</li> <li>Manage People and Performance</li> <li>RailCorp Code of Conduct</li> </ul> | <ul style="list-style-type: none"> <li>Seek coaching/mentoring from a strong networker/relationship builder</li> <li>Join an industry-related network/group and attend meetings regularly. Share knowledge gained with your workgroup and/or interested colleagues</li> <li>Foster trust in your team through ethical conduct and confidentiality</li> <li>Shadow a colleague/manager who has strong workplace relationships</li> </ul> | <ul style="list-style-type: none"> <li>When undertaking job rotations/secondments/acting in higher duties, proactively build your network of internal and external contacts by attending functions/meetings/workshops</li> <li>Coach/mentor a team member in relationship building</li> <li>Start or join a knowledge network on your area of specialisation</li> </ul> |

### 3.4 Communication

Use advanced workplace communication strategies. Give directions in a clear, concise manner appropriate to the receiver, and obtain feedback to confirm understanding. Manage meetings effectively by developing and distributing a clear and timely agenda, and conducting the meeting efficiently to enable timely completion of objectives. Facilitate meetings to enable participation, discussion, problem solving and resolution of issues by all participants. Summarise decisions and recommendations succinctly, and communicate to all participants. When making presentations, use presentation strategies and materials to enhance audience understanding and to match the audience characteristics, location, resources and subject matter. Obtain formal evaluation of the effectiveness of the presentation and use this to continuously improve future presentations

|         |  |  |  |
|---------|--|--|--|
| Guiding | <ul style="list-style-type: none"> <li>Modern Business Writing</li> <li>Modern Business Writing for Middle Managers</li> <li>RailCorp Editorial Style Guide</li> </ul> | <ul style="list-style-type: none"> <li>RailCorp Communications Resources</li> <li>Seek coaching/mentoring from a strong communicator</li> <li>Run team briefings and get feedback on your communication effectiveness</li> <li>Attend a networking event and introduce yourself to people you haven't met before</li> <li>Shadow a colleague or manager who communicates effectively</li> <li>If meetings consistently run late, analyse how time is spent and identify time wasting activities/discussions</li> </ul> | <ul style="list-style-type: none"> <li>When preparing presentations, prepare a list of questions to elicit feedback and check understanding</li> <li>Coach colleagues to manage and facilitate meetings, and deliver more effective presentations</li> <li>Attend colleagues' meetings and/or presentation and provide feedback</li> <li>Reflect on who contributes in meetings and who doesn't. Foster a culture of participation and respect for everyone's input</li> <li>Use assertive communication techniques to ensure that meetings are run to schedule</li> <li>Be a workplace host to a shadow</li> <li>When acting in higher duties, take advantage of the opportunity to deliver presentations and facilitate meetings for a different audience</li> </ul> |
|---------|--|--|--|

### 3.5 Ethics

#### Support RailCorp values and ethics

Assist others to access and use RailCorp's Code of Conduct and other ethical guidelines to ensure their work practices comply with requirements. Support staff to contribute to ethical discussions and problem solving to develop their ethical judgment. Clarify the differences between RailCorp ethics/values and personal beliefs/values to encourage understanding and compliance. Identify and discuss potential and real work practices that would constitute unethical conduct, and identify strategies to avoid, resolve or refer them in accordance with RailCorp policy and procedures. Regularly access information to ensure currency in ethical knowledge, and develop ethical judgment through relevant ongoing professional development. Use processes for preventing and reporting unethical conduct and assist others in their application.

| Capability Level | Knowledge Acquisition   | Skill Acquisition   | Skill Consolidation  |
|------------------|---|---|--|
| Guiding          | <ul style="list-style-type: none"> <li>RailCorp Code of Conduct</li> <li>RailCorp Culture and Behaviour Standards</li> <li>RailCorp Just Culture Workshops</li> <li>RailCorp Corruption Prevention Unit</li> <li>Corruption Prevention for Managers – ICAC</li> <li>The Ethics Workout – Managing Values</li> </ul> | <ul style="list-style-type: none"> <li>Be familiar with RailCorp's conduct and behaviour standards, so that you can model these at all times</li> <li>Critically assess your own conduct against RailCorp's ethical standards, and identify areas in which your actions may be contradictory. Obtain feedback from others if possible. Write an action plan to behave in a more ethical manner</li> </ul> | <ul style="list-style-type: none"> <li>If you suspect an ethical issue in your team, and if it seems appropriate to do so, draw attention to it in a way which enables the staff to uncover it for themselves. If possible, use the issue as a learning opportunity for all concerned</li> </ul> |

### 3.6 Innovation and Improvement

#### Promote innovation and improvement in a team environment

Create opportunities to maximise innovation within the team. Seek external stimuli, ideas and feedback to generate team discussion and debate. Encourage the sharing of information, knowledge, experiences, ideas and opportunities for improvement and innovation within the team. Communicate RailCorp's continuous improvement processes, and mentor and coach team members to support the improvement process. Receive ideas from others positively and provide constructive advice. Determine areas for improvement collaboratively and implement improved processes/strategies. Build improvement ideas into future activities and communicate key issues to team members and other relevant colleagues. Monitor team progress and use work performance to identify opportunities for further improvement. Identify, promote and celebrate successes and examples of successful innovation. Introduce and promote creative thinking techniques to foster personal and team innovation.

| Capability Level | Knowledge Acquisition   | Skill Acquisition  | Skill Consolidation   |
|------------------|---|--|---|
| Guiding          | <ul style="list-style-type: none"> <li>Managing Change as a Leader</li> <li>Continuous Improvement: Improving Systems and Processes</li> <li>Quality Management and Process Improvement</li> <li>Innovation and Change: Making Change Happen</li> <li>Six Thinking Hats: De Bono, E (2001) Penguin, UK</li> </ul> | <ul style="list-style-type: none"> <li>Seek coaching/mentoring from an expert in innovation and improvement</li> <li>Conduct a team debrief session on how well an improvement was implemented. Document lessons learned and apply them in the future</li> </ul> | <ul style="list-style-type: none"> <li>Coach/mentor a colleague in innovation and improvement</li> <li>When acting in higher duties, reflect on how your team can contribute to the management of innovation and continuous improvement. Plan to implement your ideas on return to your team</li> <li>Facilitate a team brainstorming session to identify improvement initiatives and how they can be implemented</li> <li>Review things that work well and things that don't and develop ideas to improve the way your team functions</li> </ul> |



### 3.7 Negotiation and Influence

Use own expertise to gain respect from peers and stakeholders. Recognise and use formal structures, rules, processes and legislation to achieve operational and strategic results. Plan, negotiate and implement a course of action to achieve a specific outcome. Assess situations and know when to be direct, forceful or diplomatic. Appeal to precedents and commonly held views and beliefs to advocate own viewpoint. Persuade others to willingly pursue a course of action against their initial inclination. Concede points gracefully while maintaining focus on the overall goal. Motivate stakeholders by understanding their business needs and positioning and promoting ideas and concepts to effectively address these. Convey complex concepts to stakeholders in an accessible way to promote underlying trust. Manage stakeholders with conflicting interests, without damaging relationships. Manage group processes to guide a group to a desired outcome and follow through with promises. Undertake formal negotiations with stakeholders, suppliers, unions and other third parties. Apply leadership and management expertise to influence the work of others and negotiate performance levels.

| Capability Level | Knowledge Acquisition   | Skill Acquisition  | Skill Consolidation  |
|------------------|---|--|--|
| <b>Leading</b>   | <ul style="list-style-type: none"> <li>• Negotiation and Influence</li> <li>• The Seven Habits of Highly Effective People: Covey, S (1989) Simon &amp; Schuster, NYC</li> </ul> | <ul style="list-style-type: none"> <li>• Seek coaching/mentoring from a strong negotiator/influencer</li> <li>• Shadow a colleague or manager during a period of negotiation and/or influencing. Observe the skills s/he uses, and plan to use these in your own role</li> <li>• Obtain feedback on your negotiation and influencing style, and use this information to improve your skills</li> <li>• List the key message/s you plan to convey, and ensure that you deliver these messages without being sidetracked</li> <li>• Reflect on the influencing styles of others, and how you respond to them, when preparing negotiations</li> </ul> | <ul style="list-style-type: none"> <li>• When undertaking job rotations/ secondments/acting in higher duties, take advantage of opportunities to negotiate and influence in new situations. Use the experience to stretch your skills and add to your repertoire of techniques</li> <li>• Be a workplace host to a shadow</li> <li>• Apply for a job rotation/secondment/ project/higher duties assignment in an area with which your business unit seeks a stronger relationship. Use the placement as an opportunity to influence key people to work more collaboratively with your original team</li> </ul> |

### 3.8 Safety

Support colleagues in following workplace safety procedures. Contribute to participative workplace safety arrangements within RailCorp procedures and scope of responsibilities and capability. Deal with existing and potential workplace hazards, and/or report them to designated personnel. Implement workplace procedures and work instructions for controlling risks. Provide feedback on the effectiveness of safety procedures and risk control measures to enable improvements to be made where necessary.

| Capability Level | Knowledge Acquisition  | Skill Acquisition  | Skill Consolidation  |
|------------------|--|--|--|
| <b>Leading</b>   | <ul style="list-style-type: none"> <li>• SMS Essentials</li> <li>• Human Factors Integration</li> <li>• Safety Risk Management</li> <li>• Safety Change Management</li> <li>• Safety training programs</li> <li>• RailCorp Safety Intranet</li> <li>• Watch a RailCorp Safety Video</li> <li>• RailCorp Safety Strategic Plan</li> </ul> | <ul style="list-style-type: none"> <li>• Attend RailCorp Safety Briefings and Events</li> <li>• Attend the RailCorp Safety Convention</li> <li>• Train for and act in safety critical roles. Use the experience to improve the way you manage safety in your own role.</li> <li>• Shadow a colleague in a safety critical role, or with greater safety accountability. Reflect on how you can apply their skills to your own role</li> </ul> | <ul style="list-style-type: none"> <li>• Report Safety Incidents</li> <li>• Participate in the RailCorp Safety Competition</li> <li>• Ensure workplace safety information is accessible and training and records are kept up to date</li> <li>• Attend or contribute to RailCorp special events, to learn about safety procedures in different contexts</li> <li>• Join or manage a safety committee</li> <li>• Develop expertise by joining safety industry networks, researching safety best practice, attending external safety forums etc. and sharing knowledge with peers and team members</li> <li>• When acting in other roles, expand your awareness of safety management in other areas</li> <li>• Maintain and role model a healthy lifestyle, and a strong commitment to workplace safety</li> </ul> |

### 3.9 Strategic Thinking

#### Understand team role

Understand the role of one's team/division in the wider RailCorp context, and how the team's performance contributes to the achievement of RailCorp's strategic vision and objectives. Contribute to and understand the strategic direction of the business unit for the coming 12 months, and how the team needs to perform in order to achieve this. Identify team goals and how they link to the business plan, and explain this in a meaningful way to team members. Guide and support the team to meet workgroup and organisational strategic objectives. Align short-term work priorities with long-term objectives, and ensure that priorities are consistent with the achievement of business goals.

| Capability Level | Knowledge Acquisition   | Skill Acquisition   | Skill Consolidation   |
|------------------|---|---|---|
| Guiding          | <ul style="list-style-type: none"> <li>RailCorp Intranet, Press Clippings, NewsStand and Media Releases</li> <li>RailCorp Vision and Strategy</li> <li>RailCorp Leaders' Forum</li> </ul> | <ul style="list-style-type: none"> <li>Seek coaching/mentoring in strategic thinking</li> <li>During Knowledge Acquisition activities, consider how your business unit can contribute to, and is impacted by, what you read and hear. Discuss with your team</li> </ul> | <ul style="list-style-type: none"> <li>Conduct regular team briefings to keep team members informed of strategic developments and their impact on day-to-day operations</li> <li>Involve the team in aligning and prioritising day-to-day operations with business unit objectives</li> <li>Coach a team member in strategic thinking</li> <li>Be a workplace host to a shadow</li> <li>When acting in higher duties, consider how other business units define their strategy. Implement relevant ideas on return to your team</li> <li>If you have a remote team, conduct regular site visits to maintain communication and awareness of their issues</li> </ul> |

### 3.10 Teamwork

Develop team cohesion by encouraging team agreement on its responsibilities and goals. Link individual goals to the goals of the team and business plan objectives. Invite team input into planning, decision making and operational aspects. Agree and share tasks and activities to ensure the best use of skills and abilities within the team. Acknowledge, respect and discuss how different people may contribute to building or enhancing the team. Encourage and support team members to take responsibility for collaboratively fulfilling responsibilities and achieving objectives. Encourage, value and reward individual and team efforts through effective feedback and supporting the team in meeting its expected outcomes. Support the team to identify and resolve problems which impede its performance and cohesion. Ensure own contribution to the team serves as a role model for team members and enhances the image of RailCorp and the business unit.

| Capability Level | Knowledge Acquisition   | Skill Acquisition   | Skill Consolidation  |
|------------------|---|---|--|
| Guiding          | <ul style="list-style-type: none"> <li>Leadership Awareness for Work Group Leaders</li> <li>Leading Teams</li> <li>Manage People and Performance</li> <li>RailCorp Time2Talk</li> </ul> | <ul style="list-style-type: none"> <li>Use the RailCorp Organisational Capability Tool Kit to determine team capability levels, gaps and recommended development activities</li> <li>Seek coaching/mentoring from a strong team builder/your manager</li> <li>Shadow a manager of a high performing team. Reflect on the skills you can apply to your own team</li> </ul> | <ul style="list-style-type: none"> <li>Conduct regular team meetings and briefings to keep your team well informed</li> <li>Coach a team member in developing team effectiveness</li> <li>Be a workplace host to a shadow</li> <li>When acting in higher duties, reflect on how you can guide your team to better performance</li> </ul> |

### 3.11 Understanding Self and Others

#### Social awareness

Recognise and appreciate the emotional strengths and weaknesses of others. Pay attention to others' words, expressions and body language in an attempt to understand their emotional state. Paraphrase others' messages to confirm understanding, and seek to understand their position. Demonstrate empathy with others, responding to their concerns and feelings. Demonstrate flexibility and adaptability by adjusting one's behaviour to suit the individual or situation. Consider the emotions of others when communicating and making decisions. Seek to understand the underlying concerns, interest or emotions that lie behind what others say and do.

| Capability Level | Knowledge Acquisition   | Skill Acquisition   | Skill Consolidation  |
|------------------|---|---|--|
| <b>Leading</b>   | <ul style="list-style-type: none"> <li>Conflict Resolution</li> </ul> | <ul style="list-style-type: none"> <li>RailCorp Conflict Coaching</li> <li>Seek coaching/mentoring from a colleague/manager with strong interpersonal skills</li> <li>If appropriate, ask to accompany a colleague/manager to a meeting where conflict is likely to occur, and observe behaviours. Debrief with your manager</li> <li>If appropriate, shadow a colleague or manager during a project which has generated considerable conflict</li> </ul> | <ul style="list-style-type: none"> <li>Prepare for challenging interactions by anticipating the positions of others, and preparing possible responses</li> <li>Try to observe yourself in difficult situations, and note your reactions</li> <li>Offer to deal with a challenging customer or colleague and debrief with your team</li> <li>Coach/mentor a colleague in dealing with conflict</li> <li>When acting in higher duties or other roles, take advantage of opportunities to deal with conflict. Apply lessons learned to your own role</li> <li>Ask team members/direct reports to give you the bad news. Address the issues without taking it personally and shooting the messenger</li> </ul> |



# APPENDIX - Development Stages

Capability is developed in three distinct stages: Knowledge Acquisition, Skill Acquisition and Skill Consolidation. Most formal training addresses only the knowledge component of this process, and contributes only 10-20% towards capability development. The vast majority of capability development occurs slowly in ad-hoc on-the-job informal learning activities. By planning and structuring these critical skill acquisition and consolidation activities, the speed and quality of capability development can be greatly increased.

|                    | Knowledge Acquisition   | Skill Acquisition   | Skill Consolidation  |
|--------------------|---|---|--|
| What it looks like | <ul style="list-style-type: none"> <li>Developing knowledge</li> <li>Gaining awareness</li> <li>Understanding the theory, principles and procedures</li> <li>Actively expanding and applying knowledge through curiosity, reading, research, using IT Help systems, etc.</li> <li>As knowledge increases, it becomes underpinning knowledge for the next level of capability</li> </ul>   | <ul style="list-style-type: none"> <li>Developing skill</li> <li>Practising with support and feedback</li> <li>Performing in simulated situations</li> <li>Supported work placements and experience</li> <li>Active, consistent and realistic reflection on own skill level, and how to improve it</li> <li>As skill increases, people prepare for the next level of capability</li> </ul>  | <ul style="list-style-type: none"> <li>Consolidating knowledge and skill under workplace conditions</li> <li>Performing on the job with responsibility and accountability for business outcomes</li> <li>Consistently performing to the standards required by the organisation</li> <li>Actively seeking ways of improving own performance and expanding capability</li> <li>At high levels of capability, people develop expertise which they consolidate by imparting their knowledge and skills to others</li> </ul>  |
| How you acquire it | <ul style="list-style-type: none"> <li>Can be acquired through all types of development interventions</li> <li>Can be formally acquired through classroom or online training, attending presentations, seminars, workshops and conferences</li> <li>Can be informally acquired through reading, accessing information, self-directed learning, participation in knowledge networks, being coached, assisted, trained, mentored by others, pre- and post-training debriefs, workshops, and all types of on-the-job development activities</li> <li>For the motivated learner, knowledge acquisition is an ongoing lifelong learning process</li> </ul> | <ul style="list-style-type: none"> <li>Can be acquired through most types of development interventions, <u>provided</u> opportunities for skills development, practice and hands-on application are included</li> <li>Can be formally acquired through demonstrations, classroom or online training, <u>provided</u> skills development is a learning objective and opportunities for practice exist</li> <li>Most skill acquisition is informally acquired through self-directed learning, shadowing, and being buddied, coached, assisted, trained, mentored by others, on the job</li> </ul> | <ul style="list-style-type: none"> <li>Skill can <u>only</u> be consolidated through on-the-job activities e.g. job rotations, secondments, relief roles, acting in higher duties, delivering presentations, presenting at conferences, contributing to knowledge networks, project roles, participating in special events, being a buddy, being mentored, coached or trained, buddying, mentoring, coaching or training others</li> <li>Expertise can be developed through mentoring, coaching and training others, presenting at conferences, contributing to knowledge networks, becoming a Subject Matter Expert (SME).</li> </ul> |