Exhibit A

TCA Standard Requirements
Exhibit A - TCA Standard Requirements

This Exhibit A includes the TCA Standard Requirements identified in Table 1 below.

In the TCA Standard Requirements any reference to the “D&C Contractor” means the Contractor.

Table 1. TCA Standard Requirements

<table>
<thead>
<tr>
<th>TCA Standard Requirements</th>
<th>Revision Date</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSR Prelude</td>
<td>18 March 2011</td>
<td>9.0</td>
</tr>
<tr>
<td>TSR Q1 - Quality Management</td>
<td>2 December 2010</td>
<td>5.0</td>
</tr>
<tr>
<td>TSR S1 - Safety Management</td>
<td>November 2010</td>
<td>4.0</td>
</tr>
<tr>
<td>TSR E1 - Environmental Management</td>
<td>12 May 2011</td>
<td>4.0</td>
</tr>
<tr>
<td>TSR T1 - Technical Management</td>
<td>29 August 2011</td>
<td>10.0</td>
</tr>
<tr>
<td>TSR C1 - Communications and Community Liaisons</td>
<td>October 2010</td>
<td>5.0</td>
</tr>
<tr>
<td>TSR A1 - Asset Management Information</td>
<td>March 2011</td>
<td>5.0</td>
</tr>
<tr>
<td>TSR O1 - Operational Readiness and Commissioning</td>
<td>March 2011</td>
<td>7.0</td>
</tr>
</tbody>
</table>
TCA Standard Requirements
TSR Prelude

ASP-01-D&C Design and Construct Contract for
Auburn Stabling Project (Stage 1)
South West Rail Link

Status: Tender Issue
Document Number: TSR Prelude.DOC
Version: 9.0
Date of issue: 18 March 2011
Security classification: General Release

© TCA 2010
Table of Contents

1 General ................................................................................................................................... 1
  1.1 Scope ................................................................................................................................ 1
  1.2 Currency of Reference Documents ................................................................................. 1
  1.3 Terms and Definitions ........................................................................................................ 2

2 Requirements for the Contract Management Plan ............................................................... 4
  2.1 Objectives .......................................................................................................................... 4
  2.2 Compliance ....................................................................................................................... 5
  2.3 Scope ................................................................................................................................ 5
  2.4 Submission and Review ..................................................................................................... 6
    2.4.1 Review of Contract Management Plan and Deliverables ....................................... 6
    2.4.2 Updating the Contract Management Plan ............................................................. 6
    2.4.3 Documentation Submission ....................................................................................... 8

3 Monthly Reporting .................................................................................................................. 9

4 Principal’s Surveillance and Collaborative Compliance Audits ........................................... 11
  4.1 Principal’s Surveillance ...................................................................................................... 11
  4.2 Principal’s Collaborative Compliance Audits ................................................................. 11

5 Working in and Adjacent to the Rail Corridor and Rail Environment .................................... 12
  5.1 Operating Railway System ............................................................................................... 12
  5.2 Configuration Management ............................................................................................. 13
  5.3 Project Safety Agreement and Work Activity Advice ................................................... 14
  5.4 Arrangements for Track Possessions ............................................................................. 14
  5.5 Additional Possessions .................................................................................................... 15
  5.6 Worksite Protection Personnel ....................................................................................... 16
  5.7 Arrangements during Track Possessions ....................................................................... 16
  5.8 Planning and Managing Track Possessions ................................................................... 17
  5.9 Certification of Work in Track Possessions ................................................................... 18

ANNEXURE A – Additional Project Requirements

ANNEXURE B – List of Reference Documents

ANNEXURE C – Requirements for Discipline-Specific Management Plans
1 GENERAL

1.1 Scope

The TCA Standard Requirements (TSR) describes certain requirements for working on a TCA project, including in relation to:

(j) quality assurance and management;
(k) occupational health and safety;
(l) environmental management;
(m) working in the Rail Corridor and the rail environment;
(n) incident management and reporting;
(o) communications and community liaison;
(p) technical management;
(q) asset management information;
(r) compliance management; and
(s) operational readiness and commissioning.

The TCA Standard Requirements (TSR) consists of the following documents:
- TSR Prelude (this document);
- TSR Q1 – Quality Management;
- TSR S1 – Safety Management;
- TSR E1 - Environmental Management;
- TSR C1 – Communications and Community Liaison;
- TSR T1 – Technical Management;
- TSR O1 – Operational Readiness and Commissioning; and
- TSR A1 – Asset Management Information.

The TSR Prelude describes requirements for:
- preparing, developing, implementing and maintaining a Contract Management Plan;
- participating in the Principal’s surveillance and audit activities; and
- working in the Rail Corridor and rail environment.

1.2 Currency of Reference Documents

If no revision number or revision date is applied to any reference document in the TCA Standard Requirements then the revision number or revision date will be deemed to be that which was current 7 days prior to the date of closing of tenders, or where no issue is current at that date, the most recent issue, unless otherwise specified.
Applicable reference documents are listed in an Annexure of each document in the TCA Standard Requirements’ suite of documents.

1.3 Terms and Definitions

Unless noted otherwise, wherever used in the TCA Standard Requirements, words and phrases defined in the General Conditions have the meaning given to them in the General Conditions and in addition to this the following words or phrases have the meaning given to them below:

"ALARP" means as low as reasonably practicable.

"CHAIR" means the Construction Hazard Assessment Implication Review, safety in design tool published by WorkCover NSW.

"Commissioning" means the systematic process of ensuring that all infrastructure, equipment and systems installed in a project perform interactively in accordance with the design intent and the user's functional and operational needs.

"Competent Person" means a person identified and certified within an organisation to have sufficient skills and knowledge based on the following attributes

- practical and thinking skills
- experience
- knowledge
- behaviours/attitudes and
- physical fitness to undertake rail safety work

to carry out rail safety work and of a specific engineering or architectural discipline, to be responsible for the development of the design, or for checking the design, or for verifying the design, or for verifying construction compliance with detailed design.

"Configuration Board" means person or a group of persons identified by RailCorp who are assigned responsibility and authority to make decisions on the configuration.

"Contract Management Plan" or "CMP" is the Contractor's overarching management plan that captures in a coordinated and integrated approach any and all other management systems and management plans that the Contractor may be required to develop under the Contract.

"Contractor's Environmental Manager" means the Contractor's representative that has defined responsibilities and authority to ensure that an environmental management system is established, implemented and maintained in accordance with the Contract and reports to the Contractor's senior management on the performance of the environmental management system for review and improvement.

"Danger Zone" has the same meaning as given in RailCorp RailSafe Network Rules.

"DECCW" means the Department of Environment, Climate Change and Water NSW.

"DECCW Licence" means the environmental protection licence which may be granted by the Department of Environment and Climate Change and Water under the Protection of the Environment Operations Act 1997 (NSW).

"Ecologically Sustainable Development" or "ESD" is defined as development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes
on which life depends. It reflects the environmental philosophy of the NSW Government that is outlined in section 6(2) of the Protection of the Environment Administration Act 1991 (NSW).

"Hold Point" means a point beyond which a work process must not proceed without the Principal's express written authorisation.

"Inspection Record" means the evidence of observation associated with the Contractor's Activities.

"Inspection and Test Plan" or "ITP" means the plans and forms that are used for recording inspection or test results with the facility to sign-off the completed and compliant inspection or test results.

"Local Possession Authority" has the same meaning as given in RailCorp RailSafe Network Rules.

"OH&S" means occupational health and safety.

"Operational Readiness" means the process which ensures that a project is ready to operate, with all necessary operational plans and approvals in place, fully trained operating staff, all external works and related projects completed and with users ready to accept the responsibility for ongoing operation and maintenance of the facility generated by the Works.

"Protection Officer" has the same meaning as given in RailCorp RailSafe Network Rules.

"RailCorp Critical Resources" means the resources provided by RailCorp to support the Contractor's Activities as nominated in the Contract during commissioning and operational readiness.


"Rail Track" or "Track" or "Line" means the rails fastened on sleepers or transoms and founded on ballast or bridge decking, associated signalling and overhead wiring components (in electrified areas).

"Rail Transport Authority" means an entity as defined by the NSW Rail Safety Act as a rail operator or rail transport operator.

"Railway Safety Work" has the same meaning as given to it in the Rail Safety Act.

"Railway Safety Worker" has the same meaning as given to it in the Rail Safety Act.

"Safety Hazard Log" means the document so titled initially prepared by TCA and further updated and maintained by the Contractor in accordance with the Works Brief and the TCA Standard Requirements.

"Safety Interface Agreement" means the agreement entered into between TCA, RailCorp, and any other relevant party which appears in Exhibit J to the General Conditions.

"Safe Work Method Statements" or "SWMS" means the documents so titled prepared in accordance with TSR S1.

"SFAIRP" means so far as is reasonably practicable.

"TCA Accreditation" means the accreditation held by TCA pursuant to the Rail Safety Act.

"Track Occupancy Authority" has the same meaning as given in RailCorp RailSafe Network Rules.
“Track Possession” means an agreed period when closures and/or occupation of defined portions of one or more running lines to allow work to be carried out in the Danger Zone using either a Local Possession Authority or a Track Occupancy Authority.

"Witness Point" means a point in a work process where the Contractor must give prior notice to the Principal's Representative and the option of attendance may be exercised by the Principal’s Representative.

“Worksite Protection” means the safety measures adopted, in relation to rail operations, to protect persons brought or invited to any part of the Site located within the Rail Corridor.

"Worksite Protection Personnel" means the personnel assigned to implement the required Worksite Protection for work within the Rail Corridor.

2 REQUIREMENTS FOR THE CONTRACT MANAGEMENT PLAN

2.1 Objectives

The Contractor must prepare, develop, implement and maintain a Contract Management Plan (CMP) to inform and direct personnel and others engaged by the Contractor about the specific work practices, resources, sequence of activities, controls and checks that are to be implemented during the Contract.

The CMP is the Contractor's project-specific management system and overarching project-specific management plan that captures any and all other management systems and management plans that the Contractor may be required to develop under the Contract.

The CMP must:

(a) explain in a systematic, coordinated and integrated structure the management method for executing the Contractor's Activities in delivering the Works;

(b) define responsibilities, resources and processes for planning and performing the Contractor's Activities;

(c) define responsibilities, resources and processes for verifying that the Contractor's Activities meet the requirements of the Contract;

(d) be consistent with the methodology submitted as part of the Contractor's tender;

(e) cover all the project-specific management systems, project-specific management plans and project-specific deliverables required for the execution of the Contractor's Activities and to meet the requirements of the Contract;

(f) cross reference all other management plans where the Contract requirements are addressed;

(g) document the interface between the project-specific management plans and the Contractor’s corporate systems;

(h) explain the alignment of the operating processes of the Contractor, Subcontractors and the Principal’s Representative; and
(i) maximise the understanding and acceptance by all parties of the management processes to be used for the execution of the Contractor's Activities.

2.2 Compliance

The CMP must meet the requirements of, as applicable:

(a) the General Conditions;
(b) relevant Australian Standards;
(c) Authorities;
(d) NSW Government Guidelines, standards and codes of practice for the various areas of management involved; and
(e) the management requirements of the Principal's Representative, as advised by the Principal's Representative, from time to time.

2.3 Scope

The CMP is to provide a framework bringing together all the management requirements for the Contractor's Activities into a coordinated and integrated plan. The Contractor may attach other discipline-specific management plans, as listed in TSR Prelude Clause 2.4.2, to the CMP or address those discipline-specific management plan requirements within the body of the CMP.

Where the Contractor has amalgamated multiple management plans, the Contractor must demonstrate where the Contract requirements have been addressed through the use of a matrix or equivalent that enables the Principal's Representative to easily identify how the Contractor has addressed the Contract requirements within the CMP.

Each discipline-specific management plan must at least address the items below:

(a) a clear statement of policy for the discipline covered;
(b) the objectives which the management plan seeks to address and processes to verify if the activities and works are achieving these objectives;
(c) the requirements, procedures and processes for the management and implementation of the relative plans and how these will be delivered, including the Contract, Authorities' consent conditions, certificates, licences, consents, permits, legislative requirements, standards, codes, agreements and proposed agreements;
(d) the various relevant Contract deliverables, including all records, reports and certificates;
(e) an identification and integration of the timing for key milestones and targets;
(f) procedures for surveillance, self-checking and audit to confirm compliance of the Contractor's Activities with the requirements of the Contract, and the effectiveness of the Contractor's management systems through desktop surveillance, physical surveillance and auditing, whichever are appropriate; and
(g) an identification and integration of the surveillance, verification and acceptance activities by the Principal's Representative.
Additional requirements for the discipline-specific management plans are listed in TSR Prelude Annexure C.

The CMP must incorporate Contractor's surveillance and collaborative audit schedule to be implemented for the project. This schedule must be reviewed and adjusted periodically during the Contract by both the parties (Principal and Contractor) to ensure that the frequency and areas targeted are relevant for each stage of the project and the surveillance and audit regime undertaken by the Contractor is effective in monitoring compliance and identifying issues. The Principal's surveillance and audit requirements are provided in TSR Prelude Clause 4. The Contractor is to include the Principal's audit requirements into the Contractor's CMP. The CMP is to explain how the Contractor will demonstrate traceability, verification and records keeping processes including all necessary assurances.

2.4 Submission and Review

2.4.1 Review of Contract Management Plan and Deliverables

The CMP, discipline-specific management plans and Contract deliverables must be developed by the Contractor and submitted to the Principal's Representative for review under clause 9.14 of the General Conditions.

A staged submission of the CMP by the Contractor is acceptable subject to the following:

(a) the Contractor has sought and obtained approval from the Principal's Representative for the staged submission;

(b) the initial version of the CMP submitted for review provides an outline of any components that are not fully developed and details the process proposed for their development and submission;

(c) the Contractor has provided the Principal with the timeframe for the submission of the subsequent parts to the CMP; and

(d) the submission of any management plans does not affect other timing requirements outlined in the General Conditions and TSR Prelude Clause 2.4.2.

2.4.2 Updating the Contract Management Plan

The Contractor must progressively monitor, review and develop the CMP and where required propose updates and modifications to the CMP. Any proposed updates and modifications to the CMP must be provided to the Principal's Representative for review under clause 9.14 of the General Conditions.

The CMP must be reviewed by the Contractor in accordance with the requirements of ISO 9001 Clause 5.6 and ISO 14001 Clause 4.6 if the period of the Contractor's Activities exceeds 6 months or if nominated in TSR Prelude Annexure A. The Contractor's reviews must reassess the CMP's suitability and effectiveness for the Contractor's Activities. Any changes made to the CMP and supporting documents must be submitted to the Principal's Representative for review under clause 9.14 of the General Conditions.

Subject to Clause 9.14 of the General Conditions, the timing for the initial submission of management plans (that are part of the CMP) for review is as shown in the following table. Note
that the plans listed in this table are not an exhaustive list of all plans required under the Contract.

<table>
<thead>
<tr>
<th>Management Plans</th>
<th>Required for the Contractor's Activities</th>
<th>Timing for Submission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aboriginal Participation Plan</td>
<td>☑</td>
<td>T1</td>
</tr>
<tr>
<td>Asset Management Information Delivery Plan</td>
<td>☑</td>
<td>T4</td>
</tr>
<tr>
<td>Commissioning Management Plan</td>
<td>☑</td>
<td>T4</td>
</tr>
<tr>
<td>Community Liaison Plan</td>
<td>☑</td>
<td>T3</td>
</tr>
<tr>
<td>Configuration Management Plan</td>
<td>☑</td>
<td>T1</td>
</tr>
<tr>
<td>Construction Management Plan</td>
<td>☑</td>
<td>T3</td>
</tr>
<tr>
<td>Contract Management Plan (framework)</td>
<td>☑</td>
<td>T1</td>
</tr>
<tr>
<td>Contractor Program</td>
<td>☑ [include requirements as part of the CMP.]</td>
<td>In accordance with the General Conditions</td>
</tr>
<tr>
<td>Contractor's Commissioning Activity Plan</td>
<td>☑</td>
<td>T4</td>
</tr>
<tr>
<td>Environmental Management Plan</td>
<td>☑</td>
<td>T3</td>
</tr>
<tr>
<td>Design Management Plan</td>
<td>☑</td>
<td>T2</td>
</tr>
<tr>
<td>Industrial Relations Management Plan</td>
<td>☑</td>
<td>T3</td>
</tr>
<tr>
<td>Interface Management Plan</td>
<td>☑</td>
<td>T2</td>
</tr>
<tr>
<td>Project Safety Management Plan</td>
<td>☑</td>
<td>T3</td>
</tr>
<tr>
<td>Property Damage Management Plan</td>
<td>☑ [include requirements as part of the CMP.]</td>
<td>T3</td>
</tr>
<tr>
<td>Quality Management Plan</td>
<td>☑</td>
<td>T2</td>
</tr>
<tr>
<td>Risk Management Plan</td>
<td>☑</td>
<td>T2</td>
</tr>
<tr>
<td>Safety Assurance Plan</td>
<td>☑</td>
<td>T2</td>
</tr>
<tr>
<td>Site Management Plan</td>
<td>☑ [may be included as part of the Construction Management Plan.]</td>
<td>T3</td>
</tr>
<tr>
<td>Traffic Management Plan</td>
<td>☑</td>
<td>T3</td>
</tr>
<tr>
<td>Training Management Plan</td>
<td>☑</td>
<td>T3</td>
</tr>
<tr>
<td>Worksite Protection Plan</td>
<td>☑</td>
<td>T3</td>
</tr>
<tr>
<td>Defects Management Plan</td>
<td>☑</td>
<td>T3</td>
</tr>
<tr>
<td>Security Management Plan</td>
<td>☑</td>
<td>T3</td>
</tr>
</tbody>
</table>
T1 15 Business Days after the date of the Contract.

T2 15 business days prior to the commencement of design. If the works do not involve any design activities prior to the commencement of construction then these plans are to be submitted under T3 timing requirements.

T3 15 business days prior to the commencement of site mobilisation or commencement of construction or investigations.

T4 9 months prior to the planned commencement of the first commissioning event, or 30 business days month following the date of the Contract if the contract duration is less than or equal to 9 months.

Where initial plans and management plans exist, each management plan must be based upon the relevant initial plan or management plan. Notwithstanding the contents of any such initial plans and management plans, the Contractor must develop each of the plan or management plans to comply fully with the requirements of the Works Brief. In addition the following Management plans:

- Design Management Plan;
- Quality Management Plan;
- Environment Management Plan;
- Contract Management Plan;
- Commissioning Management Plan;
- Asset Management Information Delivery Plan;
- Project Safety Management Plan;
- Construction Management Plan;
- Defect Management Plan;
- Configuration Management Plan; and
- Community Liaison Plan.

should include a table listing its compliance with the TSR conditions and requirements.

The commitments and requirements set out in the initial plans and management plans are the minimum commitments and requirements for the plans and management plans and the Contractor must not decrease or otherwise reduce these commitments and requirements, including those relating to the scope, processes, procedures, effort, resources, experience or expertise, in the developed and any subsequently amended versions of the plans and management plans.

2.4.3 Documentation Submission

2.4.3.1 General

The Contractor must control all copies of the CMP, discipline-specific management plans and Contract deliverables in accordance with the General Conditions. The Contractor must provide the Principal's Representative with one original and three copies (one of which is unbound). In addition the Contractor must also submit an electronic copy on CD/DVD in PDF and native formats (such as Microsoft Word, Microsoft Excel, P6, CAD in *.dwg or *.dxf). The requirement for number of copies (hard and electronic versions)
also applies when the Contractor is re-issuing documentation to the Principal' Representative.

The Contractor must promptly advise the Principal's Representative of any changes made to the submitted documents and re-submit the amended documents within 5 Business Days of the amendment, with the amendments clearly marked on the document.

2.4.3.2 Principal's Contract Deliverables Management Tool

Where nominated in TSR Prelude Annexure A, the Principal will administer the Contract deliverables using an electronic document management tool. The Contractor must provide regular input into the Principal's electronic document management tool.

The Contractor must incorporate into the CMP the Principal's administrative requirements for the acceptance, review and tracking of various Contract deliverables using the Principal's electronic document management tool.

3 MONTHLY REPORTING

The Contractor must prepare and submit to the Principal's Representative monthly progress reports on the 5th day of each month in accordance with the General Conditions updating and describing as a minimum:

(a) in accordance with clause 10.2 (e) and (f) of the General Conditions, the status at the end of the previous month of the Contractor's Activities, as compared to the current Contractor Program and the Contractor's other programs;

(b) the planned progress of activities over the forthcoming month and quarter;

(c) a list and timing of Hold Points and Witness Points planned for the forthcoming 2 months;

(d) a description, including photographs, of the progress made on all current activities;

(e) a summary of the Contractor's financial status, including detailed final cost forecasts, earned value and separate lists for the cost of approved variations, claims and outstanding variations claims;

(f) the number and categories of personnel and equipment currently engaged by the Contractor to carry out the Contractor's Activities (including apprentices and those engaged in off-site functions such as engineering and specialist subcontractors). This data must also be compared with the planned resources for the Works;

(g) the status of Design Documentation, major procurement orders, subcontracts, manufacture and general construction;

(h) Key dates for design package submission at SDR, PDR, CDR and AFC stages for Principal's review;

(i) the status of planning activities including approvals and consents;

(j) Monthly Reliability statistics listing the following
(a) Incidents in Possession
(b) Incidents in Non Possession
(c) Actual Incidents
(d) Potential incidents in Possession
(e) Potential incidents in Non Possession.

(j) Monthly reporting on actions taken to close out issues raised by TCA reliability team

(k) safety statistics, as required by the TCA Standard Requirements, including:
(a) lost time injuries/diseases, time lost, WorkCover notices/fines and injuries to the public;
(b) details of safety audits (type, outcomes and non-conformances raised/closed), preventative action, accidents, occurrences and hazards; and
(c) results of drug and alcohol tests;

(l) any non-compliances with any Authority Approvals, non conformances with design and construction and steps taken to address those non-compliances and non conformances;

(m) any issues and non-compliances with environmental management requirements of the Contract (including the TCA Standard Requirements) and steps taken to address those non-compliances;

(n) any issues arising from or affecting the Contract Management Plan (or the subject matter of the Contract Management Plan);

(o) records of all corrective and preventative actions taken under the Contract Management Plan (and the components thereof), and audits of such actions;

(p) co-operation, coordination, industrial relations and interface issues with Other Contractors;

(q) status of interface management;

(r) summary updates relating to community issues and potential community issues;

(s) complaints received by the Contractor in relation to the Works;

(t) other key issues that have the potential to affect the Works;

(u) any other information the Principal's Representative reasonably requires;

(v) activities of the Dispute Review Board; and

(w) Details of top 10 project risks with associated controls.
4 PRINCIPAL'S SURVEILLANCE AND COLLABORATIVE COMPLIANCE AUDITS

4.1 Principal's Surveillance

Surveillance and inspection of the Contractor's process and product may be conducted by the Principal at any time. The Principal may utilise surveillance officer(s) to assist the Principal in surveillance and inspection. The surveillance officer(s) will assist the Principal's Representative in recording the progress and performance of the Contractor's Activities (on or off-site). These records may be used by the Principal for any purpose.

The Contractor must be cooperative in assisting the surveillance officer(s) in undertaking their duties.

4.2 Principal's Collaborative Compliance Audits

The Principal will conduct audits on the Contractor's compliance with the requirements of the Contract and the Contractor's management systems as these apply to the Contractor's Activities.

The Contractor and the Principal will, on a collaborative basis, develop, agree and implement a program for both parties to undertake these audits. The Contractor must participate and assist the Principal in the development and completion of these audits. The Contractor's involvement in the collaborative compliance audit process is summarized in the TCA Compliance Management Standard (CS-ST-020) Clauses 11, 12 and 13.

The Principal's Representative will give at least 10 Business Days notice to the Contractor that an audit is to be conducted.

When any audit is to be undertaken by the Principal, the Contractor must:

(a) 5 Business Days prior to the audit, submit to the Principal's Representative one copy of the following documents:

   (a) policies and manuals;
   (b) management plans;
   (c) management system's procedures; and
   (d) inspection and test plan templates and record forms,

(b) make available all records produced under the Contract;

(c) make available its corporate and project management systems;

(d) make suitable facilities available as agreed between the Principal's Representative and the Contractor to accommodate the audit and audit team; and

(e) provide all reasonable assistance during the audit including the participation of a representative from the Contractor's organisation (and Subcontractor's organisation if the scope of the audit warrants) who can efficiently locate and produce the requested information for the audit.
Copies of documents submitted for the audit will be returned at the completion of the audit and finalisation of the audit report, if requested by the Contractor.

The Contractor must ensure that the audit report recommendations are actioned in accordance with appropriate corrective and preventive systems in a timely and agreed manner (refer to CS-ST-020). The Contractor must provide the Principal with the necessary cooperation and assistance in the management of the collaborative audit program, closeout of audit actions and the reporting of progress on audit action closeout. The Contractor must attend the Principal's Compliance Working Group meetings as detailed in TCA Compliance Management Standard (CS-ST-020). Those meetings are to be held whenever requested by the Principal, but are typically held on a monthly basis.

The Contractor must provide the Principal's Representative with a copy of the results of any self verification and any audit, when requested by the Principal's Representative.

5 WORKING IN AND ADJACENT TO THE RAIL CORRIDOR AND RAIL ENVIRONMENT

5.1 Operating Railway System

The Contractor acknowledges and agrees that:

(a) it is aware that RailCorp, MainTrain and the Auburn Maintenance Centre may continue to use areas adjacent to the Site as part of normal operations of the railway system on a commercial basis during the undertaking of the Contractor's Activities;

(b) if the Contractor suffers interference with or disruption or delay to the Contractor's Activities due to any act or omission of the Principal, the Principal's Representative or any contractor (including any Other Contractor), employee or agent of any of them, arising out of or in connection with the continuing railway system operations, the Principal will not be liable upon any Claim by the Contractor, other than as otherwise provided in the General Conditions;

(c) the continuance of normal operations of the railway system, including within the Rail Corridor, the Site, adjoining areas and railway stations, on a commercial basis by RailCorp, MainTrain and the AMC during the performance of the Contractor's Activities must be maintained to the satisfaction of RailCorp as notified by the Principal's Representative. The Contractor must ensure that the railway system operations and infrastructure are not impeded or interfered with by reason of the performance of the Contractor's Activities, except where this is approved in writing beforehand by the Principal's Representative;

(d) despite any other provision in the Contract, it must ensure that the railway system operations, including the Rail Corridor and all facilities whatsoever on or adjacent to or affecting the Site, or affected by the Contractor's Activities, are not interfered with or interrupted by reason of the performance of the Contractor's Activities;

(e) it must maintain and coordinate sufficient access to the railway system, for users and operators, so as not to hinder main traffic routes, including access to Rail Corridor, and
the flow of traffic, including on or accessing the Site and the adjoining areas, except where this is specifically approved beforehand by the Principal’s Representative;

(f) it must, in performing the Contractor’s Activities, do everything that could be reasonably expected of the Contractor to avoid RailCorp breaching any obligation it may have arising out of or in connection with the continuing operation of the railway system on a commercial basis;

(g) it must ensure:

(a) access and egress for RailCorp and RailCorp’s contractors to access the Site to undertake regular inspections and to complete maintenance and repairs of RailCorp’s infrastructure where required;

(b) access and egress to those parts of the Site required by Other Contractor(s) is made available and coordinated so as to minimise any interference with or disruption to the Works;

(c) emergency egress routes (including routes to the Rail Corridor and its support system) are maintained at all times and that emergency systems (including the RailCorp Emergency Warning Intercommunication System (EWIS) and fire alarm panels) remain operational throughout the duration of the Contract;

(h) it must provide a safe place for persons carrying out Rail Track inspections and/or maintenance work, for example, refuges in any hoarding/fencing constructed adjacent to the Rail Track;

(i) it must comply with any RailCorp standards applicable to the Works including for work that is adjacent to an operating rail line and to live overhead wires. The Contractor is to comply with the RailCorp publication “A guide to working in and around the rail corridor”;

(j) it must ensure that whilst undertaking the Contractor’s Activities, no employees or plant (including, for example, by the slewing of cranes) of the Contractor, its subcontractors and consultants enter an operating Rail Corridor except as permitted in RailCorp RailSafe Network Rules; and

(k) it must at all times, and to the satisfaction of the Principal’s Representative, carry out the Contractor’s Activities in a manner that will ensure the safety of all property and persons, including the general public, travelling public, station lessees, railway traffic, railway system personnel, road traffic and any person associated, or engaged in connection with the Contractor’s Activities.

5.2 Configuration Management

Configuration Management is defined as (AS ISO 10007-2003) co-ordinated activities to direct and control configuration. Key elements of the process are

- documenting the approved design of plant and equipment (plant configuration)
- managing and controlling changes to this configuration, including documentation of each change
- verifying that the physical installation remains consistent with design documentation.

Any changes to be made to either the temporary or permanent rail infrastructure must be reviewed and approved by RailCorp's Configuration Board prior to their implementation. The main aim of this process is to ensure that all relevant parties are aware of the change, and to ensure that the change meets the stakeholder's requirements, and adequately addresses risks, safety, technical and operational issues.

As part of the Approved for Construction (AFC) review the Contractor's design submissions, the Principal will issue a Configuration Change Request (CCR) to RailCorp. RailCorp's Configuration Control Board will review CCRs and determine whether due process has been followed. RailCorp's Configuration Control Board will also determine whether all relevant stakeholders have been consulted, impacts of change have been adequately assessed and stakeholder issues have been addressed and closed. Acceptance of proposed changes by RailCorp's Configuration Control Board will be advised by issuing a Configuration Change Notice (CCN).

On receipt of the CCN for a package or element of work, the Contractor may commence construction of that element of work. The Contractor may only commence a construction activity once all conditions precedent to the commencement of construction activities have been met and AFC Design Documentation exists for the relevant package or element of work.

5.3 Project Safety Agreement and Work Activity Advice

The Contractor must submit RailCorp Project Safety Agreement (PSA) (SMS-06-FM-1362) to the Principal's Representative at least 6 weeks prior to the planned works which also includes any works in a Track Possession. The requirements of RailCorp Managing Project Interfaces (IMD-PR-032) are also applicable. The Principal's Representative will submit the PSA to RailCorp to define the resulting interfaces, requirements and conditions for work proceeding on or near RailCorp infrastructure.

Work Activity Advice (WAA) must be produced by the Contractor. Each WAA covers a particular part of the Works and includes the SWMS applicable to that part of the Works. Refer to TSR S1 for further requirements relating to the WAA process, submission and approval.

5.4 Arrangements for Track Possessions

Schedule 14 of the General Conditions lists and describes the track possessions available to the Contractor.

Where power isolation is required, the Contractor must specify what power is required to be shut down and the time and duration required for the power isolation. This advice must be submitted to the Principal's Representative at least 16 weeks prior to each Track Possession.

For each Track Possession to be utilised by the Contractor, the Contractor must attend and incorporate the requirements from:

(a) RailCorp "Tier 6 Possession Co-ordination Meeting", which is held approximately 12 weeks prior to the Track Possession. This meeting will decide the co-ordination of all
activities in the Track Possession, working hours, movements of equipment and work trains in the Track Possession area;

(b) the "Possession Co-ordination Meeting" with RailCorp held approximately 2 weeks prior to the Track Possession to discuss train movements and safe working; and

(c) the "Pre-Possession Meeting" with RailCorp, usually held prior to the Track Possession to confirm the detailed arrangements for the Track Possession and co-ordinate the activities of each party working in the Track Possession.

If a Track Possession involves an asset or partial asset being handed over to the asset owner (even if only for maintenance prior to it being commissioned), then the following documents are required to be submitted to the Principal's Representative, at least six (6) weeks prior to the Track Possession:

(a) SWMS;

(b) residual risk assessments;

(c) draft Asset Register in accordance with TSR A1;

(d) draft electrical operating diagrams;

(e) Technical Maintenance Plans in accordance with TSR A1 (only required for assets which are new to RailCorp);

(f) Design Documents; and

(g) any other documents required as directed by the Principal. These documents must be approved by the Principal's Representative prior to commencing the Track Possession.

5.5 Additional Possessions

It is unlikely that weekend Track Possessions or RailCorp Critical Resources, in addition to those specified or Track Possessions (with or without power) in overnight periods when trains are not running, will be available for the Contractor's Activities. If the Contractor requires additional Track Possessions or Power Outage or RailCorp Critical Resources, they are to be arranged at the Contractor's own cost. This includes reimbursing the Principal for any costs that it has incurred in respect of granting the additional Track Possessions and procuring the RailCorp Critical Resources.

The Contractor must provide a written request with a notice period for Track Possession, week night additional Track Possession and power isolation of overhead and transmission lines as per Schedule 14(d) of the General Conditions.

Upon a written request by the Contractor, the Principal's Representative will seek to facilitate obtaining additional Track Possessions and RailCorp Critical Resources for the Contractor by arranging a meeting between the Contractor and RailCorp. At this meeting or subsequent meetings, possible dates for Track Possessions and power isolations and additional RailCorp Critical Resources may be identified.

The Principal does not guarantee the granting of, and is not obliged to arrange additional Track Possessions or RailCorp Critical Resources on any particular date, or at all.
5.6 Worksite Protection Personnel

The Principal will provide Worksite Protection Personnel including any necessary rail safety devices, signage, line marking, hand signallers, lookout, flagmen and barriers required for carrying out the Contractor’s Activities within the Rail Corridor in accordance with RailCorp RailSafe Network Rules and RailCorp RailSafe Network Procedures and TCA Rail Safeworking (SA-ST-014) and TCA Rail Safeworking Arrangements (SA-PR-106).

The Contractor must provide 10 days notification in writing to the Principal requesting the number of Protection Officer’s required.

The Contractor must provide suitable accommodation within the Contractor’s own Site offices for the Worksite Protection Personnel (Protection Officer) including a desk, a chair, phone and access to a facsimile machine and photocopier. The Contractor’s own supervisory staff are required to cooperate with the Protection Officer provided by the Principal, so as to ensure a safe working environment whenever working in the Rail Corridor.

The Protection Officer’s primary duty is to keep the worksite and workers safe when in the Rail Corridor. In order for the Protection Officer to fulfil this duty a safety assessment as described in the RailCorp RailSafe Network Rules and RailCorp RailSafe Network Procedures and TCA Rail Safeworking (SA-ST-014) and TCA Rail Safeworking Arrangements (SA-PR-106), must be undertaken. The Protection Officer is required to:

(a) assess the safety of the Contractor’s Activities and the potential of the Contractor’s Activities to intrude on the Danger Zone;

(b) ensure a safe place exists or can be created in the Danger Zone;

(c) prepare and communicate work-site protection plans;

(d) ensure all work is carried out safely and in accordance with the RailCorp RailSafe Network Rules and RailCorp RailSafe Network Procedures; TCA Rail Safeworking (SA-ST-014) and TCA Rail Safeworking Arrangements (SA-PR-106); and

(e) keep records about work-site protection arrangements.

(f) Comply with TCA standard SA-ST-004/4.0, minimum level for PO is level 2

When carrying out Contractor’s Activities in the Rail Corridor the Contractor must ensure that its employees and those of Subcontractors comply with any direction given by a Protection Officer.

5.7 Arrangements during Track Possessions

The Contractor, must immediately comply with any instructions by the Principal’s Representative to vary the program described in TSR Prelude Clause 5.8(b), or curtail the scope of Works if the Principal’s Representative considers that continuing with intended works will result in a delay to returning the Track Possession and/or delay to trains.

The Contractor will not have exclusive access to any Rail Tracks or areas within the vicinity of Rail Tracks during a Track Possession, and must coordinate its activities with those sharing the Track Possession, including parties involved in the operation or maintenance of the rail system, and Other Contractors in accordance with the requirements of the RailCorp RailSafe Network Rules.
and RailCorp RailSafe Network Procedures and TCA Rail Safeworking (SA-ST-014) and TCA Rail Safeworking Arrangements (SA-PR-106).

This includes where required, the Contractor allowing for RailCorp's contractors and Other Contractors to pass through its worksite(s) during the Track Possessions. The extent of RailCorp's contractors' and Other Contractors' activities on or within the vicinity of the Rail Track during Track Possessions will be determined at the Tier 6 Possession Co-ordination Meeting referred to in TSR Prelude Clause 5.34(a).

The Contractor must ensure that all persons invited or brought onto the Site by the Contractor or Other Contractors, and those who enter an area within the Rail Corridor undertake all necessary Site inductions and obey all directions given by the Worksite Protection Personnel.

The Principal may alter, cancel or curtail any Track Possession at any time.

Prior to the end of the Track Possession, an appropriately qualified inspector holding the appropriate competencies must approve Completion of the Works and sign off on RailCorp Certificate of Practical Completion/Certification (W42F01).

Any defects listed on W42F01 must be rectified by the Contractor to the satisfaction of the Principal within 5 Business Days of the issue of the relevant W42F01 or as agreed with the Principal's Representative.

5.8 Planning and Managing Track Possessions

To ensure that Track Possessions are managed effectively and safely, the Contractor must:

(a) prepare, maintain and update policies and procedures for planning and managing Track Possession work in accordance with the RailCorp Possession Manual;

(b) prepare and submit to the Principal's Representative for review under clause 9.14 of the General Conditions, six (6) weeks prior to each Track Possession:

   (a) a consolidated plan comprising all information required in advance of the Track Possession including that detailed in the RailCorp Possession Manual;

   (b) a program including:

      A. the elements of the Contractor's Activities to be completed prior to the Track Possession;

      B. an hour by hour breakdown of the elements of the Contractor's Activities to be carried out during the Track Possession;

      C. milestones and the time and date by which they must be achieved so as to ensure that the rail infrastructure can be reinstated within the allocated time and which, if not achieved by the nominated time, would result in the Contractor bringing work to an end and commencing reinstatement of the rail infrastructure and other works to avoid a delay in returning the Track Possession and/or delays to trains;

      D. adequate allowance of time at the beginning and end of the Track Possession to safely remove and reinstate the affected rail infrastructure to operational condition and for providing and removing safeworking protection and RailCorp inspections and certifications;
E. the specific risks to be managed during the Track Possession and the procedures to be followed in managing these risks;

F. any potential interface issue in any way connected with work carried out by an Other Contractor or involving RailCorp operational and maintenance activities; and

G. progress/program review meetings scheduled during the Track Possession as requested by the Principal’s Representative and/or RailCorp.

5.9 Certification of Work in Track Possessions

Before handover of an area at the end of any Track Possession the Contractor must provide to the Principal’s Representative and, if required by the Principal’s Representative, to RailCorp the following:

(a) for any form of civil or structural works that will support operating Rail Track, written certification by the Contractor's designers (including design Subcontractors) that the relevant works are safely able to support the operating Rail infrastructure;

(b) for any adjustments to or interruptions of service to signalling, track, overhead wiring or high voltage infrastructure, written certification from the Contractor's designers (including design Subcontractors) that such infrastructure is suitable for operations and complies with the approved design;

(c) for any adjustments to or interruptions of service to signalling, overhead wiring or high voltage infrastructure, written certification from a RailCorp representative that such infrastructure is suitable for operations; and

(d) all infrastructure certification required by RailCorp, including the RailCorp Infrastructure Handover and Completion Certification (W42F05) and RailCorp Infrastructure Booking Authority (NRF 003).
Additional Project Requirements

A1 Management Review

<table>
<thead>
<tr>
<th>Applies?</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Yes]</td>
<td>Mentioned in TSR Prelude Clause 2.4.2</td>
</tr>
</tbody>
</table>

Management review of the CMP (including all sub Management Plans) every 6 months. (Note: “Yes” applies if “Applies?” is left blank)

A2 Principal’s electronic document management tool

<table>
<thead>
<tr>
<th>Applies?</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>[No]</td>
<td>Mentioned in TSR Prelude Clause 2.4.3.2</td>
</tr>
</tbody>
</table>

Principal’s electronic document management tool to be used for this Contract. (Note: “Yes” applies if “Applies?” is left blank)

A3 Interface Management

The D & C Contractor must manage and assist the Principal to manage interfaces with external stakeholders as necessary to achieve satisfactory resolutions in a timely manner providing complete provision of information where required. Where the issue is related to a design interface, the D &C contractor shall be responsible for identifying all relevant stakeholders. Contact with external stakeholders must be through the Principal unless otherwise directed by the Principal’s Representative. Stakeholders may include:

1. RailCorp (including Major External Works, West District, Electrical Working Group, Operations, Station Working Group and Safety Group, Configuration Board, etc);
2. Auburn Maintenance Centre (AMC);
3. Maintrain;
4. RailCorp - LGCUP;
5. DECCW;
6. Department of Planning;
7. local councils;
8. service utility providers;
9. emergency services;
10. Community Groups (resident, commuters, schools, civic trust, action groups and environmental groups);
11. service utility providers; and
12. adjacent landowners and their agents.
ANNEXURE B - List of Reference Documents
List of Reference Documents

AS1742.3:2009 Part 3 - Spoil Control Devices for Works on Roads
AS4292 Railway Safety Management Standard
NSW Government Aboriginal Participation in Construction Guidelines
NSW Government Industrial Relations Management Guidelines
NSW Government Training Management Guidelines
Protection of the Environment Administration Act 1991 (NSW)
Protection of the Environment Operations Act 1997 (NSW)
Rail Safety (Drug and Alcohol Testing) Regulation 2008 (NSW)
Rail Safety (General) Regulation 2008 (NSW)
Rail Safety Act 2008 (NSW)
RailCorp A guide to working in and around the rail corridor
www.railcorp.info/building_near_the_railway/guidelines
RailCorp Certificate of Practical Completion/Certification (W42F01)
RailCorp Infrastructure Booking Authority (NRF 003)
RailCorp Infrastructure Handover and Completion Certification (W42F05)
RailCorp Managing Project Interfaces (IMD-PR-032)
RailCorp Project Safety Agreement (PSA) (SMS-06-FM-1362)
RailCorp RailSafe Network Procedures
RailCorp RailSafe Network Rules
Roads Act 1993 (NSW)
TCA Compliance Management Standard (CS-ST-020), Clauses 11, 12 and 13
TCA Monthly Safety Statistics and Incident Summary (SA-FO-096)
TCA Rail Safeworking (SA-ST-014)
TCA Rail Safeworking Arrangements (SA-PR-106)
TCA Risk Management Standard (CS-ST-018)
ANNEXURE C - Requirements for Discipline-Specific Management Plans
Requirements for Discipline-Specific Management Plans

In addition to the general requirements for discipline-specific management plans described in TSR Prelude Clause 2.3, the Contractor must for the following plans:

C1 Aboriginal Participation Plan
(a) Comply with the NSW Government Aboriginal Participation in Construction Guidelines January (2007), Nominated Category 3.

C2 Asset Management Information Delivery Plan
(a) Prepare, implement and maintain an AMI Delivery Plan in accordance with TSR A1.

C3 Commissioning Management Plan
(a) Prepare, implement and maintain a Commissioning Management Plan in accordance with TSR 01.

C4 Community Liaison Plan
(a) Prepare, implement and maintain a Community Liaison Plan in accordance with TSR C1.

C5 Configuration Management Plan
(a) Prepare, implement and maintain a Configuration Management Plan which sets out procedures necessary to fulfil all requirements of RailCorp’s configuration management process further to TSR Prelude Clause 5.2.

C6 Construction Management Plan
(a) Prepare, implement and maintain a Construction Management Plan in accordance with the TSR Prelude.
(b) The Construction Management Plan must address the Contractor’s management of time related facets of the Contractors Activities, including the production and update of the Contractor Program.
(c) The Contractor must actively manage progress of the Contractor’s Activities, anticipating and responding to events in order to stay on schedule, and achieve the Contract requirements and desired intent.
(d) The Contractor must update and resubmit the Contractor Program in accordance with the General Conditions. Refer to specific requirements detailed under the Contractor Program.
(e) The Construction Management Plan is to address the compatibility of the Temporary Works with each other and with the Works.
(f) The Construction Management Plan is to demonstrate how the Contractor will evaluate and accept plant, equipment and materials via inspection, testing, and validation.
The Construction Management Plan is to address the management of interfaces with all Authorities and Other Contractors including:

(a) communication channels, processes for ensuring efficient information flow, communication protocols and meeting schedules;

(b) sequencing and timing of activities with the interfaces, including special programs;

(c) programming of works to be conducted during Track Possessions in conjunction with RailCorp so as to ensure that RailCorp's preparatory and recommissioning works, together with the relevant parts of the Contractor's Activities, can be completed in the available possession times;

(d) procedures for handing over of structural works at the end of a Track Possession;

(e) roles and responsibilities of personnel and organisations for key aspects of the interface;

(f) technical and program requirements;

(g) work implications and applicable construction methodologies; and

(h) review and review processes and timetables;

(h) The Construction Management Plan is to outline an incident reporting procedure with reference to the General Conditions, TSR S1, TSR E1 and TSR C1.

(i) The Construction Management Plan is to address the requirements of the Site Management Plan if the Contractor so wishes.

C7 Contractor Program (to be addressed in the Construction Management Plan)

(a) The Contractor must plan, establish, develop, implement and maintain the program using professional, qualified and suitably experienced practitioners. The Contractor must submit the Contractor Program (and any other programs) to the Principal's Representative for approval in accordance with the General Conditions (Clause 9.14).

(b) Within 15 working days of the award of the Contract and at other times required by the Contract, the Contractor is required under Clause 9.14 of the General Conditions of Contract to submit the Contractor's Program in Primavera P6. The Program must include a summary program no longer than one (1) A3 sheet.

(c) The Contractor must upload and develop the Contractor Program in Primavera P6 on TCA's network. The Contractor will be given access to the TCA planning environment via Citrix at no extra cost to the Contractor.

(d) The Contractor must also provide the Contractor Program in hard copy form to the Principal's Representative. The hardcopy format of the Contractor Program and all other programs and schedules must be provided to the Principal's Representative as A3 sized paper prints in colour.

(e) The Contractor Program and other programs must comply with the following requirements:
(a) Be in a time scaled network form corresponding with the time to the Date for Practical Completion, which clearly indicates which events control Practical Completion;

(b) Accurately represent the Contractor's intended method for carrying out the work under the Contract and intended approach to performing the work in the time to meet the Date for Practical Completion;

(c) group the Contractor's Activities and milestones generally in accordance with the Work breakdown Structure (WBS) provided by the Principal's Representative within the General Conditions Schedule 2 (Payment Schedule). The Contractor must develop the WBS prepared by the Principal's Representative to the necessary lower levels, to include all discrete Contractor's Activities.

(d) Indicate the lead times for supply of information, selection of subcontractors and suppliers, approvals, supply of equipment by the Principal, its agents or persons for whom the Contractor is not responsible. Each period must be represented separately from the site activity for the relevant items; and

(e) Be capable of showing, if required, all relevant information in respect of each activity, including (without limitation):

(i) The identification, description, duration and any early or late start times;

(ii) Calendar, time or resource analysis dates;

(iii) Floats, sorts and/or cost codes;

(iv) Whether the activity is likely or not likely to affect the Contractor's ability to reach Practical Completion by the Date for Practical Completion;

(v) Program variance from baseline; and

(vi) Testing dates and certification activities required by authorities to coordinate Practical Completion.

(f) provide the start and finish dates for all elements of the Contractor's Activities (including design; procurement and construction activities), milestones, track possessions, external dependencies, other significant events and contractual completion dates. Generally, scheduled activities are to be no longer than three (3) weeks duration;

(g) The activities are to be coded, where applicable, to facilitate easy retrieval of aspects of the project such as element, location, equipment, trade etc;

(h) Be detailed enough so that the duration of each activity has one time estimate expressed in working days or such other time interval as required by the Principal's Representative. If the duration of any activity exceeds 10 working days that activity, where applicable, must be broken down into sub-activities, each of which is to be separately identified in the construction program;

(i) show activities for site mobilisation and establishment and demobilisation;
(j) identify the access requirements, including Track Possessions and any service outages;

(k) reflect scheduled and actual physical progress of the Works, and be consistent with all constraints on access, performance and co-ordination;

(l) show the logical relationship between activities and events shown in the Contractor Program, identify time leads and lags, resource and other constraints and the sequence of activities which constitute the critical path or critical paths;

(m) show total float which has been calculated for activities and milestones;

(n) show the dates when the Contractor will require information, documents, materials or instructions from the Principal’s Representative and the dates when the Contractor will provide information or documents to the Principal’s Representative. These dates are to be consistent with dates which the Principal could reasonably have anticipated at the date of the Contract;

(o) show review periods in accordance with clause 9.14 of the General Conditions where the Principal’s Representative may review, comment and where required approve information and documents submitted by the Contractor;

(p) show the procurement and appointment of Subcontractors. Subcontractor activities must be integrated into the Contractor Program;

(q) show major procurement activities, off-site activity and delivery dates of key Construction Plant and materials to Site;

(r) show commencement of substantial construction activities;

(s) show commissioning and hand-over activities, including the time allowed for testing and commissioning of major items. These activities should reflect the ten stages of commissioning as outlined in TSR 01;

(t) show significant activity dependencies;

(u) clearly identify the critical path activities and milestones;

(v) show allowance for weather and other event contingencies;

(w) show a contract calendar identifying the working and non-working days for the execution of the Works; and

(x) be in such form and include such detail as the Principal’s Representative reasonably requires, and be accurate, comprehensive and complete in all respects.

(y) Program to have units of measure, quantity and production rates for all works such as bulk earthworks, capping, structures including retaining structures, drainage, track etc.

(z) The Contractor must ensure that within the Program, and its subsequent updates;

(a) The total float is not negative or excessive
(b) The use of constraint is kept to a minimum

(c) The critical path is clearly identified

(d) The lags are not excessive

(e) That successors and predecessor to all activities, excluding the project start and practical completion, are provided

(f) Project calendars are up to date and reflect changes to the available working periods

(g) The slippage from the baseline programme is shown on periodic updates

(f) The Contractor must actively manage progress, anticipating and responding to events to stay on program and achieve the Contract requirements.

C8 Contractor’s Commissioning Activity Plan

(a) Prepare, implement and maintain a Contractor’s Commissioning Activity Plan in accordance with TSR 01.

C9 Design Management Plan

(a) Prepare, implement and maintain a Design Management Plan in accordance with TSR T1 and TSR Q1.

C10 Environmental Management Plan

(a) Prepare, implement and maintain a Contractor’s Environmental Management Plan in accordance with TSR E1.

C11 Industrial Relations Management Plan

(a) Prepare, implement and maintain an Industrial Relations Management Plan in accordance with the NSW Government Industrial Relations Management Guidelines and the requirements of the General Conditions.

C12 Interface Management Plan

(a) Prepare, implement and maintain an Interface Management Plan in accordance with TSR T1.

(b) Independent audit will be conducted on the Contractor to comply with the Traffic Management Plan.

(c) Detail the process of which the interfaces will be managed between RailCorp - LGCUP, MainTrain and the AMC.

C13 Project Safety Management Plan
(a) Prepare, implement and maintain a Contractor’s Project Safety Management Plan in accordance with TSR S1.

Note that a separate Rail Safety Management Plan is not specifically required. The Contractor may show compliance with the requirements of the Safety Interface Agreement, the Rail Safety Act 2008 (NSW), Rail Safety (General) Regulation 2008 (NSW), Rail Safety (Drug and Alcohol Testing) Regulation 2008 (NSW), AS4292 Railway Safety Management Standard, and TSR S1 within the Project Safety Management Plan.

C14 Property Damage Management Plan (to be addressed in the Construction Management Plan)

(a) Prepare, implement and maintain a Property Damage Management Plan. This will require the Contractor to undertake a risk assessment prior to any Site works in order to identify property and items that could be affected or damaged by the Contractor’s Activities. This plan must cover all property (including assets above and below ground) on and adjacent to the site and in the sphere of influence of the Works including premises, access roads and their surroundings, buildings, structures, utilities, rail assets and systems, roadways, footpaths, street furniture and gutters.

(b) Prepare, implement and maintain procedures on how the Contractor will estimate, assess, monitor, mitigate and rectify property damage of any item caused by the Contractor’s Activities.

(c) Advise the Principal’s Representative which properties and assets will be subject to a Condition Survey, in accordance with the General Conditions. The Principal’s Representative may direct the Contractor to include additional properties and assets if they have the potential to be damaged as part of the Contractor’s Activities and a Principal nominated person may attend the undertaking of Condition Surveys.

(d) Establish clear noise, vibration and settlement criteria that will prevent the damage of existing property and items by the Contractor’s Activities. Transfer these criteria into method statements and inspection and test plans to ensure that site activities are within the required limits.

(e) Provide a clear statement that all affected Site works causing any damage cease until the construction methodology is reviewed and damage rectification agreed.

(f) Within one month of Completion, the Contractor must re-survey, review and record the post-construction condition of each property previously subject to Condition Surveys. If any damage is found to be caused by the Contractor’s Activities, the Contractor must provide the Principal’s Representative with a proposal of the remedial action required.

C15 Quality Management Plan

(a) Prepare, implement and maintain a Quality Management Plan in accordance with TSR Q1.

C16 Risk Management Plan
(a) Prepare, implement and maintain a Risk Management Plan that meets the requirements of AS/NZS ISO 31000:2009 - Risk Management and addresses the management of risks applicable to the undertaking of the Contractor's Activities.

(b) The Risk Management Plan must align with the requirements and guidance provided by TCA Risk Management Standard (CS-ST-018). The Contractor must adopt the Principal's risk criteria as outlined in TCA Risk Management Standard (CS-ST-018) unless the Principal's Representative agrees to alternative risk criteria that are appropriate for the Contractor's Activities.

(c) Identify, document and rank all risks related to the delivery of the Contractor's Activities in a risk register. As a minimum, the risk register must cover the following risk areas:

(a) cost control;
(b) construction program and key timing constraints (such as booked Track Possessions and utility outages);
(c) construction access;
(d) buildability;
(e) interfaces;
(f) design, technical, quality, environmental and safety issues in delivery;
(g) asset operability, durability, reliability, availability and maintenance;
(h) safety in design, construction, operation and maintenance;
(i) integration and operations of existing assets and services;
(j) adjoining properties;
(k) approvals;
(l) community issues and interest (including media, commuters, residents and councils); and
(m) co-operation and interface with works undertaken outside this Contract by other parties or Authorities.

(d) Include in the risk register any risks that are identified by the Principal and address those risks under the Contractor's risk management process.

(e) Identify key project timeframes and milestones where the Contractor will undertake risk workshops to identify and/or review risks and update the risk register.

(f) Allocate responsibilities and accountabilities for the control and mitigation of each risk.

(g) Develop appropriate control measures and SWMS to eliminate or mitigate identified risks. For OH&S and rail safety risks, the Contractor must document the steps taken to eliminate or to reduce risks to ALARP levels. Where risk has been reduced to a level that is ALARP, the Contractor must provide documented reasons to the Principal's Representative's satisfaction as to why the risk has not been eliminated.

(h) Include methods of monitoring risk control measures so as to ensure that they are effective.
(i) Produce a procedure for the updating of the Safety Hazard Log.

(j) Detail how the risks identified under the Risk Management Plan and its processes are integrated and managed with the other specific management plans.

(k) Details of the implementation, operation and effectiveness of the Risk Management Plan must be submitted to the Principal's Representative for review each month. This submission may be in the form of a schedule or register.

C17 Safety Assurance Plan

(a) Prepare, implement and maintain a Safety Assurance Plan in accordance with TSR T1.

C18 Site Management Plan (may be included within Construction Management Plan)

(a) Prepare, implement and maintain a Site Management Plan. The Site Management Plan must address how the Contractor will manage the Site including:

   (a) meeting the requirements of Schedule 22;
   (b) control;
   (c) establishment;
   (d) security;
   (e) use; and
   (f) rehabilitation.

C19 Traffic Management Plan

(a) Prepare, implement and maintain a Traffic Management Plan that addresses the Contractor's obligations and responsibilities relating to the management of traffic.

(b) Address in the Traffic Management Plan:

   (a) the requirements for the Site traffic management plan in TSR S1;
   (b) the requirements of Authority Approvals, including RTA, NSW Police, State Emergency and local councils;
   (c) RTA Traffic Control at Worksites Manual;
   (d) AS 1742.3-2009 Part 3 - Spoil Control Devices for Works on Roads;
   (e) Roads Act 1993 (NSW) and all other legislative requirements;
   (f) certificates, licences, consents, permits and approvals, including in respect of working hours.

(c) The Traffic Management Plan must recognise, be consistent with and comply with the traffic configuration of the local road network as it exists at various stages during construction of the Works.

(d) Include in the Traffic Management Plan as a minimum:

   (a) the requirements for the Site traffic management plan as described in TSR S1;
(b) detailed traffic management procedures for the Site, including to manage the impact of construction traffic within the Site and outside the Site on the adjacent public road system;
(c) modifications to existing roads/paths and traffic patterns, and changes to public transport, routes and services required;
(d) procedures to ensure the appropriate notification of relevant emergency services prior to implementing road and pedestrian traffic modifications such as street closures or changes to station access;
(e) safety of commuters, pedestrians, cyclists and site personnel;
(f) changes to traffic usage patterns (average, low and peak flows as well as special events or traffic embargoes);
(g) management of maintenance requirements, emergencies and incidents;
(h) requirements for occupation of, or access through, private properties;
(i) coordination of traffic management procedures and plans with the Principal's Representative, Other Contractors and other parties;
(j) impacts on residents and/or commercial enterprises on traffic routes (including traffic movement and parking);
(k) procedures for obtaining relevant certificates, licences, consents, permits and approvals;
(l) expected number of truck movements each hour, based on the predicted maximum monthly spoil generation amounts and hours of operation of worksites;
(m) roles and responsibilities of the Contractor's personnel and Subcontractors;
(n) review and reporting procedures; and
(o) procedures for regular updating of the Traffic Management Plan on an as needs basis or at the direction of the Principal's Representative.

C20 Training Management Plan

(a) Comply with the NSW Government Training Management Guidelines February (2009), Nominated Category 1, and requirements stipulated in the General Conditions.

C21 Defect Management Plan

(a) Prepare, implement and maintain a defect management plan that addresses the Contractor's obligations and responsibilities relating to the management of defects and must comply with Principal's procedure;
(b) Address all contractual requirements for managing defects;
(c) Clearly specify strategy for managing defects raised internally by the Contractor, raised by the Principal and raised by RailCorp; and

(d) Document the Defect Management Procedure, which must include the utilisation of Scenario 6 (tool provided by the Principal).

C22 Security Plan

(a) Prepare, implement and maintain a Security Plan which will be developed collaboratively with all the signatories of Safety Interface Agreement; and

(b) Must meet the requirements of TCA's Safety Management Systems.
TCA Standard Requirements
TSR Q1 – Quality Management

ASP-01-D&C Design and Construct Contract for
Auburn Stabling Project (Stage 1)
South West Rail Link

Status: Tender Issue
Document Number: TSR Q1 - Quality Management.DOC
Version: 5.0
Date of issue: 2 December 2010
Security classification: General release

© TCA 2010
Table of Contents

1 General ............................................................................................................................ 1
  1.1 Scope............................................................................................................................ 1
  1.2 Terms and Definitions .............................................................................................. 1
  1.3 Addressing Comparability with ISO 9001:2008 .................................................... 1

2 Quality Management System ............................................................................................... 1
  2.1 Documentation Requirements................................................................................ 1
    2.1.1 Quality Manual ......................................................................................... 1
    2.1.2 System Procedures .................................................................................. 1
    2.1.3 Control of Documents .............................................................................. 2
    2.1.4 Control of Records .................................................................................... 2
    2.1.5 Submission of Documents to the Principal ............................................ 2

3 Management Responsibility ................................................................................................ 3
  3.1 General ......................................................................................................................... 3
  3.2 Responsibility, Authority and Communication ....................................................... 3
    3.2.1 Management Representative .................................................................. 3
    3.2.2 Internal Communication .......................................................................... 3
  3.3 Contractors Management Review of the QMP ....................................................... 3

4 Resource Management ........................................................................................................ 4
  4.1 Competence, Awareness and Training................................................................... 4

5 Auburn Stabling Project Realisation ..................................................................................... 4
  5.1 Planning of Project Realisation ............................................................................... 4
  5.2 Principal-Related Processes ................................................................................... 4
  5.3 Design and Development ........................................................................................ 4
  5.4 Purchasing .............................................................................................................. 6
    5.4.1 Purchasing Process .................................................................................. 6
    5.4.2 Purchasing Information ............................................................................. 7
    5.4.3 Verification of Purchased Product ......................................................... 7
  5.5 Production and Service Provisions ......................................................................... 8
    5.5.1 Control of Production and Service Provisions ........................................ 8
    5.5.2 Validation of Processes Where Outputs Cannot be Verified ................. 8
    5.5.3 Identification and Traceability ................................................................. 9
    5.5.4 Principal Property ..................................................................................... 9
    5.5.5 Preservation of Product ........................................................................... 9

6 Control of Monitoring and Measuring Devices .................................................................... 9

7 Measurement, Analysis and Improvement ......................................................................... 9
  7.1 General..................................................................................................................... 9
  7.2 Inspection and Test Planning ................................................................................... 10
Monitoring and Measurement .......................................................... 11
8.1 Principal's Satisfaction ................................................................. 11
8.2 Project Assurance Requirements Monitoring ................................. 11
8.3 Internal Audit ............................................................................... 11
8.4 Monitoring and Measurement of Process ........................................ 12
8.5 Monitoring and Measurement of Product ....................................... 12
   8.5.1 General .................................................................................. 12
   8.5.2 Hold Points and Witness Points .............................................. 12
   8.5.3 Close out of Work Lots and Release of Products ..................... 12
8.6 Control of Non-conforming Product ............................................. 12
8.7 Analysis of Data .......................................................................... 13
8.8 Improvement .............................................................................. 13
   8.8.1 Continual Improvement ......................................................... 13
   8.8.2 Corrective Action .................................................................. 13
   8.8.3 Preventative Action ............................................................... 14

ANNEXURE A - Additional Project Requirements

ANNEXURE B - List of Reference Documents

ANNEXURE C - Quality Records
1 GENERAL

1.1 Scope
The Contractor must have in place and maintain a quality management system compliant with ISO 9001:2008 and the NSW Government Quality Management System Guidelines.

The Contractor must fully address the requirements of both ISO 9001:2008 and TSR Q1.

The quality assurance provisions contained within TSR Q1 and ISO 9001:2008 are in addition to any technical requirements prescribed in the Works Brief.

The Contractor must develop and implement a project specific Quality Management Plan (QMP).

1.2 Terms and Definitions
Unless the context otherwise provides, wherever used in this TSR Q1, words and phrases defined in the TSR Prelude, the General Conditions, ISO9000 and ISO9001:2008 have the meaning given to them in those documents.

1.3 Addressing Comparability with ISO 9001:2008
Where the Contractor's quality management system including the project QMP is not structurally comparable with the structure of ISO 9001:2008, the Contractor must include a matrix, annexure or equivalent demonstrating how the Contractor's QMP addresses the requirements of TSR Q1 and ISO 9001:2008.

2 QUALITY MANAGEMENT SYSTEM

2.1 Documentation Requirements

2.1.1 Quality Manual

2.1.2 System Procedures
The Contractor must document, maintain and implement procedures in accordance with ISO 9001 and TSR Q1 to:

(a) control corporate and project documents;
(b) manage quality records;
(c) plan, resource and manage design and development, where design of the Works is part of the Contractor's Activities;
(d) plan product realisation and preparation of the QMP;
(e) ensure that personnel working on or associated with the Works are suitably trained/qualified and authorised to carry out tasks;
(f) control purchasing and subcontracted work to ensure conformity with the requirements of the Contract including the Works Brief;

(g) plan and implement process controls and monitor their effectiveness;

(h) identify and trace products and work;

(i) control inspection and test activities;

(j) plan and implement internal auditing;

(k) identify, record, notify and control nonconforming products or services;

(l) analyse nonconformities and implement corrective action; and

(m) implement preventative action.

The system procedures referenced by the QMP must be readily accessible by all project personnel at their work locations.

2.1.3 Control of Documents

The Contractor must stipulate the processes and approval regime for the drafting, modifying and updating of the QMP.

In addition to the requirements of ISO 9001 Clause 4.2, the Contractor must provide access (to the Contractor's personnel and the Principal's Representative) at all times at the Site to copies of ISO 9001, the Contract and the design documentation required by the Contract or necessary to be produced by the Contractor to design and construct the Works and Temporary Works.

2.1.4 Control of Records

The Contractor must:

(a) retain all product and service conformance records including all those listed in TSR Q1 Annexure C. These are to also include the Subcontractors’ service conformance records and certificates;

(b) retain all quality records for a period of no less than 5 years from the Date of Completion; and

(c) upon request by the Principal's Representative, provide the Principal's Representative with copies of any quality records. Those quality records which are not required or not available on Site, must be forwarded to the Principal's Representative within 3 Business Days of the request.

2.1.5 Submission of Documents to the Principal

Documents are to be submitted (and reviewed by the Principal where required) in accordance with clause 9.14 of the General Conditions and the TCA Standard Requirements.

Where the Contractor's quality management system is accessible electronically, and the Principal's Representative agrees, the Contractor may provide the Principal with access to Project relevant parts of its electronic system in lieu of hard copies. At any time during the Contract, the Principal's Representative may request that the Contractor submit hard or electronic copies of any and all documents, relevant to the Project.
3 MANAGEMENT RESPONSIBILITY

3.1 General

The requirements of ISO 9001 Clauses 5.1, 5.2, 5.3 and 5.4 sufficiently address the Principal's quality requirements in relation to Management Commitment, Customer Focus, Quality Policy and Planning for Management Responsibility. The Contractor must demonstrate to the Principal how these requirements are addressed.

3.2 Responsibility, Authority and Communication

The QMP must:

(d) include a description of the management structure for control of the work down to foreman/supervisor level including any support for safety, environment and quality personnel;

(e) list the main responsibilities and authorities of persons identified in the management structure including responsibilities for:
   (i) receiving, in-process and final inspection and testing;
   (ii) identifying/recording quality problems;
   (iii) ensuring corrective action is implemented and effective; and
   (iv) controlling non-conforming products until they are rectified.

(f) nominate persons to have the responsibility and authority for planning and implementing training and induction for the quality management system for the Contractor’s Activities, including establishing competence needs.

3.2.1 Management Representative

The Contractor must nominate in the QMP a Management Representative who is the has the responsibility and authority to enact the requirements of ISO 9001 Clause 5.5.2.

The Management Representative must be contactable by telephone and email at all times during the undertaking of the Contractor’s Activities and must be available to attend meetings at the Principal’s office or at the Site within 48 hours of notice by the Principal’s Representative.

3.2.2 Internal Communication

The requirements of ISO 9001 Clauses 5.5.3 sufficiently address the Principal’s quality requirements in relation to Internal Communication. The Contractor must demonstrate to the Principal, in the QMP, how these requirements have been addressed.

3.3 Contractors Management Review of the QMP

The Contractor’s QMP must be reviewed in accordance with the requirements of ISO 9001 Clauses 5.6, 5.6.2 and 5.6.3 and if:

(a) the term of the Contractor’s Activities exceeds 6 months; or

(b) specified in TSR Prelude.
4 RESOURCE MANAGEMENT

The requirements of ISO 9001 Clauses 6.1, 6.3 and 6.4 sufficiently address the Principal's quality requirements in relation to the Provision of Resources, Infrastructure and Work Environment. The Contractor must demonstrate to the Principal in the QMP, how these requirements have been addressed.

4.1 Competence, Awareness and Training

The Contractor must include in the QMP a site-specific induction and training plan and induction and training procedures.

The Contractor must collect certificates, licenses and competencies (including design competence and design authority as required by TCA and Authorities) held by personnel. The Contractor must describe processes for identifying competencies required of personnel, which personnel will be trained, when they will be trained, and how they will be trained. Furthermore the Contractor must provide to the Principal's Representative a project specific training matrix.

The Contractor must ensure that all on and off Site personnel engaged in the Contractor's Activities (including Subcontractors) have undergone all necessary inductions that include the explanation of how the quality management system is to be implemented. The inductions must also include an explanation of the Contractor's work processes, safety and environmental requirements, community relations, emergency management and incident reporting. The induction must also address any rail safety and RailCorp requirements if applicable (refer to TSR Q1 Annexure A).

5 AUBURN STABLING PROJECT REALISATION

5.1 Planning of Project Realisation

The Contractor must document as part of its QMP a quality management system procedure which addresses the requirements of ISO 9001 Clause 7.1. The Contractor must describe the method for preparing the QMP and include guidelines about how to determine project specific requirements applicable to the Works.

5.2 Principal-Related Processes

The Contractor must document as part of its QMP a quality management system procedure which addresses the requirements of ISO 9001 Clause 7.2.

The Principal's Representative may at any time by written notice direct the Contractor to further develop, update or amend the QMP or any of its parts. Such direction must specify the reasons why such development, update or amendment is required. Whenever such a direction is issued, the Contractor must submit the revised QMP to the Principal in accordance with this TSR Q1, TSR Prelude and clause 9.14 of the General Conditions and TSR Q1 Clause 3.3.

5.3 Design and Development

The Contractor must document as part of its QMP a quality management system procedure which addresses the requirements of ISO 9001 Clause 7.3.
The QMP must include a Design Management Plan, if required by TSR Prelude, to address the requirements of ISO 9001 Clause 7.3, TSR Prelude and the Works Brief for all design activities, including subcontractors engaged for design work. Where a design Subcontractor does not have a quality management system which complies with the Contract requirements, the Design Management Plan must include the method of control and verification of the Subcontractors' activities.

The Contractor may only commence construction activity once all conditions precedent to the commencement of construction activities have been met including receipt of the Approved For Construction drawings and all requirements under TSR T1 have been addressed. Drawings such as workshop drawings, combined services layouts, structural electrical and mechanical drawings, and equipment installation drawings, which are typically produced during the construction phase, are to be submitted to the Principal's Representative.

At the detail design stages of a project, Assurance documentation is to be reviewed and accepted by the Principal. Key items to be considered in the design from an assurance aspect are:

- Compliance with the Principal's requirements;
- Compliance with Principal's standards;
- Construction Methodology;
- Inspection and Test requirements;
- Maintenance concept;
- Any special requirements for new technologies (including type approval);
- Safety Risks;
- Interfaces between the Contractors and Principles systems and stakeholders; and
- Asset information.

During design, all the Assurance requirements needed to support the project are to be addressed, including:

- Quality Assurance and documentation management;
- Design and review management;
- Engineering Authority/Competencies;
- Design reports, drawings and calculations;
- Specifications;
- Systems Assurance and RAMS assessment;
- BCA, DDA and F&LS assessments;
- Verification;
Inspection and Test;
Commissioning and Operational Readiness; and
Safety Assurance and risk control.

These requirements are to be documented in the progressive design reports. This will result in review of selected design reports and contractor plans by the Principal's Representative.

5.4 Purchasing

5.4.1 Purchasing Process

The Contractor must document as part of its QMP a quality management system procedure which addresses the requirements of ISO 9001 Clause 7.4. This procedure must include methods to systematically plan and conduct surveillance of Subcontractors' work and any plant, equipment and materials procured for the Works.

The Contractor must document how the procurement requirements set out in the Contract will be included in subcontracts where applicable.

Where a Subcontractor is to carry out work or provide services that require process verification, the Contractor must evaluate each Subcontractor on its capability to perform this verification. The Contractor must document this evaluation.

With each request for the assignment of activities to Subcontractors (for work that requires the Principal's Representative's approval), the Contractor must submit the following documentation to the Principal's Representative:

(a) a listing of the requirements that are applicable and an explanation of how these requirements have been conveyed to the proposed Subcontractors;
(b) the results and findings of the Contractor's evaluation the proposed Subcontractor's capability to undertake the works effectively, and of their method of process verification; and
(c) an explanation of how the Contractor plans to systematically conduct surveillance (inspect, monitor, audit and test) of the Works once assigned to the proposed Subcontractor.

The Contractor must incorporate any manufacturer and supplier recommendations and directions into its work process, checks and verification to ensure that items are purchased, stored, handled, installed and commissioned in a defect free state and that they do not infringe any warranty conditions.

Purchased products and services must be compatible with other products and Works and must be handled, stored and used in accordance with the manufacturer's recommendations.

The Contractor must control delivery schedules so as to minimise long-term storage of products at the Site, and overcrowding of construction spaces. In particular, the Contractor must provide delivery/installation coordination to ensure minimum holding or storage times for products and materials which are recognised to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other causes of loss. The Contractor may only request that a material or...
work process specified in the Works Brief be substituted, if there is a demonstrated advantage to the Principal for the substitution. Should the Contractor request a substitution, the request must:

(d) fully identify the product, method or material which is requested to be substituted, and include all information as elsewhere required which applies to the product, method or material to be substituted. The request must also clearly indicate how the proposed product, material or method satisfies the requirements of the Contract in full;

(e) include product data/drawings, description of methods, samples where applicable, a detailed comparison of significant qualities between the current and proposed items, coordination of proposed product, method, material with other affected work, cost information for the proposed product, material or method, and a statement from the Contractor to the effect that proposed substitution will result in overall work equal to or better than work originally indicated; and

(f) state whether the use of the substitution will require alteration to any part of the Works.

The approval of any proposed substitution under the Contract is at the sole discretion of the Principal’s Representative.

5.4.2 Purchasing Information

The quality management system requirements detailed in TSR Q1 apply to all subcontracted products and services which are procured as part of the Works. This includes control of product and service provisions and inspection/testing documents.

5.4.3 Verification of Purchased Product

The Contractor must comply with TSR Q1 Clause 5.5 when receiving products from Subcontractors.

The QMP must include the Subcontractor’s process control documentation used to control processes and to verify the purchased products.

The Contractor must plan and document the surveillance method that will be utilised for each Subcontractor including for the management of information and records generated by Subcontractors. The Contractor must review the documentation submitted by each Subcontractor to ensure that all requirements (including process control and inspection/testing) of the Works Brief are addressed. The Contractor’s surveillance process must cover how nominated Hold Points will be released and other activities to verify that the Subcontractor’s output complies with the Principal’s requirements.

Where the design of the Works is part of the Contractor’s Activities (whether in part or full), the Contractor’s Design Manager must certify that the quality documentation is adequate and sufficient to demonstrate compliance of the Contractor’s Activities with the design requirements.
5.5 Production and Service Provisions

5.5.1 Control of Production and Service Provisions

The Contractor must include work process control documents in the QMP which address the requirements of ISO 9001 Clause 7.5.

The Contractor must prepare and update a schedule listing of the proposed work method statements (or equivalent), with estimated dates of their submission to the Principal's Representative. The schedule listing of proposed work method statements must also include any work method statements nominated by the Principal as required. If the QMP is to be submitted in stages in accordance with TSR Q1 Clause 2.1.5 then the initial schedule of proposed work method statements must be part of the first submission of the QMP. The Contractor must update the schedule of proposed work method statements for submission to the Principal's Representative on a monthly basis, and seek the involvement of the Principal's designers (to the extent that it is relevant to do so).

The Contractor must apply effective procedures to plan, document, implement and monitor the work process including:

(a) the sequence of operations;
(b) risk assessments and controls to manage the risks and hazards;
(c) actions for addressing quality, environmental protection and safety requirements;
(d) types of equipment required, capability, maintenance and calibration;
(e) any special working environment aspects;
(f) competency and skills of personnel;
(g) work methods and materials to be used;
(h) product characteristics, tolerances and workmanship standards to be met;
(i) inspection, tests and control points;
(j) how the process will be implemented and monitored to ensure its continuing sustainability and how these will be demonstrated to the Principal;
(k) records to be kept as evidence that the work process controls are and remain effective; and
(l) defining the responsibility for implementing and monitoring work process controls and rectifying any deficiencies.

Where the design of the Works is part of the Contractor's Activities (whether in part or full), the Contractor's Design Manager must certify that the work method statements adequately address the design requirements.

5.5.2 Validation of Processes Where Outputs Cannot be Verified

The Contractor must identify in the QMP any work process (including subcontracted work) where the resulting output cannot be verified by subsequent monitoring and measurement. For these work processes, control of the work must be documented and implemented in accordance with ISO 9001 Clause 7.5.2.
5.5.3 Identification and Traceability

The Works are to be subdivided into lots or discrete work areas. A lot or discrete work area must consist of a continuous portion of homogeneous and/or representative material or end product under essentially constant conditions.

The Contractor must document in the QMP the method(s) for subdividing the Works into lots or discrete work areas and for allocating lot numbers to uniquely identify each lot.

The Contractor must use the lot number as an identifier on all quality records. The lot number must be recorded on an appropriate register that indicates the three-dimensional location of the lot.

The Principal has the right to reject a lot or discrete work area that is visually non-homogeneous and/or non-representative.

5.5.4 Principal Property

The Contractor must describe in the QMP how ISO 9001 Clause 7.5.4 will be implemented for any property or items supplied by the Principal for the Works.

5.5.5 Preservation of Product

The Contractor must describe in the QMP how ISO 9001 Clause 7.5.5 will be implemented for transport, handling, storage and protection on Site to prevent damage or deterioration.

6 CONTROL OF MONITORING AND MEASURING DEVICES

The Contractor must describe in the QMP how ISO 9001 Clause 7.6 will be implemented to set-out, construct, check and test the Works.

The Principal's Representative will accept certification for laboratory testing equipment from the National Association of Testing, Australia (NATA), as satisfying the requirements for calibration and verification of measuring equipment described in ISO 9001 Clause 7.6.

7 MEASUREMENT, ANALYSIS AND IMPROVEMENT

7.1 General

The Contractor must carry out inspection and testing in order to demonstrate conformity of the product to specified requirements. This inspection and testing must be undertaken:

(a) before the product is used in the Works (receiving inspection and testing);
(b) progressively during construction of the Works (in-process inspection and testing); and
(c) as a final check to demonstrate conformity of the product with the Contract requirements (final or acceptance inspection and testing).

The Contractor must be able to as part of QMP to describe its methodology and processes of inspection and testing.
7.2 Inspection and Test Planning

The Contractor must prepare and update a schedule listing of all the proposed ITPs for the Works with estimated dates of their submission to the Principal's Representative. The Contractor must make available any ITPs, inspection, test and verification records for review by the Principal's Representative in accordance with clause 9.14 of the General Conditions. If the QMP is to be submitted in stages in accordance with TSR Prelude then the initial schedule of proposed ITPs must be part of the first submission of the QMP. The Contractor must update the schedule of proposed ITPs for submission to the Principal's Representative on a monthly basis.

The Contractor must document ITPs for all inspections and testing required to deliver the Works.

The ITPs used to record assurance to the Contract requirements must include:

(a) qualifications and certification of persons performing inspections and testing;
(b) who performs the receiving, in-process and final inspections or tests and when;
(c) how the inspection or test is to be carried out and recorded;
(d) all acceptance criteria (including those specified in the Works Brief) applicable to ensure that the produced works conform to the Works Brief in all regards. Reference to a specification or clause number is not of itself acceptable. Specific acceptance criteria must be explicitly stated on the ITP to ensure that the person on-Site delivering and checking the works may check for conformity on-Site;
(e) all requirements and criteria stipulated by the Subcontractor;
(f) must include ITP for all systems as well as the subsystems
(g) frequency of inspection and testing;
(h) who reviews the inspection/test results, evaluates whether the work conforms with the acceptance criteria and determines what the proposed course of action is when the work does not pass a requirement;
(i) who performs final review to confirm that all inspections/test results have been carried out and to verify conformity for each lot;
(j) the time limits for testing, the time constraints for submissions and the Hold and Witness Points;
(k) the requirements of TSR Q1 Clause 5.5.3; and
(l) the specific lot that the ITP is being used for.

Where the design of the Works was undertaken by the Principal, the Principal may supply the Contractor with specific requirements and inspection and testing regimes for inclusion within the Contractor's ITPs (refer to TSR Q1 Annexure A). The Contractor must incorporate these requirements and inspection and testing regimes into their ITPs to ensure that they cover all acceptance criteria and design intent prior to the submission of the ITPs to the Principal's Representative for review under clause 9.14 of the General Conditions.

Where the design of the Works is part of the Contractor's Activities (whether in part or full), the Contractor must ensure that all design Subcontractors review and endorse the Contractor's ITPs to ensure that they cover all acceptance criteria and design intent prior to the submission of the ITPs to the Principal's Representative.
The Contractor must submit any ITPs, inspection, test and verification records to the Principal's Representative for review under clause 9.14 of the General Conditions.

The Principal's Representative will then nominate witness points and hold points in addition to the ones already nominated under Annexure A.

8  MONITORING AND MEASUREMENT

8.1  Principal’s Satisfaction

The Contractor must describe in the QMP the methods to be used to assess the Principal's satisfaction during the project in accordance with ISO 9001 Clause 8.2.1

8.2  Project Assurance Requirements Monitoring

TCA will monitor that the Contractor is managing the assurance documentation created by their works for this project. This will be undertaken by:

- Review of relevant Contractors plans, at both design and construction stages
- Principal to carry out site inspections by suitably qualified / experienced staff
- Validation
- Management of risk controls
- Residual risks
- Principal’s audit process
- Review of Safety Assurance Reports

8.3  Internal Audit

The Contractor must proactively ensure that its quality management system through the QMP is implemented and effective at achieving conformity with all requirements.

The Contractor must incorporate in the QMP an audit schedule for the Works. This schedule must include the following types of audit:

(a) audits of the operation of the quality management system to evaluate its effectiveness as applied to the project;

(b) product and service audits to assess the conformity of the product or service with the specified requirements; and

(c) audits of work process control, to evaluate how effectively work process controls are implemented in practice.

The Contractor's audit must include in its scope the activities and products of Subcontractors engaged for the Works. The audit schedule must be periodically reviewed and adjusted by the Contractor during the Works to ensure that the frequency of audits and the areas targeted for
audit are relevant to the stage of the Works at which they are undertaken. The Contractor must provide the Principal’s Representative with access to the audits, audit findings and audit action closeout progress.

8.4 Monitoring and Measurement of Process

The Contractor must describe in the QMP how ISO 9001 Clause 8.2.3 will be implemented to monitor the effectiveness of the work processes used for the Works.

8.5 Monitoring and Measurement of Product

8.5.1 General

The Contractor must implement the ITPs for the project, as established in TSR Q1 Clause 7.2.

Unless otherwise agreed by the Principal’s Representative, independent laboratories with current registration under a Joint Accreditation System of Australia and New Zealand (JAS-ANZ) registered authority must perform all laboratory testing undertaken for the Works.

8.5.2 Hold Points and Witness Points

The Contractor must establish and maintain a register of all Contractor’s and Principal nominated hold points and witness points for undertaking the Contractor’s Activities. The register must clearly identify the Hold Points and Witness Points. The register must be updated on a monthly basis to include all hold points and witness points to be implemented in the following 3 months.

The register and details of the hold points and witness points must be submitted to the Principal’s Representative for review under clause 9.14 of the General Conditions, 15 Business Days following the date of the Contract and thereafter 1 Business Day following each update. The Principal’s Representative will undertake a review of the register and may nominate additional Hold Points and Witness Points.

The Contractor must not proceed beyond a Hold Point until the Principal has released the Hold Point. The Contractor must describe in the QMP the method of arranging for the release of Hold Points by the Principal.

8.5.3 Close out of Work Lots and Release of Products

Work lots must not be closed out or products released, dispatched, used or installed until the Contractor has fully verified their conformity. This may involve obtaining the Principal’s approval or release if this is required in the Works Brief and/or the QMP.

Where products or work fail to pass any inspection and/or test, the work lot must not be closed out until the non-conformity has been rectified and closed out in accordance with TSR Q1 Clause 10.5.

8.6 Control of Non-conforming Product

The Contractor must describe in the QMP how the requirements of this TSR Q1 Clause 8.6 will be implemented on the project.

The Contractor must identify and control all products that fail to meet the acceptance criteria.
The Contractor must notify the Principal's Representative of the non-conformity and record it on an appropriate register. The Contractor must submit a non-conformity report within 2 Business Days of detection, indicating the proposed disposition and when the disposition is proposed to be undertaken.

If the Principal, through its own surveillance or audit, identifies a non-conformance that has not been identified or satisfactorily addressed by the Contractor's system, the Principal will issue a TCA System Improvement Observation (CS-FO-033). This non-conformity must be dealt with in the same manner as if it had been identified by the Contractor.

All detected non-conformances constitute a Hold Point until a rectification method has been accepted by the Principal and implemented by the Contractor.

Hold Point: Covering up of rectified work.
Submission Details: Notification and verification that the rectified work conforms to the acceptance criteria or Principal agreed disposition.
Release Of Hold Point: Upon evaluation and or inspection and testing, the Principal may authorise release of the Hold Point.

8.7 Analysis of Data

The Contractor must describe in the QMP how the requirements of ISO 9001 Clause 8.4 will be addressed.

8.8 Improvement

8.8.1 Continual Improvement

The Contractor must describe in the QMP how the requirements of ISO 9001 Clause 8.5.1 will be addressed. This register must be established prior to the commencement of the Contractor's Activities.

8.8.2 Corrective Action

The Contractor must establish and maintain a Corrective Action Register to record a summary of corrective actions. This register must be established prior to the commencement of the Contractor's Activities.

If surveillance or any audit by the Principal indicates that the Contractor's quality management system does not comply with the provisions of the Contract then the Principal may issue a TCA System Improvement Observation (CS-FO-033). The Contractor must rectify any non-conformities and issues notified by the Principal.

Hold Point: The process referred to in TCA System Improvement Observation (CS-FO-033).
Submission Details: Details of the corrective action to be implemented.
Release of Hold Point: Upon evaluation, the Principal may authorise release of the Hold Point.
8.8.3 Preventative Action

The Contractor must establish and maintain a Preventative Action Register to record a summary of preventative actions. This register must be established prior to the commencement of the Contractor's Activities.
ANNEXURE A - Additional Project Requirements
Additional Project Requirements

Competence, Awareness and Training
Project inductions are to include rail safety and RailCorp requirements. [Yes]. Mentioned in clause 4.1 ("Yes" applies if not filled in)

Inspection and Test Planning
The Principal will be supplying specific requirements for inclusion in the ITPs. [Yes]. Mentioned in clause 9.2 ("Yes" applies if not filled in)

Notification of testing

For all tests to be witnessed by the Principal or its representative(s), the Contractor must provide the Principal's Representative with at least 5 Business Days written notice for any tests to be performed in Australia external to the Asset Lands, and at least 45 days written notice for tests to be performed overseas, or such other time as determined from time-to-time by the Principal's Representative, to enable the Principal to make arrangements for attendance.

Submission of inspection and testing records

The Contractor must submit all certificates, inspection records, test results/records and verification records to the Principal's Representative for review under clause 9.14 of the General Conditions, no later than 10 Business Days following the certification, inspection or test date.

AS-built Drawings

The Contractor must prepare as-built drawings for the Works to accurately reflect all details of the Works constructed. All as-built drawings shall be prepared in accordance with the TCA CAD Manual. The Contractor must provide three copies of all as-built drawings and related documentation, including a complete set of specifications and design drawings (in both printed form and electronic format) to the Principal's Representative as a condition precedent to Completion of any Portion and of the Works.

Setting-Out and Survey

The Contractor must:
(a) check and verify all dimensions and levels on Site and the location of existing services on and within the Site;
(b) set out and survey in accordance with the MGA coordinate system;
(c) verify positions of grids and levels from survey marks;
verify and confirm its acceptance of the cadastral survey and all property boundaries provided by the Principal’s Representative;

set out the Works using permanent survey marks for the sole purpose of the Works. The permanent survey marks shall be coordinated with the cadastral survey;

preserve and maintain in their true position all survey marks;

give the Principal’s Representative not less than two (2) Business Days notice of its intention to perform any part of the setting out or levelling, so that suitable arrangements can be made for review of the work by the Principal’s Representative; and

provide adequate recovery pegs in suitable locations within or adjacent to the Site.

**Final Cleaning**

The Contractor must provide final cleaning of the Works, immediately prior to Completion. This must consist of cleaning each surface of unit of work to a clean condition expected from a first class building cleaning and maintenance program.

The Contractor shall comply with the manufacturer’s instructions for cleaning operations.

The necessary cleaning work includes, but is not limited to, the following:

(a) removal of labels that are not required as permanent labels;

(b) cleaning of exposed exterior and interior hard surfaced finishes to be free from dirt, fingermarks, films and any foreign substances and marks;

(c) except as otherwise indicated by the Works Brief or as directed by the Principal’s Representative, avoid disturbance of natural weathering of exterior surfaces;

(d) restore reflective surfaces to original and new reflective condition;

(e) wiping the surface of mechanical and electrical equipment clean, including lift equipment and similar equipment and remove excess lubrication and other substances;

(f) removal of debris and surface dust from limited access spaces, paying particular attention to concealed spaces such as plumbing ducts, shafts, pits, cupboards, false ceiling spaces, etc;

(g) vacuum cleaning of floors, including concrete floors, in areas intended to be occupied;

(h) thorough sweeping, cleaning and where required vacuuming, of all floors to ensure a clean and dust free surface;

(i) cleaning light fixtures and lamps so as to function with full efficiency (re-lamp non functioning lamps); and

(j) cleaning signage.

The Contractor must employ experienced workmen or professional cleaners for final cleaning operations.

**Principal Nominated Hold and Witness Points**
Within the Contractor's submission of the initial QMP, the Contractor shall include a complete register of all work activities and the associated inspection and testing regimes. This register must also include:

(a) all the Contractor's internal Hold and Witness Points;
(b) all the Principals pre-nominated Hold and Witness Points;
(c) quality records required to verify conformance.

The Principal will consider the activities on the register and nominate activities that require Principal release via a Hold or Witness Point. The Principal will also consider the proposed submission details for each activity. The Principal will undertake this activity consultation with the Contractor. The Principal will nominate additional witness and hold points after reviewing the ITP's issued by the contractor.
The Principal's nominated Hold Points and Witness Points are listed in the table below.

<table>
<thead>
<tr>
<th>ID</th>
<th>Witness Point / Hold Point</th>
<th>Element of Work</th>
<th>Process Held/ Process to be Witnessed</th>
<th>Submission Details</th>
<th>Release of Hold Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 1</td>
<td>Hold Point</td>
<td>Track Welding</td>
<td>Commencement of welding on any track.</td>
<td>Submit to the Principal's Representative, at least 5 Business Days prior to the planned commencement of welding on any track, copies of the following documentation: 1) personnel qualifications; 2) technical procedures for welding; and welding procedures associated with the work (including qualification records of these welding procedures by the Contractor's welding inspector)</td>
<td>The Principal will examine the submitted documentation prior to authorising the release of the Hold Point.</td>
</tr>
<tr>
<td>EN 2</td>
<td>Hold Point</td>
<td>Sleepers</td>
<td>Delivery of sleepers to the Site</td>
<td>Submit to the Principal's Representative, at least 5 Business Days prior to the planned date for delivery to Site, the following: 1) documentation showing satisfactory completion of testing in accordance with AS 1085.14 'Prestressed Concrete Sleepers' as required by Section 9 of SPC 203 2) testing documentation in accordance with SA 1085.19, 'Resilient Fastening Assemblies', as required by Section 5 of SPC 203 3) quality assurance documentation showing the sleepers are manufactured so as to meet the long term rail gauge retention tolerance 4) quality assurance documentation meeting the requirements of Section 3 of AS 1085.14 (Manufacture), and Appendix A of AS 1085.19 (Demonstrating Compliance)</td>
<td>The Principal will consider the documents submitted prior to authorising the release of the Hold Point.</td>
</tr>
<tr>
<td>ID</td>
<td>Witness Point / Hold Point</td>
<td>Element of Work</td>
<td>Process Held/ Process to be Witnessed</td>
<td>Submission Details</td>
<td>Release of Hold Point</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------</td>
<td>----------------------------------</td>
<td>--------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>EN 3</td>
<td>Hold Point</td>
<td>Sample Track Construction</td>
<td>Commencement of placement of capping layer</td>
<td>Submit to the Principal's Representative, 5 Business Days prior to the planned commencement of placement of capping layer, test records demonstrating conformity of the subgrade and formation, including compaction test results, material test results, and survey report.</td>
<td>The Principal will consider the documents submitted prior to authorising the release of the Hold Point.</td>
</tr>
<tr>
<td>EN 4</td>
<td>Hold Point</td>
<td>Sample Track Construction</td>
<td>Commencement of placement of ballast</td>
<td>Submit to the Principal's Representative, 5 Business Days prior to the planned commencement of placement of the ballast, material test records on the ballast demonstrating conformity with track structure classification 60SW/CM/SL for the mainlines and 60SW/CM/SL150 for the new sidings in the stabling yard in accordance with RailCorp Standard ESC 200 – Track System</td>
<td>The Principal will consider the documents submitted prior to authorising the release of the Hold Point.</td>
</tr>
<tr>
<td>EN 5</td>
<td>Hold Point</td>
<td>Track Construction</td>
<td>Commencement of any track construction beyond Sample Track.</td>
<td>Submit to the Principal's Representative, following construction of Sample Track, all the necessary validation documentation for the Sample Track construction including: measurement of track geometry; measurement of gauge; measurement of alignment; ultrasonic testing and geometric assessment of welds; certificate of construction compliance (in a format similar to Schedule 6 to the General Conditions); and any other documentation that would be required to hand over the track to the Principal and then RailCorp</td>
<td>The Principal will consider the documents submitted, inspect the Sample Track and may conduct its own surveillance and audit prior to authorising the release of the Hold Point.</td>
</tr>
<tr>
<td>EN 6</td>
<td>Hold Point</td>
<td>Sample Track Construction (Remedial Works)</td>
<td>Commencement of any remedial works to the Sample Track.</td>
<td>Submit to the Principal's Representative, at least 5 Business Days prior to the planned commencement date of the remedial works to the Sample Track, the necessary Safe Work Method Statements.</td>
<td>The Principal will consider the documents submitted prior to authorising the release of the Hold Point.</td>
</tr>
<tr>
<td>ID</td>
<td>Witness Point / Hold Point</td>
<td>Element of Work</td>
<td>Process Held/Process to be Witnessed</td>
<td>Submission Details</td>
<td>Release of Hold Point</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------------</td>
<td>--------------------------</td>
<td>-----------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>EN 7</td>
<td>Hold Point</td>
<td>Turnout Construction</td>
<td>Commencement of any turnout construction beyond Sample Turnout construction.</td>
<td>Submit to the Principal’s Representative, following construction of the Sample Turnout, all the necessary validation documentation including: measurement of track geometry; measurement of gauge; measurement of alignment; ultrasonic testing and geometric assessment of welds; certificate of construction compliance (in a format similar to Schedule 6 to the General Conditions); and any other documentation that would be required to hand over track to the Principal and then RailCorp.</td>
<td>The Principal will consider the documents submitted, inspect the Sample Turnout and may conduct its own surveillance and audit prior to authorising the release of the Hold Point.</td>
</tr>
<tr>
<td>EN 8</td>
<td>Hold Point</td>
<td>Sample Turnout Construction (Remedial Works)</td>
<td>Commencement of remedial works to Sample Turnout.</td>
<td>Submit to the Principal’s Representative, at least 5 Business Days prior to the planned commencement date of the remedial works to the Sample Turnout, the necessary Safe Work Method Statements.</td>
<td>The Principal will consider the documents submitted prior to authorising the release of the Hold Point.</td>
</tr>
<tr>
<td>EN 9</td>
<td>Hold Point</td>
<td>Embankments</td>
<td>Commencement of construction of embankments</td>
<td>Submit to the Principal’s Representative, at least 5 Business Days prior to the planned commencement date of the embankments, procedures which: 1) include identification of test procedures for: ensuring materials meet specifications; control of placement, moisture control and compaction; and testing bearing capacity; provide for monitoring of settlement and for remediation works where settlement occurs greater than that included and explicitly identified in the design.</td>
<td>The Principal will consider the documents submitted prior to authorising the release of the Hold Point.</td>
</tr>
<tr>
<td>ID</td>
<td>Witness Point / Hold Point</td>
<td>Element of Work</td>
<td>Process Held/ Process to be Witnessed</td>
<td>Submission Details</td>
<td>Release of Hold Point</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------------</td>
<td>---------------------</td>
<td>----------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>EN 10</td>
<td>Hold Point</td>
<td>OHW Construction</td>
<td>Construction of OHW beyond Sample OHW.</td>
<td>Submit to the Principal's Representative, following construction of the Sample OHW, the necessary verification documentation, including: 1) confirmation that the structures have been manufactured and constructed to the design and any “field” alterations to the OHW have been approved by appropriate Engineering Authority, prior to installation; and 2) confirmation that the co-ordination between the Sample OHW and track are within the design tolerances.</td>
<td>The Principal will consider the documents submitted, inspect the constructed Sample OHW and the co-ordination between the Sample OHW and the track and may conduct its own surveillance and audit prior to authorising the release of the Hold Point.</td>
</tr>
<tr>
<td>EN 11</td>
<td>Hold Point</td>
<td>Sample OHW</td>
<td>Remedial works to Sample OHW Construction</td>
<td>Submit to the Principal's Representative, at least 5 Business Days prior to the planned commencement date of the remedial works to the Sample OHW, the necessary Safe Work Method Statements.</td>
<td>The Principal will consider the documents submitted prior to authorising the release of the Hold Point.</td>
</tr>
<tr>
<td>EN 12</td>
<td>Witness Point</td>
<td>Cable route</td>
<td>Cable routes inspection</td>
<td>Submit to the Principal's Representative, at least 5 Business Days prior to the planned commencement date for cable route inspection as listed below 1. Prior to the installation of cables (Pipes into which cable is to be hauled shall be proven for adequate bore and cleanliness prior to cable installation by drawing a test mandrel 240mm long and 90% of the nominal internal diameter of the pipes through the pipes prior to cable hauling) 2. After the cable installation 3. prior to backfilling of trenches or 4. closing of lid.</td>
<td>The principal will witness the cable route construction.</td>
</tr>
<tr>
<td>ID</td>
<td>Witness Point / Hold Point</td>
<td>Element of Work</td>
<td>Process Held/ Process to be Witnessed</td>
<td>Submission Details</td>
<td>Release of Hold Point</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------------</td>
<td>-----------------</td>
<td>--------------------------------------</td>
<td>-------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>EN 13</td>
<td>Hold Point</td>
<td>Remediation Action Plan</td>
<td>Submission of the Validation Assessment Report</td>
<td>Submit to the Principal's Representative a Validation Assessment Report at the completion of the remediation works that has been prepared by a suitably qualified environmental consultant. This report would comment on the suitability of the site for the proposed continued industrial land use. Furthermore, a long-term Environmental Management Plan (EMP) would be prepared to detail the ongoing management requirements for the long-term maintenance of the capping structures.</td>
<td>The Principal will consider the documents submitted prior to authorising the release of the Hold Point.</td>
</tr>
</tbody>
</table>
ANNEXURE B – List of Reference Documents
List of Reference Documents

NSW Government Quality Management System Guidelines
TCA System Improvement Observation (CS-FO-033)
ANNEXURE C – Quality Records
Quality Records

The quality records produced must satisfy the requirements of the Contract. The following is a non-exhaustive list of quality records which are required by this TSR Q1. The Contractor must review this list and add any other quality records set out in the Contract. All records must be made available to the Principal. Copies of these documents must be forwarded to the Principal for his own copy and record and the Contractor must ensure that the Principal’s copies are kept current and up to date. Where the Contractor is required to forward records to the Principal’s Representative, the Contractor must submit one original and three copies (one of which is unbound) of each document (including draft and final reports, specifications, drawings, plans, etc) for the Principal’s review. In addition the Contractor must also submit an electronic copy on CD/DVD in PDF and native formats (such as Microsoft Word, Microsoft Excel, CAD in *.dwg or *.dx) of documents.

<table>
<thead>
<tr>
<th>Required Record or Reference</th>
<th>Issue to Principal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality Manual, Quality Policy, Quality Management Plan, and applicable quality management system procedures</td>
<td>*</td>
</tr>
<tr>
<td>QMP including other Management Plans required under the Contract</td>
<td>*</td>
</tr>
<tr>
<td>List of who holds issued documents on a register of current document issue/revisions</td>
<td>*</td>
</tr>
<tr>
<td>Index of all quality records with a final list issued upon Completion</td>
<td>*</td>
</tr>
<tr>
<td>Records of management reviews for the project</td>
<td>*</td>
</tr>
<tr>
<td>Personnel qualifications/skills records</td>
<td>*</td>
</tr>
<tr>
<td>Induction and training records</td>
<td>*</td>
</tr>
<tr>
<td>Records of work environment controls, where applicable</td>
<td></td>
</tr>
<tr>
<td>Minutes of tender/contract reviews</td>
<td></td>
</tr>
<tr>
<td>Records of design review undertaken on supplied drawings and other design documentation</td>
<td>*</td>
</tr>
<tr>
<td>Design plan, inputs/outputs, changes, verification/review/ validation/certificates records</td>
<td>*</td>
</tr>
<tr>
<td>Intermittent and final design reports</td>
<td></td>
</tr>
<tr>
<td>Evaluation of Subcontractors</td>
<td></td>
</tr>
<tr>
<td>Surveillance, audit of Subcontractors</td>
<td></td>
</tr>
<tr>
<td>Subcontractor originated documentation</td>
<td></td>
</tr>
<tr>
<td>Certificate of testing by Subcontractors</td>
<td></td>
</tr>
<tr>
<td>Schedule of work method statements</td>
<td>*</td>
</tr>
<tr>
<td>Procedures describing how to control work processes (work method statements)</td>
<td>*</td>
</tr>
<tr>
<td>Records demonstrating effectiveness of work process controls</td>
<td>*</td>
</tr>
<tr>
<td>Survey records</td>
<td>*</td>
</tr>
<tr>
<td>Records of process validation when applicable</td>
<td>*</td>
</tr>
<tr>
<td>Product batch/traceability records</td>
<td></td>
</tr>
<tr>
<td>Lot Identification Register</td>
<td></td>
</tr>
<tr>
<td>Required Record or Reference</td>
<td>Issue to Principal</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Contractor's verification records/reports</td>
<td></td>
</tr>
<tr>
<td>Delivery dockets</td>
<td></td>
</tr>
<tr>
<td>Product preservation control/Inspection Records</td>
<td></td>
</tr>
<tr>
<td>Register of equipment</td>
<td></td>
</tr>
<tr>
<td>Calibration frequency and certificates</td>
<td></td>
</tr>
<tr>
<td>Schedule of inspection and test plans</td>
<td></td>
</tr>
<tr>
<td>Inspection and test plans</td>
<td></td>
</tr>
<tr>
<td>Principal satisfaction records and actions taken to improve Principal satisfaction</td>
<td></td>
</tr>
<tr>
<td>Audit reports</td>
<td></td>
</tr>
<tr>
<td>Records/checklists of inspection and testing</td>
<td></td>
</tr>
<tr>
<td>Conformity reports for each completed lot</td>
<td></td>
</tr>
<tr>
<td>Certificates of Compliance</td>
<td></td>
</tr>
<tr>
<td>Nonconformity reports</td>
<td></td>
</tr>
<tr>
<td>Principal's Nonconforming Product Notifications</td>
<td></td>
</tr>
<tr>
<td>Nonconformity Register</td>
<td></td>
</tr>
<tr>
<td>Records of analysis of data generated during the Contract</td>
<td></td>
</tr>
<tr>
<td>Corrective action reports and Register</td>
<td></td>
</tr>
<tr>
<td>Principal's Corrective Action Requests</td>
<td></td>
</tr>
<tr>
<td>Incident Investigation Reports and Corrective Action</td>
<td></td>
</tr>
<tr>
<td>Preventive action reports and Register</td>
<td></td>
</tr>
</tbody>
</table>

* These documents must be forwarded to the Principal for his own copy and record and the Contractor must ensure that the Principal's copies are kept current and up to date.
TCA Standard Requirements
TSR S1 - Safety Management

ASP-01-D&C Design and Construct Contract for
Auburn Stabling Project (Stage 1)
South West Rail Link

Status: Tender Issue
Document Number: TSR S1 - Safety Management.DOC
Version: 4.0
Date of issue: November 2010
Security classification: General Release

© TCA 2010
# Table of Contents

1. General ........................................................................................................... 1
2. General Requirements ...................................................................................... 1
3. Management of Contractor Safety Breaches .................................................. 2
4. Contractor's Safety Management System ......................................................... 3
5. Contractor's Project Safety Management Plan ................................................ 3
   5.1 General .......................................................................................................... 3
   5.2 Submission of the Project Safety Management Plan ................................... 4
   5.3 Management Plan Requirements ................................................................. 4
      5.3.1 Safety Policy ......................................................................................... 4
      5.3.2 Safety Culture ....................................................................................... 4
      5.3.3 Accountability, Competence, Induction and Training ......................... 5
      5.3.4 Alcohol and Other Drugs ...................................................................... 8
      5.3.5 Fatigue Management ............................................................................. 10
      5.3.6 Safety Risk Management ...................................................................... 10
      5.3.7 Personal Protective Equipment (PPE) ................................................. 11
      5.3.8 Communication and Consultation ....................................................... 12
      5.3.9 Design .................................................................................................. 13
      5.3.10 Safety Change Management and Human Factors ............................. 13
      5.3.11 Safety Related Procurement ............................................................... 14
      5.3.12 Permits and Licences .......................................................................... 14
      5.3.13 Site Amenities ...................................................................................... 15
      5.3.14 Security ............................................................................................... 15
      5.3.15 Lighting ............................................................................................... 16
      5.3.16 Walking surfaces ................................................................................ 16
      5.3.17 Walkway barriers ............................................................................... 17
      5.3.18 Secondary accesses ............................................................................ 17
      5.3.19 Restricted areas ................................................................................... 18
      5.3.20 Signage ............................................................................................... 18
      5.3.21 Construction plant ............................................................................... 18
      5.3.22 Traffic management on-site ............................................................... 20
      5.3.23 Excavation and Earthworks ............................................................... 20
      5.3.24 Working at heights ............................................................................. 21
      5.3.25 Working adjacent to or over water .................................................... 21
      5.3.26 Working on or near public roads ......................................................... 22
      5.3.27 Electrical Safety .................................................................................. 22
      5.3.28 Safety Inspections, Monitoring and Audit ......................................... 23
      5.3.29 First aid and Defibrillators ................................................................. 24
5.3.30 Emergency and Crisis Management ...................................................... 24
5.3.31 Safety Occurrence Investigation, Reporting and Recording ................. 26
5.3.32 Nonconformances and Corrective actions ........................................... 27
5.3.33 Safety Performance Reporting .............................................................. 27
5.3.34 Safety Assurance of Rail Related Projects ............................................ 28

5.4 Additional Management Plan Requirements for Rail Safety Work ............. 28
5.4.1 General ................................................................................................... 28
5.4.2 Accountability, Competence and Inductions ........................................ 28
5.4.3 Rail Safety ............................................................................................. 29
5.4.4 Work on Track Methods for Working Safely ........................................ 30
5.4.5 Swing Arm Plant ................................................................................. 32
5.4.6 Use of Rolling Stock, Hi-Rail Vehicles and Work Trains ....................... 33
5.4.7 Fatigue, Medical and Health Management .......................................... 33
5.4.8 Safety Related Procurement ................................................................. 34
5.4.9 Rail Safety Interface Agreement ........................................................... 34

ANNEXURE A – Additional Project Requirements

ANNEXURE B – List of Reference Documents
1 GENERAL

TSR S1 describes the safety requirements and processes which the Contractor (including Subcontractors) must comply with under the Contract. The Contractor must ensure that the requirements of the NSW Government OH&S Management System Guidelines are addressed, where they apply to the Contractor’s Activities.

The Contractor must have a Safety Management System accredited for NSW Government work under the NSW Government OH&S Management System Guidelines. The Safety Management System includes the Contractor’s Safety Management System and Project Safety Management Plan (including Site Specific Safety Management Plans). The Contractor and Subcontractors must carry out the Contractor’s Activities in accordance with TCA’s Safety Management System and the relevant operators (MainTrain and AMC) SMS when working within their site.

All requirements of this TSR S1 also apply to Subcontractors unless otherwise specified.

2 GENERAL REQUIREMENTS

Without limiting any other obligations under the Contract, the Contractor must demonstrate compliance with:

(a) the Occupational Health and Safety Act 2000 (NSW) and Occupational Health and Safety Regulation 2001 (NSW) (OH&S Law);
(b) the NSW Government OH&S Management System Guidelines;
(c) the NSW Government Guidelines for Auditing Project OHS Management Plans;
(d) the NSW Government Code of Practice for Procurement; and
(e) relevant standards and codes of practice.

Additionally, if the Contractor’s Activities involves work in or adjacent to the Rail Corridor and the rail environment the Contractor must demonstrate compliance with:

(f) the Rail Safety Act and Rail Safety Regulation 2008 (NSW) (Rail Safety Law);
(g) the TCA Accreditation; and
(h) the AS 4292 Railway Safety Management.

The Contractor must have in place processes to:

(i) identify the requirements of relevant OH&S statutory and other requirements;
(j) develop and implement actions to ensure compliance with (a) - (h) above; and
(k) monitor compliance with (a) - (h) above.

The requirements contained within this TSR S1:

(l) are in addition to, not in substitution for, and do not limit any Law;
(m) do not relieve the Contractor from or alter its liabilities or obligations under the Contract;
(n) do not limit or otherwise affect the Principal’s rights against the Contractor, under the Contract or otherwise; and
(o) the Principal’s Project Safety Master Plan.
The Contractor and Subcontractors must comply with all safety policies, procedures and measures which are implemented or directed by the Principal, or by occupiers of any premises within which the Contractor's Activities will be undertaken.

The Contractor must create a safe working environment for the undertaking of the Contractor's Activities. The Contractor must ensure the safety of all personnel, visitors and the general public on or within the vicinity of the Site and other work sites, and ensure that no unauthorised individuals gain access to the Site or other work sites. The Contractor must also ensure that noise, vibration and air pollution levels associated with the Contractor's Activities are minimised and do not exceed the safety and environmental requirements for workers and the public.

The Principal's Representative will issue the Contractor with a Project Safety Master Plan which is authored by the Principal. The Contractor must comply with all the requirements of the Project Safety Master Plan.

The Contractor's OH&S Manager must be:

(p) based in the Contractor's site facilities for the duration of works at the Site; and

(q) allocated to OH&S management on a fulltime basis until the Date of Completion.

3 MANAGEMENT OF CONTRACTOR SAFETY BREACHES

The Contractor must develop procedures to ensure that the Contractor's Activities are undertaken in a controlled and safe manner. These safe working procedures must be regularly reviewed and updated by the Contractor to ensure that they are effectively implemented and improved where required.

The Contractor must develop processes for managing safety breaches, including rail safety breaches if the Contractor's Activities fall under the scope of Rail Safety Act (2008).

If the Principal's Representative identifies and advises the Contractor of an unsafe work activity, the re-commencement of the activity or process is subject to a Hold Point.

HOLD POINT: Commencement or re-commencement of any activity or process which has been identified by the Principal as unsafe. For an activity in progress, the Contractor must ensure that the activity ceases immediately upon receipt of such verbal or written advice from the Principal's Representative unless an immediate cessation of the activity is likely to increase the risk to health and safety, in which case the Contractor must stop work as soon as it is safe to do so.

SUBMISSION DETAILS: The Contractor is to close out the required action and is to submit to the Principal's Representative (or re-submit) a Safe Work Method Statement (SWMS) and Work Activity Advice (WAA) for the activity or process to which the Hold Point applies to address the rectification of the unsafe activity. The Contractor's submission must also include the following:

- revised hazard/risk assessment for the activity;
- issued and closed non-conformances;
- corrective action report; and
an appropriate non-conformance and corrective action report which addresses the Principal’s Representative’s concerns.

RELEASE OF HOLD POINT: The Principal will consider the corrective action proposed and all supporting documentation, prior to authorising release of the Hold Point.

The Contractor must coordinate Subcontractors so that any safety matters are managed in accordance with the Contract and the Contractor’s Safety Management System.

4 CONTRACTOR’S SAFETY MANAGEMENT SYSTEM

The Contractor must prepare, develop, implement and maintain its Safety Management System in accordance with the requirements set out in this TSR S1 Clause 4. The Contractor’s Safety Management System must remain accredited under the NSW Government Occupational Health and Safety System Guidelines whilst the Contractor’s Activities are undertaken.

The Contractor must identify who will be fulfilling the role of Senior Management Representative (as defined in the NSW Government OH&S Management System Guidelines Clause 4 “Management Responsibility”). This person will be responsible for implementing and maintaining the safety requirements of this TSR S1 (including monitoring the effectiveness of the Contractor’s Safety Management System in complying with all safety requirements) and reporting to the Principal’s Representative.

The Contractor must within 5 Business Days, notify the Principal’s Representative of any changes to the Contractor’s Safety Management System.

5 CONTRACTOR’S PROJECT SAFETY MANAGEMENT PLAN

5.1 General

The Contractor must develop and implement a Project Safety Management Plan including Site Specific Safety Management Plans and SWMS in accordance with:

(a) the NSW Government OH&S Management System Guidelines;
(b) the Contract (including this TSR S1); and
(c) Rail Safety Law, if the Contractor’s Activities involves work in or adjacent to the Rail Corridor and the rail environment.

The Project Safety Management Plan must address all elements and objectives of the Contract (including this TSR S1) and the NSW Government OH&S Management System Guidelines. Processes and procedures for all safety elements and objectives within the Contract are to be developed and included within the Project Safety Management Plan.

All SWMS, regardless of whether they are authored by the Contractor or Subcontractors, must be listed on a consolidated SWMS register. An updated SWMS register must be attached to each submission of a SWMS to the Principal’s Representative. The Contractor must provide an electronic version of the SWMS register upon request by the Principal’s Representative.
5.2 Submission of the Project Safety Management Plan

The Project Safety Management Plan must be submitted to the Principal for review in accordance with the requirements set out in TSR Prelude.

The Contractor is to notify the Principal's Representative in writing of any change to the Project Safety Management Plan within 24 hours of this change.

HOLD POINT: Commencement of design, or where the Contractor's Activities do not include design then site mobilisation.

SUBMISSION DETAILS: Submit the Project Safety Management Plan and associated documentation in accordance with the time frames stipulated in TSR Prelude and the General Conditions or at least 15 Business Days prior to the planned commencement date (whichever occurs earlier).

RELEASE OF HOLD POINT: Within 15 Business Days of submission, the Principal's Representative will consider all submitted documentation to determine whether it adequately addresses the safety requirements.

5.3 Management Plan Requirements

5.3.1 Safety Policy

The Contractor must document and endorse a safety policy which complies with the NSW Government OH&S Management System Guidelines. The Contractor's safety policy must be consistent with the requirements of the TCA Safety Policy (SA-PO-001) and must be:

(a) endorsed by the most senior person within the Contractor's organisation;
(b) dated;
(c) displayed in prominent locations on Site; and
(d) reviewed on an annual basis.

5.3.2 Safety Culture

The Contractor must document how the Safety Management System will be communicated to all persons associated with the Works such that it is incorporated into the Contractor's Activities.

The Contractor must develop and implement detailed procedures for how the culture of Beyond Zero (a TCA initiative to a safer, healthier, more productive workplace) will be achieved and maintained for the Contractor's Activities. The procedures must establish and maintain an effective reporting system that facilitates the flow of information both within the Contractor's organisation and between the Contractor's organisation, Subcontractors and the Principal.

The Contractor's procedures must address:

(a) the establishment of a culture that allows workers to adapt to their changing environment where required;
(b) hazard reporting;
(c) methods for providing feedback and within set timeframes;
(d) methods to reduce the gap between work as perceived and work as performed, and what measures will be taken to bridge the gap;

(e) a method to communicate and share learnings from successes and failures;

(f) the encouragement of teamwork and of employee involvement in promoting and maintaining a positive safety culture; and

(g) a method to demonstrate how site safety rules will be reflected in the practice on Site and how such rules will be incorporated into the Contractor's Activities.

If the duration of the Contractor's Activities extends beyond 12 months, the Contractor must provide the Principal's Representative with updated safety culture improvement procedures for review under clause 9.14 of the General Conditions, 3 months prior to the expiry of the previous 12 month safety culture improvement procedures.

5.3.3 Accountability, Competence, Induction and Training

5.3.3.1 Accountability

The Contractor must provide clear safety accountabilities for all employees and Subcontractors undertaking the Contractor's Activities. These safety accountabilities must address the requirements of the NSW Government OH&S Management System Guidelines. The Contractor must:

(a) provide specific accountabilities for management and other personnel who are responsible and qualified to deal with safety matters (ranging from the Chief Executive Officer (or equivalent) to foreman/team leaders);

(b) develop and document position descriptions for all persons involved in undertaking Contractor's Activities beyond those of management level listed above;

(c) ensure that the specific safety accountabilities are addressed and that all competencies required for all Contractor's Activities are covered; and

(d) clearly identify all positions associated with the undertaking of the Contractor's Activities.

5.3.3.2 Competencies

The Contractor must have processes in place to ensure that competencies for all tasks have been identified, and that personnel are assessed against these competencies prior to commencing work. Competencies in this regard refer to an individual's skills, education, attitude and behaviour. The Contractor must produce matrices that identify the competence requirements for each position and the personnel filling those positions.

All persons undertaking work at the Site must be trained and accredited in the Occupational Health and Safety General Induction for Construction Work and must comply with the Principal's training requirements.

Copies of all certificates of competence and trade licenses must be provided to the Principal's Representative prior to the commencement of the Contractor's Activities. This includes copies of:

(a) certificates of competency required under OH&S Law for relevant Contractor's Activities (e.g. confined spaces entry, working at heights, Construction Plant operators, work near overhead lines, rigging, etc);
(b) trade licences (e.g. electricians, plumbers etc);
(c) certificates of competency for first aid and senior first aid officers;
(d) certificates of competency for traffic control plan designers and traffic controllers;
(e) certificates of competency for safety professionals;
(f) certificates of competency for workplace training and assessors;
(g) certificates of competency for plant assessors; and
(h) certificates of competency for persons preparing emergency plans.
(i) certificates of competency for engineering professionals

5.3.3.3 Inductions

The Contractor must develop and implement all induction procedures which are necessary for the Contractor's Activities. This includes an obligation to develop the content of and deliver:

(a) Project Specific Induction(s);
(b) Site Specific Induction(s);
(c) Task Specific Induction(s); and
(d) Visitor Specific Induction(s).

The Contractor must have processes in place to ensure that all persons undertaking the Contractor's Activities (including Subcontractors) undergo site induction training prior to commencing work on Site, and on any other areas where the Contractor's Activities are undertaken.

Project Specific Induction

The Contractor must develop a project specific safety induction and induction program for personnel undertaking the Contractor's Activities.

The Project Specific Safety Induction must include:

(e) description of the Works;
(f) description of the major Contractor's Activities;
(g) description of major hazards and their controls for the Site and the Contractor's Activities;
(h) the Contractor's commitment to and implementation of the safety, quality, environmental and community requirements of the Contract and all relevant Law;
(i) the Principal's expectation in achieving the Beyond Zero safety culture and how this culture will be achieved by the Contractor;
(j) emergency and evacuation plans (including the role of wardens and assembly points);
(k) how to obtain first aid and role of first aid officers;
(l) safety occurrence, near miss and hazardous reporting and investigations;
(m) fatigue management;
(n) drug and alcohol policy on Site;
(o) duties of people operating Construction Plant on Site;

(p) policies relating to personal protective equipment (including its use, maintenance and replacement).

Site Specific Induction

Site Specific Inductions must cover the requirements of site-specific safety plans. Each Site Specific Induction must also cover hazards which are likely to be encountered and the control measures that have been developed to mitigate such hazards. Each Site Specific Induction must include:

(q) rail safety, if the Contractor’s Activities involves work in or adjacent to the Rail Corridor and the rail environment;

(r) communication and consultation processes;

(s) issue resolution processes;

(t) emergency procedures, including evacuation procedures;

(u) site security procedures;

(v) implementation of safety, quality, environmental and community procedures;

(w) any other issues relevant to the Site; and

(x) pre-start muster/pre-work briefing covering:

(i) the progress of the project and specific work area;

(ii) any changes to work areas expected during the day (e.g. change in planning);

(iii) incidents and breaches;

(iv) complaints received that are applicable to the site-specific activity and measures implemented to address or minimise those complaints;

(v) Construction Plant and traffic changes; and

(vi) introductions for new employees.

Site Specific Inductions must be regularly reviewed and updated by the Contractor so as to ensure that they remain relevant to the work being undertaken on Site.

Task Specific Induction

The Contractor must develop and implement Task Specific Inductions for all activities:

(y) deemed as high risk under OH&S Law; and

(z) under Rail Safety Law, if the Contractor’s Activities involves work in or adjacent to the Rail Corridor and the rail environment.

Visitors Specific Induction

The Contractor must develop a Visitors Specific Induction program. The Contractor must ensure that all visitors who are invited or brought onto the Site (including suppliers) undergo the Visitors Specific Induction prior to entering the Site. The Visitors Specific Induction must include:

(aa) site safety rules;

(bb) personal protective equipment (PPE) that must be worn;
site-specific hazards and controls to be adhered to on Site;

safe access, egress and amenities;

emergency evacuation procedures; and

safety occurrence, near miss and hazard reporting.

The Contractor must keep records of all Visitors Specific Inductions which are undertaken and ensure that visitors to the Site are at all times accompanied by a person who has undergone either a Site Specific Induction or a Project Specific Induction.

The Contractor must keep records of all inductions given to persons in accordance with Clause 223 of the Occupational Health and Safety Regulation 2001 (NSW).

5.3.3.4 Training and Records

The Contractor must undertake a training needs analysis to identify any gaps and any additional training required to undertake the Contractor's Activities.

The Contractor must ensure that training records which document which personnel (including subcontractors) have satisfactorily completed various training modules are maintained. The training records must also document previous (but current) certificates, and accreditation and qualifications relevant to each person that has undertaken training. The training records must be kept up to date at all times. The site manager/supervisor must have an up to date matrix, which documents all personnel and the competencies required for the activities they are undertaking as part of the Works.

5.3.4 Alcohol and Other Drugs

A policy of zero tolerance of alcohol and illegal drug use applies to projects carried out for or controlled or managed by the Principal. Alcohol and illegal drugs are not permitted on the Site or on premises controlled or managed by the Principal.

The Contractor must develop policies and procedures to ensure this policy of zero tolerance is adhered to at all times. The Contractor must develop and implement drug and alcohol testing procedures. If the Contractor's Activities involves work in or adjacent to the Rail Corridor and the rail environment, these procedures must be in line with the Rail Safety (Drug and Alcohol Testing) Regulation 2008 (NSW) and the testing regime must also include prestart testing prior to Track Possessions.

The Contractor must ensure that all persons associated with the Contractor's Activities (including the Contractor's employees, visitors, Subcontractors employees and agents) are aware of their obligations to comply with all alcohol and drug requirements.

The Principal's Alcohol and Other Drugs Policy, prohibits any persons affected by alcohol or drugs from working on any projects carried out for or controlled or managed by the Principal, regardless of their work location. Prescription and over-the-counter drugs may also affect a person's ability to work safely and the Principal will determine its policy in relation to prescription and over-the-counter drugs on a case by case basis.

A breach of the Principal's Alcohol and Other Drugs Policy will occur if:
(a) drug levels are at or above the cut off level stipulated by the Australian Standard AS/NZS 4308:2008 Procedures for Specimen Collection and the detection and quantitation of drugs of abuse in urine; or

(b) alcohol levels are at or above 0.02 grams (which is considered an above zero reading for the Principal) or more of alcohol in 210 litres of breath or 100 millilitres of blood.

Anyone that tests positive to alcohol or drugs or who refuse a drug or alcohol test must be removed from the Site immediately, and the Principal's Representative must be notified immediately.

The Contractor must take disciplinary action against a person associated with the Contractor's Activities who breaches the Principal's Alcohol and Other Drugs Policy or who refuse a drug or alcohol test. The nature of the disciplinary action to be taken must be agreed upon by the Principal's Representative.

A person associated with the Contractor's Activities who breaches the Principal's Alcohol and Other Drugs Policy may have their Rail Industry Safety Induction (RISI) card or any other competence cards removed. Rail Safety Workers who test positive to drug or alcohol tests or who tamper with, or refuse any test, may be subject to prosecution by ITSR.

If required by the Contractor or the Principal, individuals must provide blood or urine samples and/or be breath tested. If an individual's test result is positive,

(c) excluded from carrying out the Contractor's Activities;

(d) tested by an authorised officer, medical practitioner or the New South Wales Police Service; and/or

(e) removed from the Site.

All of the Contractor's employees and employees of Subcontractors may also be subject to drug and alcohol testing by the Principal at any time whilst carrying out the Contractor's Activities (including within the Contractor's site amenities or facilities). Such testing will be in accordance with the Principal's Alcohol and Other Drugs Policy and the Rail Safety (Drug and Alcohol Testing) Regulation 2008 (NSW) (if the Contractor's Activities involves work in or adjacent to the Rail Corridor and the rail environment).

The Contractor must ensure that all such people co-operate with the Principal in administering investigation and testing procedures.

The Principal will determine a test program and will select work locations for random testing. The locations will be selected for random testing in order to achieve an annual test rate of at least 25% of Rail Safety Workers and 5% of non-Rail Safety Workers. Due consideration will be given to the hours of work and the number of persons at each work location. The test program schedule of site visits will remain confidential and may be audited by Officers of the Independent Transport Safety Regulator (ITSR).

The Contractor must provide the Principal's authorised testing officers with access to the Site and Subcontractor's places of work to conduct the alcohol and other drug testing as required. The methods of administering and processing alcohol and other drug tests will be in accordance with AS/NZS 4308:2008 and the Rail Safety (Drug and Alcohol Testing) Regulation 2008 (NSW) (if the Contractor's Activities involves work in or adjacent to the Rail Corridor and the rail environment).
In the event of an Incident, the Contractor's personnel on Site who were involved with or witnessed the Incident, may not leave the Site until they have undertaken drug and alcohol testing, and the Principal's Representative has agreed to their departure from the Site. If individuals involved in or witness to the Incident are taken by ambulance to hospital, then the drug and alcohol testing will be undertaken at the hospital.

Each individual that signs on at the commencement of each shift will be declaring themselves to be free of drugs and alcohol.

Contractor to administer their own drug and alcohol program to randomly test and achieve an annual test rate of at least 25% of Rail Safety Workers with a minimum of 5% Rail Safety Workers involved at any one test.

5.3.5 Fatigue Management

The Contractor must prepare, document and implement a fatigue management program for all employees and Subcontractors that is in accordance with OH&S Law and Rail Safety Law.

5.3.6 Safety Risk Management

The Contractor must identify and treat safety risks in accordance with the Contractor's Risk Management Plan and build upon the Principal's Safety Risk Logs. The requirements of TCA Generic Rail Safety Risk Register (SA-SD-038) and TCA Management of Rail Safety Risk are also applicable if the Contractor's Activities involves Rail Safety Work.

The Contractor must develop procedures in accordance with AS/NZS ISO 31000:2009 - Risk Management and AS 4292 Railway Safety Management (if the Contractor's Activities involves Rail Safety Work.).

These procedures must outline the method of hazard identification, the risk assessment processes and the control measures which will be applied for the Contractor's Activities, including how the risks have been managed so far as is reasonably practicable.

The Contractor must maintain a Safety Risk Log which includes:

(a) a description of the risk/hazard;
(b) the controls that the Contractor has implemented to address the risk/hazard;
(c) the residual risks/hazards;
(d) consultative processes employed by the Contractor in relation to the risk/hazard and the persons involved;
(e) demonstrative application of hierarchy of controls undertaken to achieve ALARP taking into account the SFAIRP principle;
(f) a log of the safety documentation produced by the Contractor for the safe operation of the asset;
(g) a list of potential accidents and the expected in-operation controls necessary to manage the ongoing risks/hazards by the owner of the asset; and
(h) for design and construct projects, safety in design considerations that have occurred during the project design phase presented in a documented and auditable trail to the satisfaction of the Principal's Representative.
The Safety Risk Log must document risks and hazards that:

(i) the Principal agrees cannot be closed out by the Contractor (and these risks are transferred to the asset owner upon Completion of the Works);

(j) are residual risks that need to be part of the lifecycle safety assurance documentation provided to the client; and

(k) are closed risks which are retained as records to demonstrate SFAIRP considerations as part of the design development.

For design and construct projects, the Contractor must also address safety in design issues by maintaining a Safety Risk Log, as outlined in TSR T1.

5.3.7 Personal Protective Equipment (PPE)

The Contractor must assess the PPE required to undertake the Contractor's Activities. The Contractor must:

(a) undertake PPE compliance monitoring;

(b) consider PPE replacement within its procedures;

(c) develop and implement a PPE testing and inspection regime (e.g. testing and inspection of breathing apparatus, safety harness); and

(d) provide the necessary instruction and training to ensure that the PPE effectively protects against the risk for which it is provided.

The Contractor must ensure that each person, including Subcontractors, carrying out work at the Site:

(e) is provided with, and wears at all times PPE that satisfies the following criteria:

(i) high visibility orange clothing (including high-visibility vest and wet weather /winter upper body apparel). Red, green or yellow PPE is not permitted to be worn at any time on the Site or Rail Corridor;

• is compliant with section 8 (Class D/N Garments) of AS 4602 High Visibility Safety Garments and the label clearly states that the clothing meets this standard and any others standards applicable;

• is approved by the Principal and RailCorp;

• has retro-reflective strips (suitable for working both day and night);

• is long sleeved, collared and covers the whole upper torso;

• the back of the clothing extends at least 100mm below the waist and covers the buttocks;

• has flame-retarding properties where the activities to be undertaken involve working on or near hot work.

(ii) includes lace up, ankle length, steel capped safety footwear (elastic sided boots are not permitted on site) compliant with AS/NZS 2210 Occupational Protective Footwear;
(iii) includes a safety helmet compliant with AS/NZS 1801 Occupational Protective Helmets and appropriate to the environment in which they work or enter;

(iv) includes safety eye wear and/or face protection which is appropriate to the task and environment. Eyewear must be compliant to AS 1337 Eye Protectors for Industrial Applications;

(v) has long trousers; and

(vi) has full-fingered cotton gloves (unless an alternative type of hand protection is specified by a risk assessment);

(f) is provided with, and wears where required by the nature of the task and the environment, all necessary and appropriate PPE including:

(i) respiratory protection (including particulate respirator, gas filter respirator and supplied air respirator) appropriate to the environment to the task;

(ii) hearing protection appropriate to the environment to the task; and

(iii) sun protection; and

(g) is provided with storage and hanging locations to allow PPE to be aired and dried.

Where the minimum PPE does not create the most suitable control for the task a risk assessment must be undertaken and defined controls incorporated into the SWMS (e.g. the use of steel capped gumboots during concrete pours).

5.3.8 Communication and Consultation

The Contractor must develop communication and consultation procedures for the Contractor’s Activities. These procedures must cover the requirements of the WorkCover (NSW) Code of Practice Occupational Health and Safety Consultation.

The Contractor’s communication and consultation procedures must include:

(a) a process for managing OH&S consultation and OH&S issue resolution on site;

(b) strategies to communicate the Contractor’s issue resolution and safety breach management procedures, to all persons undertaking the Contractor’s Activities;

(c) identification of statutory mandated notices that are to be displayed on Site, including locations of these notices;

(d) strategies to communicate safety and emergency protocols and procedures to all persons undertaking the Contractor’s Activities;

(e) processes on how pre-start meetings (toolbox meetings) will be organised, managed implemented, and closed out including:

(i) the contents and timing of meetings. This must take into consideration the fact that there may be multiple shifts;

(ii) management of shift handover meetings (taking into account if there is more then one shift); and

(iii) a schedule of safety meetings that will be held (e.g. site, project, senior management).
5.3.9 Design

Where the Contractor is to undertake design activities, the Contractor must have design processes in place that ensure that:

(a) design of the Works and the Temporary Works eliminates or mitigates safety risks, including those identified in the Safety Risk Log;

(b) design review and verification processes and records include verification that the design process has eliminated or mitigated safety risks; and

(c) a design safety risk assessment is completed.

5.3.10 Safety Change Management and Human Factors

5.3.10.1 Safety Change Management

If the Contractor’s Activities involves work in or adjacent to the Rail Corridor and the rail environment, the Contractor must develop and implement change management procedures in line with AS 4292.1 (2006) Railway Safety Management.

The Contractor must make all endeavors to not modify the organisational structure of its project team as nominated and assessed at the time of tender, unless such modification has been requested or authorised by the Principal’s Representative. This includes changes to:

(a) roles and responsibilities;

(b) reporting and communication lines; and

(c) individuals nominated for each position.

Any changes to the Contractor’s organisational structure must be approved by the Principal’s Representative. A request must be made to the Principal’s Representative for a change to be made to its organisational structure at least 10 Business Days prior to the date the change is proposed to occur.

The Contractor must develop and implement procedures for the management, control, authorisation and recording of changes to the safety procedures on the Site. This includes:

(d) changes to safe working requirements;

(e) changes as a result of amendments to relevant Law;

(f) changes in technology; and

(g) procedures and processes that are covered under safety change management.

The Contractor must not bring any plant or equipment to Site that has been modified in any way unless approval has been received from the respective regulatory or certification Authority.

5.3.10.2 Human Factors

The Contractor must develop and implement a procedure for the identification and management of human factors relating to all activities related to the Contractor’s Activities. The purpose of this procedure will be, but not limited to, ensure that its employees and those of Subcontractors and Other Contractors can work safely, comfortably and effectively whilst undertaking their duties and to eliminate incidents which may be avoided by considering the risk to human factors.
5.3.11 Safety Related Procurement

The Contractor must develop and implement a procedure addressing safety issues in procurement related processes that complies with the NSW Government OH&S Management System Guidelines and the NSW Government Code of Practice for Procurement.

5.3.11.1 Subcontractors

The Contractor must ensure that:

(a) Subcontractors have safety management systems in place that comply with all relevant requirements of the Contract;

(b) the Project Safety Management Plan identifies all risks associated with the work of each Subcontractor and any mitigation measures that are necessary;

(c) each Subcontractor undertakes one of the following:

(i) develops and implements a Site-specific Safety Management Plan that is compatible with the Project Safety Management Plan and complies with the NSW Government OH&S Management System Guidelines; or

(ii) uses the Contractor's Project Safety Management Plan (instead of establishing its own Site-Specific Safety Management Plan) and submits SWMS to the Contractor before work commences, for all the work activities that have been assessed as having safety risks.

5.3.11.2 Products and Materials

The Contractor must ensure that upon its arrival at the Site, all product and materials are quarantined within a designated lay down area, where they can be checked against relevant specifications. Products and materials must remain in quarantine area until they are either:

(a) signed-in as compliant; or

(b) assessed as non-compliant and tagged with an "OUT OF SERVICE" tag for removal from the Site.

5.3.11.3 Hazardous Substances

Where the Contractor procures hazardous substances, Material Safety Data Sheets (MSDS) must be obtained from the supplier. The Contractor must develop procedures for the purchase, transport, storage and use of hazardous substances.

The MSDS must be kept on Site in hardcopy, in close proximity to where the hazardous substance to which it relates is being used. The MSDS must also be kept in electronic form.

The MSDS must be dated within the last five years of the date of use.

5.3.12 Permits and Licenses

The Contractor must obtain all permits and licenses which are required to undertake the Contractor's Activities and to deliver the Works. The Contractor must develop and implement procedures and processes that enable it to identify all required permits and licenses (including design permits that are required for undertaking the Contractor's Activities), and detail how and when they will be procured. The Principal may direct the Contractor to obtain additional permits.
and licenses to ensure that the TCA Accreditation is not compromised. Copies of the permits and licenses must be forwarded to the Principal prior to the commencement of the Contractor's Activities that relate to the license or permit.

Without limiting the above requirement, the following activities are not permitted to commence without a permit/licence:

(a) hot work including underground locations or outdoor locations during bush fire warning periods;
(b) work within “no-go zones” and “Accredited Persons Zone” associated with overhead power lines or other electrical equipment including RailCorp’s electrical infrastructure;
(c) work in a confined space (including tunnels);
(d) work on public roads;
(e) demolition involving mobile cranes, a wrecking ball or the pulling down of a building with ropes or chains;
(f) asbestos removal; and
(g) excavation work.

Copies of all relevant permits must be attached to WAA or SWMS and submitted to the Principal’s Representative for review 6 weeks prior to commencing work on-Site.

The Contractor must ensure that all applicable staff sign on and off the relevant permit when required to work in areas to which the permit applies. The Contractor must have processes in place to manage any breaches of these signing requirements.

All licences and Permits must be available for inspection by the Principal’s Representative at all times.

5.3.13 Site Amenities

The Contractor must provide amenities as defined for Type 1 Major Construction workplaces as detailed in the WorkCover (NSW) Code of Practice Amenities for Construction Work, with the exception of the use of open closet portable toilets. All toilet facilities on Site must be either connected to the main sewer system or have self-contained freshwater flushing. No open closet portable toilets are to be used. The amenities must be kept in clean and tidy condition.

The Contractor must provide cold water for drinking in hot weather, especially for employees working away from site amenities.

5.3.14 Security

The Contractor is responsible for the care and security of the Contractor’s Activities. The Contractor must develop and implement a procedure to manage the security of the Contractor’s Activities and of the Site.

The procedure must be developed by a person with the relevant knowledge and experience. The Contractor must:

(a) document the security measures and audits to be implemented;
(b) document the security responsibilities and accountabilities for all position descriptions;
(c) manage access to the Site including access points, perimeter security and rail gates within the Site, lay down areas, Construction Plant, and any site buildings and its contents. All gates must be either locked or attended at all times;

(d) have methods of securing plant and equipment, excavations, water ponds, etc on the Site. This will ensure that they are left in a secured state and do not endanger other employees, the environment or the public;

(e) institute a register to cover keys to the Site and keys for Construction Plant;

(f) ensure that the security management of the Works reflects the National Counter Terrorism Alert Levels;

(g) develop procedures to communicate and respond to changes in the National Counter Terrorism Alert Levels;

(h) document how notification of a terrorism incident will be made to the Principal's Representative and law enforcement authorities, and the roles and responsibilities of the Contractor's employees and Subcontractors in such an event; and

(i) document the procedures for the management of graffiti on Site.

The Principal may require the Contractor to undertake security drills, exercises and audits at any location involved with the delivery of the Works.

The Principal may direct the Contractor to undertake police criminal record checks for any of the Contractor's and Subcontractor's employees. The Contractor must develop procedures on how such checks will be undertaken and how the results will be treated in confidence. The Principal's Representative must be notified of the results of these checks if any offences have been recorded. If in the Principal's Representative's opinion the results of the checks pose a potential risk to the Works, the relevant person may be removed from Site and prevented from continuing to undertake any Contractor's Activities.

The Contractor must ensure that the overall presentation of the Site is neat and clean, with uniform hoardings and fencing that is safe and that clearly and neatly delineates the Site from the public and adjoining areas.

5.3.15 Lighting

The Contractor must provide and maintain efficient lighting for the Contractor's Activities as may be necessary and to ensure the safety of its workmen and others. Lighting must be positioned and screened so that it does not distract the vision of train and car drivers.

Lighting in close proximity to the Rail Corridor must be white in colour. Any lighting must be selected and installed in a manner to avoid glare or other impact to adjacent properties, wherever feasible.

5.3.16 Walking surfaces

The Contractor must provide walking surfaces on-site that meet the following requirements:

(a) walkway surfaces must be evenly formed with no trip hazards. Concrete or tarmac finished paths with formed edges are preferred;
(b) walkways made from fill must be adequately compacted to give a plane surface with falls designed to shed water and avoid puddling and deterioration;

(c) the minimum clear width of a footpath is to be 1.2m to allow two persons to walk side-by-side or to pass safely where possible;

(d) boards used on scaffold platforms or bridges must be free from warp, large knots or damage and secured in position. Where there is any overlap, a fillet piece should be installed to prevent tripping. Refer AS 1577 Scaffold Planks and AS/NZS 4576 Guidelines for Scaffolding;

(e) scaffold ramps with a gradient of 1 in 4 or greater must be fitted with stepping lathes or non-slip surfaces with handrails;

(f) formed steps within a walkway are to be constructed with a rise of approximately 190mm and 300mm treads with adequate handrails; and

(g) nosings to temporary steps, with a non-slip surface are to be provided. These must be highlighted in a contrasting colour in poorly lit areas.

5.3.17 Walkway barriers

The Contractor must provide walkway barriers that meet the following requirements:

(a) walkways are to be delineated where possible with solid rails or surfaces (such as scaffold tubes, proprietary fencing panels, jersey barriers or hoarding);

(b) where scaffolding is used as a walkway barrier:
   (i) mid-rails are to be provided to discourage persons from leaving the route at unauthorised points;
   (ii) transom couplers are to be used in preference to right angle couplers; and
   (iii) where the use of transom couplers is not practical and right angle couplers are used, right angle couplers are to have protective coverings;

(c) due to high maintenance demands and untidy appearance, the use of road pins and netting is discouraged except when forming very transient access routes;

(d) in large floor areas, designated access routes are to be identified by painted lines or hatching and clearly identified as walkways; and

(e) sufficient numbers of formal access points are to be provided and sign posted to allow entry and exit; and

Walkway barriers must be kept clean, safe and in a state of repair.

5.3.18 Secondary accesses

The Contractor must determine the requirements for secondary access on the Site. This must include the type of secondary access to be used, in what situation it will be used, and the responsibility for approval of its use. The determination must be based on a hazard identification, a risk assessment and the relevant standards.

Secondary access must be provided by the Contractor that meets the following requirements:
(a) access down batters or into excavations must be planned. Where stair towers cannot be used, steps must be formed in the bank in concrete, or scaffold or proprietary components may be used;

(b) mats (walkway) are to be provided for walking across re-bar to gain access to the work location. The walkway should be constructed by providing a 1.2 metre wide platform from scaffold boards or staging. Fillet pieces are to be installed to prevent trip hazards from lapping of the boards.

5.3.19 Restricted areas

The Contractor must identify and designate restricted areas. The Contractor must develop and implement a procedure to determine how access to restricted areas will be prevented, the type of barriers to be used, the signage that will be displayed and the persons who are authorised to enter.

Restricted areas must be clearly signed and delineated with physical barriers. The Contractor must obtain prior approval from the Principal’s Representative for the following:

(a) use of barrier tape as a form of delineation; and

(b) use of star pickets.

Where existing access and escape routes are likely to be affected by restricted areas, alternative safe access and escape routes must be established prior to work commencing.

5.3.20 Signage

In addition to the requirements of clause 210(7) of the Occupational Health and Safety Regulation 2001, the Contractor must provide signage that is securely fixed and clearly visible to define formal access routes. All signage must be cleaned, maintained and remain visible at all times. Mandatory signage is to be displayed at all entry gates which contain, as a minimum:

(a) PPE requirements for the Site;

(b) relevant advisory and danger signs related to Works activities on Site;

(c) hazardous substances; and

(d) emergency contact numbers.

5.3.21 Construction plant

The Contractor must ensure that all Construction Plant, used for the purpose of carrying out the Contractor’s Activities, is properly operated and maintained so as to ensure that it poses no risk to the health and safety of any person on the Site, or on land adjoining the Site.

The Contractor must:

(a) develop and maintain as current, a Site assets register;

(b) ensure that daily or shift inspections of Construction Plant are carried out and record the results;

(c) identify potential hazards associated with the use of Construction Plant, and assess and control the risks associated with the use of such Construction Plant;
(d) provide the Principal’s Representative with copies of all risk assessments undertaken on mobile and stationary Construction Plant prior to arrival on Site;

(e) provide the Principal’s Representative with copies of the inspection record and testing regime for lifting devices, prior to arrival on Site;

(f) have copies of any certificates of competency, licences and permits relevant to the operation of Construction Plant and that are required by WorkCover NSW at the Site, and provide these to the Principal’s Representative on request;

(g) maintain the Construction Plant in accordance with the manufacturer’s standards;

(h) ensure that all Construction Plant including site vehicles/trucks entering the Site have:
   (i) proper functioning orange flashing lights;
   (ii) non-tonal beepers; and
   (iii) reversing cameras (a camera positioned so as to eliminate blind spots of the vehicles/plant);

(i) ensure that inspections, servicing, cleaning and maintenance on Construction Plant is performed by appropriately qualified and competent persons;

(j) maintain records of inspections, service, cleaning and/or maintenance of Construction Plant, and provide these to the Principal’s Representative on request;

(k) provide its employees with adequate information about the safe use of Construction Plant;

(l) ensure that prior to any crane lifts, a lift study is undertaken and the relevant calculation carried out;

(m) remove from operation any piece of Construction Plant when so directed by WorkCover NSW or by the Principal’s Representative;

(n) ensure that people do not enter areas where mobile Construction Plant is operating unless authorised by the Principal’s Representative to do so; and

(o) ensure that where spotters are used for all reversing movements and these spotters are dedicated solely to performing the task of spotting and are not permitted to perform other tasks (such as labouring and cleaning). Spotters that are required to ensure that safe approach distances from electrical equipment are maintained at all times, must be trained in electrical safety to at least the same level as the operator of the item of mobile plant.

If the Contractor’s Activities involves work in or adjacent to the Rail Corridor and the rail environment, the Contractor must:

(p) implement the use of slew restrictors where the plant is capable of slewing within 3 metres of the Danger Zone of the rail; and

(q) ensure that all Construction Plant complies with RailCorp’s Safety Requirements for Plant.

The Principal may inspect any Construction Plant that the Contractor brings on to the Site for compliance with the requirements of the Contract.
5.3.22 Traffic management on-site

A Site traffic management plan must be developed by the Contractor for the use of mobile Construction Plant. All workers must be briefed on the traffic management plan and the plan must be posted in relevant prominent positions around the Site. The plan must include:

(a) marked walkways;
(b) speed limits;
(c) directions of travel;
(d) reversing arrangements, including the mandatory requirement for spotters to be used for all reversing movements;
(e) parking locations;
(f) signage and markings;
(g) the location of hazardous materials; and
(h) the location of fire prevention equipment.

5.3.23 Excavation and Earthworks

The Contractor must develop and implement a procedure to manage excavation and earthworks. This procedure must include:

(a) a signing on/off process for access to excavations;
(b) inspection regimes;
(c) time frame of permits; and
(d) a system for managing associated breaches related to excavation and earthworks.

All work involving excavation or earthworks:

(e) to a depth greater than 1.5 metres;
(f) within 5 metres of underground services; or
(g) within 3 metres of overhead wires,

must be in accordance with either an excavation work plan or SWMS. In addition, excavation can only take place after a detailed site survey of underground services has been conducted.

Furthermore were relevant the excavation must comply with the TCA Excavation in and around Utilities Standard EN-ST-107. This document should be read in conjunction with the TCA Procedure for Management of Excavation in and around Utilities and the TCA Guide to Management of Excavating in and around Utilities.

Permits must be current and must be signed and approved by the Contractor prior to the commencement of any excavation or earthwork.

All plans and service searches must be validated by potholing (or other non-destructive methods which are approved by the Principal) before mechanical excavation can begin.

All excavations deeper than 1.5 metres or where there is a risk of either structural damage or collapse must be shored, battered, or benched. Shoring systems must be designed and certified by a Competent Person.
Appropriate controls must be implemented to prevent persons falling into excavations deeper than 1 metre. The controls must be inspected by a competent person at intervals determined by the risk assessment.

Ladder access must be provided for all excavations deeper than 1 metre. The ladder must be set at 1:4 angle, must be secured and must protrude at least 1 metre above the top of the excavation.

For advice and information to locate external underground services contact Dial Before You Dig (DBYD) on 1100 or www.dialbeforeyoudig.com.au

5.3.24 Working at heights

The Contractor must develop and implement a procedure for working at heights. This procedure must demonstrate how the risks of working at height will be managed. The hierarchy of controls must be applied when determining risk control options. The use of fall arrest systems/harnesses must not be used wherever it is practicable to use an elevated work platform (EWP) or scaffold.

The Contractor must develop and implement a rescue plan for any of the Contractor's Activities that are undertaken at a height and detail these procedures within the SWMS.

Ladders

The Contractor must discourage the use of ladders on Site. Where ladders are to be used the Contractor must undertake a risk assessment and hazard identification to implement adequate control measures.

Scaffolding

Scaffolding must only be erected by appropriately trained and competent staff in accordance with AS/NZS 1576 Scaffolding. Any scaffold over 4 metres must be erected by a WorkCover NSW licensed scaffolder. All scaffolds must be erected in accordance with either engineer designed drawings or the scaffolding manufacturer's instructions (whichever is appropriate). The Contractor must implement a Scafftagg system requiring scaffolds to be inspected and certified as safe for use by a competent person before use, and every 30 days.

Elevated Work Platform

The Contractor must develop and implement a procedure in relation to the use of elevated work platforms. This procedure must cover the competencies required, and the use, inspection and maintenance requirements.

Lifting equipment

The Contractor must develop and implement a procedure in relation to lifting equipment (e.g. chains, slings). This procedure must cover the competencies required, the use, inspection regime, and maintenance requirements and the methods for destruction of noncompliant lifting equipment.

5.3.25 Working adjacent to or over water

The Contractor must develop and implement a procedure in relation to how work adjacent to or over water will be managed.

The procedure must implement the following requirements:
(a) any work over water requires a minimum of two people;

(b) if there is a risk of drowning, workers must wear either a buoyancy aid or use a fall arrest system; and

(c) rescue equipment (either a boat or a lifebuoy must be provided and workers that cannot swim must be discouraged from working near a deep water body.

This procedure must also cover the development of stable grounds for the placement of lifting devices (e.g. cranes or excavation equipment) if this is not already covered by the management procedures of Construction Plant in such areas.

5.3.26 Working on or near public roads

The Contractor must develop and implement a procedure for working on or near public roads. This procedure must include methods of dust suppression.

The Contractor must obtain Authority Approvals for any work on or near public roads that might disrupt either pedestrian or traffic flow. A Traffic Control Plan (TCP) must be in place for all such work. The TCP must be submitted to the Principal's Representative for review under clause 9.14 of the General Conditions prior to being implemented.

Traffic controllers must hold the RTA Blue Card (Stop / Slow bat) and must wear high visibility clothing. Traffic controllers are not permitted to operate on roads where the speed limit is 60 km/hr or higher. Traffic controllers and workers on the road must be provided with protection from the risk of being struck by out-of-control vehicles (e.g. safety barriers, shadow vehicles, distance from moving traffic).

Signs must be installed in accordance with the TCP and must be periodically checked throughout the work. There must be sufficient traffic controllers to allow them to rotate and have breaks. Traffic controllers working at night must carry illuminated wands to direct traffic and wear clothing with reflective stripes in accordance with AS 4602 High Visibility Safety Garments.

5.3.27 Electrical Safety

The Contractor must develop a procedure in relation to electrical safety which accords with all relevant standards and Laws. This procedure must include the following requirements:

(a) all portable electrical equipment must be tested and tagged on a monthly basis. Items that are not tagged or are out-of-date are not to be used and must be removed from the Site;

(b) earth leakage devices/residual-current devices (RCDs) must be provided and used for all portable electrical equipment including welders;

(c) cords and leads must be elevated out of the way using insulated stands and hooks. All electrical equipment must be visually inspected for damage before use;

(d) work on low voltage electrical installations must only be done by a qualified electrician. Live work is not permitted. Isolated circuits are to be treated as live until they have been proven dead by testing;

(e) the use of tag out/lock out permit system and of isolation locks, wherever possible;
safe approach distances (SADs) to electrical equipment must be maintained at all times in accordance with the WorkCover (NSW) Code of Practice - Work Near Overhead Power Lines. These SADs may be increased for certain activities such as using scaffolding and use of plant. For people that have been specifically trained, the SAD’s may be reduced. Metal ladders must not be used; and

if there is any chance that SADs cannot be maintained at all times, then the work must not commence, or must stop immediately if it has already commenced.

5.3.28 Safety Inspections, Monitoring and Audit

5.3.28.1 Safety Inspections

The Contractor must develop and implement a system for conducting regular safety inspections which complies with the requirements outlined in the NSW Government OH&S Management System Guidelines for inspection and testing. The Contractor may incorporate these inspection requirements into the ITPs developed by the Contractor in accordance with TSR Q1. The Contractor must provide the Principal’s Representative with a Site inspection regime and must participate in collaborative safety inspections with the Principal.

The Contractor must:

(a) maintain inspection registers of assets, activities and systems that require formal inspection. These registers are to be made available on Site at all times;

(b) perform and document daily pre-start inspections of all Construction Plant and any rolling stock;

(c) conduct safety inspections at least weekly, or more frequently if the Contractor’s Activities warrant. Inspections should also identify hazards associated with the Contractor’s Activities;

(d) include in its safety inspections all work undertaken by Subcontractors;

(e) record the results of all safety inspections indicating, as a minimum, the date, the person(s) undertaking the inspection, the items/activities inspected, the findings, actions required, by whom and when;

(f) participate in collaborative safety inspections with the Principal on a monthly basis (or more frequently if required by the Principal’s Representative);

(g) record the results of and the parties present at all collaborative safety inspections addressing the requirements of parts (c) and (f) above;

(h) record any non-compliances that were discovered during safety inspections and treat these non-compliances in accordance with TSR Q1; and

(i) ensure that appropriate and timely action is taken to eliminate or reduce hazards and non-compliances.

Each non-compliance must be addressed and the party being inspected must be provided with the corrective actions. Corrective actions must detail:

(j) the corrective action required;

(k) priority and date for corrective action close out; and
(l) person accountable for the corrective action.

5.3.28.2 Monitoring

The Contractor must develop and implement a procedure to monitor compliance that includes the following:

(a) Contractor's Project Safety Management Plan (including Site Specific Safety Management Plans) (as outlined in TSR Prelude);
(b) document management requirements;
(c) Construction Plant, Temporary Work, protection systems and their associated inspection regimes;
(d) the procedure for the management of incoming produce and material;
(e) electrical tagging requirements;
(f) lifting equipment testing regime;
(g) preventative maintenance regime for Construction Plant (trucks will be considered as a Construction Plant for this project); and
(h) instrument and measuring equipment testing regime.

5.3.28.3 Auditing of Contractor's Project Safety Management Plan

The Contractor must demonstrate to the satisfaction of the Principal's Representative that it has implemented an effective self verification process for the Works which includes inspections and audits.

The Principal and regulatory agencies will conduct audits of the Contractor's Project Safety Management Plan to verify its compliance with the requirements of the Contract.

In addition to the auditing requirements set out in the TSR Prelude and TSR Q1, the Contractor must comply with the requirements outlined in the NSW Government Guidelines for Auditing Project OHS Management Plans.

5.3.29 First aid and Defibrillators

The Contractor must develop and implement a procedure for managing the provision of first aid for the Contractor's Activities in accordance with the OH&S Law.

The Contractor must provide a defibrillator (and suitable training in its use for its senior first aiders), at each major first aid location, and must ensure that the Project Safety Management Plan addresses the provision of such defibrillators and training. Persons trained in the use of the defibrillator must be on Site at all times.

5.3.30 Emergency and Crisis Management

The Contractor must develop and implement appropriate emergency and crisis management procedures in consultation with:

(a) the Principal;
(b) police, fire and ambulance services;
(c) any government agencies with emergency management functions in the area that the emergency plan applies;

(d) organisations that may be required to assist in implementing the emergency plan (e.g. service and telecommunications providers);

(e) DECCW;

(f) local councils; and

(g) owners of neighbouring properties that affect or are affected by the Works.

The Contractor must develop and implement site emergency plans which include:

(h) identification of reasonably foreseeable emergencies and measures to mitigate the consequences of these emergencies;

(i) allocation of roles and responsibilities in case of an emergency;

(j) appointment of adequate number of senior level first aid officers and fire wardens;

(k) medical equipment required, including first aid boxes and defibrillators;

(l) location of safety equipment;

(m) emergency evacuation arrangements;

(n) assembly areas;

(o) response procedures to bomb threats;

(p) an explanation of how simulated emergency exercises will be undertaken;

(q) procedures on how a post-emergency review will be conducted; and

(r) an emergency call out procedure and contact list, which includes:

(i) the contact details of:

• police, fire, local hospitals and ambulance services;

• any government agencies with emergency management functions in the area that the emergency plan applies;

• organisations that may be required to assist in implementing the emergency plan;

• DECCW;

• local councils;

• owners of neighbouring properties that affect or are affected by the Works; and

• utility Authorities;

If the Contractor's Activities involves work in or adjacent to the Rail Corridor and the rail environment:

(s) the site emergency plans must also include:

(l) a rail traffic plan, which covers:
emergency arrangements for hazards associated with local rail operations including hazardous rail freight;

communications procedures; and

site control and coordination; and

(ii) an emergency contact list which includes the contact details of:

- train control and signalling locations;
- adjoining railway managers;
- transport authorities (rail and road);
- owners of neighbouring properties affected by rail activities; and
- recovery procedures for restoration of railway operations; and

(t) the Contractor must ensure that the requirements for emergency plans contained in the Rail Safety Law are complied with.

The Contractor must test the site emergency plan at least annually and request the Principal's Representative to attend and be included in the test.

5.3.31 Safety Occurrence Investigation, Reporting and Recording

5.3.31.1 General

The Contractor must notify the Principal's Representative of any Incidents in accordance with TSR C1, and must develop processes which address these requirements.

The Contractor must document:

(a) the processes for communication in relation to safety issues and emergencies

(b) maintain a current list of relevant names, telephone numbers (all-hours), email addresses and facsimile numbers

(c) details of emergency services.

5.3.31.2 Investigation of Occurrences

The Contractor must develop a procedure for the investigation of all safety occurrences, including OH&S and rail safety occurrences, with the purpose of ascertaining the cause of the occurrence and ensuring that appropriate actions are taken to prevent recurrence. This procedure must describe the investigation methods to be used, the timing of investigations, the various levels of investigations being undertaken and the composition of the various investigation teams, and the training that must be undertaken by the investigation team. The occurrences investigation undertaken must be free from all bias.

The Contractor must undertake an investigation into all near-miss or actual occurrences and implement controls to prevent recurrence. The Principal may direct the Contractor to undertake an investigation into an Incident or potential Incident. The Principal may also participate in any investigation being undertaken by the Contractor or initiate its own investigation. If the Principal initiates its own investigation the Contractor must provide the Principal with all assistance reasonably required for the purposes of the investigation.
The Contractor must use the following forms:

- TCA Minor Investigation Report (SA-FO-001);
- TCA Major Incident Investigation Report Template (SA-FO-178).

The Contractor must progressively record the results of all investigations that it undertakes. The Contractor must provide the Principal's Representative with an interim investigation report within 24 hours of a request from the Principal's Representative. The Contractor must attach any statutory notifications forms, statutory notices and any fines received to this interim report.

5.3.31.3 Reporting Of Incidents

The Contractor must notify the Principal's Representative of any Incidents in accordance with TSR C1 on TCA Initial Safety Occurrence Report (SA-FO-002) and transmit this electronically (via email to safety@tca.nsw.gov.au) to the Principal's Representative within given timeframes.

All OH&S and Rail Safety Notifiable Occurrences must be reported by telephone to the Principal's Representative within 2 hours of the Contractor becoming aware of the occurrence. In the event of these types of occurrences, measures are to be taken to ensure plant is not used, moved or interfered with after it has been involved in a serious incident, and the area at that place that is within 4 metres of the location of the serious incident is not disturbed.

Where the Contractor is required to give WorkCover NSW a notice of an Incident, the Contractor must immediately notify the Principal's Representative. The Contractor must also provide the Principal's Representative with a copy of this notice within 2 hours of the Incident occurring.

Where any type of notice, infringement or fine by WorkCover NSW or the Independent Transport Safety Regulator (ITSR) has been issued to the Contractor whilst undertaking the Works, the Contractor must immediately notify the Principal's Representative, and must provide the Principal's Representative with a copy of the notice, infringement or fine within 2 hours of receiving it.

5.3.32 Nonconformances and Corrective actions

The Contractor must develop and implement procedures to manage non-conformances and corrective actions in accordance with TSR Q1. The Contractor must also identify the consultative process that has been applied and how the non-conformance will be treated.

5.3.33 Safety Performance Reporting

The Contractor must provide monthly safety statistics electronically to the Principal's Representative, by the 25th Day of each month, using TCA Monthly Safety Statistics and Incident Summary (SA-FO-096). It must include but not be limited to:

(a) number of employees on site and hours worked;
(b) lag indicators;
(c) proactive safety indicators for Contractor's Activities (the Contractor must as a minimum develop 5 project specific lead indicators and obtain the Principal's Representative's concurrence on the lead indicators which are to be reported monthly);
(d) list of proactive activities undertaken; and
5.3.34 Safety Assurance of Rail Related Projects

Where nominated in TSR S1 Annexure A, the Principal will establish and manage a Project Safety Leadership Team for the Works. The Contractor must participate within this team as requested by the Principal.

Prior to any design activity being undertaken in relation to the Works, the Contractor must demonstrate to the Principal's Representative that all associated personnel are familiar with the requirements of the international standard "Railway applications. The specification and demonstration of reliability, availability, maintainability and safety (RAMS)" (EN50126) and the requirements of TSR T1.

For design and construct projects, the Contractor must, as a condition precedent to Completion, produce a Safety Assurance Report in accordance with TSR T1.

The Safety Assurance Report must clearly define and document the safety argument underpinning the design, construction, commissioning and integration of the works and must include all evidence required to support the safety assurance argument.

5.4 Additional Management Plan Requirements for Rail Safety Work

5.4.1 General

This TSR S1 Clause 5.4 describes additional Project Safety Management Plan requirements for any work in and adjacent to the Rail Corridor and rail environment.

5.4.2 Accountability, Competence and Inductions

5.4.2.1 Accountability

The Contractor must develop position descriptions for personnel carrying out the Contractor's Activities. The Contractor must provide the Principal's Representative with a list of position descriptions which identifies each position description as either:

(a) the position is deemed not to be a Railway Safety Worker in accordance with the Rail Safety Act; or
(b) the position is deemed to be a Railway Safety Worker in accordance with the Rail Safety Act.

The Principal's Representative may alter the list of Rail Safety Workers as nominated by the Contractor.

5.4.2.2 Competencies

The Contractor must consult with the Principal's Representative to obtain a determination as to when the Rail Industry Safety Induction (RISI) Identification Card is mandated for the Contractor's Activities. See TSR S1 Clause 5.4.4 for further information.
The Contractor must ensure that persons who are deemed to be a Rail Safety Worker are issued with a certificate of competency under the Rail Safety Act. The Contractor shall develop and implement a competence management system that encompasses the Principal’s Requirements.

The Contractor must keep an up to date register of persons who hold certificates of competency for Rail Safety Workers. This register must include the issue date and expiry date of the certificate and comply with regulatory requirements.

The Contractor must ensure that any personnel (including visitors) that enter the Rail Corridor obtain a Rail Industry Safety Induction Certificate (RISI). The Principal will only accept RISI cards issued by RailCorp as evidence of compliance with RISI requirements.

5.4.3 Rail Safety

The Contractor must develop and implement processes to ensure that:

(a) any person supervising work on or in the vicinity of the Rail Corridor has the qualifications required by RailCorp and the Principal;

(b) any person setting up safe work arrangements for work on or in the vicinity of the rail environment has the qualifications required by RailCorp and the Principal;

(c) all work must be assessed for safety including its potential to intrude on the Danger Zone;

(d) without limiting the obligations under sub-paragraphs (a) and (b), any person who is to perform Railway Safety Work (as defined under the Rail Safety Act holds appropriate certificates of competency as required under the Rail Safety Act;

(e) SWMS are prepared for any activities on or adjacent to the Rail Corridor that have the potential to impact on the rail infrastructure, train operations, station platforms or RailCorp facilities. The Contractor must process the review of all SWMS associated with or adjacent to the Rail Corridor through the WAA (using the TCA Work Activity Advice (SA-FO-105)) and the meetings held pursuant to the Safety Interface Agreement;

(f) WAA’s and associated SWMS are submitted to the Principal’s Representative at least 6 weeks prior to the commencement of the activity and addresses the requirements of the Safety Interface Agreement;

(g) the WAA includes a risk assessment performed by a competent person. This risk assessment is in addition to the risk assessments undertaken as part of the production of SWMS. The WAA risk assessment is to ensure that all safety hazards have been identified and that the safety risks associated with the combination of the proposed SWMS are effectively managed;

(h) compliance is achieved with the Principal’s Rail Safeworking requirements, based upon the following principles:

(i) people must have a safe place immediately available when on track;

(ii) when on track and in the Danger Zone people must be protected;

(iii) people and trains must be separated at all times;

(iv) if trains cannot be separated from people, they must be managed to ensure the safety of people on the Track;
(v) a safety assessment must be completed before entering the Danger Zone;
(vi) all relevant information must be provided to people;
(vii) workers must be competent in rail safeworking;
(viii) workers must be warned about the hazards within the Rail Corridor;
(ix) rail traffic must meet technical and operational standards; and
(x) safe routes must be established for all rail traffic;

(i) the Contractor's employees working in or adjacent to the Rail Corridor attend a pre-work safety briefing each day (or more frequently if work practices dictate) with a qualified work supervisor. This briefing must detail the agreed nature of the work, the effect of the work on the rail operations, and the methods of safe working that must be employed. Pre-work safety briefings must be in accordance with all RailCorp and Principal's requirements;

(j) the Contractor obtains the Principal's Representative's approval for the introduction of new or modified rolling stock onto the Site; and

(k) the Contractor obtains the Principal's Representative's approval for the introduction of new or modified rolling stock maintenance activities.

The Worksite Protection Personnel must brief all personnel undertaking the Contractor's Activities on the Worksite Protection arrangements at the Site at the start of each shift or as is required by the Works (and agreed by the Principal's Representative).

5.4.4 Work on Track Methods for Working Safely

Unless specified by the issue of a Safeworking Notice issued by the Principal's Representative, the primary work on track methods for working safely are summarised as follows:

<table>
<thead>
<tr>
<th>Site</th>
<th>Specification</th>
<th>Method of Worksite Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenfield Worksite</td>
<td>Worksite under construction without any rail traffic movements, permanent way or traction power systems being installed.</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RISI Identification is not required.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If further clarification is required refer to the Principal's Representative.</td>
</tr>
<tr>
<td>Greenfield Rail Site</td>
<td>Rail site under construction or commissioning with rail traffic movements, or when traction power systems are being installed. A TCA managed and controlled rail site which has no interface access with other rail sites or rail systems.</td>
<td>Work within or potential to impact the Danger Zone requires the TCA's Local Possession Authority (TLPA).</td>
</tr>
<tr>
<td></td>
<td>Note: Should a Greenfield Rail Site</td>
<td>Work within the rail site but outside of the</td>
</tr>
</tbody>
</table>
I

TCA Standard Requirements
TSR S1 - Safety Management

.rt6k\" Transport
~ Construction
GQYBINMn.,

Authority

Auburn Stabling Project

encroach on the Danger Zone of any
other adjoining Rail Transport
Operator's (RTO's) rail sites, adjacent
line protection must be implemented
and managed in accordance with the
rules of the adjoining RTO.
An interface is considered removed if
points that allow entry and exit to the
site are secured and a physical barrier
is established at the limits of the
Greenfield Rail Site.

Principal's Danger
Zone may be
performed without a
TLPA as long as the
work is performed
under the direction of
a Protection Officer.
RISI Identification
Card requirements
need to be verified
with the Principal's
Representative.

Brownfield Rail Site

A rail site, which mayor may not be
situated on another RTO's land, which
interfaces with another rail site or rail
system which has physical barriers in
place to prevent rail traffic movements
over the Principals and other RTO rail
interfaces, for which the Principal is the
accredited RTO applies and where the
Principal's Safety Management System
applies.

Principal's Local
Possession Authority

Brownfield Rail Site

Rail traffic movements over rail
interfaces between Principal's and
other RTO.

Other RTO's Network
Rules and Procedures

Other RTO Rail Sites

Where TCA work is, or may be required
to be protected by other RTO
safeworking controls e,g. where
adjoining lines on other RTO rail sites
require or may require protection, or in
possessions on other RTO rail sites.

Other RTO's Network
Rules and Procedures

The Contractor must submit to the Principal's Representative for review under clause 9.14 of the
General Conditions certification that completed track work is fit for purpose from:
(I)

the Contractor's designers (including relevant Subcontractors carrying out such design);
and

(m)

persons who hold RailCorp track inspector qualifications of Maintain Track Geometry
(00188), Visually Inspect and Monitor Track (00191), and Record and Analyse Track
Parameters (00185),

before returning infrastructure affected by the Contractor's Activities back into service.

TSR Sl- Safety Management.DOC
©TCA2010

TCA

"

Page 31

•
•


5.4.5 Swing Arm Plant

The Contractor, in determining whether there is a requirement for the use of restrictors for swing arm plant, must consider the following factors:

(a) the work environment including weather conditions where the work is to be undertaken (e.g. clearances to the overhead wires or Danger Zone);

(b) the topography where the work is to be undertaken (e.g. width of the corridor);

(c) whether the restrictors afford the highest level of protection to make the task safe;

(d) whether an alternative item of plant can be used;

(e) whether the use of restrictors introduce additional hazards to the process;

(f) whether the operator is trained, competent and certified to operate the plant and restrictor (e.g. computer based);

(g) the restrictor type and relevant usability factors (e.g. audio, mechanical, electronic, laser, GPS with laser technology, radius indicators, etc.);

(h) the size of the plant and its potential radius / reach capability;

(i) if the plant is dependant upon hydraulics to lift and navigate the swing arm, whether it is fitted with a hydraulic failure controlled descent device; and

(j) whether the restrictor complies with Australian Standards and designed for the plant that is being used.

In planning for work to be undertaken with plant and equipment using restrictors, the Contractor must complete a safety assessment of all work to be performed within the Rail Corridor, including for the potential to encroach into the Danger Zone.

The Contractor’s site supervisor and plant operator, and the Protection Officer must be involved in any safety assessment which involves swing arm plant. The safety assessment must consider the following:

(k) risks have been identified, documented and controlled where plant is utilised out of the Danger Zone;

(l) whether plant used in the work will intrude into the Danger Zone;

(m) the effect of the formation of the railway line and the topographical location on the work;

(n) whether the level of noise from equipment and rail traffic will be excessive;

(o) managing risk of plant rolling over;

(p) identification and protection of electrical infrastructure; and

(q) resources required to undertake the work safely.

The Contractor’s construction planning process must include the validation of the proposed method of work to be carried out on the day. This validation process must include the completion of a site specific risk assessment and development of a plant working diagram by the Contractor’s site supervisor or construction engineer in conjunction with the project rail safeworking coordinator and any other required project personnel. All potential safety hazards and control measures must be documented in SWMS before work is to commence.
The Contractor's site supervisor must conduct a pre-work briefing with all personnel involved, including the Protection Officer, prior to commencing the work. The Site Supervisor's pre-work briefing must include the following items:

- (r) description of swing arm plant and equipment being used, including the type of restrictor(s) being used;
- (s) details of the "line in the sand" for the positioning of the chassis of the swing arm plant or equipment being used (including consideration of the size and reach of the swing arm plant or equipment);
- (t) arrangements for the provision of a spotter;
- (u) reference to the details included in the Worksite Protection Plan prepared by the Protection Officer that includes swing arm plant considerations; and
- (v) in the case of operations involving the use of a crane, details of the lifting plan developed for the work.

5.4.6 Use of Rolling Stock, Hi-Rail Vehicles and Work Trains

Rolling stock and rail traffic is not permitted to travel or operate on the Site without the Principal's consent. The Principal may also impose requirements, limitations and constraints on rail traffic travelling or operating on the Site.

To the extent that any part of the Contractor's Activities requires the use of hi-rail vehicles or work trains, the Contractor must:

- (a) ensure that such vehicles are only operated by persons with appropriate competencies and by an organisation which holds accreditation as a Rolling Stock Operator;
- (b) ensure that hi-rail vehicles are duly checked and certified as being fit for their intended use at the start of each shift;
- (c) ensure that the utilisation of hi-rail vehicles or work trains is appropriately addressed in the Contractor's procedures to ensure safe operations, to prevent injury and damage to infrastructure and to ensure that responsibilities are identified and documented;
- (d) assess the past record of potential Subcontractors to ensure that they comply with the Rail Safety Law and relevant rail accreditation requirements. The results of these assessments must be made available to the Principal upon request;
- (e) set out and carry out regular reviews of the performance of train and hi-rail operators engaged for the undertaking of the Contractor's Activities (including at least one review after each major Track Possession or major Incident, or in any event every three months). The results of these reviews must be made available to the Principal upon request; and
- (f) Only use plant authorised on Rolling Stock Register.

5.4.7 Fatigue, Medical and Health Management

For workers carrying out Railway Safety Work the Contractor must apply the following fatigue, medical and health minimisation controls:
Transport
Construction
Authority

TCA Standard Requirements
TSR S1 – Safety Management
Auburn Stabling Project

(a) implement a fatigue management program that:

(i) addresses the requirements of the Rail Safety Law and TSR S1 Clause 5.3.5;
(ii) restricts workers to no more than 12 hours worked at a time not including travel time to and from work, unless there is a declared incident in which case work can be performed up to a maximum of 16 hours at a time, as long as workers are not required to drive a motor vehicle or operate heavy plant or equipment between the 13th and 16th hour;
(iii) includes periods of 11 hours rest away from work;
(iv) restricts the maximum number of work days to 12 work days in 14 consecutive days;
(v) minimises to five consecutive occasions where 8 hours are worked at night (i.e. after normal office hours) or 4 consecutive occasions where 10 hours are worked at night or 3 consecutive occasions where 12 hours are worked at night without a 48 hour rest break;
(vi) ensures employees receive a minimum of 48 consecutive hours free of work in a 14-day period; and
(vii) has the capacity to replace or relieve workers where unplanned or unavoidable extended hours have created a risk to employee health and safety;

(b) inform such persons that they are subject to medicals and health assessments in accordance with the National Standard for Health Assessments of Rail Safety Workers;

(c) ensure that the National Standard for Health Assessments of Rail Safety Workers are undertaken and documented including re-examinations. The documented records must be maintained according to the State Records Act; and

(d) inform such persons that additional medical and health assessments may be required to be undertaken where they are involved in a safety accident or where there is reasonable cause for concern that person may be unable to perform work safely (such as upon return from a long illness).

5.4.8 Safety Related Procurement

The Contractor must, as part of the procurement and management processes for Subcontractors, ensure that:

(a) the Subcontractors have appropriate systems and practices in respect of Railway Safety Work and that they comply with those systems and practices;

(b) the Subcontractor’s employees are qualified and competent to undertake Railway Safety Work as required by Rail Safety Law; and

(c) the Subcontractor’s employees are trained and inducted on any Site specific rail safety procedures.

5.4.9 Rail Safety Interface Agreement

The Contractor must fulfil its obligations and comply with the conditions and requirements of the Safety Interface Agreement which appears in Exhibit J.
ANNEXURE A – Additional Project Requirements
Additional Project Requirements

Project Safety Leadership Team
The Principal will establish a Project Safety Leadership Team. (Yes / No) [Yes]

Mentioned in clause 5.3.34 of TSR S1 ("Yes" applies if not filled in)
ANNEXURE B – List of Reference Documents
List of Reference Documents

General
AS 4602 High Visibility Safety Garments
AS/NZS 1576 Scaffolding
AS 1577 Scaffold Planks
AS/NZS 4576 Guidelines for Scaffolding
AS/NZS 2210 Occupational Protective Footwear
AS/NZS 1801 Occupational Protective Helmets
AS 1337 Eye Protectors for Industrial Applications
NSW Government Code of Practice for Procurement
NSW Government Guidelines for Auditing Project OHS Management Plans
NSW Government Occupational Health and Safety Management System Guidelines
Occupational Health and Safety Act 2000 (NSW)
Occupational Health and Safety Regulation 2001 (NSW);
State Records Act
TCA Excavating in and around Utilities (EN-ST-107/2.0)
TCA Procedure for Management of Excavating in and around Utilities (EN-PR-159)
TCA Guide to Management of Excavating in and around Utilities (EN-SD-043)
TCA Monthly Safety Statistics and Incident Summary (SA-FO-096).
TCA Initial Safety Occurrence Report (SA-FO-002)
TCA Minor Investigation Report (SA-FO-001)
TCA Major Investigation Report Template (SA-FO-178)
TCA Safety Policy (SA-PO-001)
TCA Work Activity Advice (SA-FO-105)
WorkCover (NSW) Code of Practice Amenities for Construction Work
WorkCover (NSW) Code of Practice Occupational Health and Safety Consultation
WorkCover (NSW) Code of Practice Work Near Overhead Power Lines
WorkCover (NSW) Code of Practice Work Near Underground Services

Additional References for Working In and Adjacent to the Rail Corridor and Rail Environment
AS 4292 Railway Safety Management
AS/NZS ISO 31000:2009 - Risk Management National Standard for the Health Assessments of Rail Safety Worker

National Standard for Health Assessments of Rail Safety Workers

RailCorp Project Safety Agreement (PSA) (SMS-06-FM-1362)

Rail Safety (Drug and Alcohol Testing) Regulation 2008 (NSW)

Rail Safety Act

Rail Safety Regulation 2008 (NSW)

RailCorp RailSafe Network Procedures

RailCorp RailSafe Network Rules

Railway applications. The specification and demonstration of reliability, availability, maintainability and safety (RAMS) (EN50126)

TCA Generic Rail Safety Risk Register (SA-SD-038)

TCA Management of Rail Safety Risk (SA-PR-126)
TCA Standard Requirements
TSR E1 – Environmental Management

ASP-01-D&C Design and Construct Contract for
Auburn Stabling Project (Stage 1)
South West Rail Link

Status: Final with tender addendum
Document Number: 1328915_2.DOC
Version: 4.0
Date of issue: 12 May 2011
Security classification: General Release

© TCA 2010
# Table of Contents

1. General .............................................................................................................................. 4
2. Environmental management Representative ................................................................. 4
3. Contractor's Environmental Management System .......................................................... 4
4. Contractor's Environmental Management Plan ............................................................... 5
   4.1 Overview ................................................................................................................... 5
      4.1.1 Scope ............................................................................................................. 5
      4.1.2 Submission ................................................................................................. 5
   4.2 Policy ......................................................................................................................... 5
   4.3 System planning ...................................................................................................... 6
      4.3.1 Environmental Risk Assessment ............................................................. 6
      4.3.2 Sustainability ............................................................................................ 6
      4.3.3 Ecologically Sustainable Development ......................................................... 6
      4.3.4 Environmentally Sensitive Areas ................................................................. 6
      4.3.5 Environmental Control Maps ................................................................... 7
      4.3.6 Environmental Design Constraints Map ..................................................... 7
      4.3.7 Construction Noise Strategy .................................................................... 7
      4.3.8 Waste Management Reduction and Purchasing ....................................... 7
   4.4 Implementation ....................................................................................................... 8
      4.4.1 Resources and Responsibilities .............................................................. 8
      4.4.2 Environmental Requirements as Part of Site Inductions ...................... 9
      4.4.3 Competence, Training and Awareness ................................................... 9
      4.4.4 Notification of Incidents ........................................................................... 9
      4.4.5 Emergency Planning and Response ..................................................... 10
      4.4.6 Subcontractor Requirements ................................................................ 10
      4.4.7 Out-of-Hours Work ............................................................................... 11
      4.4.8 Dust and Air Management................................................................... 11
      4.4.9 Water, Erosion and Sediment Management ........................................ 12
      4.4.10 Aboriginal and Non-Aboriginal Heritage Management .................. 12
      4.4.11 Flora and Fauna Protection ................................................................... 12
      4.4.12 Storage and Use of Hazardous Materials............................................. 13
      4.4.13 Contamination ........................................................................................ 13
      4.4.14 Complaints .............................................................................................. 14
   4.5 Measurement, Evaluation and Review ........................................................................ 14
   4.6 Principal Raised Nonconformity, Corrective Action and Preventative Action .......... 14
   4.7 Control of Environmental Records ........................................................................ 14
   4.8 Planning and Environmental Compliance Monitoring System (PECOMS) ......... 15

# ANNEXURE A - Additional Project Requirements
ANNEXURE B - List of Reference Documents

ANNEXURE C - Environmental Records
1 GENERAL

TSR E1 describes environmental requirements and processes which the Contractor must comply with under the Contract. The Contractor must ensure that the requirements of the NSW Government Environmental Management System Guidelines and AS/NZS ISO 14001 are implemented as they apply to the Contractor's Activities.

Where the design of the Works is part of the Contractor's Activities, additional environmental requirements appropriate to design processes are detailed in TSR T1.

The environmental requirements contained within TSR E1 are in addition to any requirements prescribed in the Works Brief and Authority Approvals.

2 ENVIRONMENTAL MANAGEMENT REPRESENTATIVE

The Principal will engage an Environmental Management Representative (EMR) to monitor and verify the Contractor's compliance with Authority Approvals and Construction Environmental Management Plan. The Contractor must work with the Environmental Management Representative (EMR) and provide the EMR with access to the Site and all environmental records including those listed in TSR E1 Annexure C.

Any findings by the EMR must be actioned within the timeframes reasonably required by the EMR. The Contractor must provide written notification to the Principal's Representative that the findings of the EMR have been closed out within the specified timeframes.

3 CONTRACTOR'S ENVIRONMENTAL MANAGEMENT SYSTEM

The Contractor must operate under an Environmental Management System accredited under AS/NZS ISO 14001 whilst the Contractor's Activities are undertaken.

For the avoidance of doubt, Subcontractors are required to work under the Contractor's Environmental Management System, unless otherwise specified.

The Contractor must, in collaboration with the Principal's Representative, complete a gap analysis in order to demonstrate consistency between the Contractor's Environmental Management System and the environmental requirements of the Contract. The gap analysis must be undertaken within 40 days of the date of the Contract unless otherwise agreed by the Principal's Representative. The Contractor's Environmental Management Plan must address all findings of the gap analysis.

Where the Contractor has implemented an integrated management system it must include a matrix or equivalent on how the Contractor's management system and management plans address the requirements of TSR E1.
4 CONTRACTOR'S ENVIRONMENTAL MANAGEMENT PLAN

4.1 Overview

4.1.1 Scope

The Contractor must prepare, implement and maintain a project and site-specific Construction Environmental Management Plan(s) that cover all work necessary for the Contractor to fulfill its environmental obligations under the Contract. The CEMP(s) should be consistent with all Authority Approvals and must address all aspects and impacts identified in the Environmental Risk Assessment (TSR E1 Clause 4.3.1).

The Contractor's CEMP must comply with the NSW Government Environmental Management System Guidelines and be consistent with the requirements of the Contract. The CEMP(s) must also comply with the quality management system documentation specified in TSR Q1.

The Contractor must regularly review and update the CEMP(s) throughout the Contract and the Contractor must implement additional environmental protection measures if the protection measures in the CEMP(s) are not adequate in achieving compliance with the environmental obligations under the Contract.

4.1.2 Submission

The CEMP(s) must be submitted to the Principal's Representative in accordance with the requirements of TSR Prelude.

HOLD POINT: Commencement of any construction work (including Temporary Works).

SUBMISSION DETAILS: Submit the CEMP(s) documentation addressing the Contract requirements in accordance with the time frames stipulated in TSR Prelude and the General Conditions.

RELEASE OF HOLD POINT: The Principal's Representative will consider the CEMP(s) documentation and determine whether the submission adequately addresses the requirements of the Contract prior to authorising release of the Hold Point.

4.2 Policy

The CEMP(s) must include a Contract-specific environmental policy signed by the Contractor's Chief Executive Officer or appropriate delegated authority which commits the Contractor to meet the environmental requirements of the Contract. The policy must complement the TCA Environmental Policy (PE-PO-002) and support the achievement of sustainability requirements of TSR E1 Annexure A and the Works Brief.

The policy must be explained to and understood by the employees of the Contractor and Subcontractors.
4.3 System planning

4.3.1 Environmental Risk Assessment

The Contractor must undertake a comprehensive and site-specific environmental risk assessment. This risk assessment must identify the actual and potential environmental aspects and impacts of the Contractor's Activities and the control measures that are required to be implemented in order to provide environmental protection in accordance with the requirements of the Contract. For each site under the Contract, this risk assessment is to include (without limitation):

(a) contamination;
(b) noise and vibration;
(c) air quality, including dust;
(d) soil and water management;
(e) waste management;
(f) indigenous and non-indigenous heritage;
(g) flora and fauna; and
(h) traffic and pedestrian management.

4.3.2 Sustainability

The Contractor must comply with the sustainability requirements of TSR E1 Annexure A and the Works Brief.

The Contractor must comply with the TCA Sustainable Design Guidelines (PE-ST-114) as applicable to the Contractor's Activities and submit a completed checklist in electronic format (supplied by TCA) confirming compliance with the requirements at the intervals listed in TSR E1 Annexure A.

4.3.3 Ecologically Sustainable Development

The Contractor's Activities must be consistent with the principles of Ecologically Sustainable Development as outlined in the Protection of the Environment Administration Act 1991.

4.3.4 Environmentally Sensitive Areas

The Contractor must ensure that the details and locations of environmentally sensitive areas are clearly identified and specific protection measures communicated through:

(a) use of Environmental Control Maps (TSR E1 Clause 4.3.5);
(b) use of Environmental Design Constraints Map (TSR E1 Clause 4.3.6);
(c) site inductions and site-specific training (e.g. toolbox talks); and
(d) inspections, work plans and physical marking (if possible).
More regular and rigorous monitoring and inspection may be required to ensure that environmental protection measures are effective for environmentally sensitive areas.

4.3.5 Environmental Control Maps

The Contractor must develop, implement and maintain Environmental Control Map(s) (ECM) in accordance with TCA Guide to Environmental Control Maps (PE-SD-015). An ECM is a document prepared to assist in the planning and delivery of construction works. An ECM must be specific to a work area and/or work activity. The ECM is to identify the location of physical environmental protection measures, work method controls and monitoring requirements to minimise the impact of construction activities on the environment and community in and adjoining a specific work area and or work activity.

Each ECM must be prepared as a map, suitably enlarged (e.g. A0 size) for mounting on the wall of a site office. Training in the interpretation and use of the ECM by all site personnel must be included in site inductions.

The Contractor must submit to the EMR draft copies of the ECMs for review and approval prior to the implementation of the ECM.

The Contractor must regularly review and update the ECMs throughout the Contract and the Contractor must implement additional environmental protection measures if the protection measures in the ECMs are not adequate in achieving compliance with the environmental obligations under the Contract.

4.3.6 Environmental Design Constraints Map

The Contractor must develop an Environmental Design Constraints Map(s) in accordance with TCA Guide to Environmental Design Constraints Map (EN-SD-018) clauses 1, 2 and 3.

The Contractor must submit to the EMR draft copies of the Environmental Design Constraints Maps for review and approval prior to the implementation of the Environmental Design Constraints Maps.

4.3.7 Construction Noise Strategy

The Contractor must ensure that its programming, planning, work methods, equipment and processes comply with the noise and vibration requirements specified in the Authority Approvals and Section 3 of TCA Construction Noise Strategy (Rail Projects) (“CNSRP”).

The Contractor must predict and monitor the construction noise and vibration impacts of the Contractor’s Activities in accordance with the CNSRP and any requirements of the Planning Approval and Environment Protection License (where the latter is applicable).

4.3.8 Waste Management Reduction and Purchasing

Wastes created during the Works must be managed in accordance with all applicable Law. Measures to be implemented by the Contractor must include:

(a) management of wastes during construction in accordance with the NSW Government’s Waste Reduction and Purchasing Policy (WRAPP);
application of the waste minimisation hierarchy principles of avoid/reduce/re-use/recycle/dispose;

disposal of any waste material that is unable to be re-used, re-processed or recycled at a facility approved to receive that type of waste;

procedures for classifying waste in accordance with DECCW's Waste Classification Guidelines July 2009;

procedures for the recovery of resources from waste where this is beneficial and does not harm the environment or human health, in accordance with the 'resource recovery exemptions' under clause 51 of the Protection of the Environment Operations (Waste) Regulation 2005;

installation of segregated bins for recyclable materials and provision for material to be reused or recycled wherever possible;

the disposal of chemical, fuel and lubricant containers and solid and liquid wastes in accordance with applicable DECCW guidelines; and

the disposal of chemical, fuel and lubricant containers and solid and liquid wastes in accordance with applicable DECCW guidelines; and

reporting biannually, in the first two weeks of July and of January for the proceeding 6 month period (i.e. for January to June; and for July to December respectively) to the Principal's Representative on the amount of material generated, the amount recycled and the amount purchased with recycled content as part of the Project using the format and tables contained in Part C and Part D of the NSW Government Waste Reduction and Purchasing Policy (WRAPP) - Guidelines to Assist Reporting WRAPP progress for 2005-2007.

The CEMP must document proposed waste management measures and must demonstrate the manner in which a target of at least 90% of construction waste generated during site preparation and construction of projects must be diverted from landfill and either recovered, recycled or reused. In addition, the CEMP must address how 100% of usable spoil material will be recovered for beneficial use.

4.4 Implementation

4.4.1 Resources and Responsibilities

The Contractor must provide sufficient resources on-site and off-site to ensure effective implementation of the CEMP(s).

Each CEMP must:

(a) indicate the names, responsibilities and authority of the site management personnel for implementing the CEMP, monitoring its effectiveness, rectifying any environmental deficiencies and keeping environmental records;

(b) nominate a member of the site management team who is the authorised contact person for the Principal and the DECCW for all environment related issues;

(c) identify the Contractor's Environmental Manager who reports to the Contractor's Project Manager, is suitably qualified and experienced, and has defined authority and responsibility to ensure that the requirements of the CEMP are implemented and maintained; and
(d) detail the working relationship between the designated Contractor's Environmental Manager and other persons involved with the implementation of the CEMP.

The Contractor must provide details (inclusive of Curriculum Vitae) of its proposed Environmental Manager for consideration and non-rejection/rejection by the Principal's Representative. The Contractor's Environmental Manager is to be full time and based permanently at Site. The Environmental Manager must be present during all inspections undertaken by the Environmental Management Representative.

4.4.2 Environmental Requirements as Part of Site Inductions

The Contractor must ensure its employees and the employees of Subcontractors engaged in carrying out the Contractor's Activities on the Site are inducted and trained in the environmental requirements of the Contract to achieve a level of awareness and competence appropriate to their assigned activities.

The Contract-specific environmental policy and ECM(s) must form part of the site induction.

The environmental requirements of the induction must include training of relevant persons in the efficient use of plant and materials to minimise all potential environmental impacts including noise, air pollution, water pollution, waste, contamination and hours of work.

Any person who has not been inducted must not work on the Site.

4.4.3 Competence, Training and Awareness

The CEMP(s) must include a site-specific training program (e.g. toolbox talks). The site-specific training is to cover all relevant environmental issues and must include direction on the proper implementation and maintenance of erosion and sedimentation controls, out-of-hours works, sensitive receivers and environmental sensitive areas/aspects.

The CEMP(s) must include a training plan (or cross reference to a separate training plan) that describes the minimum level of training, experience and qualifications required for employees of the Contractor and Subcontractors, scheduled dates for training and procedures for training.

The Contractor must establish and maintain a register of environmental training carried out including dates, names of people who have completed the training and details of the trainer.

4.4.4 Pre-Construction Minor Works Approval

Using the TCA form Pre-Construction Minor Works Approval (PE-FO-202) the Contractor must submit the details of any pre-construction works (being works not defined as "Construction" in the Planning Approval) to the Principal for review and approval at least 10 days prior to the commencement of such works. All supporting documentation must be attached and pre-construction activities must comply with the requirements of the planning approval. Pre-construction works may not commence until approval is given by the Principal.

4.4.5 Notification of Incidents

The Contractor's procedure for the notification of environmental incidents must be consistent with TCA Environmental Incident Reporting Procedure (PE-PR-105) and TSR C1. In the event of any inconsistency between these two documents, the more stringent requirements of the two
documents will prevail to the extent of the inconsistency. The Contractor must report incidents to the Principal using TCA Environmental Incident / Non-Conformance Report (PE-FO-101).

The Contractor must immediately notify the Principal of actual or potential Material Harm to the environment as defined within the Protection of the Environment Operations Act (1997) or where actual or potential clean-up costs are likely to exceed $10,000 on or off the Site for all environmental incidents. Within this context, immediate notification means within 10 minutes of becoming aware of the event causing or with the potential to cause Material Harm to the environment.

4.4.6 Emergency Planning and Response

In respect to emergency planning and response the Contractor must comply with AS/NZS ISO 14001 (specifically Clause 4.4.7) and the relevant parts of TSR S1 and TSR C1.

Each CEMP must also include the following details:

(a) a list of emergency response personnel with contact details and a 24 hour contact number;

(b) a list of resources (addressing both physical and human resources) with a description of their function and their contact details (or location in relation to physical resources) that will be made available immediately in the event of an environmental incident;

(c) details of emergency services including specialist environmental response organisations that may be required (e.g., emergency containment and clean up);

(d) clear communication strategy in the case of an emergency;

(e) details of immediate containment measures to be implemented in the event of an emergency situation;

(f) the location of the material safety data sheets;

(g) the location of all emergency response equipment; and

(h) notification requirements to relevant public authorities.

4.4.7 Subcontractor Requirements

The Contractor must comply with the requirements of TSR Q1 for the engagement of Subcontractors.

The Contractor must:

(a) include environmental management requirements and conditions consistent with the Contract in the planning, selection and management of Subcontractors;

(b) undertake a review of Subcontractors' documentation to verify compliance with the requirements of the Contractor's Activities to be subcontracted and ensure that the documentation complies with the CEMP(s); and

(c) undertake appropriate monitoring of each Subcontractor's environmental protection measures to ensure that the specified environmental protection requirements are effectively implemented and maintained.
4.4.8 Out-of-Hours Work

Construction activities are to be restricted to the hours of:

(a) 07.00 to 18.00 on Monday to Friday,
(b) 08.00 to 13.00 hours on Saturday; and
(c) at no time on Sundays or public holidays.

High noise generating construction activities are restricted to the hours of:

(d) 8.00 to 12.00 noon, Monday to Saturday; and
(e) 14.00 to 17.00, Monday to Friday.

High noise generating activities include rock breaking or hammering, jack hammering, pile driving, vibratory rolling, cutting of pavement, concrete or steel and any other activities which result in impulsive or Tonal Noise generation must only be scheduled between the following hours unless otherwise agreed to by the DE or DECCW (where relevant to the issue of an EPL), unless inaudible at nearby residential properties and other noise sensitive receivers.

The Contractor is responsible for ensuring that any changes to the working hours comply with all Authority Approvals.

The Contractor must include in the CEMP(s) a procedure for notifying the Principal, the community, DECCW (if this is a requirement), and all relevant Authorities in advance of any proposed extension to hours of work.

The requirements of the TCA Construction Noise Strategy and TCA Out-of-Hours Assessment (PE-PR-065) are to be incorporated in the Contractor’s procedure, and the applicable Out-of-Hours Work Application Form (PE-FO-079 or PE-FO-080) is to be used.

The Contractor must also develop and maintain an Out-of-Hours Work Application Register.

4.4.9 Dust and Air Management

The Contractor must take all reasonable steps to minimise dust and air pollution arising from the Works. Mitigation measures must be implemented and may include, but are not limited to:

(a) ensuring that all loads entering or leaving the Site are covered;
(b) ensuring that adequate truck and equipment washing facilities are in place;
(c) ceasing works when conditions are excessively dusty until dust suppression can be adequately carried out;
(d) maintaining vegetation as long as possible prior to clearing; and
(e) regular watering of substrates and temporary access roads.

The Contractor must implement dust control and air monitoring in accordance with the Remediation Action Plan (RAP) prepared by Douglas Partners dated August 2010.

The preferred mitigation measures must be documented in the CEMP.
4.4.10 Water, Erosion and Sediment Management

The Contractor must supply, install and maintain adequate stormwater and runoff controls in accordance with “The Blue Book” (Managing Urban Stormwater, Soils and Construction 4th Edition (Landcom/Department of Housing), which include:

(a) appropriate erosion controls
(b) appropriate sediment controls
(c) appropriate water management controls;
(d) strict containment of washed-down concrete trucks and pumps.

Proposed mitigation measures must be implemented and documented in the CEMP. The Contractor must undertake daily inspections to verify the adequacy of its environmental control measures, document these inspections and retain a record on site.

The Contractor must include in the CEMP(s) a procedure for water discharge and reuse that is consistent with TCA Water Discharge and Reuse Guideline (PE-ST-146).

The Contractor’s Project Manager and Environmental Manager must attend a part day training session associated with water, erosion and sediment management which is undertaken by the Principal’s Representative.

4.4.11 Aboriginal and Non-Aboriginal Heritage Management

Any identified Aboriginal or non-Aboriginal heritage/archaeological items on the Site and the requirements to mitigate any construction impacts to them are described in the Review of Environmental Factors (REF).

The proposed mitigation measures to manage impacts on these items must be documented in the CEMP.

If previously unidentified Aboriginal or non-Aboriginal heritage/archaeological items are uncovered during construction works, the Contractor must immediately cease all works in the vicinity of the find and advise the Principal’s Representative and EMR. The Contractor must erect a fence/barrier around the area if the Contractor proposes to continue the construction of any other works on the Site. Works within the fenced/barricaded area defining the find must not recommence until clearance has been received from the Principal’s Representative.

4.4.12 Flora and Fauna Protection

Measures for managing impacts to flora and fauna must be documented in the CEMP.

Prior to any clearing, trimming, cutting, pruning or removal of any vegetation, the Contractor is to appropriately mark all vegetation proposed for removal and retention (respectively) in accordance with the REF. Clarification is to be sought from the Principal’s Representative regarding the removal/retention status of any unmarked residual vegetation not identified in the REF prior to any removal of such unmarked residual vegetation.

If the Contractor considers it necessary to trim, cut, prune or remove any tree(s) which are not identified in the REF, the Contractor must obtain written approval from the Principal’s Representative prior to carrying out the work using TCA’s Application for Removal of Trees (PE-FO-078).
Where required, the Contractor must protect any vegetation and trees to be retained in accordance with measures set out in the CEMP. Trees in close proximity to the Contractor’s Activities must be protected with timber post and wire, or other sturdy protective measure.

In the event of physical damage to any tree to be retained, the Contractor must promptly engage the services of a qualified arborist to inspect the damage and recommend a progressive course of action to be taken by the Contractor to rectify the damage.

4.4.13 Storage and Use of Hazardous Materials

Construction hazard and risk issues associated with the use and storage of hazardous materials must be addressed in the CEMP. These measures must include:

(a) recognition and compliance with applicable Australian/ISO Standards, and relevant guidelines issued by DECCW.
(b) the storage of hazardous materials, and refuelling/maintenance of Construction Plant and equipment to be undertaken in clearly marked designated areas that are designed to contain spills and leaks;
(c) spill kits, appropriate for the type and volume of hazardous materials stored or in use, to be readily available and accessible to construction workers. Kits to be kept at hazardous materials storage locations, in site compounds and on specific construction vehicles. Where a spill to a watercourse is identified as a risk, spill kits to be kept in close proximity to potential discharge points;
(d) all hazardous materials spills and leaks to be reported to the Principal’s Representative and actions to be immediately taken to remedy spills and leaks; and
(e) training in the use of spill kits to be given to all personnel involved in the storage, distribution or use of hazardous materials.

4.4.14 Contamination

The Contractor must remediate the site in accordance with the Remediation Action Plan (RAP) prepared by Douglas Partners dated March 2011. The CEMP must demonstrate how the Contractor will implement the requirements of the RAP including all management practices and mitigation measures set out therein.

The Contractor is to gain written approval from the Principal’s Representative prior to any discussion with external parties relating to contamination or remediation of the site.

The Principal will appoint an independent Site Auditor to undertake any necessary reviews and validation of the remediation of the site in accordance with the Contaminated Land Management Act 1997.
4.4.15 Complaints

Complaints received by the Contractor from any source in relation to environmental issues are to be handled in accordance with TSR C1.

4.5 Measurement, Evaluation and Review

The CEMP(s) must document a procedure to verify that the Works are compliant with the requirements of the Contract and all approvals and licenses.

The Contractor must:

(a) include daily surveillance and periodic and planned inspections (both physical and desktop type reviews) to verify the adequacy of controls for all environmental aspects of the Works and document these via Inspection Records;

(b) document ITPs and ITP forms (or equivalent to the satisfaction of the Principal’s Representative) for all inspections and testing required for the Works in accordance with TSR Q1; and

(c) immediately notify the Principal’s Representative in writing of any breach or nonconformity as a result of the Contractor’s Activities.

4.6 Principal’s Representative Raised Nonconformity, Corrective Action and Preventative Action

The Principal’s Representative may raise a TCA Environmental Non-Compliance Report (PE-FO-077) or TCA System Deficiency Notice (CS-FO-032). Upon issue of a Principal-raised TCA Environmental Non-Compliance Report or TCA System Deficiency Notice, the Contractor must deal with and close-out the non-compliance or deficiency under its own system. The Principal-raised TCA Environmental Non-Compliance Report or TCA System Deficiency Notice must be completed by the Contractor and returned to the Principal’s Representative within 24 hours and 48 hours respectively, unless otherwise agreed with the Principal.

The requirements of AS/NZS ISO 9001 and TSR Q1 (clauses relating to control of nonconforming product and improvement) apply to TSR E1 for the identification, management and addressing of environmental nonconformance, corrective action and preventative action.

4.7 Control of Environmental Records

The Contractor must comply with AS/NZS ISO 14001 Clause 4.5.4 Control of Records.

The Contractor must demonstrate compliance with its contractual environmental obligations through concise and appropriately detailed environmental records that include (without limitation):

(a) details of qualifications of personnel;

(b) design review records (where applicable);

(c) monitoring and inspection reports;

(d) induction and training records;
(e) reports of environmental issues, incidents and complaints and action taken to rectify these;

(f) internal and external audit reports;

(g) evidence of action taken as a result of a recommendation from such meetings;

(h) records of subcontractors monitoring their own activities;

(i) records of the Contractor monitoring the subcontracted activities;

(j) incident, non-conformance and Corrective Action records; and

(k) risk management records.

The Contractor must retain all environmental records for a period of no less than 5 years from the Date of Completion.

The Contractor must provide the Principal's Representative with copies of the environmental records stated at TSR E1 Annexure C. For those records not required to be stored on-site, they must be forwarded to the Principal's Representative within 3 Business Days of the request.

4.8 Planning and Environmental Compliance Monitoring System (PECOMS)

The Planning and Environmental Compliance Monitoring System (PECOMS), is the system developed and used by the Principal to monitor compliance with the conditions of all licences, permits and approvals of its projects.

Where nominated in TSR E1 Annexure A, the Contractor is required to use PECOMS to undertake self-regulation to confirm that project activities are compliant with the Planning Approval, DECCW Licence (where applicable) and the conditions of any other permits, licences or approvals. Where nominated in TSR E1 Annexure A, the Contractor must implement a PECOMS reporting structure in addition to any other reporting requirements for the Contract and follow the applicable parts of TCA Guide to Compliance Monitoring and Reporting Using PECOMS Procedure (PE-SD-012).
ANNEXURE A – Additional Project Requirements
Additional Project Requirements

Planning and Environmental Compliance System (PECOMS)

<table>
<thead>
<tr>
<th>Applies?</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Yes]</td>
<td>Mentioned in TSR E1 Clause 4.8</td>
</tr>
</tbody>
</table>

Implement and utilise a PECOMS reporting structure in addition to any other reporting requirements (Note: “Yes” applies if “Applies?” is left blank)

Compliance with the TCA Sustainable Design Guidelines (PE-ST-114)
The Contractor must produce project-specific checklists relating to sustainability initiatives and submit these to the Principal’s Representative. The content and submission of the project-specific checklists is elaborated in the TCA Sustainable Design Guidelines (PE-ST-114) Part 1, subheading “How to use the Guidelines”. The Contractor must submit the completed checklist in electronic format (supplied by TCA) at the following intervals:

(a) Detailed design;
(b) 6 monthly intervals during construction; and
(c) at Completion.

Additional Sustainability Requirements

The Contractor must comply with the following sustainable design requirements for the Contractor’s Activities:

(a) The Principal estimates that approximately 32,000 tonnes of carbon emissions (CO2-e) would be created from construction activity associated with the Works. The Contractor must prepare a carbon emissions report during the SDR design at a time to be instructed by the Principal’s Representative and in accordance with Australian Standard 14064.1-2006 and the Greenhouse Gas Protocol and produce a revised total estimated carbon footprint for all construction activity associated with the Works. The carbon emissions report must nominate all the initiatives that will be implemented to reduce the project’s overall carbon footprint (examples include the selection of construction materials and the creation of suitable offsets). Where renewable energy initiatives are required as part of this Contract, the offsets generated during construction may be nominated as an appropriate initiative.

(b) A greenhouse gas reporting regime tracking Scope 1, 2 & 3 emissions generated during construction (as defined in Australian Standard 14064.1-2006) must be implemented by the Contractor in accordance with Australian Standard 14064.1-2006 and the Greenhouse Gas Protocol at the commencement of construction and submitted to the Principal on a 6 monthly basis.
(c) The Contractor must produce a carbon footprint assessment at the completion of CDR design for the entire project utilising a bill of quantities that include mass quantities of building materials to enable the carbon footprinting to be more accurate, cost effective and in accordance with AS14064.

(d) The Contractor must prepare a lighting scheme to be included in the SDR design submission via the services of a suitably qualified lighting designer, and must consider lighting demands of different areas and strategic placement of lighting fixtures to maximise ground coverage. The Contractor must ensure that lighting fixtures are compatible with insulation to avoid conflicts in ceilings.

(e) The Contractor must use low formaldehyde composite wood products for all composite wood products. Certification that this use has been achieved must be included within the SDR design submission in accordance with the requirements of TSR T1.

(f) The Contractor must provide all certifications that timber used in the Works is not sourced from native forest. This certification must be included within the SDR design submission in accordance with the requirements of TSR T1.

(g) All spoil generated by the Contractor's Activities must be assessed in accordance with the relevant legislation and guidelines developed or approved by DECCW including the Contaminated Lands Management Act to determine suitability for reuse on-site or off-site. All spoil assessment reports must be issued to the Principal. The Contractor must reuse 100% of spoil that has been assessed and reported to be suitable for reuse.

(h) The Contractor must segregate the following construction waste materials for reuse/recycling at all times whilst undertaking the Contractor's Activities in accordance with the Waste Classification Guidelines (DECCW, 2008):

- spoil;
- concrete;
- steel;
- timber; and
- vegetation (mulch).

These stockpiles must be adequately marked with signage and located far from sensitive receivers (e.g. water courses).

(i) At least 90% of construction waste generated as a result of the Contractor’s Activities must be diverted from landfill and either reused or recycled. A reporting regime tracking waste quantities must be established and implemented by the Contractor at the commencement of site works and submitted to the Principal’s Representative on a biannual basis, in the first two weeks of July and of January for the proceeding 6 month period (i.e. for January to June; and for July to December respectively).

(j) The Contractor must reuse all vegetative waste material (excluding weeds) on-site as mulch.

(k) The Contractor must meter water consumption at all of the outlets used on-site. A reporting regime tracking potable water quantities must be implemented by the Contractor at the commencement site-works and submitted to the Principal's Representative on a 6 monthly basis.
List of Reference Documents


NSW Government Environmental Management System Guidelines

NSW Government Waste Reduction and Purchasing Policy

Protection of the Environment Administration Act 1991

Protection of the Environment Operations (Waste) Regulation 2005


TCA Application for Removal of Trees (PE-FO-078)

TCA Construction Noise Strategy (Rail Projects) 2010

TCA Environmental Incident Reporting Procedure (PE-PR-105)

TCA Environmental Incident / Non-Compliance Report (PE-FO-101)

TCA Environmental Non-Compliance Report (PE-FO-077)

TCA Environmental Policy (PE-PO-002)

TCA Guide to Compliance Monitoring and Reporting Using PECOMS Procedure (PE-SD-012)

TCA Guide to Environmental Control Maps (PE-SD-015)

TCA Guide to Environmental Design Constraints Map (EN-SD-018), clauses 1, 2 and 3

TCA Out of Hours Work Application Form (EPL Requirements) (PE-FO-080)

TCA Out of Hours Work Application Form (PE-FO-079)

TCA Out-of-Hours Assessment (PE-PR-065)

TCA Pre-Construction Minor Works Approval (PE-FO-202)

TCA Sustainable Design Guidelines (PE-ST-114)

TCA System Deficiency Notice (CS-FO-032)

TCA Water Discharge and Reuse Guideline (PE-ST-146)

Waste Classification Guidelines (DECCW 2008)
Annexure C - Environmental Records
Environmental Records

The following lists the environmental records required by TSR E1. All records must be made available to the Principal's Representative. The documents identified below with a "*" must be forwarded to the Principal's Representative and the Contractor must ensure that the Principal's Representative has the latest version of the records at all times. Where the Contractor is required to forward records to the Principal's Representative, the Contractor must submit one original and three copies (one of which is unbound) of each document (including draft and final reports, specifications, drawings, plans, etc) for the Principal Representative's review. In addition the Contractor must also submit an electronic copy on CD/DVD in PDF and native formats (such as Microsoft Word, Microsoft Excel, CAD in *.dwg or *.dxl) of documents.

<table>
<thead>
<tr>
<th>Required Record or Reference</th>
<th>Issue to Principal's Representative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Manual, Policy, Contractor’s Environmental Management Plan, and applicable</td>
<td>*</td>
</tr>
<tr>
<td>environmental management system procedures.</td>
<td></td>
</tr>
<tr>
<td>List of who holds issued documents on a register of current document issue/revisions</td>
<td></td>
</tr>
<tr>
<td>Index of all environmental records (prior to Completion)</td>
<td>*</td>
</tr>
<tr>
<td>Records of management reviews for the project</td>
<td></td>
</tr>
<tr>
<td>Personnel qualifications/skills records</td>
<td></td>
</tr>
<tr>
<td>Induction and training records</td>
<td></td>
</tr>
<tr>
<td>Environmental Control and Constraints Maps</td>
<td>*</td>
</tr>
<tr>
<td>Records of work environment controls</td>
<td></td>
</tr>
<tr>
<td>Minutes of tender/contract reviews</td>
<td></td>
</tr>
<tr>
<td>Evidence of environmental inputs/outputs and outputs into the design process including sustainability initiatives</td>
<td></td>
</tr>
<tr>
<td>Surveillance, audit of subcontractors environmental performance and controls</td>
<td>*</td>
</tr>
<tr>
<td>Procedures describing how to control work processes and continual demonstration of effective environmental controls</td>
<td>*</td>
</tr>
<tr>
<td>Register of equipment</td>
<td></td>
</tr>
<tr>
<td>Calibration frequency and certificates</td>
<td></td>
</tr>
<tr>
<td>Work method statements</td>
<td>*</td>
</tr>
<tr>
<td>Schedule of Inspection and Test Plans</td>
<td>*</td>
</tr>
<tr>
<td>Inspection and Test Plans</td>
<td>*</td>
</tr>
<tr>
<td>Customer satisfaction records and actions taken to improve customer satisfaction</td>
<td></td>
</tr>
<tr>
<td>Audit reports</td>
<td>*</td>
</tr>
<tr>
<td>Records/checklists of inspection and testing</td>
<td>*</td>
</tr>
<tr>
<td>Contractor’s Incident / Non-conformance Reports and register</td>
<td>*</td>
</tr>
<tr>
<td>Principal raised Incident / Non-Compliance Reports</td>
<td>*</td>
</tr>
<tr>
<td>Required Record or Reference</td>
<td>Issue to Principal's Representative</td>
</tr>
<tr>
<td>------------------------------------------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Records of analysis of data generated during the Contract</td>
<td></td>
</tr>
<tr>
<td>Corrective action reports and Register</td>
<td></td>
</tr>
<tr>
<td>Principal's System Deficiency Notices</td>
<td>*</td>
</tr>
<tr>
<td>Preventive action reports and Register</td>
<td>*</td>
</tr>
</tbody>
</table>
TCA Standard Requirements
TSR T1 – Technical Management

ASP-01-D&C Design and Construct Contract for
Auburn Stabling Project
South West Rail Link

Status: Final with tender addendum
Document Number: 911727_10.DOC
Version: 10.0
Date of issue: 29 August 2011
Security classification: Tender

© TCA 2010
# Table of Contents

1. General ........................................................................................................... 3

2. Design Management and Administration ..................................................... 3
   2.1. General Design Obligations ..................................................................... 3
   2.2. Principal's Reference Design ................................................................. 3
   2.3. Management of the Detailed Design Process .......................................... 4
   2.4. Verification, Validation and Proof-Checking of Design ......................... 5
       2.4.1. General ............................................................................................ 5
       2.4.2. RailCorp Design Packages ............................................................... 6
   2.5. Competence for Design .......................................................................... 6
   2.6. Sustainability in Design ......................................................................... 7
   2.7. Management Plans .................................................................................. 7
       2.7.1. Design Management Plan ................................................................. 7
       2.7.2. Interface Management Plan ............................................................... 8
       2.7.3. Safety Assurance Plan ...................................................................... 8

3. Design Documentation ....................................................................................... 9
   3.1. Design Reports ......................................................................................... 9
   3.2. Road Safety Audit ................................................................................... 11
   3.3. Safety Assurance Reports ....................................................................... 11

4. Design Documentation Submission Process .................................................. 13
   4.1. General ................................................................................................... 13
   4.2. Quality of Submission ............................................................................. 13

5. Principal's Design Review .............................................................................. 14
   5.1. Design and Sustainability Review Panel ................................................ 14
   5.2. Review for Completeness ....................................................................... 14
   5.3. Review for Appropriateness .................................................................... 14
   5.4. Principal's Design Rejection Criteria ...................................................... 15
   5.5. Design Review Stages (Non-RailCorp Design Package) ....................... 16
   5.6. Design Review Stages (RailCorp Design Package) .................................. 16
   5.7. Design Briefing Sessions Pre-Submission ............................................. 19
   5.8. Design Briefing Session Post-Submission ............................................. 19
   5.9. Closure of Previous Comments ............................................................ 19

6. Construction Compliance with Detailed Design .......................................... 20
   6.1. General .................................................................................................. 20
   6.2. System Verification Reviews ................................................................. 20
   6.3. Physical Configuration Audit ................................................................. 21

7. Shop Drawings ............................................................................................... 21
ANNEXURE A - Additional Project Requirements

ANNEXURE B - List of Reference Documents

ANNEXURE C - Design Review Process for RailCorp Design Packages

ANNEXURE D - RailCorp Professional Services Division - Time Slots Planner
1. General

The purpose of this TSR T1 is to describe the requirements for the management and production of the detail design of the Works and the monitoring of delivery of the Works to enable the effective construction and transfer of the Works to the final asset owner on Completion.

2. Design Management and Administration

2.1. General Design Obligations

The Contractor’s general obligations include:

(a) to provide a high performance and highly skilled design team, which will work collaboratively with the Principal, the Principal’s advisors, RailCorp, Other Contractors and key stakeholders to design and monitor the delivery of the Works;

(b) to ensure nominated designers have and maintain all required competencies and approved Engineering Authority;

(c) to undertake all studies, investigations, design, documentation and reporting required to design the Works in compliance with the conditions of the Planning Approval;

(d) to produce fully integrated designs, with all interfaces managed and co-ordinated with all relevant parties including Subcontractors, Other Contractors and key stakeholders;

(e) to produce designs that incorporate and comply with all necessary functional, environmental, economic, whole of life, social, aesthetic and sustainability requirements;

(f) to provide high quality design services and Design Documentation;

(g) to verify and validate the design to ensure it meets the requirements of the Contract;

(h) to obtain approval for the design from the relevant Authority prior to construction; and

(i) to produce as constructed and system and safety assurance records so as to enable the effective transfer of the Works to the final asset owner.

2.2. Principal’s Reference Design

The Principal’s Reference Design does not show the level of detail that must be demonstrated in the final Design Documentation.

The Contractor must adopt the Principal’s Reference Design as the technical basis for the detailed design for the Works and must include this detail in the Design Documentation.

The Contractor will provide, in writing, notification to the Principal of any proposed departures from the Reference Design during the delivery of the Works. This will be used by the Principal to register potential impacts to scope. No departures from the Reference Design shall be accepted without prior written consent from the Principal’s Representative.
The Principal does not warrant, guarantee, represent or assume any duty of care to the Contractor that the Reference Design is accurate, adequate, suitable or complete, or is the most effective design solution or will meet the requirements of the Contract.

2.3. Management of the Detailed Design Process

The Contractor must manage the design development and review process such that:

(a) a request for information procedure to address all design matters is developed in consultation with the Principal;

(b) a design change process to control design changes to the Works is developed in consultation with the Principal; and

(c) the Works are identified as a set of integrated systems (for example, in a railway these are track, signalling, OHW, electrical, communications, bridges and structures, stations and car parks, common infrastructure, train control);

(d) each system is fully developed and documented including the sub-systems and components that make up each system;

(e) interfaces between systems are identified, developed and documented fully in accordance with the Design Management Plan;

(f) each system is designed and checked by Competent Persons;

(g) each system design is verified against the Works Brief, via a requirements analysis and traceability process to be agreed with the Principal;

(h) all Design Documentation is approved by the Contractor prior to its final release;

(i) all system designs and interfaces between systems are supported by a Safety Assurance Report, in accordance with the Safety Assurance Plan;

(j) all system designs and interfaces between systems are supported by a reliability, availability, maintainability and safety (RAMS) report in accordance with EN50126;

(k) all Design Documentation is reviewed by the Principal prior to commencement of construction; and

(l) all Design Documentation is approved by the relevant Authority prior to commencement of construction.

The Contractor must not alter the design package list included with the Contractor’s Design Management Plan without written approval by the Principal’s Representative.

The Contractor verifies and certifies that:

(m) the designs and the Design Documentation are in accordance with the Contract. Where the design and/or Design Documentation is not compliant, these non-compliances must be identified;

(n) the design packages and documents are complete, checked and verified (as required) prior to submission to the Principal’s Representative;

(o) the design packages and disciplines/systems are fully coordinated with each other and with adjoining/interfacing activities and designs;
(p) the Works can be safely constructed, commissioned, operated, maintained and decommissioned; and

(q) designs comply with all requirements of Law and all relevant standards, guidelines, codes of practice and sustainability objectives, with respect to:
   (i) safety in design, construction, operation and maintenance;
   (ii) equitable access;
   (iii) fire and life safety requirements; and
   (iv) environmental management requirements.

2.4. Verification, Validation and Proof-Checking of Design

2.4.1. General

The Contractor must verify and validate the design of the Works using recognised systems engineering principles, where:-

(a) verification means the process to ensure that the outputs of any stage (or stages) in the design cycle meets the intent of the preceding stage;
(b) validation means the process to confirm that the final product delivers defined operations and performance requirements for its intended use.

The Contractor must engage one or more verifiers for the design of the Works. The verifier must not be associated with the Contractor (for example, verifiers must not be related companies or companies in which the Contractor has a financial interest). The Contractor's design subcontractor may be engaged as a verifier.

All design packages submitted to the Principal's Representative for review under clause 9.14 of the General Conditions must be accompanied by a certificate from the verifier(s) certifying that the design is in accordance with the Contract.

The Contractor must develop design validation procedures which must, as a minimum, cover the following for each construction package and for the completed Works:

(c) items to be validated;
(d) the proposed validation tests, performance evaluation and other means of assessment;
(e) commissioning and hand-over activities; and
(f) the people responsible for undertaking validation activities and their responsibilities and authorities.

The design validation procedures must be included in the Design Management Plan.

The validation must include technical support from the Contractor's designers during construction, including their involvement in:

(g) testing, commissioning and certification of work;
(h) validation of the integration of work with the existing railway system; and
(i) witnessing acceptance tests.
2.4.2. RailCorp Design Packages

The verification performed under TSR T1 Clause 2.4.2 is defined as:

(a) Class 1 Verification, where performed by a third party verifier who is not associated in any way with the Contractor's design subcontractor (but may be associated with the organisation undertaking independent Proof Checking); and

(b) Class 2 Verification, where performed by a verifier who may be associated with the Contractor's design subcontractor.

If the Contractor's design subcontractor is engaged as a verifier to perform Class 2 Verification, the person so verifying the design must not be a member of the original team of persons engaged in the design of the Works.

In this clause, Independent Proof-checking means undertaking a full and independent assessment, without exchange of calculations or similar information, of all factors influencing the final integrity of the design of the Works and associated Temporary Works, including:

(c) undertaking design calculations and modelling;

(d) reviewing the safety, durability and functional requirements of the identified elements, the Design Documentation and construction methodology;

(e) performing an independent dimensional check of the design; and

(f) providing the Principal's Representative with a comprehensive report on the independent assessment.

The design packages which require Class 1 Verification, Class 2 Verification and Independent Proof-checking are listed in TSR T1 Annexure A.

2.5. Competence for Design

All design activities performed by the Contractor must be carried out by Competent Persons (as defined in clause 1.3 TSR - Prelude). Each Competent Person may be different to the person in an organisation who holds the authority to release the design to the Principal.

The Contractor must have a competency assessment and certification process by which it identifies persons as having sufficient skills and knowledge to undertake design tasks. The Contractor's competency assessment and certification process must have the following characteristics:

(a) a detailed log of a person's relevant qualifications and past experience. This must be in sufficient detail to enable an assessment of whether the individual could have gained the skills and knowledge required to perform the identified tasks;

(b) identification of the minimum qualifications and experience required for each task;

(c) a defined assessment methodology; and

(d) a method or process which identifies accepted competence levels to perform specific tasks by individuals at a specific time. For example, this method must be capable of confirming that person A was certified as competent to deliver a structural design solution between July 04 - June 06.
Within 10 Business Days of the date of the Contract, the Contractor must submit to the Principal's Representative for review and record:

(e) evidence of its competency certification process; and

(f) a schedule which details personnel which have been assessed as Competent Persons, the tasks to be performed by each Competent Person (designer, checker, and verifier), and evidence that each individual has been assessed as a Competent Person by the competency assessment and certification process. This schedule must be maintained as current throughout the entire Contract duration.

The Principal's Representative will review the submission within 10 Business Days of receipt, and reject it if the Principal deems the submission to be incomplete or if insufficient evidence has been provided to demonstrate the competency of the proposed personnel. A revised submission will then need to be made to the Principal's Representative where an earlier submission has been rejected. Once a submission is accepted by the Principal's Representative it will be forwarded to RailCorp for review and approval of the Engineering Authority.

All submissions must be made on TCA Engineering Authority Application Forms with accompanying Project Role/Work Experience/Skills Record Form found in RailCorp Engineering Procedure EPA 241 - Engineering Design Competence and Engineering Authority and TCA's CV Proforma for each of the nominated personnel.

2.6. Sustainability in Design

The Contractor must further develop the sustainability initiatives as identified in the Contract and incorporate these initiatives in the detailed design for the Works.

Reference should be made to the Works Brief, TSR E1 and the Planning Approval for further details on sustainability requirements.

2.7. Management Plans

2.7.1. Design Management Plan

The Contractor must prepare a Design Management Plan to demonstrate how the design of the Works is to be delivered. The Design Management Plan must be submitted to the Principal's Representative for review in accordance with the requirements set out in TSR Prelude. The plan must as a minimum:

(a) identify appropriate resources and procedures to effectively manage the design process;

(b) identify all design output;

(c) include a list of personnel nominated for the design, checking and verification of each design output;

(d) identify the responsibility and authority for each design development activity;

(e) identify all design packages, reports, drawings and all other design outputs;

(f) identify all design interfaces and how they will be managed;
program for all submissions (taking into account the RailCorp Professional Services Division - Time Slots Planner (to be issued each year) included in Annexure D), progress and review meetings should be incorporated into the master program P6;

(h) include a register of parts of the Works and Temporary Works that require shop drawings to be created; and

(i) Undertake safety risk reviews at both the design input and output stage taking into account reliability and maintainability.

2.7.2. Interface Management Plan

The Contractor must prepare an Interface Management Plan (IMP) and submit this plan to the Principal’s Representative for review in accordance with the requirements set out in TSR Prelude. The IMP must ensure that appropriate resources and procedures are in place to effectively manage the interfaces during the design. The IMP should provide for:

(a) arrangement of interface management meetings and recording of the meeting minutes;

(b) presentations, production of design reports, technical papers and drawings; and

(c) participation in stakeholder design reviews and Authority approval process.

The IMP will identify all demarcations, responsibilities and interfaces with other parties, and will also incorporate a schedule of interface meetings.

The Contractor must nominate an interface representative to provide a single point of contact for all interfaces and interface management issues relating to design development.

The Contractor must communicate with RailCorp, LGCUP, AMC, MainTrain, Subcontractors, Other Contractors and all other interfacing parties as required to produce a coherent design that incorporates all interfacing parties requirements.

Where an issue or conflict with an external stakeholder arises, the Contractor must provide the support and assistance to the Principal (in managing interfaces with external stakeholders) which is necessary to achieve satisfactory resolutions in a timely manner. Contact with external stakeholders must be through the Principal unless otherwise directed by the Principal’s Representative.

2.7.3. Safety Assurance Plan

The Contractor must review and update the Safety Assurance Plan for the Works prepared by the Principal and submit this plan to the Principal’s Representative for review in accordance with the requirements set out in TSR Prelude. The Safety Assurance Plan must address the design, construction, testing, commissioning, integration, operation, maintenance and decommissioning stages of the Works, and must describe how the Contractor intends to demonstrate that the Works are acceptably safe to form part of the existing network (Safety Assurance Demonstration).

The Safety Assurance Plan must include the requirement that the Contractor produce one or more Safety Assurance Reports for the Works. These reports must document the Safety Assurance Demonstration.
The Safety Assurance Plan must specify the number of Safety Assurance Reports the Contractor expects to produce for the Works and must describe the general scope of each of the Safety Assurance Reports.

In determining the number and scope of the Safety Assurance Reports to be produced, the Contractor must take into account the way in which elements of the Works will be packaged for design, construction, testing, commissioning, integration, operation, maintenance and decommissioning of the Works.

The Contractor must regularly review and update the Safety Assurance Plan throughout the duration of the Contract.

The Contractor should review the goal structuring notation diagram provided in the Safety Assurance Plan which illustrates the safety argument supporting the Safety Assurance Demonstration and the relationship between the Safety Assurance Demonstration and the supporting evidence.

The Safety Assurance Plan should abide by and make reference were relevant to the TCA Safety Assurance of Rail Related Projects Standard.

3. Design Documentation

3.1. Design Reports

The Contractor must prepare a series of Design Reports to demonstrate that the Contract requirements have been incorporated into the Design Documentation. This must include detail of the design, maintenance requirements, construction method, and asset operation.

These reports may be updated progressively on a package by package basis by the addition of appendices as the design is developed. Each design package must be documented in at least one Design Report.

Design Reports must reflect the stage of the design process at the time of submission.

The final Design Report must include:

(a) the scope covered by the final Design Report;
(b) the relationship between design packages and with external interfaces;
(c) design inputs, including loads, load combinations, factors, safety requirements (during construction, operation and maintenance), environmental considerations and input from others;
(d) design assumptions, constraints and limitations;
(e) design input from others, particularly Other Contractors (see (c) above);
(f) identification of relevant and applicable standards, codes and guidelines (including document versions) and the identification of specific provisions, criteria and classifications within such standards and codes;
(g) evidence of compliance of the design with the standards noted in (f) above;
a schedule of reference information and reports providing input into the design (e.g., geotechnical data, cadastral survey, topographical survey, utilities and services data);

(b) basis of the design and the specific design methodology adopted;

(c) a full set of drawings including:

(i) site plans;

(ii) general arrangements;

(iii) elevations, plans and sections;

(iv) drawings for all design/construction packages;

(v) interface drawings; and

(vi) staging and sequencing drawings;

(d) a schedule of signatures of Competent Persons;

(e) verifier review/certification;

(f) safety in design demonstration (including compliance with Safety Assurance Plan, identification of the hazards addressed by the design and identification of hazards that will be transferred to the eventual asset owner);

(g) RAMS report and how the design addresses RAMS, including identification of required spares, operating and maintenance manuals and any special equipment or skills required for maintenance or operation;

(h) sustainability in design demonstration, including how the sustainability initiatives as identified in the Contract have been addressed (refer TSR T1 Clause 2.6);

(i) documentation showing coordination with interfacing work packages and projects;

(j) comments register, including all comments from previous submissions and how each has been closed out;

(k) where applicable to the design package, room data sheets, room schedule and design requirements including sizing and specific weight requirements for equipment rooms. The room data sheets must specify detailed requirements for all new buildings including room sizes, services, furniture and equipment, provisions for equipment, finishes services;

(l) construction review, including construction methodology and operations staging report (including identification of works requiring track possessions);

(m) a schedule of approved asset owner published standard waivers;

(n) demonstration of compliance with environmental management requirements and the Planning Approval;

(o) demonstrate compliance with the requirements of the Works Brief. Any non-compliances must be identified;

(p) workmanship, material, product and equipment specifications (including certification of type approval for new materials, products or equipment);

(q) calculations (if requested);
(y) evidence of design verification and validation (refer TSR T1 Clause 2.4.1(c)) including the methodology adopted;
(z) documentation of outstanding issues that may affect the design;
(aa) certificates by verifiers;
(bb) Building Code of Australia design certificate obtained by the Contractor in accordance with TSR 01;
(cc) certification obtained by the Contractor from the BCA consultant that the design is in accordance with the fire and life safety requirements of the Building Code of Australia, the Environmental Planning and Assessment Act 1979, and the Environmental Planning and Assessment Regulation 2000;
(dd) certification obtained by the Contractor from the DDA consultant that the design is in accordance with the requirements of Disability Discrimination Act 1992;
(ee) compliance with any conditions of approval from DECCW;
(ff) requirements for ITPs and Hold and Witness Points, together with the criteria for acceptance/release in accordance with TSR Q1; and
(gg) any additional information listed in TSR T1 Annexure A.

3.2. Road Safety Audit

Where the Works require a change to existing road networks (such as through physical alteration, change of use and/or introduction of new hazards) then the Contractor must arrange for a road safety audit to be carried out as per RTA Technical Direction for Road Safety Practitioners (TD 2003/RS03) and RTA Road Accident Reduction Guide, Part 2: Road Safety Audits.

Road safety audits must be carried out at least at the following stages:

(a) on completion of the detailed design for the proposed changes to existing road networks; and
(b) on completion of construction of the changes to existing road networks but prior to operation.

The road safety audits must be carried out by a team consisting of a lead auditor and a least one other member who is experienced in traffic management. The lead auditor must be considered by the Institute of Public Works Engineering Australia Ltd (NSW Division) to be a level 3 auditor.

3.3. Safety Assurance Reports

As outlined in TSR T1 Clause 2.7.3, the Contractor must produce one or more Safety Assurance Reports to demonstrate that the Works are acceptably safe to be constructed, tested, commissioned, integrated into the existing network, operated, maintained and decommissioned as part of the existing network.

Safety Assurance Reports must be submitted to the Principal's Representative for review under clause 9.14 of the General Conditions at the following stages:

(a) with the Preliminary Design Review (outline only);
(b) on completion of the design of the Works;
(c) on completion of the construction of the Works;
(d) on completion of the commissioning phase; and
(e) on completion of the system integration phase.

Where more than one Safety Assurance Report is to be produced for the Works, the Contractor must ensure that when read together, the Safety Assurance Reports demonstrate the safety of the whole of the Works.

The Safety Assurance Reports must demonstrate and provide evidence that:

(f) the Contractor has a documented safety management system in place and that this system was followed throughout the various stages of the Works;

(g) the Contractor's design for the Works complies with standards, and includes that:
   (i) material, equipment and configuration standards were identified by the Contractor;
   (ii) these standards were assessed to be applicable and suitable for the Works by the Contractor;
   (iii) the Contractor used a Competent Person to design, check and verify that the design meets those standards; and
   (iv) the Contractor ensured that the Contractor's design was subject to the review process under clause 9.14 of the General Conditions;

(h) the Contractor has constructed the Works in accordance with the design and standards for the Works, including that:
   (i) where applicable, the Contractor has used the final asset owner type approved equipment;
   (ii) the manufacturer and/or supplier of material and/or equipment has confirmed that materials and/or equipment complies with all relevant standards;
   (iii) the Contractor has completed all stages of the commissioning phase of the Works and that the Works are proven to meet acceptance criteria; and
   (iv) the Contractor has completed all stages of the system integration phase of the Works and the required overall network performance is proven to be achieved.

(i) the Contractor has identified and effectively managed all project-specific hazards when delivering the Works, including that:
   (i) the Contractor reviewed and adopted the Principal's Safety Hazard Log at the commencement of the design for the Works;
   (ii) the Contractor progressively updated the Safety Hazard Log during the design, construction, commissioning, and system integration phases of the Works;
   (iii) the Contractor eliminated project-specific hazards or treated them to reduce the risk associated with those hazards to a level that is ALARP;
(iv) the Contractor transferred the responsibility for any project hazards which remain after Completion of the Works to the final asset owner; and
(v) the final asset owner accepts responsibility for the remaining project hazards;
(j) the Contractor has prepared asset management information for the Works and delivered it to the Principal’s Representative in accordance with the requirements of TSR A1; and
(k) the Contractor has identified any special tools and training needs in accordance with TSR A1 and, where necessary, trained RailCorp’s personnel in accordance with TSR O1.

4. Design Documentation Submission Process

4.1. General

The Contractor must submit all Design Documentation and other documents progressively to the Principal’s Representative for review under clause 9.14 of the General Conditions.

All submissions to the Principal’s Representative must be under cover of a letter stating the purpose of the submission and containing a transmittal listing all the documents and their versions contained in the submission.

All written documents must be prepared in A4 format. All drawings and associated documentation, such as schematics or schedules, must be in accordance with TCA CAD Protocols (EN-ST-084).

All reports/plans submitted as draft and final must be of high quality. The Contractor must ensure all drawings/plans and reports are thoroughly checked and proof read before submission.

The Contractor must submit to the Principal’s Representative for review, one original and three copies (one of which is unbound) of each deliverable document (including draft and final reports, specifications, drawings, plans). In addition the Contractor must also submit an electronic copy of the deliverable documents on CD/DVD in PDF and native formats (such as Microsoft Word, Microsoft Excel, CAD in *.dwg or *.dxf). All reports or plans are to include a title, date, author (individual and company), company contact details, comment sheets, revision number, status, page headers and footers and an executive summary.

4.2. Quality of Submission

For a document set (particularly drawings) to achieve a standard of presentation sufficient to be reviewed, it must meet the following minimum criteria:

(a) drawings must be readable when printed at A3 size. This covers adequate font size and clarity as well as an uncluttered appearance with text and dimensions not obscured by other text or line work;

(b) drawings must be completed in sufficient detail such that the reviewer can understand what is being represented on the drawing and how it relates to other elements of the design;

(c) documents containing coloured elements must be easily readable;
5. Principal's Design Review

5.1. Design and Sustainability Review Panel

TCA has established an independent Design and Sustainability Review Panel (DSRP). The DSRP is comprised of the Government Architect (who chairs the meeting), two eminent architects, representatives from the Principal, and selected advisors as required for specific meetings with project-specific designs.

The function of the DSRP is to review and assess whether the design proposals are consistent with the overall project design objectives, and State and Local Government master planning requirements.

In addition to its obligations under TSR T1 Clauses 5.5 and 5.6, the Contractor must, in consultation with the DSRP, do all things reasonably necessary to progress the design. This includes:

(a) to present and explain the design to the DSRP, as and when required; and
(b) to respond to current and previous design issues as advised by the Principal.

5.2. Review for Completeness

The Principal's Representative will review each design submission to satisfy itself that it contains the following:

(a) a covering letter which includes the title of the project and the reference number of the design package (if appropriate). The letter must be on company letterhead and signed by the Contractor;
(b) document transmittal listing all of the documents forwarded for review and their format (e.g. drawing, report, specification, etc);
(c) CD or DVD containing all of the documents listed in the document transmittal; and

Nothing in this TSR T1 limits the Principal's Representative's rights under the General Conditions.

5.3. Review for Appropriateness

The Principal will review each design submission to assure itself that the design solution is adequate for the stated purpose.
The TCA Engineering Assurance Directorate will critically review designs at agreed points in the staged design development. Each review shall be undertaken at sufficient detail to determine if the design submission can be accepted or rejected (Rejection Criteria would be as per Clause 5.4 of this TSR). Calculations, determinations and the like will be undertaken as required to assure the adequacy of the design. Acceptance is evidenced by the issue of a Certificate of No Objection that will allow the design to proceed to the next stage of the process and ultimately to construction and commissioning. Rejections are accompanied by an explanation of the deficiencies in the design and actions required to achieve acceptance. Reviews are undertaken by a team of Assurance Managers who are acknowledged subject matter experts within their respective disciplines.

The Assurance Managers undertake reviews throughout the project lifecycle, provide guidance on design solutions and the applications of standards, run design review meetings with TCA designers and contractors and run discipline working group meetings with Clients, Authorities and other stakeholders. They generally review all engineering aspects of a project.

This review will not diminish the responsibility of the Contractor, designer, design checker and the verifier(s) to ensure the design solution is fit for purpose.

5.4. Principal's Design Rejection Criteria

As part of the Principal’s design review process it will reject the design submissions from the contractor based on the following criteria:

(a) design packages that do not include the minimum set of deliverable documents at the applicable SDR, PDR or CDR design stages, as required by RailCorp or TCA standards;

(b) significant failure of the design to comply with RailCorp or Australian standards, without a Waiver;

(c) for submissions after SDR, formal design comments from TCA or RailCorp not being adequately responded to or closed out;

(d) interfaces not clearly considered in the design documentation, e.g., a lack of coordination between track alignment, track formation, signalling, OHW or drainage;

(e) design reports which fail to meet a reasonable standard of English expression, e.g., reports which have poor structure, poor grammar, ambiguities, contradictions, incorrect reference numbers or cross referencing, or excessive spelling mistakes;

(f) nominated designers, checkers and verifiers do not have the required competencies or do not hold TCA and RailCorp Engineering Authority for the specific design work. It should be noted that the roles of designer and checker are not interchangeable. All documents must be signed by the nominated designer and checker;

(g) the design documents do not demonstrate or provide evidence (in the form of certification) of internal design review, verification, validation or proof checking;
(h) the design depends on unfounded or unreasonable assumptions that are “to be confirmed” at later design stages, e.g., insufficient information on geotechnical, survey or existing services, or a lack of procurement details of major equipment items;

(i) no recognition in the design documentation of construction methodology, sequencing and staging for the works, particularly at the CDR stage;

(j) absence of minimum requirements for inspection and test criteria at the CDR stage;

(k) no or poor demonstration of sustainability, safety and reliability when considering the construction, operation of the infrastructure being designed;

(l) No or poor demonstration that relevant risks identified in the project hazard log have been addressed and mitigated by the design;

(m) inadequate general arrangement drawings including project site location and design package location, i.e., to identify the inter relation with the site or other design packages;

(n) contradictory information with an already submitted and approved design; and

(o) the drawings are not in full compliance with TCA CAD Protocols.

5.5. Design Review Stages (Non-RailCorp Design Package)

Designs not related to RailCorp and RTA assets or approval processes must be submitted for review in accordance with the design review stages and submission information requirements of the relevant approval Authority. The Contractor must submit to the Principal’s Representative a copy of each submission on the same day as submitted to the relevant approval Authority. The Principal’s Representative may, but is not obliged to, direct that any document in such submission is a Document that is to be reviewed pursuant to clause 9.14(d) of the General Conditions. The Contractor must not commence any construction activity related to these designs until Approved for Construction Design Documentation exists for those designs and the confirmation notice allowing construction to commence from the relevant approval Authority is provided to the Principal’s Representative.

Designs related to RTA approvals must be submitted to the Principal’s Representative for review under clause 9.14 of the General Conditions.

5.6. Design Review Stages (RailCorp Design Package)

Designs related to RailCorp approvals must be submitted to the Principal’s Representative for review under clause 9.14 of the General Conditions at the following stages of design development (note: the information required for each stage are further described in RailCorp standard EPD 0013).

The review process for these design packages is illustrated in the flowchart in Annexure C. The flowchart shows each stage of review required and identifies the responsible party for actioning each stage of review.
Design packages submitted must be received by the Principal's Representative at least 12 working days prior to a RailCorp design review "time slot" allocated for TCA projects (see Annexure D for current RailCorp Professional Services Division - Time Slots Planner (to be issued each year)). This will allow for TCA to conduct its reviews and, if not rejected, provide time for RailCorp to receive the packages before a review period commences. The letter provided with any package submitted for RailCorp Design Review, must make it clear (list) which disciplines are contained within the package so that it is clear to those disciplines that they will need to review the documentation, e.g. whilst the main subject matter may be Civil & Structural there may be elements of Electrical Design (such as Earthing & Bonding) or Track (alignment and transit space issues).

The design reports covering the package must contain discrete sections for each of the disciplines included in the overall design, e.g. in a Civil & Structural package that has an element of Electrical Design there must be a section in the report that deals with the electrical design.

Where a report or drawing has sections covering secondary disciplines, it must be signed off by the Designers and Checkers for all design discipline areas, e.g. in a Civil & Structural report containing an electrical element, the Civil & Structural Designer and Checker and the Electrical Designer and Checker will need to sign the report.

**System Definition Review (SDR)**

The purpose of an SDR is for the Contractor to demonstrate that the system and interface specifications are complete and unambiguous and consistent with the requirements of the Contract. The Principal must be assured that the requirements for the system or interface are fully defined in the system and interface specification and that any inconsistencies or omissions in relation to contract requirements are identified and resolved.

SDRs will take place once initial requirements analysis and allocation has been undertaken and each Systems Design Report has been developed. Each Systems Design Report must include, as a minimum:

(a) identification of each system (including where relevant its sub systems) and the relationship between the systems;

(b) an availability allocation for each system to achieve the asset owner's systems requirements specification;

(c) a requirements analysis and traceability matrix (as described in IEEE Standard 1220, ANSI/EIA 632 or similar standards) which allocates requirements in the Works Brief to the various systems identified under TSR T1 Clause 2.3(c);

(d) a summary of key assumptions made by the designer about each system;

(e) an engineering specification for each system or interface; and

(f) an initial risk and hazard identification for each system.

**Preliminary Design Review (PDR)**

PDRs must be carried out at the completion of the "engineering" in the detail design development phase for each system and/or interface between systems to ensure that the proposed solution is consistent with the functional and performance requirements of the
engineering specification. The Principal must be satisfied that the proposed design solution complies with the intent of the specification and the Contract.

The PDR will take place once a preliminary Design Report has been developed. The preliminary Design Report must contain:

(a) engineering specification for the system or interface;
(b) engineering design and layout drawings, including interface definitions;
(c) a summary of key assumptions made by the designer;
(d) initial selection of major components and materials (including samples where appropriate);
(e) a palette of all materials (including colours) to be used for the architectural finishes;
(f) functional flow diagrams (or equivalent for software);
(g) preliminary system or interface risk and safety hazard assessment, including safety hazards that have been identified and either eliminated or reduced to treatments proposed through design, manufacture or testing to ALARP levels, and any residual safety risks expected at handover to be managed through maintenance or operational procedures;
(h) preliminary reliability models and predictions; and
(i) maintainability features, maintenance access, vandalism resistance features, and self test and built in monitoring systems.

Critical Design Review (CDR)

CDRs must follow completion of the detailed design for each system and/or interface between systems in the detailed design development phase.

The purpose of the CDRs is for the Contractor to demonstrate that the detailed design is to be suitable in all respects to proceed with construction/fabrication of physical items or coding of software.

The CDR will take place once a Design Report has been developed in accordance with TSR T1 Clause 3.1.

The Principal will review and comment on the initial submission of the CDR. Any comments made by the Principal must be closed out by the Contractor to the satisfaction of the Principal at which time a Certificate of No Objection will be issued to evidence acceptance. The submission must then be updated to reflect any agreements prior to being passed on to the Principal’s stakeholders for their review and comment at this stage.

Approved for Construction (AFC) Review

At the conclusion of the CDR and following close out of any comments received during the CDR, the documentation is to be signed by the relevant Competent Persons and verifier, and marked as "For NOTC (No Objection To Construct) Approval". The Contractor must then submit this documentation to the Principal’s Representative for its review under clause 9.14 of the General Conditions. This review by the Principal’s Representative is the AFC Review.
As part of the AFC Review, the Principal will obtain the RailCorp configuration change notice (CCN) certificate from RailCorp. The Contractor will mark the documentation as AFC only after the Principal's Representative has provided it with the RailCorp CCN certificate. The Principal will obtain the CCN and issue it to the Contractor within 10 (ten) working days from receiving the correctly signed documentation marked "For NOTC (No Objection To Construct) Approval". The Contractor may only commence a construction activity once all conditions precedent to the commencement of construction activities have been met and AFC Design Documentation exists for the relevant package or element of work. The Contractor is to mark up the design drawings "AFC" in accordance with Annexure C and issue it to the Principal's Representative for its records.

5.7. Design Briefing Sessions Pre-Submission

Prior to any design submission for each design review stage under TSR T1 Clause 5.6 the Contractor must arrange the following briefing sessions with the Principal's Engineering Assurance Manager:

(a) an inception review, no later than 3 Business Days after commencing the design; and
(b) a design progress review, between 2 and 3 weeks prior to the design being submitted.

The Contractor must give a brief presentation on key points of the design. The Principal's Representative will provide the Contractor with comments on the design 5 Business Days following the briefing. The Contractor must address and close-out these comments with responses to the comments included as an appendix to the design report provided with the design submission.

5.8. Design Briefing Session Post-Submission

As part of any design submissions, and otherwise if specifically requested by the Principal's Representative, the Contractor must arrange a briefing session with the Principal and either RailCorp or the relevant Authority, approximately 8 business days after submission of the documentation. The Contractor must give a comprehensive presentation on key points of the design submission, discuss queries, and minute the discussion and action points arising. The minutes must be provided to the Principal's Representative within 3 Business Days of the briefing session. The Contractor must address and close-out these minutes as part of the design review process described in clause 9.14 of the General Conditions. The minutes and responses are to be included as an appendix to the final Design Report.

5.9. Closure of Previous Comments

Comments generated by the Principal's Representative and other stakeholders from the review of the design at each stage must be addressed and closed out by the Contractor in accordance with clause 9.14 of the General Conditions, and must be reflected in the next stage submission.

Comments generated by the Principal's Representative from the review of the final detail design must be addressed and closed out by the Contractor in accordance with clause 9.14 of the General Conditions, prior to the Principal's review of the draft AFC Design Documentation.

Without limiting clause 9.14 of the General Conditions, a response such as "noted" or "agreed" or "to be amended in the next design stage" is not a satisfactory response to a review comment.
6. Construction Compliance with Detailed Design

6.1. General

The Contractor must manage the construction process such that:

(a) the Works comply with the AFC Design Documentation;
(b) each procurement specification is documented and approved by a Competent Person for final release;
(c) each procurement specification is verified against the AFC Design Documentation by a Competent Person;
(d) any proposed change to a design solution during construction phase is reviewed and approved by a Competent Person;
(e) any proposed change to a design solution that affects the safety regime (during construction and/or during long term operations/maintenance), the maintenance plan, the operation of the system, or the long term asset life is referred to the Principal for review;
(f) a Competent Person specifies acceptance criteria for each system and subsystem and interfaces between systems;
(g) each system and sub-system, once constructed, is verified against the Competent Person's acceptance criteria;
(h) each identified interface between systems is verified progressively against the Competent Person's acceptance criteria; and
(i) an ITP is developed in accordance with TSR Q1 for each system (and sub-system if required) and the interface between systems and is approved by a Competent Person before use.

The Contractor must determine appropriate Hold and Witness Points as part of the design process and incorporate them into the construction management process.

6.2. System Verification Reviews

System Verification Reviews (SVR) are to be conducted progressively by the Contractor. SVRs must cover each system and/or interface between systems during the construction and testing phase.

The documentation for each SVR is to be systematised and progressively submitted by the Contractor as works proceed, including closeouts of non-conformances and Principal’s Representative’s queries.

The purpose of the SVRs is for the Contractor to demonstrate that all testing and verification action is complete, that all specification requirements have been achieved, and that the system is ready for integration testing with the existing network, final acceptance testing and handover.

Completed SVR documentation is to be submitted in final form following system integration of the relevant system or subsystem.
6.3. Physical Configuration Audit

A Physical Configuration Audit (PCA) is to be conducted by the Contractor in conjunction with the Principal for each system and/or interface between systems during the construction/commissioning phase. The purpose of the PCA is to ensure that the as-built configuration conforms with the AFC Design Documentation. The PCA also aims to ensure that the as-built documentation is accurate and complete record of the as-built configuration.

The Contractor must issue a formal notification to the Principal’s Representative at least 2 weeks prior to commencing a PCA. The Principal’s Representative will advise the Contractor if the Principal’s representative(s) intend to attend. If the Principal confirms its intention to attend, the PCA must not proceed unless the Principal’s representatives are present.

7. Shop Drawings

The Contractor must produce shop drawings that are consistent with the Contract. The Contractor must submit shop drawings in the form of one original, three copies and one electronic copy (in PDF and unlocked native form) to the Principal’s Representative at least 14 days prior to commencing fabrication.

The Principal’s Representative may review and provide comment to the Contractor in relation to shop drawings, however the Contractor is responsible for the accuracy, correctness and suitability of shop drawings.

All shop drawings submitted to the Principal’s Representative must be validated by a Competent Person. Evidence of the Competent Person’s validation must be shown on each shop drawings.
ANNEXURE A - Additional Project Requirements
Additional Project Requirements

A1 Class 1 and 2 Verification (TSR T1 Clause 2.4)
Class 1 Verification must be completed for:
(a) all fire and life safety measures;
(b) Durability Assessment Reports.
Class 2 Verification must be completed for all other design packages not requiring a Class 1 Verification.

A2 Additional information to be provided with the final Design Report (TSR T1 Clause 3.1(gg))
(a) the durability assessment report in accordance with section 2.9 of the Works Brief;
(b) the “effect of the Works” report in accordance with section 2.10 of the Works Brief;

A3 Design Package Structure
The structure of the design packages should be agreed within 15 days of contact with the Principal’s Representative. Splitting of packages should not occur without the Principal’s Representatives approval. Furthermore without the approval of the Principal’s Representative the order of submission of the design packages should be reserved.

A4 Station Working Group
The Station Working Group (SWG) is comprised of representatives of RailCorp and other stakeholders, including those involved in station operations, management, presentation services, train crewing, safety and maintenance. The SWG will provide expert input to the design and construction processes to the extent it relates to yard operations and staff facilities. This will include confirmation of RailCorp’s Business Requirements Specification and Systems Requirements Specification (refer to the Works Brief) and reviews of the design.

The Contractor must do all things reasonably necessary to assist the proper functioning of the SWG including:
(a) provide presentations to the SWG generally at each design stage, as applicable; and
(b) prepare and provide to the Principal’s Representative such material as the Principal’s Representative may reasonably require for any meeting of the SWG.

A5 Engineering Authority
The Contractor must comply with RailCorp’s and Principal’s Engineering Authority process. Contractor must provide a register to the Principal listing designers with their classification and status of Engineering Authority granted by RailCorp or TCA prior to the start of Design. This register must be updated regularly every month and issued to the Principal. For applicants applying for Engineering Authority for the first time the application contractor should include a log book listing the design experience for rail work and the RailCorp “Declaration Form”, which must be signed by their supervisor who should hold and Engineering Authority.
ANNEXURE B - List of Reference Documents
List of Reference Documents

Building Code of Australia
Disability Discrimination Act 1992
Disability (Access to Premises – Buildings) Standard 2010
Environmental Planning and Assessment Act 1979
Environmental Planning and Assessment Regulation 2000
TCA CAD Protocols (EN-ST-084)
TCA Engineering Authority Application (EAA) (EN-FO-143)
TCA Sustainability Design Guidelines
RTA Technical Direction for Road Safety Practitioners (TD 2003/RS03)
RTA Road Accident Reduction Guide, Part 2: Road Safety Audits
TCA Safety Assurance of Rail Related Projects
http://engineering.railcorp.nsw.gov.au/All%20Disciplines_EngAuthority.asp
http://engineering.railcorp.nsw.gov.au/Disciplines/AllStandards/Declaration_Engineering_Authority.doc
ANNEXURE C - Design Review Process for RailCorp Design Packages
### RailCorp Professional Services Division - Time Slots 2010-2011 Year Planner

<table>
<thead>
<tr>
<th>September-10</th>
<th>October-10</th>
<th>November-10</th>
<th>December-10</th>
<th>January-11</th>
<th>February-11</th>
<th>March-11</th>
<th>April-11</th>
<th>May-11</th>
<th>June-11</th>
<th>July-11</th>
<th>August-11</th>
<th>September-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday</td>
<td>8PM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
</tr>
<tr>
<td>Saturday</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
</tr>
<tr>
<td>Sunday</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
<td>8AM</td>
</tr>
<tr>
<td>Friday</td>
<td>9:05AM</td>
<td>9:05AM</td>
<td>9:05AM</td>
<td>9:05AM</td>
<td>9:05AM</td>
<td>9:05AM</td>
<td>9:05AM</td>
<td>9:05AM</td>
<td>9:05AM</td>
<td>9:05AM</td>
<td>9:05AM</td>
<td>9:05AM</td>
</tr>
</tbody>
</table>

- **Public Holidays**: [Day of the Week] (Day of the Week)
- **MPT**: [Day of the Week] (Day of the Week)
- **Capital Internal**: [Day of the Week] (Day of the Week)
- **Capital TCA**: [Day of the Week] (Day of the Week)
- **ARTC/Others**: [Day of the Week] (Day of the Week)
- **Close Down**: [Day of the Week] (Day of the Week)
TCA Standard Requirements
TSR C1 – Communications and Community Liaison

ASP-01-D&C Design and Construct Contract for
Auburn Stabling Project (Stage 1)
South West Rail Link

Status: Tender Issue
Document Number: TSR C1 - Communications and Community Liaison.DOC
Version: 5.0
Date of issue: October 2010
Security classification: General Release

© TCA 2010
Table of Contents

1 General ..................................................................................................................................... 1
2 General Community Liaison Obligations ............................................................................... 1
3 Community Liaison Plan (CLP) .............................................................................................. 1
4 Communications Management System (CMS) ................................................................... 2
5 Communications Management Control Group (CMCG) ....................................................... 3
6 Meetings with the Community and other Stakeholders ....................................................... 3
7 Community Notification ........................................................................................................ 4
8 Information to the Principal's Representative ..................................................................... 5
9 Marketing and Promotional Opportunities ......................................................................... 5
10 Complaints and Enquiries Management ............................................................................ 5
11 Media and Government Relations ...................................................................................... 8
12 Incident Management and Reporting ................................................................................... 8
13 Site Inspections by Visitors and Photography .................................................................... 9
14 Construction Hoardings and Fences ................................................................................. 9
15 Signage, Graffiti and Bill Posters ....................................................................................... 9
16 Communication Requirements as Part of Site Inductions .................................................. 10
17 Accessing Private Property ................................................................................................ 10

ANNEXURE A - Additional Project Requirements
ANNEXURE B - List of Reference Documents
ANNEXURE C - Principal's Communications Quality Checklist
ANNEXURE D - Principal's Process for Approval of Routine Correspondence
ANNEXURE E - Procedure for Accessing Private Property
1 General

TSR C1 describes the requirements and processes which the Contractor must implement as a minimum to ensure communications and community relations activities are appropriately managed and designed to engage positively with the community, minimising disruption to the adjacent residents, property owners and all transport users. TSR C1 includes the requirements for incident management and reporting.

For the avoidance of doubt, all requirements of this TSR C1 also apply to Subcontractors unless otherwise specified.

2 General Community Liaison Obligations

The Contractor must:

(a) appoint suitably qualified and experienced community relations personnel to fulfil the communications requirements of the Contract;

(b) ensure timeframes and resources for community notification and consultation are incorporated into project planning and programs;

(c) develop a Community Liaison Plan (CLP) in accordance with TSR C1 Clause 3;

(d) record and maintain records in the project's communications management system (CMS) in accordance with the requirements of TSR C1;

(e) ensure its employees, Subcontractors and agents comply with the CLP and the CMS;

(f) be proactive in providing the community with accurate and adequate information on the status of works and any associated impacts;

(g) make available appropriate senior personnel (for example environmental manager, design manager, construction manager, technical experts) to attend meetings with the community or other stakeholders, as required; and

(h) prior to taking any unilateral action that may impact on the community, consult the Principal's Representative.

3 Community Liaison Plan (CLP)

The CLP must provide a clear framework, including policies, processes, and procedures for proactive communications management, which complies with the community liaison obligations of the Contract.

The CLP must be submitted to the Principal's Representative in accordance with TSR Prelude. The Contractor is responsible for implementing and maintaining the CLP. The Contractor must review and update the CLP in accordance with TSR Prelude.

The CLP must include the following as a minimum:

(a) details of the community relations resources, including personnel, to be employed by the Contractor whilst carrying out the Contractor's Activities;
(b) a comprehensive analysis of issues to be managed prior to, and during construction, including proposed strategies to manage these issues;

(c) a comprehensive stakeholder list, highlighting issues/interests and strategies for dealing with each audience;

(d) details of key messages to be used in information materials and when responding to enquiries and complaints;

(e) details of proposed communication and consultation tools to be used;

(f) details of requirements of the project environmental assessment and the conditions of the Planning Approval for community and stakeholder consultation and proposed methodologies and timeframes for undertaking this consultation;

(g) policies and procedures for handling community complaints and enquiries, and for handling of media enquiries;

(h) details of the Contractor’s nominated 24 hour contact for management of complaints and enquiries;

(i) policies and procedures for incident management and reporting;

(j) an indicative program for the implementation of community liaison activities. This program should include key dates for the commencement and conclusion of construction activities, associated impacts to the community and the Contractor’s proposed strategy for minimising impacts and informing the community. The community liaison program must be regularly updated for discussion at the communications meeting with the Principal’s Representative;

(k) policies and procedures for ensuring Subcontractors comply with the communications requirements of the Contract;

(l) details of activities which will be undertaken to monitor and evaluate the effectiveness of the community liaison program;

(m) analysis of other major projects/influences in the area with the potential to result in cumulative impacts to the community and strategies for managing these; and

(n) details of proposed ‘marketing’ activities planned to be undertaken by the Contractor regarding its activities, including procedures for obtaining approval from the Principal’s Representative prior to planning and implementing any such activities.

A summary CLP may be required for upload on to the Principal’s website.

4 Communications Management System (CMS)

The Principal has a web-based CMS for the collection and recording the details of all project contact and correspondence with the community/stakeholders. The Contractor must update and maintain it with accurate contact details to ensure easy identification and rapid distribution of information when required.

The Contractor must record all contacts with the community and actions resulting from these contacts in the CMS within 24 hours of the contact/activity occurring or receiving correspondence.
Monthly reports on community contacts (detailing issues and frequency) must be sent to the Principal’s Representative.

5 Communications Management Control Group (CMCG)

A CMCG will be convened by the Principal’s Representative prior to the commencement of any works by the Contractor at the Site. From then, the CMCG will meet fortnightly or less frequently if approved by the Principal’s Representative.

The Contractor must attend the CMCG meetings and provide all relevant information regarding any potential impact the Contractor’s Activities may have on the community including local residents, property owners and transport users.

At each meeting the Contractor is required to provide the following information:

(a) a summary of current and upcoming construction works, likely impacts, and proposed communication strategies to address these;
(b) an update on any current or emerging issues and/or any promotional opportunities;
(c) an update on complaints received and action taken to resolve them; and
(d) other information as requested by the Principal’s Representative.

The aim is for the CMCG to provide a forum to exchange information and coordinate communication and consultation activities with Other Contractors and the Principal to ensure a consistent approach to the community and other stakeholders is delivered.

The CMCG may comprise of representatives from Other Contractors, the Contractor and the Principal.

The CMCG may be integrated into other meetings at the discretion of the Principal’s Representative.

6 Meetings with the Community and other Stakeholders

The Contractor must assist in conducting consultation activities with the community and other stakeholders. This includes organising meetings with the community or with key stakeholders (or accompanying the Principal’s Representative where such meetings are organised by the Principal’s Representative) to discuss work in progress, works upcoming or issues pertaining to the Contractor’s Activities. Where required by the Principal’s Representative, the Contractor must provide materials for presentation and/or distribution at such meetings.

The Contractor must ensure that suitable persons are available to attend such meetings (including after-hours). Such persons must be adequately informed and suitably qualified to participate and be able to take the lead during the meeting in detailing the progress of the Works, and in the resolution of community issues (where possible).

The Contractor must comply with all reasonable suggestions and requests of the community.

The Contractor must ensure that the details of all meetings held with the community and key stakeholders are recorded in the CMS within 24 hours of such meetings taking place.
The Contractor must provide the Principal's Representative with a minimum of 3 Business Days notice prior to any meeting with the community or stakeholders.

7 Community Notification

The Contractor must proactively notify the community and key stakeholders of current and upcoming development and/or construction works including those activities of Subcontractors and of the Contractor's Activities with the potential to impact on the community. The Contractor must comply with TSR C1 Annexure C and Annexure D when preparing and distributing community information.

In particular, for any activity with the potential to adversely impact on any member of the community, the Contractor must advise the community between 10 and 14 days prior to such activity being undertaken.

At least 5 Business Days prior to the 10 to 14 day notification period, the Contractor must submit to the Principal's Representative for approval its proposed notification materials in accordance with the process described in TSR C1 Annexure D. All materials must be consistent with the requirements of the checklist contained within TSR C1 Annexure C.

In addition to notifying of works with the potential to adversely impact the community, the Contractor is responsible for updating the community on a monthly basis on the status of current and upcoming construction works. The Contractor must submit the draft construction-update content to the Principal's Representative for approval at least 5 Business Days prior to distribution (as per the requirements above).

Means of advising the community may include, but are not limited to, flyers, newsletters, door knocks, signage, posters, telephone calls, meetings and advertisements.

The Contractor must not implement any communication strategies to the community or stakeholders without the approval of the Principal's Representative. This includes any means of advising the public through the use of flyers, newsletters, door knocks, signage, posters, telephone calls, meetings, advertisements and the like.

All information materials must be sufficiently detailed, accurate and targeted to the appropriate audience. All information materials must be of a professional quality and designed in accordance with the TCA Corporate Identity Style Guide for Consultants and Contractors (CO-ST-100) and the quality checklist contained within TSR C1 Annexure C.

For complex or potentially contentious issues, a communications strategy must be developed to adequately consider, address and manage the communications process. Communications strategies must be submitted to the Principal's Representative for approval at least 5 Business Days prior to implementing the strategy.

The Contractor must ensure that details of communication with the community and key stakeholders are recorded in the CMS.
8 Information to the Principal's Representative

The Contractor is required to provide (and explain) accurate communications information to the Principal’s Representative regarding current and upcoming Contractor’s Activities (including works of Subcontractors) and all associated community impacts as follows:

(a) **Prior to Site establishment:** a program of the Contractor's Activities, and details of the planned community impact minimisation measures;

(b) **Monthly:** the works completed and upcoming Contractor's Activities, including any associated community impacts (in a format suitable for inclusion on the Principal’s website);

(c) **Quarterly:** the works completed and upcoming Contractor's Activities, including any associated community impacts (in a format suitable for inclusion in the Principal’s project updates); and

(d) **As required:** information to allow the Principal's Representative to be kept abreast of construction activities and/or community impacts, and to allow timely responses to community and media enquiries and/or complaints.

The Contractor must be contactable on a 24-hour basis (as required).

9 Marketing and Promotional Opportunities

The Contractor must not unilaterally commit to a marketing or promotional opportunity or develop marketing or promotional materials that relate to the project or the Contractor’s Activities (including but not limited to signage, displays, media articles, advertisements, presentations at conferences, technical papers, photographs, sponsorships, website text and graphics, case studies or other corporate materials) without the prior written approval of the Principal’s Representative.

Any marketing and promotional opportunities and draft marketing/promotional materials must be submitted to the Principal's Representative for approval at least 5 Business Days prior to the activity occurring or the distribution date or print deadline of any materials.

The Contractor must proactively identify positive media and/or community relations opportunities and inform the Principal’s Representative of these opportunities in a timely manner.

10 Complaints and Enquiries Management

The Contractor is responsible for responding to complaints and enquiries received regarding the Contractor’s Activities and impacts associated with the Contractor’s Activities. Complaints and enquiries may be received through a variety of avenues including TCA's 24-hour construction response line or project infoline, in writing (letter or email), direct to TCA via telephone, in writing or direct to the Contractor or Subcontractors.

In responding to complaints the Contractor must:

(a) record details of every complaint received and how it was managed and closed out in the CMS;
(b) investigate and determine the source of the complaint immediately, including an immediate call to the complainant where the complaint was received by telephone. Should the Contractor determine that the complaint does not relate to the Contractor’s Activities, the Contractor must immediately notify the Principal’s Representative;

(c) provide at least an oral response to the complainant regarding what action is proposed as soon as possible and within a maximum of 2 hours from the time of the complaint (unless the complainant requests otherwise). If a phone number is provided, complaints received by email and letter must be responded to orally within a maximum of 2 hours from time of receipt. If no phone number is provided, the complaint must be responded to within a maximum of 24 hours for emails and one week for letters from time of receipt.

(d) forward information on any complaints received, including response times and details of any actions undertaken or proposed or investigations occurring, to the Principal’s Representative in writing each Business Day to meet the Principal’s reporting requirements and requirements of the DECCW Licence;

(e) provide a detailed written response to the complainant within 7 Business Days, outlining the reason for the problem and the remedial action that has been taken. A draft written response is to be provided to the Principal’s Representative for approval within 5 Business Days of receipt of the complaint;

(f) forward a scanned signed copy of the approved written response to the Principal’s Representative on the day it is sent; and

(g) provide the Principal’s Representative with details in writing of complaint close out actions and the date action was implemented.

In responding to enquiries the Contractor must:

(h) record details of enquiries received in the CMS; and

(i) provide at least an oral response to the enquirer within 2 hours from the time of the enquiry during standard construction hours as outlined in the Planning Approval, or on the next Business Day during all other times (unless the enquirer agrees otherwise);

The table below illustrates the required complaints handling and reporting process.
Principal's Complaint Resolution Process

1. Complaint received by project 1800 complaints line or email and forwarded to TCA.
2. TCA determines works package where complaint originated and the Principal forwards details of the complaint to the relevant Contractor.
3. Contractor records details into the CMS and investigates the complaint and determines appropriate action.
4. Contractor verbally confirms the action to be undertaken with the complainant and updates details in the CMS within 2 hours.
5. CMS report forwarded to the Principal's Representative.
6. At end of period as per DECCW Licence period requirements (Principal to advise).
7. Within 5 business days, the Principal to forward details of complaints to Environmental Representative.
8. Within 7 business days, Contractor to provide draft written response to Principal's Representative for approval.
9. Once approved, Contractor issues the written response to complainant and provides Principal's Representative with a scanned signed copy of the approved letter and logs into the CMS.
10. Contractor provides the Principal's Representative with details in writing of complaint close out actions and lists the date action was implemented. Complaints register forwarded to Principal's Representative.
11 Media and Government Relations

The Contractor must:

(a) immediately make any enquiry/contact by the media or elected government representative known to the Principal's Representative;
(b) not make any statement (oral or written) or provide any photographs or illustrations to the media or elected government representative regarding the Contractor's Activities without the prior written approval of the Principal's Representative;
(c) not permit any media or elected government representative on a worksite without the prior written approval of the Principal's Representative;
(d) provide the Principal's Representative with relevant information in a timely manner, as required to respond to media and government enquiries; and
(e) record all contact with the media and elected government representatives, and project related articles into the CMS and send copies of articles through to the Principal's Representative; and
(f) ensure all subcontractors comply with the requirements.

12 Incident Management and Reporting

The Contractor must immediately notify the Principal's Representative of any incident or issue associated with the Contractor's Activities that may have an impact on the community, environment, employees, Subcontractors or other stakeholders or may attract the attention of the media, the Minister for Transport, a local MP, council or the broader community.

Where the incident or issue is in respect of OH&S issue the Contractor must also comply with the notification provisions of TSR S1. Where the incident is in respect of the environment the Contractor must also comply with the notification provisions of TSR E1.

In the event of an incident or issue, the Contractor must not contact or provide information to any person (other than that which is required to directly manage the incident or to comply with Law), including any stakeholder, the media or the public, without the prior approval of the Principal's Representative. The Contractor must make available senior personnel to respond to the community, the media and other stakeholders when required by the Principal's Representative.

As required, the Contractor must provide the Principal's Representative with all necessary communications materials that may need to be disseminated as a result of such incidents.

The details of response times for incident reporting by the Contractor are:

(a) immediate verbal notification to the Principal's Representative, which is interpreted as:

(i) within 10 minutes of the incident occurring, in the case of an incident that has attracted or will imminently attract the attention of the media, the Minister for Transport, a local MP, or the broader community. Examples of such incidents include without limitation:

- any delays to train timetables caused by the incident;
incidents where employees of the Contractor or Subcontractor, or a member of the community is harmed; and

- access to trains is blocked and preventing (or severely restricting) access to commuters,

(ii) otherwise, within 1 hour of the incident occurring;

(b) a report detailing the incident to be issued to the Principal’s Representative within 24 hours of the incident occurring, using:

(i) TCA Initial Safety Occurrence Report (SA-FO-002) for incident or issue in respect of OH&S; or

(ii) TCA Community and Environmental Incident Report (PE-FO-101); and

(c) a corrective action report prepared by the Contractor in accordance with TSR Q1, and submitted to the Principal’s Representative within 5 Business Days of the incident occurring.

The Contractor must ensure that all details of an incident or issue are recorded in the CMS.

13 Site Inspections by Visitors and Photography

The Contractor must not organise any site visits by community members or other stakeholders without approval from the Principal’s Representative. The Contractor must provide the Principal’s Representative with at least 48 hours prior written notice of all proposed visits.

The Contractor must accommodate regular, periodic visits to the Site by the Principal’s Representative for the purpose of photography or videography for promotional purposes. Any photographs or film footage taken by the Contractor or the Principal’s Representative becomes the property of the Principal who may, without the Contractor’s approval, use the photographs and/or film footage for footage for whatever purpose the Principal deems necessary or appropriate.

14 Construction Hoardings and Fences

Hoardings and fencing, including shade cloth or other material on the external face of any hoarding or fence, must be provided in a colour and texture specified by the Principal’s Representative.

The Contractor must submit plans for proposed hoardings or fencing, including shade cloth or other material on the external face of any hoarding or fence, to the Principal’s Representative for review and written approval.

15 Signage, Graffiti and Bill Posters

The Principal will provide the Contractor with signage to be installed by the Contractor on hoardings at the Site to provide the community with details of the 24-hour construction response line. The Contractor must provide, as requested, the resources required to assist the Principal...
with the provision and/or installation of any other signage or graphics required on the hoardings or fencing.

The Contractor must not place any signage, advertising or branding (other than safety signage) on the external face of any hoarding or fence without the prior written approval of the Principal’s Representative.

The Contractor must prepare and install any way finding signage to direct pedestrians/commuters/vehicles around the Site as appropriate.

Hoardings, site sheds, fencing, acoustic walls around the perimeter of the site and any structures built as part of the Works are to be maintained free of graffiti and advertising not authorised by the Principal’s Representative during the construction period.

The Contractor must carry out daily inspections for graffiti and unauthorised advertising must be removed or covered with the following timeframes:

(a) offensive graffiti will be cleaned or covered within 24 hours;
(b) highly visible yet non-offensive graffiti will be cleaned or covered within 1 week;
(c) graffiti that is neither offensive nor highly visible will be cleaned or covered during normal operations within one month; and
(d) any advertising material will be removed or covered within 24 hours.

16 Communication Requirements as Part of Site Inductions

The Contractor must ensure its employees and the employees of Subcontractors are adequately inducted and trained on the communication requirements of the Contract, with particular focus on incident management, incident reporting procedures, community enquiries or complaints, and media enquiries prior to commencing work on the Works.

The Contractor must periodically carry out further inductions of persons previously inducted to ensure the communications procedures remain clear.

The proposed induction must be submitted to the Principal’s Representative for approval prior to use.

17 Accessing Private Property

The Contractor must adhere to the Principal’s procedure (TSR C1 Annexure E) for accessing private property.
Additional Project Requirements

Page left blank intentionally
ANNEXURE B – List of Reference Documents
List of Reference Documents

TCA Community and Environmental Incident Report (PE-FO-101)
TCA Corporate Identity Style Guide for Consultants and Contractors (CO-ST-100)
TCA Initial Safety Occurrence Report (SA-FO-002)
ANNEXURE C - Principal's Communications Quality Checklist
Principal's Communication Quality Checklist

This quality checklist must be completed and attached with all draft written communication provided to Principal's Representative for review/approval.

Communication title: ____________________________________________

Objective of communication (i.e. general update, advise of out-of-hours work etc): ________________________________

Date of submission to Principal's Representative: __________________ Date distribution to commence: __________________

Proposed start date of any new works requiring 10 to 14 days notice: ____________ Time period notification covers: ____________

<table>
<thead>
<tr>
<th>Review/approve</th>
<th>Name/Position</th>
<th>Date</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Checklist</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
<th>Comment</th>
</tr>
</thead>
</table>

**Content and content:**

- Does the communication clearly provide:
  - A description of each activity/event?
  - The dates, times and duration of each activity/event?
  - The location of each activity/event?
  - Information explaining the need for each activity/event?
  - Information about the impact to the community (e.g. audible works) of each activity/event?
  - Information about proposed mitigation measures to manage these impacts?

**Distribution:**

- Is the proposed distribution area attached?

**Out-of-hours/weekend traffic impacts (if applicable):**

- Are the details in the notification consistent with the out-of-hours/traffic works application(s) submitted?
- Have the works been approved by all relevant parties (including Council or RTA if necessary)?
- For all unapproved works, have the words ‘subject to approval’ been included?
- Has justification been provided for the need for out-of-hours works?

**Monthly construction notifications:**

- Have details about all current/ongoing/upcoming works been included?
- Will an additional, more detailed notification need to be distributed closer to the date? If yes, when will the subsequent notification be distributed?
- Is the communication consistent with other information issued to the community/stakeholders? List in comment field where appropriate other related existing/upcoming communications (i.e. advertisements, posters, signs etc).

**Style and structure:**

- Is this communication tool the best way of communicating this information to the target audience?
- Have any other additional or alternative methods been considered or implemented? If so, please list.
- Is the most important information positioned at the beginning of the document?
- Are the messages clear and consistent with agreed project messages?
- Has construction terminology been detailed in layman's terms?

**Supporting graphics:**

- If a map is included (where required):
  - Is the graphic easy to understand?
  - Are the key items, work areas, detours and/or landmarks referred to in the text easily identified?
Once approved, the communication material should be recorded into the CMS. A copy of the final should be provided to the Principal's Representative before communication is distributed.
ANNEXURE D – Principal's Process for Approval of Routine Correspondence

(flyers, notices, advertisements etc)
Principal’s process for Approval of Routine Correspondence

Contractor drafts correspondence in accordance with the contract requirements and reviews against Principal’s Communications Quality Checklist.

Contractor forwards draft correspondence with proposed distribution area and completed quality checklist to Principal’s Representative via email at least 5 Business Days before commencement of the 10 to 14 day notification period.

Principal’s Representative reviews/corrects (or approves) copy, distribution zone and timeframe, and sends back to Contractor within 24-48 hours.

If approved

Contractor to correct copy and send revised draft to Principal’s Representative within 24 hours of receipt.

Principal’s Representative to review/correct or sign off within 24 hours of receipt and send back to the Contractor.

Contractor sends final approved copy to Principal’s Representative and issue correspondence as required.

Contractor to scan final copy of correspondence and enter into CMS together with any relevant documentation.
ANNEXURE E - Procedure for Accessing Private Property

Also including:

a) template letter to owner
b) template introduction letter
c) template thank you letter
Procedure for Accessing Private Property

Aim

These procedures have been developed to ensure a consistent and professional approach is adopted by Transport Construction Authority (TCA) staff and contractors when seeking access to private properties.

Scope

These procedures must be implemented when seeking access to private property to conduct field work. Separate procedures have been developed for accessing private property to conduct property/building condition surveys.

Procedures

Specific procedures must be followed prior to visiting the property, during the visit and following the visit. These procedures apply to all TCA staff and contractors.

(a) Prior to the visit

1. Send a letter to the property owner at least one week prior to commencing field work to seek permission to access their property. The letter should provide details of the project, explain why the field work needs to be conducted, who will conduct the field work and what is involved. The letter should be on TCA letterhead and must be approved by the Director Public Affairs or nominated representative (see sample letter in Attachment A).

2. Contact the property owner by telephone 2 to 3 days after sending the letter to request permission to enter their property and discuss any special conditions of entry they may have. Provide details of the expected day/time of visit and ask the owner if they wish to be home as a condition of entry. Ensure all specific requirements are clearly documented. Ensure details of owners refusing permission are clearly documented. This call can be made by TCA or the main contractor’s community relations manager.

3. Brief the field staff on which property owners have/have not provided permission and any specific conditions of entry.

4. Prepare an introduction letter for the field staff to carry on the day of the visit, advising the property owner that they are authorised to carry out the field work on behalf of TCA, and who to contact if they have any concerns (see sample letter in Attachment B).

If it is not possible to make contact with the property owner prior to the field visit, follow the procedures specified under the heading ‘During the visit’ below.

(b) During the visit

If the owner has already given permission:

1. Knock on the property owner’s door to notify of your arrival. Show the owner photo identification and the letter of introduction from TCA and then proceed with the field work. When completed, knock on the door to announce your departure.
2. If the owner is not home, and they previously gave permission for field work to be conducted without being present, leave the letter of introduction, including the time and date of the visit, in the letterbox and proceed with the field work.

3. If the owner is not home and did not previously give permission to carry out the field work without being present, leave the property immediately. Leave a copy of the original letter from TCA in the letterbox, with a note attached advising the property owner that you visited and asking them to make contact.

If prior contact has not been made with the owner:

1. If the person who answers has not previously given permission to access the property, ask if they recall receiving a letter from TCA. Explain the purpose of your visit and request permission to conduct the field work. Please note that permission cannot be given by a minor or a tenant. Ensure the person you are talking to is the owner, or ask for the owner’s contact details.

2. If the owner is not home and did not previously give permission to carry out the field work without being present, leave the property immediately. Leave a copy of the original letter from TCA in the letterbox, with a note attached advising the property owner that you visited and asking them to make contact.

(c) After the visit

1. Advise TCA Public Affairs Directorate of any issues which emerged during the field work, such as enquiries or complaints made by owners, tenants or neighbours.

2. Send the property owner a letter confirming that the field work has been completed and thanking them for their cooperation (see sample letter in Attachment C).

Protocols

The following protocols should be followed by all staff at all times.

- Log all contacts made with property owners through the process into the project CMS.
- Do not enter any properties for which entry has been refused.
- Always knock on the door to announce your arrival and departure, even if the owner has previously provided permission to access the property.
- Always wear photo ID and carry a letter of introduction from TCA when conducting field work on private property.
- Always leave gates and entrances the way they were found. If a gate is padlocked, do not enter.
- If someone asks you to leave the property, do so without argument.
- Always be courteous and polite to property owners and neighbours.
- If someone asks you for any information about the project, ask them to ring the TCA infoline on 1800 684 490.
- Do not give any results or data collected during the survey to the property owner/tenant.
Further information

Please contact the TCA Public Affairs Directorate on 9200 0265 for any questions relating to these procedures.
Dear (insert name)

**Proposed Auburn Stabling Project – Request for property access for field investigations**

I am writing to request temporary access to your property to undertake field investigations for the proposed Auburn Stabling Project (ASP)

Transport Construction Authority has recently engaged xxxxx to prepare an Environmental Assessment for the ASP. As part of the Environmental Assessment, xxxxx will carry out field investigations to complete noise, flooding, heritage and flora and fauna studies.

To carry out these investigations, xxxxx and its sub-consultants require access to a number of private properties in the area surrounding the proposed ASP. As your property at (insert address) is in the field study area, I am seeking permission for xxxxx (or its sub-consultants) to temporarily access your property on up to four occasions over the coming months.

The visits would be used to collect data, but this would not require any ground disturbance at your property.

Access would be required during the day. The length of each visit will vary according to the size and features of your property, but should not take longer than a few hours. Access inside your home is not necessary so you would not be required to be in attendance.

A representative from xxxxx will contact you by telephone in the next week to confirm your decision regarding access to your property. If you agree to provide access, they will discuss with you the expected date of the visits and any specific instructions you may have regarding access.

Enclosed for your information is a copy of a Planning Update that was recently distributed to the area. The update contains information about the preferred route and the planning process for the ASP.

If you have any questions about the field investigations, or any other aspect of the ASP, please contact TCA on 1800 684 490.

Yours sincerely

XXXXX

General Manager, Corporate and Public Affairs
Attachment B – Sample Introduction Letter

To the property owner

Proposed Auburn Stabling Project – Field investigations

Thank you for allowing access to your property for field investigations associated with the Environmental Assessment for the proposed Auburn Stabling Project.

Transport Construction Authority has engaged xxxxx to prepare the Environmental Assessment, and a number of specialists will also be engaged to undertake investigations.

This letter is to introduce a representative(s) of xxxxx, who will be undertaking flora and fauna assessments for the proposed Auburn Stabling Project.

The representative(s) will not require access inside your home, and will be carrying photo identification to confirm their identity.

If you have any questions or concerns regarding the field investigations, please contact TCA on 1800 684 490.

Thank you for your cooperation and assistance.

Yours sincerely

xxxxx

General Manager, Corporate and Public Affairs
Attachment C – Sample Thank You Letter

Dear (insert name)

Proposed Auburn Stabling Project – Property access for field investigations

Thank you for allowing access to your property for field investigations associated with the Environmental Assessment for the proposed Auburn Stabling Project.

xxxxx and its sub-consultants have recently completed flooding, non-Indigenous heritage and some ecological surveys. It was not necessary to access all properties in the area, as enough data was collected from the road or adjoining properties. If you have not received a visit from the field staff, access to your property was not required for this round of surveys.

In the coming months it will be necessary to complete a spring-time ecological survey in some areas and an Indigenous heritage survey. A representative from xxxxx will contact you before commencement of these surveys to request permission to access your property and discuss timing and conditions.

Your assistance during this field work is greatly appreciated.

If you have any questions about the field investigations, or any other aspects of the proposed Auburn Stabling Project, please contact the Project Infoline on 1800 684 490 or email mail@tca.nsw.gov.au.

Yours sincerely

XXXXX

General Manager, Corporate and Public Affairs
TCA Standard Requirements
TSR A1 – Asset Management Information

ASP-01-D&C Design and Construct Contract for
Auburn Stabling Project (Stage 1)
South West Rail Link

Status: Tender Issue
Document Number: TSR A1 - Asset Management Information.DOC
Version: 5.0
Date of issue: March 2011
Security classification: General Release

© TCA 2010
Table of Contents

1 General ................................................................................................................................. 5
2 Asset Management Information Overview ........................................................................... 5
3 AMI Objective....................................................................................................................... 5
4 AMI Delivery Plan .................................................................................................................. 6
5 AMI Submission .................................................................................................................... 7  
   5.1 Timeframe for Submission ............................................................................................... 7
   5.2 AMI Documentation Format ........................................................................................... 7
      5.2.1 General ................................................................................................................... 7
      5.2.2 Document Numbering ............................................................................................... 7
      5.2.3 Document Revision Numbering ................................................................................ 8
      5.2.4 Document Identification ............................................................................................ 8
      5.2.5 Document File Types ................................................................................................. 8
      5.2.6 Document File Sizes ................................................................................................. 9
      5.2.7 Hard Copy Format ..................................................................................................... 9
   5.3 Document Transmittals .................................................................................................... 9
   5.4 Document Metadata ....................................................................................................... 10
   5.5 Validation of Content ..................................................................................................... 10
 6 AMI Content for RailCorp Related Assets .......................................................................... 11
   6.1 General .......................................................................................................................... 11
   6.2 Project Description and Scope of the Works ................................................................. 11
   6.3 Schedule of Contact Details ........................................................................................... 12
   6.4 Operation and Maintenance (O&M) Manuals ............................................................... 12
      6.4.1 General ................................................................................................................... 12
      6.4.2 O&M Manual Scope & Structure ............................................................................. 12
      6.4.3 Inclusion of Drawings and Photographs .................................................................... 12
      6.4.4 O&M Manual Content ............................................................................................ 13
   6.5 Technical Description & Operating Instructions ............................................................. 18
   6.6 Equipment ..................................................................................................................... 19
      6.6.1 Asset Register ........................................................................................................... 19
      6.6.2 Existing Asset Registers to be Updated ...................................................................... 20
      6.6.3 Extent of Detail Required .......................................................................................... 20
   6.7 Spares ............................................................................................................................ 21
      6.7.1 General ................................................................................................................... 21
      6.7.2 Spares Assessment Methodology .............................................................................. 21
      6.7.3 Spares Schedule ........................................................................................................ 22
   6.8 Special Tools, Facilities and Equipment ......................................................................... 23
   6.9 Maintenance .................................................................................................................... 23
   6.10 Schedule of Finishes ..................................................................................................... 24
   6.11 Operating Guide ........................................................................................................... 24
   6.12 Compliance Certificates and Records ......................................................................... 25
6.13 Work-As-Executed Drawings ................................................................. 25

7 AMI Requirements for Non-RailCorp Related Assets ................................ 26
   7.1 General.................................................................................................... 26
   7.2 Project Description and Scope of the Works ............................................ 27
   7.3 Schedule of Contact Details ................................................................. 27
   7.4 Manufacturer’s Manuals, Brochures and Spare Parts Lists...................... 27
   7.5 Schedule of Finishes ............................................................................ 27
   7.6 Warranties and Guarantees................................................................. 28
   7.7 Compliance Certificates and Records ..................................................... 28
   7.8 Work-As-Executed Drawings ................................................................. 28

ANNEXURE A – Additional Project Requirements

ANNEXURE B – List of Reference Documents
1 GENERAL

TSR A1 describes the requirements for the production, compilation and submission of asset management information (AMI) so as to enable and ensure the efficient operation and maintenance of the assets created by the Works.

2 ASSET MANAGEMENT INFORMATION OVERVIEW

All AMI, including manuals, reports, drawings, specifications, surveys, plans, maps, illustrations, schedules, certificates, warranties, test results, commissioning data and the like, must comply with the requirements of this TSR A1 and meet the requirements set out in the reference documents listed in TSR A1 Annexure B.

The Contractor must provide AMI documentation covering all of the Works and the assets delivered as part of the Works. Where directed by the Principal’s Representative, the Contractor must incorporate material provided by others into the AMI.

The Contractor must submit the AMI to the Principal’s Representative in accordance with TSR A1 Clauses 4 and 5.

TSR A1 Clauses 6 describe the AMI requirements for RailCorp related assets. TSR A1 Clause 7 describes the AMI requirements for non-RailCorp related assets.

3 AMI OBJECTIVE

The AMI documentation must contain accurate and complete information on:

(a) the scope of the Works;
(b) any special features of the design, the systems, or the equipment installed that is relevant to the operation of the asset;
(c) a record of the parties involved in the design, construction, certification and commissioning of the Works;
(d) operating guide(s) providing a description of the location, functions performed, and operating instructions for all equipment and systems;
(e) a register of the individual assets created for the Works;
(f) a register of the finishing materials installed, with descriptive details of the location, manufacturer, colour, cleaning instructions, warranties, maintenance requirements and contacts for supply and repairs;
(g) summary technical maintenance plan(s) for the regular routine maintenance requirements which must be undertaken on a daily, weekly, monthly or annual basis (this plan is not intended to provide details of maintenance tasks but should identify where details can be found);
(h) a schedule of spare parts or components for the assets created by the Works that it is recommended the operator should keep in stock;
(i) compliance certificates and records for the Works;
(j) a library of available technical data, including detailed maintenance requirements, on equipment and systems; and
(k) Work-As-Executed Drawings, design drawings, shop drawings and technical specifications /schedules.
4 AMI DELIVERY PLAN

The Contractor must incorporate requirements for the collection, production and submission of AMI documentation into the Contract Management Plan. In particular, these requirements must address the timely collection of information, the accuracy of detail and the progressive submission of documents.

The Contractor must prepare and implement an AMI Delivery Plan, which includes:

(a) a complete list of the Contractor’s AMI deliverables, including documents provided by Subcontractors;

(b) a hierarchical structure diagram detailing how all AMI documents are to be delivered and their relationships to each other;

For example:

(c) the systems, sub-systems, geographic areas and other key elements that make up the Contract;

(d) the Contractor’s proposed project-specific document metadata structure for each document delivery stage, work ‘discipline’, work ‘location’ and document type as required by TSR A1 Clause 5.4;

(e) a document numbering system that complies with TSR A1 Clause 5.2.2;
(f) a "Drawing Plan" for the production and submission of drawings (including Work-As-Executed Drawings), including a sample of drawings for the different systems and types for review by the Principal’s Representative prior to production of actual drawings;

(g) a schedule of proposed submission dates for both interim and final documents;

(h) the components of the final AMI that will be provided to the Principal’s Representative in conjunction with any staged handover, or upon Completion of the Works or any Portion, so as to enable all the assets included in the staged handover or upon Completion of the Works or any Portion to be operated and maintained by the asset owner;

(i) processes and procedures to respond to comments made by the Principal’s Representative on the staged submissions of the AMI;

(j) processes and procedures to ensure that information is collected progressively as it becomes available;

(k) identification of the resources to be used to collect and produce the AMI documentation;

(l) the asset owner’s and TCA’s standards that will be followed in document production; and

(m) proposed process and program for validation of documents to be provided under this Contract as required in TSR A1 Clause 5.5.

The AMI Delivery Plan must incorporate all requirements of this TSR A1. The AMI Delivery Plan must be submitted to the Principal’s Representative in accordance with the requirements of TSR Prelude.

The Contractor must regularly update the AMI Delivery Plan so as to maintain a current list of AMI deliverables.

The Contractor must submit the AMI documentation to the Principal’s Representative in accordance with the AMI Delivery Plan.

5 AMI SUBMISSION

5.1 Timeframe for Submission

The Contractor must progressively submit the AMI for review by the Principal’s Representative under clause 9.14 of the General Conditions, at least at each of the stages during the execution of the Contractor’s Activities listed in TSR A1 Annexure A.

5.2 AMI Documentation Format

5.2.1 General

The Contractor must:

(a) submit all AMI documentation in digital form as individual documents (computer files); and

(b) submit in hard copy format the AMI documents listed in TSR A1 Annexure A.

5.2.2 Document Numbering

The Contractor must produce a coherent system of document numbering for the AMI as appropriate to its content.
The numbering system for all documents must be approved by the Principal's Representative in accordance with TCA CAD Protocols (EN-ST-084).

The TCA project descriptors and drawing band numbers will be provided by the Principal's Representative upon request by the Contractor.

5.2.3 Document Revision Numbering

Revision numbers for draft versions (e.g. Design, Approved For Construction) of documents must be A, B, C, etc.

Revision numbers for final (Works as-executed) versions of documents must be 1, 2, 3 etc. with no decimal places.

5.2.4 Document Identification

Each document delivered, must, as a minimum, be identified in the following ways:

(a) by the document number and revision number in the electronic file name, separated by a unique divider (e.g. "-" or ".") that is not used elsewhere in the file name;

(b) by the document number and a fully descriptive title on the front page of the document; and

(c) by the above document number and revision number on all pages of the document.

Where large numbers (more than 100) of documents are delivered on one subject (e.g. certificates, concrete records, etc.) a separate document providing an index to these documents must be provided.

5.2.5 Document File Types

The Contractor must:

(a) submit each document in its own file, identified in accordance with TSR A1 Clause 5.2.4. Multiple documents must not be contained in a compressed (zip) file;

(b) submit the documents in an acceptable format for the document type. Acceptable electronic formats are Microstation CAD files, TIF format image files, JPG format photographs, Microsoft Excel spreadsheets, Microsoft Word word processing files, Microsoft PowerPoint presentation files, Microsoft Access relational data base files and Adobe Acrobat portable document format (PDF);

(c) submit drawings in the format required by TCA CAD Protocols (EN-ST-084);

(d) submit the native 'updateable' files for requested documents, as part of the final AMI, including:

(i) drawings (including Work-As-Executed Drawings);

(ii) Technical Maintenance Plans;

(iii) Asset Registers;

(iv) Service Schedules;

(v) failure modes, effects, and criticality analysis (FMECA)/reliability availability maintainability and safety (RAMS) calculations;

(vi) O&M Manuals;

(vi) equipment software and configuration files (including software programs necessary to access such files);
(vii) training program; and
(viii) forms required for maintenance activities; and

(e) include all required data within the designated file (whether view file or native file). Links between files are not acceptable as these links are not always transferable to other document management systems.

5.2.6 Document File Sizes

Document files must not exceed 10MB in size. Individual files can be compressed (zipped) to achieve this size.

Where documents exceed 10MB they should be divided into sub-documents and sequentially numbered accordingly (e.g. SWRL-GD-SE12345-001, 002, 003 etc).

5.2.7 Hard Copy Format

The Contractor must:

(a) bind or contain each hard copy of the AMI documentation in white, durable, three ring hard cover binders, not greater than 70mm thick, with the facility, equipment or plant identification permanently marked on the spine and outside cover with clear protection on the covers;

(b) where multiple binders are utilised, include a complete table of contents for the entire AMI documentation in each binder, clearly indicating which sections are located in each folder. The cover page for each binder must be inserted as the first page within each folder, and a copy inserted into the front cover of the folder;

(c) limit filling of binders to 60% of binder capacity;

(d) divide sections with indexed plastic divider sheets and index the contents;

(e) protect vulnerable and much used pages with plastic covers;

(f) print drawings in colour on A3 size paper. Where drawings are not legible on A3 size paper, drawings are to be printed in colour on their original size paper;

(g) print text on A4 size paper on one side only, in a clear typeface with a 35mm margin for binding;

(h) where diagrams forming part of the AMI are larger than A4 size, print the diagrams on A3 size paper and fan fold them to align to A4 size; and

(i) print illustrations on A3 size paper folded to A4 size and located at the rear of the text, but small illustrations, to highlight matters, may be located in the text.

5.3 Document Transmittals

The Contractor must:

(a) identify in the instrument of transmittal, a unique transmittal identifier, a description of the content of the disk and/or hardcopy documentation supplied, the date of transmission and the sender;

(b) adhere to any standard transmittal formats supplied by the Principal's Representative;

(c) deliver documents using an acceptable electronic media for data exchange. Unless otherwise agreed with the Principal's Representative, these are CD and/or DVD disks formatted to suit Microsoft Windows based PC computers, and any web based
document management system adopted by the Principal. The use of electronic mail (Email) to deliver documents is not acceptable;

(d) transmit CAD files in accordance with the requirements of TCA CAD Protocols (EN-ST-084);

(e) deliver 1 copy of any CD/DVD and one original and three copies (one of which is unbound) of any hardcopy documents.

5.4 Document Metadata

The Contractor must identify each document submitted with appropriate project-specific metadata as required by TSR A1 Annexure A, or as otherwise specified by the Principal's Representative.

The metadata for each document must be provided on document transmittals (see sample transmittal format provided in TSR A1 Annexure A). A Microsoft Excel formatted electronic copy of the transmittal template will be provided by the Principal's Representative upon request by the Contractor.

5.5 Validation of Content

The AMI documentation provided must be validated by the Contractor prior to any staged handover, commissioning and Completion of the Works or any Portion, in sufficient time for it to be used as part of the training provided by the Contractor.

The Contractor must submit to the Principal's Representative the proposed process and program for validation of documents to be provided under this Contract, in accordance with TSR T1 Clause 5.1. The validation process must include participation by personnel nominated by the Principal's Representative.
AMI CONTENT FOR RAILCORP RELATED ASSETS

6.1 General

This TSR A1 Clause 6 describes the AMI requirements for non-RailCorp related assets.

The AMI must include the following documentation:

(a) Project description and description of the scope of the Works delivered;
(b) schedule of the contact details for all the Contractor's designers and Subcontractors involved in the design, construction, certification and commissioning of the Works;
(c) an equipment register of the individual assets created for the Works (Asset Register);
(d) Operation and Maintenance Manuals providing a description of the location, functions performed, and operating instructions for all equipment, systems and geographical areas;
(e) a schedule containing the finishing materials installed on each asset, with descriptive details, location, manufacturer, colour, cleaning instructions, warranties, maintenance requirements and contacts for supply/repairs (Schedule of Finishes);
(f) warranties and guarantees;
(g) operating guides and supplier manuals;
(h) compliance certificates and records, including a register of the same;
(i) Technical Maintenance Plans;
(j) Work-As-Executed Drawings including design drawings, shop drawings, survey drawings, photographic records and technical reports, specifications, plans and schedules;
(k) a schedule of spare parts or components that it is recommended the operator should keep in stock (Spares Schedule);
(l) test certificates;
(m) quality records;
(n) Schedule of Special Tools, Facilities and Equipment; and
(o) training materials.

6.2 Project Description and Scope of the Works

This AMI document must contain:

(a) an outline of the scope of the Works;
(b) the major stakeholders;
(c) datelines;
(d) any new or altered services or systems included; and
(e) any other relevant information.

If the Works abut any existing assets, it must be made clear that these assets are not included in the scope of the Works.

Where the size of the Works only warrants the Contractor preparing one O&M Manual, this information can be included in Section 1 of that manual.
6.3 Schedule of Contact Details

This document must provide contact details for all Subcontractors, including the Contractor's designers. Details must include:

(a) the names of all designers and the corresponding initials utilised on drawings;
(b) the correct name of the organisation, including the ABN number;
(c) the role of the organisation under the Contract;
(d) address, telephone and fax numbers for the organisation;
(e) primary contact name within the organisation for enquiries relating to the Works; and
(f) website address of the organisation (if any).

Where the size of the Works only warrants the Contractor preparing one O&M Manual, this information can be included in Section 1 of that manual.

6.4 Operation and Maintenance (O&M) Manuals

6.4.1 General

The Contractor must provide O&M Manuals which are written in clear, concise English, are produced in the required format, are in the present tense, and which cover the necessary scope and content as detailed in this TSR A1.

An O&M Manual must be provided for every key element of the Works (e.g. system, sub-system, geographic areas, etc.), as outlined in the AMI Delivery Plan.

Each O&M Manual must be written from the perspective of the maintainer looking to research a 'single system'. In the electronic documentation environment, the O&M Manual must provide a central document that provides cross references to all other relevant documentation for the system.

6.4.2 O&M Manual Scope & Structure

The Contractor must provide individual O&M Manuals for each system. Each O&M Manual must be in the standard format as detailed in TSR A1 Clause 6.4.4.

No section of this standard form is to be omitted. Where a section is not applicable to a particular asset/element, the words 'Not Applicable' or similar must be included under the section heading.

Where appropriate, detailed information (e.g. for a Technical Maintenance Plan) can be provided in a separate document. This separate document must also adhere to the AMI requirements and must be fully cross-referenced from the O&M Manual.

Where references to other documents are included, the reference must include the reference document number and the location within that document where the relevant information can be found.

6.4.3 Inclusion of Drawings and Photographs

Figures and pictures must be included in the O&M Manuals where this is appropriate. For example, figures and pictures must be used to:

(a) present information which is difficult to describe by text alone; and
(b) provide identification of tools, parts and other such items.
Halftone figures (photographs), where used, must be suitable for electronic scanning and photocopying without loss of detail.

### 6.4.4 O&M Manual Content

The O&M Manual is to be presented in the following standard sections, with all applicable content.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>Front Cover</td>
</tr>
<tr>
<td></td>
<td>The front cover of the O&amp;M Manual must contain:</td>
</tr>
<tr>
<td></td>
<td>- The RailCorp logo (no TCA or supplier logo);</td>
</tr>
<tr>
<td></td>
<td>- The Project name;</td>
</tr>
<tr>
<td></td>
<td>- The document description consisting of the key element description (e.g. asset type or discipline) and the words &quot;Operations and Maintenance Manual&quot;; and</td>
</tr>
<tr>
<td></td>
<td>- The document number.</td>
</tr>
<tr>
<td>General</td>
<td>Page Headers</td>
</tr>
<tr>
<td></td>
<td>The page headers of the O&amp;M Manual must contain the Project name and the document description.</td>
</tr>
<tr>
<td>General</td>
<td>Page Footers</td>
</tr>
<tr>
<td></td>
<td>The page footers of the O&amp;M Manual must contain:</td>
</tr>
<tr>
<td></td>
<td>- The document number and revision number; and</td>
</tr>
<tr>
<td></td>
<td>- Page numbers in the format &quot;Page x of y&quot;. Page numbers must be continuous throughout the document and not reset at section breaks.</td>
</tr>
<tr>
<td>General</td>
<td>Revision History</td>
</tr>
<tr>
<td></td>
<td>The revision history of the O&amp;M Manual must be included in a &quot;Revision Control Table&quot; at the start of the manual. The revision control table must provide, for each revision:</td>
</tr>
<tr>
<td></td>
<td>- Revision letter or number with no decimal places;</td>
</tr>
<tr>
<td></td>
<td>- Date of revision;</td>
</tr>
<tr>
<td></td>
<td>- Summary of change(s) in comparison to the previous version.</td>
</tr>
<tr>
<td>General</td>
<td>Glossary of Terms</td>
</tr>
<tr>
<td></td>
<td>A glossary of terms for of each O&amp;M Manual must be included at the start of the manual, including all acronyms and technical terms listed in the manual.</td>
</tr>
<tr>
<td>General</td>
<td>Table of Contents</td>
</tr>
<tr>
<td></td>
<td>A table of contents, listing sections and sub-sections of the O&amp;M Manual</td>
</tr>
<tr>
<td>Reference</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>Section 1</strong></td>
<td><strong>Purpose of the O&amp;M Manual</strong></td>
</tr>
<tr>
<td></td>
<td>- Brief description of the O&amp;M Manual's purpose, structure and content;</td>
</tr>
<tr>
<td></td>
<td>- Identification of asset owner, Contractor, Subcontractors and other involved parties; and</td>
</tr>
<tr>
<td></td>
<td>- Tabulation of Subcontractors and utilities/service providers, together with contact details for each significant element of the assets.</td>
</tr>
<tr>
<td><strong>Section 2</strong></td>
<td><strong>Description of the System</strong></td>
</tr>
<tr>
<td></td>
<td>- An 'overview' of sufficient detail to provide the reader with immediate understanding of the whole of the system;</td>
</tr>
<tr>
<td></td>
<td>- A location plan / diagram with introductory text to identify the main components of the system and the interfaces;</td>
</tr>
<tr>
<td></td>
<td>- Detailed description of each of the elements of the assets covered by the O&amp;M Manual to complement the location plan, including all equipment, components, systems and items, with a tabulation of dimensions, performance ratings, and asset number, information and attributes, with cross reference to location in relevant Work-As-Executed Drawings and Equipment Register (Asset Register) data.</td>
</tr>
<tr>
<td><strong>Section 3</strong></td>
<td><strong>System Interfaces</strong></td>
</tr>
<tr>
<td></td>
<td>- Details of all systems with which this system interfaces;</td>
</tr>
<tr>
<td></td>
<td>- Description of how these interfaces operate (i.e. how this system works with / impacts on the other systems);</td>
</tr>
<tr>
<td></td>
<td>- Impacts of system failures either by this system or by other systems, impacting on this system;</td>
</tr>
<tr>
<td></td>
<td>- Summary diagrams of the various utilities and services such as communication services, electrical services, drainage, fire services, water treatment and utilities, gas, sewer, stormwater, water and the like; and</td>
</tr>
<tr>
<td></td>
<td>- References of where further information for the interfacing systems can be found.</td>
</tr>
<tr>
<td><strong>Section 4</strong></td>
<td><strong>Detailed Technical Description and Operating Instructions</strong></td>
</tr>
<tr>
<td></td>
<td>- Detailed technical description of the asset/system, aimed at the operators, and covering each element of the system, including all equipment, components, systems and items as described in TSR A1 Clause 6.5; and</td>
</tr>
<tr>
<td></td>
<td>- References to relevant Operating Guide(s) (refer TSR A1 Clause 6.11).</td>
</tr>
<tr>
<td><strong>Section 5</strong></td>
<td><strong>Safety and Environment</strong></td>
</tr>
<tr>
<td></td>
<td>- Consolidation of all relevant safety issues associated with the system (may be duplicating content of supplier/manufacturer manuals located elsewhere in the manual), noting all hazards and highlighting specific risks;</td>
</tr>
<tr>
<td></td>
<td>- A tabulation or listing of emergency contact organisations, personnel or positions, phone/fax numbers and operational procedures relating to emergencies; and</td>
</tr>
<tr>
<td></td>
<td>- Suppliers' material safety data sheets (MSDS) to be provided.</td>
</tr>
<tr>
<td>Reference</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>Section 6</strong></td>
<td>FMECA/RAMS</td>
</tr>
<tr>
<td></td>
<td>- Statement of whether FMECA was carried out. Explanation of the basis for original design and equipment selected for installation (e.g. performance requirements); and</td>
</tr>
<tr>
<td></td>
<td>- Statement of whether RAMS was carried out. Reports are to include actual calculations.</td>
</tr>
</tbody>
</table>

**Section 7**

Equipment

RailCorp Ellipse Equipment Register (Asset Register) prepared in accordance with RailCorp's Asset Management Information requirements as described in TSR A1 Clause 6.6.

**Section 8**

Spares

Detail the methodology used to develop the Spares Schedule (e.g. based on FMECA/RAMS, manufacturers' recommendations, etc.) and the operating period addressed by the spares as described in TSR A1 Clause 6.7.

Include details of:

- The level at which spares are to be held (e.g. component, assembly, sub-system or system level);
- Expected failure rates;
- Maintenance policies that the spares selection is based on;
- Expected procurement lead time;
- Ongoing availability of spares;
- Storage requirements, including storage environmental constraints such as temperature and humidity; and
- Spares list, divided into “General Spares” and “Insurance Spares” categories.
**Reference** | **Description**
--- | ---
**Section 9** | **Maintenance**
- Comprehensive step by step instructions in preventative and corrective maintenance procedures, nominating the work to be carried out by qualified tradespersons and others, and the designated service periods, such as weekly, monthly, quarterly, semi annually, annually and the like. Where appropriate for the assets provided as part of the Works, RailCorp’s standard Technical Maintenance Plans and Service Schedules are to be used (as described in TSR A1 Clause 6.9);
- Relevant maintenance standards;
- Maintenance instructions for each of the service periods subdivided into the following categories: Unit Running, Unit Stopped;
- Location of maintenance action (on-system, in workshop etc);
- Consumables and special tools required (as described in TSR A1 Clause 6.8);
- List of recommended greases and oils, stating quantities, methods and frequency for application;
- Troubleshooting instructions in tabular form listing “fault”, “possible cause” and “remedial action”, with testing regimes and instructions; and
- A Schedule of Finishes containing the finishing materials installed with descriptive details, location, manufacturer, colour, cleaning instructions, warranties, maintenance requirements and contacts for supply/repairs, as described in TSR A1 Clause 6.10.

**Section 10** | **Training Program**
- A program of appropriate training for operations and maintenance personnel developed in accordance with TSR 01;
- Train the trainer style manuals appropriate to the personnel associated with the operation and maintenance of the system; and
- If the training information included in the Operating Guide(s) (refer TSR A1 Clause 6.11) or suppliers’/manufacturers’ manuals does not meet the requirement, then additional information is required.
<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Section 11</strong></td>
<td><strong>Installation, Commissioning &amp; Overhauling</strong></td>
</tr>
<tr>
<td></td>
<td>- Details of standards and procedures for mounting or erecting, wiring or setting up, and commissioning equipment;</td>
</tr>
<tr>
<td></td>
<td>- All testing and commissioning certificates and all associated commissioning and test results issued in respect of the Works for the system/sub-system and equipment;</td>
</tr>
<tr>
<td></td>
<td>- System configuration information, including protection settings for electrical equipment; and</td>
</tr>
<tr>
<td></td>
<td>- Unless otherwise contained in the Technical Maintenance Plans or Service Schedules, step by step instructions and procedures for complete overhauls, indicating those procedures to be carried out by qualified tradespersons, described under at least the following subheadings:</td>
</tr>
<tr>
<td></td>
<td>- Dismantling;</td>
</tr>
<tr>
<td></td>
<td>- Cleaning, inspection, repair and adjustment;</td>
</tr>
<tr>
<td></td>
<td>- Reassembly; and</td>
</tr>
<tr>
<td></td>
<td>- Final checks and unit running.</td>
</tr>
<tr>
<td><strong>Section 12</strong></td>
<td><strong>Manufacturer's/Supplier's Operation &amp; Maintenance Manuals, Equipment Warranties and Compliance Certificates</strong></td>
</tr>
<tr>
<td></td>
<td>- Manufacturer's O&amp;M manuals (can be embedded in the main manual or delivered as a separate referenced document);</td>
</tr>
<tr>
<td></td>
<td>- Relevant warranties and guarantees for each major item of equipment. These must be made out to RailCorp in the form set-out in relevant Schedule to the General Conditions;</td>
</tr>
<tr>
<td></td>
<td>- Compliance certificates as required by specific items of plant, equipment, works, etc (refer TSR A1 Clause 6.12).</td>
</tr>
<tr>
<td><strong>Section 13</strong></td>
<td><strong>Other Information</strong></td>
</tr>
<tr>
<td></td>
<td>Any relevant information not specifically covered in the previous sections.</td>
</tr>
<tr>
<td>Reference</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>Section 14</td>
<td>Document Reference List</td>
</tr>
</tbody>
</table>

References of all documents & drawings listed in the body of the O&M Manual as well as those not specifically referenced but which are required to complete the documentation related to the O&M subject (e.g. Asset).

References must be listed in order of type and document number, and provide the title of each document.

Examples of contents are:
- Asset/Equipment Registers;
- Calculations;
- Certificates, Warranties and Guarantees;
- Commissioning Results;
- Drawings;
- Procedures;
- Quality Forms and Records;
- Reference Manuals;
- Schedule of Finishes;
- Service Schedules;
- Software;
- Spares Lists/Bill of Materials;
- Technical Specifications and Reports;
- Technical Maintenance Plans; and
- Training Manuals.

### 6.5 Technical Description & Operating Instructions

The Contractor must provide a detailed technical description of the asset/system which is aimed at the operators. This must include:

(a) each element of the system, including all equipment, components, systems and items, with a table of dimensions, performance ratings, etc;

(b) a summary of the key design parameters for the various elements of the asset that are required to be known for its operation, maintenance and management. This must include references to final design reports and purchasing specifications;

(c) operating instructions, procedures and principles for all of the assets;

(d) a basic working description of the asset/system, including novel features, any automatic control, and the operational purposes and functions of the various components and systems. If appropriate, this section can simply refer to the relevant section of the Operating Guide described in TSR A1 Clause 6.11;
a location plan to identify and locate all elements of the system, or a written description if more appropriate;

references to drawings, design reports, asset register, applicable software/systems and specific specialist equipment/tools required for the servicing needs of the asset/system;

details of any utilities critical to the operation of the system and where necessary the isolation points;

a short description of all items in the system, even if it is a proprietary item, as well as the relevant technical tables;

for software oriented systems, functional specifications (hardware and software), systems programs, individual program modules, including flow charts and source codes, and the like; and

comprehensive details of technical information relevant to all elements of the asset/system with a step by step procedure which is arranged into sections which relate to, for example:

(i) safety procedures;

(ii) operating limitations due to temperature, pressure and flow, or other relevant factors;

(iii) checks before, and procedures for, equipment start-up, operations and shutdown;

(iv) emergency shutdown and abnormal operation;

(v) full information on alarm and trip settings;

(vi) links to inspection, servicing and maintenance schedules as defined in the Technical Maintenance Plan;

(vii) component manuals covering maintenance and repair of all items of installed equipment;

(viii) fault finding guides, for use at the operating maintenance level;

(ix) illustrated parts catalogues; and

(x) any other information needed by operating staff to ensure the safe and efficient operation of the equipment.

6.6 Equipment

6.6.1 Asset Register

The Contractor must develop and implement a comprehensive data collection system for all asset components (Asset Register), which includes a digital copy in an acceptable relational database format.

The Asset Register must provide details of all assets provided as part of the Works other than architectural floor, wall and ceiling finishes which must be included in the Schedule of Finishes prepared by the Contractor.

The Asset Register must be divided into groups containing items that are commonly grouped together. For example, electrical distribution boards, light fittings, lifts and escalators, plumbing fittings, public address system, fire detection equipment, fire suppression equipment.

There must be an index to the groups in the front of the Asset Register.
6.6.2 **Existing Asset Registers to be Updated**

The Contractor must utilise an appropriate hierarchical numbering system which enables RailCorp to update the following Asset Registers:

(a) the asset register held within RailCorp's “Ellipse” Enterprise Asset Management application. The “Ellipse” asset register must be prepared in accordance with the RailCorp Ellipse Naming Conventions in an electronic format that is acceptable to the Principal’s Representative. The “Ellipse” application is provided by Mincom Limited and has been configured and customised to suit RailCorp’s business. The “Ellipse” application was formerly known as “MIMS”;

(b) the asset registers held within RailCorp’s “Discrete Asset Database”, which describe the location and characteristics of assets. Relevant assets may include:
   (i) track circuits;
   (ii) turnouts;
   (iii) bridges (including multi-level structures);
   (iv) culverts;
   (v) electrolysis protection equipment;
   (vi) miscellaneous structures;
   (vii) transmission line poles; and
   (viii) electrical substations and substation equipment;

(c) the asset registers held within RailCorp’s “SmartData” database which describe the location and characteristics of:
   (i) in-situ rail welds - SmartWeld; and
   (ii) overhead wiring - SmartWire;

(d) the asset register contained within RailCorp’s “TrackData” software; and

(e) the asset registers held within RailCorp’s Geographical Information System (GIS), which describe the location and characteristics of all of RailCorp’s infrastructure assets.

6.6.3 **Extent of Detail Required**

The Contractor must:

(a) progressively define the list of assets in consultation with the Principal’s Representative during the performance of the Contractor's Activities;

(b) progressively submit to the Principal's Representative the agreed list of assets with the drawings to be used for the construction of the Works;

(c) manage the provision of AMI so that the “Identification” fields associated with a particular asset/system/component are consistent and readily available from the drawings and schedules and match the location, naming and numbering conventions agreed with the Principal's Representative;

(d) collect and provide data on the “attributes” of the assets created under the Contract in consultation with Other Contractors; and

(e) include this data on the “attributes” of the assets in the O&M Manuals for each asset.
RailCorp has developed templates for uploading data into the asset registers described in TSR A1 Clause 6.6.2. These documents are listed in TSR A1 Annexure B.

Data relating to assets and their component parts is to be uploaded into the asset registers described in TSR A1 at the level at which RailCorp normally recognises the asset. For example:

(a) it is not necessary to register the component parts of a transformer as separate individual assets: RailCorp identifies the asset as a transformer;
(b) it is not necessary to identify the switches, busbars, cabinets, cables and other components of an electrical switchboard: RailCorp identifies the asset as a switchboard;
(c) it is necessary to register each type of light fitting (and the total number of fittings) installed as a separate asset but it is not necessary to list the number of fittings in each room. If light fittings are used in many locations it is adequate to describe the location in broader terms such as “Western Concourse and Platform Buildings” or “Platform Canopies”;
(d) it is necessary to register each type of loudspeaker (and the total number of loudspeakers) installed as a separate asset but it is not necessary to list the number of loudspeakers in each room. If loudspeakers are used in many locations it is adequate to describe the location in broader terms such as “Western Concourse” or “Platform Canopies”;
(e) it is not necessary to separately register the component parts of assets such as the fire indicator panel, EWIS master control panel, lifts, escalators, pumps and valves.

The Principal’s Representative will arrange for RailCorp’s subject matter experts to provide advice to the Contractor on this topic, upon request by the Contractor.

6.7 Spares

6.7.1 General

The Contractor must develop a schedule of spare parts for the assets generated by the Works (Spares Schedule). The Spares Schedule must be submitted to the Principal’s Representative in accordance with TSR A1 Clause 5.1.

The Spares Schedule must detail the recommended range and quantity of consumables and the spares required to support the planned operational and maintenance requirements of the assets created by the Works.

6.7.2 Spares Assessment Methodology

The Contractor must develop the Spares Schedule using a clearly defined methodology that is acceptable to the Principal’s Representative and consistent with RailCorp’s Engineering Design Procedures ED 0018P “Integrated Support Requirements” and ED 0019P “Maintenance Requirements Analysis”.

Long lead time spares (those with a one month or greater supply time), high-value spares, spares for equipment commonly held by RailCorp and spares for equipment not commonly held by RailCorp must be identified and listed.

Spares must be considered at the equipment level and not at the part level (e.g. a full pump or motor is a spare, not an impellor or bearing).

The spares assessment methodology must use established in-service failure rates and the related maintenance policies. It must also identify the range and quantity of spares required to be made available at any time to maintain the systems and ensure they meet the availability requirements.
Upon request by the Contractor, the Principal's Representative may at its discretion make RailCorp's historical failure rate data available for assets that are currently in use in RailCorp's existing network.

The need for insurance spares to meet unplanned needs must be addressed, and a separate assessment process must be used to identify, quantify and list these insurance spares.

The methodology to be used for the assessment of spares requirements must be included in the Technical Maintenance Plan.

### 6.7.3 Spares Schedule

The Contractor must progressively develop and refine the Spares Schedule whilst undertaking the Works to ensure that it fully covers the Works and includes the spares recommended in this list.

The Spares Schedule must include the following information:

(a) item identification (name, manufacturer's part or reference number and specification, as appropriate);

(b) recommended spares quantities;

(c) price expected;

(d) source;

(e) procurement lead time;

(f) failure rate;

(g) number of items installed in the Works;

(h) predicted usage rate and whether the item is consumable or is used in support of scheduled preventative maintenance;

(i) proposed location of spares; and

(j) probability of the required item being available to suit the recommended spares quantity.

Data on spare parts is to be supplied under the following headings:

(k) "List of Suppliers", stating:

(i) manufacturer, including ABN number;

(xii) manufacturer's nearest representative;

(xii) company address;

(xiii) telephone & fax numbers; and

(xiv) website;

(l) "Illustrated Parts List", including a list (or lists) of parts with part numbers referenced to an illustration, preferably an exploded view of a sectional drawing and a specification;

(m) "Recommended Spare Parts", including a list of recommended spare parts with part numbers and quantities, and highlighting critical spares (to be held at all times);

(n) "Availability of Spare Parts", including a short statement quoting the worst case procurement lead time/availability to suit the quantities of parts from suppliers; and

(o) "Ordering Information", including specific details that would be required when ordering replacement parts, such as serial number, model number, name, reference number and the like.
6.8 Special Tools, Facilities and Equipment

As part of the AMI documentation, the Contractor must develop a Schedule of Special Tools, Facilities and Equipment necessary for the operation and maintenance of the systems included in the Works. The Schedule of Special Tools, Facilities and Equipment must be submitted to the Principal's Representative in accordance with TSR A1 Clause 5.1.

The schedule must:

(a) include the recommended number of special tools, facilities and equipment required for the operation and maintenance of the Works;

(b) identify the items required to perform specific maintenance, repair and recovery tasks on the systems, including scheduled preventative maintenance of the systems, the removal, installation and testing of rotatable and repairable items, and other procedures, such as temporary repairs during normal operating periods for unscheduled failures with follow-up maintenance and emergency recovery; and

(c) include any special purpose test equipment and facilities needed in support of the maintenance tasks, including specialist hand-tools.

The Schedule of Special Tools, Facilities and Equipment must include:

(d) details of, and a specification for, each item;

(e) purpose of the item;

(f) maintenance requirements for each item;

(g) supplier;

(h) the quantity required;

(i) price and validity period expected; and

(j) delivery times.

6.9 Maintenance

The Contractor must provide Technical Maintenance Plan(s) (TMPs) prepared by the Contractor as part of the AMI. The TMPs must be compatible with the RailCorp Technical Maintenance Plans commonly in use and must be prepared in accordance with RailCorp Provision of Technical Maintenance Plans by External Organisations (ED-ISG-21). The Contractor is required to obtain existing TMPs used by RailCorp and agree with RailCorp on where new or updated documents are applicable.

The TMPs must, where appropriate, refer to RailCorp's existing standard Service Schedules. The Contractor must develop Service Schedules for assets provided as part of the Works where RailCorp standard Service Schedules either do not exist or are not appropriate for the use to which the asset is to be put.

The Contractor must provide details and the respective forms (where required) of all records that are required for maintenance and breakdown actions. These must be presented in table form in the O&M Manual. Sample forms are to be delivered as separate documents in native format (e.g. Microsoft Word or Microsoft Excel).
6.10 Schedule of Finishes

The Schedule of Finishes must include the following data for all internal and external architectural materials and finishes on the Works:

(k) description or name of material or finish;
(l) thickness/weight/gauge;
(m) profile or size;
(n) colour/finish details;
(o) manufacturer or supplier;
(p) cleaning and maintenance recommendations; and
(q) locations used.

Colours may be scheduled in a separate colour schedule.

A location schedule must be included so that the details of materials and finishes in each room or space or building component can be located on the Schedule of Finishes.

6.11 Operating Guide

The Operating Guide(s) must provide a description of each operating system, the function of the system, and day to day operating instructions for users including details of how to close down the system.

Manuals and documents provided by suppliers and manufacturers may be used in conjunction with the O&M Manuals to help describe the equipment covered, provided they meet the general documentation standards required by this TSR A1 and are integrated into the O&M Manuals.

The Operating Guide(s) must be completed two months prior (and as a condition precedent) to Completion of the Works or any Portion and will be utilised for training of RailCorp’s operational staff.

Operating Guides for the following systems must be included if the system is provided as part of the Works:

(a) trackwork;
(b) high voltage power supply (including details of how to operate switchboards);
(c) overhead wire and traction power supply;
(d) low voltage power supply including uninterruptible power supplies and lighting;
(e) signalling and train control;
(f) public address system;
(g) CCTV system (but excluding RailCorp’s CCTV system);
(h) communications systems (including telecommunication, radio systems and communications backbone);
(i) fire detection and protection systems;
(j) emergency warning and intercommunication systems;
(k) SCADA systems (but excluding RailCorp’s EOC SCADA system);
(l) access control, intruder alarm system and personal duress alarm;
(m) precise clocks;
(n) cold water supply, reticulation and fittings;
(o) hot water supply, reticulation and fittings;
(p) sanitary drainage, fittings, fixtures, reticulation and pumps;
(q) stormwater drainage, reticulation and pumps;
(r) lifts and escalators; and
(s) ventilation, fans and air conditioning systems.

For each system, the Contractor must provide:
(t) supply contract details (if applicable);
(u) name of supplier (if applicable); and
(v) address for service calls (if applicable).

6.12 Compliance Certificates and Records

Major compliance and certification documents must be provided, including but not limited to the following where applicable:

(a) Building Code of Australia (BCA) Compliance Assessment Report, BCA Design Certificate and BCA Compliance Certificate as defined in TCA Building Certification Procedure (EN-PR-184);
(b) Disability Discrimination Act (DDA) Compliance Certificate as defined in TCA Building Certification Procedure (EN-PR-184);
(c) Fire and Life Safety Brief;
(d) Fire and Life Safety Report which justifies any “Alternative Solutions” to BCA Performance Requirements;
(e) Fire Safety Certificate and all supporting assessments of Essential Fire Safety Measures;
(f) Maintenance schedule for Essential Fire Safety Measures;
(g) A description of the quality assurance systems utilised by the Contractor and the location of all detailed test results, inspection and test plans and other quality assurance data.

6.13 Work-As-Executed Drawings

The Contractor must:

(a) submit sample “Work-As-Executed Drawings” for different systems and types for review by Principal’s Representative under clause 9.14 of the General Conditions, prior to production of actual drawings;
(b) show on Work-As-Executed Drawings the Works as completed;
(c) update the AFC drawings to produce the Work-As-Executed Drawings and other drawings as necessary to fully describe the Works. Work-As-Executed Drawings for the building component of the Works must include all drawings produced for the building component of the Works, including but not limited to design drawings, shop drawings and drawings produced by specialist trades (for example, combined services layouts, structural electrical and mechanical drawings, and equipment installation drawings);
(d) ensure that the Work-As-Executed Drawings are produced in accordance with the requirements of TCA CAD Protocols (EN-ST-084);
(e) ensure the content, accuracy and level of detail of Work-As-Executed Drawings are equivalent to those in the detail design drawings used for construction, and are sufficient to describe, to enable and to ensure the efficient operation of the assets created under the Contract;

(f) include in Work-As-Executed Drawings, the final survey drawings undertaken and signed by a licensed surveyor, in accordance with the Surveying and Spatial Information Regulation 2006 (NSW), indicating the positioning of the Works relative to the primary survey grid and the cadastral boundaries;

(g) include new and updated RailCorp detailed site survey drawings prepared in accordance with RailCorp's requirements (refer TSR A1 Annexure B) as part of the Work-As-Executed Drawings;

(h) certify, via a statutory declaration that each Work-As-Executed Drawing is accurate, complete and correct, and that the Works as completed are wholly contained within the Site as constrained by the area nominated in the Contract;

(i) comply with the AS1100 series of standards unless otherwise instructed by the Principal's Representative;

(j) comply with relevant RailCorp Standards and normal practice for drawing formats. This includes incorporation of a unique "EDMS Number" on every Work-As-Executed Drawing. A batch of EDMS numbers for use on the Works will be provided by the Principal's Representative on request from the Contractor;

(k) where necessary to describe the Works, or where directed by the Principal's Representative, include digital photographs of specific aspects of the Works in Work-As-Executed Drawings; and

(l) identify and cross reference assets on Work-As-Executed Drawings with the information in the Asset Register database prepared in accordance with TSR A1 Clause 6.6.

7 AMI REQUIREMENTS FOR NON-RAILCORP RELATED ASSETS

7.1 General

This TSR A1 Clause 7 describes the AMI requirements for non-RailCorp related assets. The Contractor must determine and comply with the AMI content requirements for asset owners other than RailCorp (such as Telstra, RTA, Sydney Water, Integral Energy and local councils).

As a minimum, the AMI content provided for each asset owner must include:

(a) project description and description of the scope of the Works delivered;

(b) schedule of the contact details for all the Contractor's designers and Subcontractors involved in the design, construction, certification and commissioning of the Works;

(c) manufacturer's manuals/brochures and spares parts list;

(d) a schedule containing the finishing materials installed on each asset, with descriptive details, location, manufacturer, colour, cleaning instructions, warranties, maintenance requirements and contacts for supply/repairs (Schedule of Finishes);

(e) warranties and guarantees;

(f) compliance certificates and records, including a register of the same; and

(g) Work-As-Executed Drawings including design drawings, shop drawings, survey drawings, photographic records and technical reports, specifications, plans and schedules;
The Contractor must also update any existing equipment or asset registers in use by the asset owners.

7.2 Project Description and Scope of the Works

This AMI document must contain:
(a) an outline of the scope of the Works;
(b) the major stakeholders;
(c) datelines;
(d) any new or altered services or systems included; and
(e) any other relevant information.

If the Works abut any existing assets, it must be made clear that these assets are not included in the scope of the Works.

7.3 Schedule of Contact Details

This document must provide contact details for all Subcontractors, including the Contractor's designers. Details must include:
(a) the names of all designers and the corresponding initials utilised on drawings;
(b) the correct name of the organisation, including the ABN number;
(c) the role of the organisation under the Contract;
(d) address, telephone and fax numbers for the organisation;
(e) primary contact name within the organisation for enquiries relating to the Works; and
(f) website address of the organisation (if any).

Where the size of the Works only warrants the Contractor preparing one O&M Manual, this information can be included in Section 1 of that manual.

7.4 Manufacturer's Manuals, Brochures and Spare Parts Lists

The Contractor must provide copies of manufacturer's operating and maintenance manuals, brochures and spare parts lists for all operable equipment. Where not already included in the manufacturer's operating and maintenance manuals, the Contractor must also provide a schedule of the manufacturer's recommended maintenance activities and maintenance intervals.

7.5 Schedule of Finishes

This document must include the following data for all internal and external architectural materials and finishes on the Works:
(a) description or name of material or finish;
(b) thickness/weight/gauge;
(c) profile or size;
(d) colour/finish details;
(e) manufacturer or supplier;
(f) cleaning and maintenance recommendations; and
(g) locations used.
Colours may be scheduled in a separate colour schedule.

A location schedule must be included so that the details of materials and finishes in each room or space or building component can be located.

7.6 Warranties and Guarantees

This document must contain all warranties or guarantees required by the Contract.

The warranties or guarantees must be arranged in a logical sequence and an index must be provided in the front of the document.

All warranties should be in favour of RailCorp for any structural items, equipment any other items. Warranty period to commence after the asset is handed over to the Principal.

7.7 Compliance Certificates and Records

Major compliance and certification documents must be provided, including but not limited to the following where applicable:

(a) Building Code of Australia (BCA) Compliance Assessment Report, BCA Design Certificate and BCA Compliance Certificate as defined in TCA Building Certification Procedure (EN-PR-184);

(b) Disability Discrimination Act (DDA) Compliance Certificate as defined in TCA Building Certification Procedure (EN-PR-184);

(c) Fire and Life Safety Brief;

(d) Fire and Life Safety Report which justifies any “Alternative Solutions” to BCA Performance Requirements;

(e) Fire Safety Certificate and all supporting assessments of Essential Fire Safety Measures;

(f) maintenance schedule for Essential Fire Safety Measures;

(g) a description of the quality assurance systems utilised by the Contractor and the location of all detailed test results, inspection and test plans and other quality assurance data.

7.8 Work-As-Executed Drawings

The Contractor must:

(a) submit sample “Work-As-Executed Drawings” for different systems and types for review by Principal’s Representative under clause 9.14 of the General Conditions, prior to production of actual drawings;

(b) show on Work-As-Executed Drawings the Works as completed;

(c) update the AFC drawings to produce the Work-As-Executed Drawings and other drawings as necessary to fully describe the Works. Work-As-Executed Drawings for the building component of the Works must include all drawings produced for the building component of the Works, including but not limited to design drawings, shop drawings and drawings produced by specialist trades (for example, combined services layouts, structural electrical and mechanical drawings, and equipment installation drawings);

(d) ensure that the Work-As-Executed Drawings are produced in accordance with the requirements of TCA CAD Protocols (EN-ST-084);

(e) ensure the content, accuracy and level of detail of Work-As-Executed Drawings are equivalent to those in the detail design drawings used for construction, and are
sufficient to describe, to enable and to ensure the efficient operation of the assets created under the Contract;

(f) include in Work-As-Executed Drawings, the final survey drawings undertaken and signed by a licensed surveyor, in accordance with the Surveying and Spatial Information Regulation 2006 (NSW), indicating the positioning of the Works relative to the primary survey grid and the cadastral boundaries;

(g) certify, via a statutory declaration that each Work-As-Executed Drawing is accurate, complete and correct, and that the Works as completed are wholly contained within the Site as constrained by the area nominated in the Contract;

(h) comply with the AS1100 series of standards unless otherwise instructed by the Principal's Representative; and

(i) where necessary to describe the Works, or where directed by the Principal's Representative, include digital photographs of specific aspects of the Works in Work-As-Executed Drawings.
ANNEXURE A - Additional Project Requirements
### Additional Project Requirements

#### A1 Timeframe for AMI Submission for Auburn Stabling Project

- **Portion 1:** AFC Drawings for track design approved
- **Portion 2:** AFC Drawings for earthing and bonding approved
- **Portion 3:** Commissioning and handover of remainder of the works

#### Deliverables required as listed in the order below

<table>
<thead>
<tr>
<th>Required as a part of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample O&amp;M Manual for Portion 3</td>
</tr>
<tr>
<td>Proposed process and program for validation of documents to be provided under the Contract</td>
</tr>
<tr>
<td>Design documentation updated to reflect ‘as constructed’ status of Works for each system</td>
</tr>
<tr>
<td>Complete construction quality assurance records for each system.</td>
</tr>
<tr>
<td>Certified results for tests carried out earlier:</td>
</tr>
<tr>
<td>FAT as set-out in TSR 01, post-installation tests for electrical equipments as listed below, but not limited to</td>
</tr>
</tbody>
</table>
  - pad mount substations and
  - Isolation transformers
<p>| Finalised and approved commissioning procedure and ITP’s for the system               |
| Draft O&amp;M Manual available and accepted by the Principal for all rail system          |
| Draft Operation and Maintenance manuals for all the Signalling System                 |
| Draft of Asset Register for signalling equipment                                       |
| 3 month prior to signalling ‘Set to Work’ testing                                    |
| Provide the following signalling documentation:                                      |
| • Installation and Commissioning Works packages including test results and QA certificates; |
| • Certified circuits, plans and drawings;                                             |
| • Final Operation and Maintenance Manuals.                                            |
| 1 month after completion of ‘Set to Work’ and Operational Readiness for rail systems; |</p>
<table>
<thead>
<tr>
<th>Deliverable required as listed in the order below</th>
<th>Required as a part of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft O&amp;M Manuals submitted for review for a system</td>
<td>3 months prior to scheduled commencement of final Commissioning and Operational Readiness (Portion 3)</td>
</tr>
<tr>
<td>Spare Schedule as per the requirement under clause 6.7.3</td>
<td></td>
</tr>
<tr>
<td>Schedule of Special Tools, Facilities and Equipment for the system</td>
<td></td>
</tr>
<tr>
<td>Training program for each system</td>
<td>At least 3 months prior to scheduled training for that system</td>
</tr>
<tr>
<td>Complete AMI inclusive of Work-As-Executed Drawings for the remainder of the works</td>
<td>Portion 3: (Commissioning and Handover of the remainder of the works)</td>
</tr>
</tbody>
</table>

A2 Documents to be provided in Hard Copy

The AMI documents to be provided in hard copy format are:

(a) project description and description of the scope of the Works delivered (Refer TSR A1 Clause 6.2);
(b) schedule of contact details (Refer TSR A1 Clause 6.3);
(c) an Asset Register (Refer TSR A1 Clause 6.6);
(d) Operation and Maintenance Manuals (Refer TSR A1 Clause 6.4);
(e) a Schedule of Finishes (Refer TSR A1 Clause 6.10);
(f) warranties and guarantees (Refer TSR A1 Clause 6.4);
(g) Operating Guides and Supplier Manuals (Refer TSR A1 Clause 6.11);
(h) compliance certificates and records, including a register of same (Refer TSR A1 Clause 6.12);
(i) Technical Maintenance Plans (Refer TSR A1 Clause 6.9);
(j) Work-As-Executed Drawings (Refer TSR A1 Clause 6.13);
(k) a Spares Schedule (Refer TSR A1 Clause 6.7);
(l) test certificates (Refer TSR A1 Clause 6.12);
(m) quality records (Refer TSR A1 Clause 6.12);
(n) Schedule of Special Tools, Facilities and Equipment (Refer TSR A1 Clause 6.8); and
(o) training materials (Refer TSR 01).

A3 Document Metadata:

AMI documents submitted by the Contractor must be in a format compatible with the ProjectWise document system (used by RailCorp) and must contain the following document metadata:

(a) document number;
(b) revision number;
c) full document title / description matching exactly that written on the document front page;

(d) discipline (example structure shown in TSR A1 Annexure A Clause A4);

(e) document type (example structure shown in TSR A1 Annexure A Clause A4);

(f) document stage (example structure shown in TSR A1 Annexure A Clause A4);

(g) location (example structure shown in TSR A1 Annexure A Clause A4);

(h) REMARKS metadata is used to hold various free format key words that provide additional details regarding the document. This is particularly useful to address cases where a document covers more than one of the above groupings, or to allow more detail search for example:

1. O&M – Main O&M Manuals developed by the contractor as opposed to all the rest of the manuals provided by subcontractors and vendors.
2. SHOP – used for workshop and vendor documents
3. TEMP – relate to Temporary works only
4. UTIL – relates to local authority utilities
5. AUDIT – relates to audits

(i) Extract Code - designed by the Principal to allow documents to be easily extracted from the Principal Document Management System (DMS) for various end users;

(j) Completion Indicator: Y or N, for whether this document revision is expected to be the final one delivered to DMS;

(k) Reason: used to describe why document revision is not complete (if applicable);

(l) Revision Notes: used to hold comments about this document revision, including the unique transmittal number on which it was delivered to the DMS;

(m) Sender Company: Name of company who sent the document to be loaded to DMS;

(n) Sender: Name of person within Sender Company who sent the document to be loaded to DMS;

(o) From Company: Name of company who loaded this document to DMS;

(p) From User: Name of person within From Company who loaded this document to DMS;

(q) RailCorp Drawing Metadata (required by RailCorp for transfer of drawing information to their EDMS Trim System), which applies only to drawings, as follows:

1. RC EDMS Drawing No. – Unique Code entered onto each drawing by the originator (e.g. CV1234567). The codes will be issued by RailCorp and then passed by the Principal to the Contractor for inclusion on the drawings
2. RC EDMS Title – same as Document Title, but changed to UPPER CASE.
3. RC EDMS ID. – Last 7 numbers of RC EDMS Code
4. RC Location – as provided by RailCorp
5. RC Sector – Number representing Line sector as defined by RailCorp.
6. RC KM From – indicates start of km range for drawing
Transport
Construction
Authority

TCA Standard Requirements
TSR A1 – Asset Management Information
Auburn Stabling Project

7. RC KM To – indicates end of km range for drawing
8. RC Job Description – Description of project as defined by RailCorp
9. RC Document Type – always “DRAWING”
10. RC Document Status – always “AS BUILT”
11. RC Document Set Name – value of the RC EDMS No. for the first drawing in a set or blank if no set
12. RC Sheet No. sequence number of a drawing in a ‘set’ or ‘1’ where no set
13. RC No. of Drawings – total number of drawings in a ‘set’ or ‘1’ where no set
14. RC Sheet Size – Size of drawing as shown in the drawing title block (e.g. A0, A1, A2, A3, A4 etc)
15. RC Amendment Level – always ‘A’
16. RC Approved date – Approved date for this drawing as shown in the drawing title block.
17. File Name – calculated number based on RC EDMS ID, RC Orientation and RC File Extension (e.g. 1234567_A0c.tif)
18. RC Design Company – name of design company for drawing
19. RC the Principal Doc No. – same as the Originator’s Document Number
20. RC Engineering Discipline – First two characters of the RC EDMS Code
21. RC Document Scale – As shown in the drawing title block. (e.g. 1:100)
22. RC TMP Code – Provided by RailCorp
23. RC Orientation – L=Landscape, P=Portrait
24. RC File Extension – Type of File (e.g. tif, pdf)

A4 Example Document Metadata Structures

(a) An example of a document stage structure:
   • Concept
   • Draft
   • System Definition Review (30%)
   • Preliminary Design Review (70%)
   • Critical Design Review (100%)
   • Approved for Construction (AFC)
   • Work-As-Executed

(b) An example of work ‘discipline’ structure:
   • Alignment
   • Architecture
   • Civil
   • Communications
- Drainage
- Electrical (LV)
- Fire Systems
- Geotechnical
- General
- Instrumentation & Monitoring
- Landscaping
- Mechanical
- Operations
- Overhead Wiring
- Plumbing
- Rail (Permanent Way)
- Road Engineering
- Signalling & Train Control
- Structural
- Survey
- Transmission (HV Power)
- Tunnels
- Tunnels Ventilation
- Urban Design
- Utilities
- Vertical Transportation
- Water Treatment
- OH&S
- Environmental

(c) An example of 'location' structure:
- Stabling Yard
- Staff Facilities Building
- Staff Amenities Building
- Section Hut/ Substation

(d) An example of documentation 'type' structure:
- Drawing
- Report, inclusive of Analysis, Calculations, FMECA, RAMS
- Specification
- Plan
- Schedule, inclusive of Register, Bill of Material and List
- Procedure, inclusive of ITP
- Quality records – design and construction phase
- Quality records – commissioning phase
- Software, inclusive equipment configuration settings
- O&M Manual, inclusive of TMP, Service Schedule and vendor manual
- Training material
- Survey
- Photographic records
- Certificate, inclusive of licences
- Warranty
- Program
- Other AMI
### ASP – Document Transmittal (DRAFT ONLY)

<table>
<thead>
<tr>
<th>Reference Number</th>
<th>Document Description</th>
<th>Reference Number</th>
<th>Document Description</th>
<th>Reference Number</th>
<th>Document Description</th>
<th>Reference Number</th>
<th>Document Description</th>
<th>Reference Number</th>
<th>Document Description</th>
<th>Reference Number</th>
<th>Document Description</th>
<th>Reference Number</th>
<th>Document Description</th>
<th>Reference Number</th>
<th>Document Description</th>
<th>Reference Number</th>
<th>Document Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ONLY REQUIRED FOR DRAWINGS THAT ARE OR WILL BE CONSIDERED "AS BUILT"**

**TO ASSIST DOCUMENT PROCESSING – NOT LOADED INTO DOCUMENT MANAGEMENT SYSTEM**

---

**TCA Standard Requirements**

**TSR A1 - Asset Management Information**

**Auburn Stabling Project**
ANNEXURE B – List of Reference Documents
List of Reference Documents

RailCorp Asset Management Information Requirements
RailCorp Provision of Technical Maintenance Plans by External Organisations (ED-ISG-21)
RailCorp Signalling Technical Maintenance Plan (SC 00 51 00 00 MP)
RailCorp Electrical Backbone Technical Maintenance Plan (EP 00 0 00 00 MP)
RailCorp Civil Technical Maintenance Plan (ESC 100)
RailCorp B1 B2 B3- TMP Templates (Microsoft Excel Spreadsheet)
RailCorp Ellipse Equipment Register Overview (SAM-AI-UG-028-2.1)
RailCorp Ellipse Equipment Naming Conventions Guidelines - Track & Structures (SAM-AI-UG-018-1.4)
RailCorp Ellipse Equipment Naming Conventions Guidelines - Bridges & Culverts (SAM-AI-UG-019-3.3)
RailCorp Ellipse EquipmentNaming Conventions Guidelines - Electrical (SAM-AI-UG-020-1.4)
RailCorp Ellipse Equipment Naming Conventions Guidelines - Signals (SAM-AI-UG-021-1.4)
RailCorp Ellipse Equipment Naming Conventions Guidelines - Facilities, Buildings & Services (SAM-AI-UG-022-1.8)
RailCorp Ellipse Equipment Naming Conventions Guidelines - Control Systems (SAM-AI-UG-023-1.3)
RailCorp Ellipse Equipment Naming Conventions Guidelines - Communications Systems (SAM-AI-UG-024-1.4)
RailCorp Ellipse Equipment Naming Conventions Guidelines - Plant & Equipment (SAM-AI-UG-025-1.4)
RailCorp DAD User Guide (Bridges & Culverts) for Release 5.0 (SAM-AI-UG-010-1.3)
RailCorp DAD User Guide (Rotables) (DAD_Rotables_UG_V3.1)
RailCorp DAD User Guide (Non-Rotables) (DAD_NonRotables_UG_V3.1)
RailCorp DAD Template Index (Microsoft Excel Spreadsheet)
RailCorp DAD F1-Bridges Templates (Microsoft Excel Spreadsheet)
RailCorp DAD F2-Bridge Part Template (Microsoft Excel Spreadsheet)
RailCorp DAD F3-Culverts Templates (Microsoft Excel Spreadsheet)
RailCorp DAD F4-Turnouts Templates (Microsoft Excel Spreadsheet)
RailCorp DAD F5-Electrolysis Templates (Microsoft Excel Spreadsheet)
RailCorp DAD F6-Misc Structures Templates (Microsoft Excel Spreadsheet)
RailCorp DAD F7-Tunnels Templates (Microsoft Excel Spreadsheet)
RailCorp DAD F8-Poles Templates (Microsoft Excel Spreadsheet)
RailCorp DAD F9-Substations & Equipment Templates (Microsoft Excel Spreadsheet)
RailCorp DAD F10- CSEE Track Circuits (Microsoft Excel Spreadsheet)
Rail Infrastructure Corporation Maintenance Requirements Analysis Manual (AM 9995 PM)
RailCorp Spares Requirements Analysis Process (ED-ISG-13)

RailCorp C1 - Building & Services_Equipment Script Template ECRL V1.0 (Microsoft Excel Spreadsheet)

RailCorp C1 - Equipment Script Template V1.1 (Microsoft Excel Spreadsheet)

RailCorp TrackData User Guide for Release 1.4 (SAM-AI-UG-006-1.4)

RailCorp E1 - TrackData Data Templates (Microsoft Excel Spreadsheet)

RailCorp SmartWeld User Guide for Release 2.0 (SAM-AI-UG-048-1.1)

RailCorp SmarWire User Guide for Release 2.0 (SAM-AI-UG-009-1.3)

RailCorp G1 - Smart Weld Templates (Microsoft Excel Spreadsheet)

RailCorp G2-OHW Data Templates (Microsoft Excel Spreadsheet)

RailCorp Asset Information - Requirements for Capitalisation of Costs as Part of a New Project (ABC123)

RailCorp H1-Asset Acquisition Template (Microsoft Word Document)

RailCorp GIS Data Requirements for Electrical Operating Diagrams

RailCorp GIS Data Source and Attributes (Microsoft Excel Spreadsheet)

RailCorp Detailed Site Survey Accurate Field Drawing Procedure (EP0491)

RailCorp Detailed Site Survey Data Capture Procedure (EP0492)

RailCorp Detailed Site Survey Scope Procedure (EP0493)

RailCorp Detailed Site Survey Work as Executed Procedure (EP0494)

RailCorp Detailed Site Survey Infrastructure Services Data Policy (EP0495)

RailCorp Detailed Site Survey Specification for Collection of Services Data (EP0496)

RailCorp Detailed Site Survey Plan Symbols and Interpretation Guidelines (EP0511)

Other Documents

Building Code of Australia

Disability Discrimination Act 1992

Environmental Planning and Assessment Act 1979

TCA Building Certification Procedure (EN-PR-184)

TCA CAD Protocols (EN-ST-084)
TCA Standard Requirements
TSR 01 - Commissioning and Operational Readiness

ASP-01-D&C Design and Construct Contract for
Auburn Stabling Project
South West Rail Link

Status: Tender Issue
Document Number: TSR 01 - Operational Readiness and Commissioning.DOC
Version: 7.0
Date of issue: March 2011
Security classification: General Release

© TCA 2010
Table of Contents

1 GENERAL ................................................................................................................ 1

2 DEFINITIONS ........................................................................................................... 1
   2.1 COMMISSIONING .............................................................................................. 1
   2.2 OPERATIONAL READINESS .............................................................................. 1

3 BUILDING CERTIFICATION .................................................................................... 1
   3.1 GENERAL ........................................................................................................... 1
   3.2 ENGAGEMENT OF SPECIALIST CONSULTANTS .............................................. 2

4 COMMISSIONING AND OPERATIONAL READINESS (COR) ..................................... 3
   4.1 STAGES OF COMMISSIONING AND OPERATIONAL READINESS (COR) .......... 4

5 COMMISSIONING ...................................................................................................... 6
   5.1 COMMISSIONING MANAGEMENT PLAN (CMP) .............................................. 6
   5.2 COMMISSIONING MANAGEMENT TEAM (CMT) .............................................. 6
   5.3 CONSTRUCTION COMPLIANCE WITH DESIGN ............................................. 7
   5.4 CONTRACTOR’S COMMISSIONING ACTIVITY PLAN (CCAP) ............................... 8

6 OPERATIONAL READINESS ..................................................................................... 9
   6.1 OPERATIONAL READINESS PLAN (ORP) ........................................................ 9
   6.2 OPERATIONAL READINESS MANAGEMENT TEAM (ORMT) ............................ 9

7 TRAINING .................................................................................................................. 9

ANNEXURE A - Additional Project Requirements

ANNEXURE B - List of Reference Documents

ANNEXURE C - Commissioning and Operational Readiness Staged Delivery Responsibilities
1 GENERAL

TSR 01 describes the Commissioning and Operational Readiness requirements that the Contractor must complete to enable the Principal to handover the Works to RailCorp.

2 DEFINITIONS

2.1 Commissioning

The systematic process of ensuring that all infrastructure, buildings, equipment and systems installed in a project perform interactively in accordance with the design intent and the user's functional and operational needs. This is achieved through a complete commissioning process beginning in the procurement phase, continuing through design, construction, inspection, testing, acceptance and concluding with actual verification of performance under simulated operational conditions.

2.2 Operational Readiness

The process which ensures that a project is ready to operate with all infrastructure, buildings, equipment and systems completed and commissioned, all required documentation completed and approved, all necessary operational plans and approvals in place, fully trained operating staff, all external works and related projects completed and with users ready to accept the responsibility for handover and the ongoing operation and maintenance of the new asset.

3 BUILDING CERTIFICATION

3.1 General

The Works must comply with the Building Code of Australia (BCA), the Environmental Planning and Assessment Act (1979) NSW (EP&A Act), the Environmental Planning and Assessment Regulation 2000 NSW (EP&A Regulation), the Disability Discrimination Act 1992 (DDA), Disability (Access to Premises - Buildings) Standard 2010 and, where applicable, the Disability Standards for Accessible Public Transport. The Contractor is responsible for securing building compliance certifications for all building works consistent with the provisions of TCA Building Certification Procedure (EN-PR-184).

Certifications must include but are not limited to the following:

(a) BCA compliance assessment report which must be submitted by the Contractor with its System Definition Review submission unless this has been provided by the Principal and included in the Contract;

(b) BCA design certificate which must be issued prior to commencement of construction to comply with Section 109R of the EP&A Act;

(c) final BCA compliance certificate which must be issued as a pre-condition of achieving Completion;

(d) DDA Compliance Certificate;
(e) final fire safety certificate; and
(f) maintenance schedule for essential fire safety measures.

All building works must comply with the “Deemed-to-Satisfy” provisions of the Building Code of Australia unless “Alternative Solutions” are provided by appropriate persons as detailed in the BCA, and the EP&A Act and the EP&A Regulation.

In addition to the requirements of the EP&A Act and the EP&A Regulation any “Alternative Solutions” proposed by the Contractor must be submitted for review by the Principal’s Representative under clause 9.14 of the General Conditions prior to the commencement of construction.

The Contractor is responsible for referring all required documents to and securing all necessary approvals from the NSW Fire Brigade.

3.2 Engagement of Specialist Consultants

The Contractor must engage the following consultants:

(a) An Access Consultant who is an accredited member of the Association of Consultants in Access, Australia.

(b) A BCA Certifier who meets the requirements of an “accredited certifier” as defined in the EP&A Act.

The Contractor may engage the following consultant if required:

(c) A “fire safety engineer” as defined in the EP&A Regulation.

All of the above consultants must be approved by the Principal’s Representative prior to engagement by the Contractor.

As a guideline only, the consultants should satisfy the following selection criteria:

In respect of the BCA Certifier:

(d) it must employ two or more Accredited Certifiers (as defined in the EP&A Act) with Grade 1 (unrestricted) Accreditation, who must be located in Sydney;

(e) individual certifiers must have direct experience gained within the last five years on all phases of two or more railway station building projects where the cost of building works exceeded $1,000,000 for each project (individual certifiers must have OH & S (green) card and RISI card);

(f) individual certifiers must have direct experience gained within the last five years on all phases of four or more Crown building projects where the cost of building works exceeded $2,000,000 for each project;

(g) four referees from the projects in (e) and (f) must be nominated; and

(h) it must be an incorporated company, must hold appropriate insurances and must have been active in this field for at least four years.

In respect of the Fire Engineer:

(i) it must employ two or more fire safety engineers (as defined in the EP&A Regulation), who must be located in Sydney;
individual fire safety engineers must have direct experience gained within the last five years on all phases of two or more railway station building projects where the cost of building works exceeded $10,000,000 for each project (individual fire safety engineers must have OH & S (green) card and RISI card);

four referees from the projects in (j) must be nominated; and

it must be an incorporated company, must hold appropriate insurances and must have been active in this field for at least four years.

In respect of the Access Consultant:

it must employ a person who is an accredited member of the Association of Consultants in Access, Australia, who must be located in Sydney;

the accredited consultant must have direct experience gained within the last five years on all phases of two or more railway station building projects where the cost of building works exceeded $1,000,000 for each project (the accredited consultant must have OH & S (green) card and RISI card);

four referees from the projects in (m) must be nominated; and

it must be an incorporated company, must hold appropriate insurances and must have been active in this field for at least four years.

4 COMMISSIONING AND OPERATIONAL READINESS (COR)

Commissioning and Operational Readiness covers the completion of all activities necessary to enable TCA to hand over new or refurbished infrastructure, buildings, equipment or systems to the owner/operator. COR are two separate but closely related processes, which become more intensive towards the completion of a project (or a particular stage of a project), to ensure the project (or stage) meets user requirements and is ready to become operational at handover.
Operational Readiness begins as a planning function early in the project life cycle and continues until the project becomes operational. Completion of operational activities will likely be progressive and may be staged along with project delivery. TCA defines the elements of operational readiness as infrastructure ready, personnel ready and documentation ready.

Figure 2.0 below shows the relationship between COR and other project phases for a single stage project.

### Project Phase

<table>
<thead>
<tr>
<th>Project Phase</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
</tr>
<tr>
<td>Plant/Equipment Commissioning</td>
<td></td>
</tr>
<tr>
<td>Integrated System Commissioning</td>
<td></td>
</tr>
<tr>
<td>Operational Readiness</td>
<td>Plan Implement</td>
</tr>
<tr>
<td>Operate/Maintain</td>
<td></td>
</tr>
</tbody>
</table>

Figure 2.0 - Integration of commissioning/operational readiness phases with project delivery

### 4.1 Stages of Commissioning and Operational Readiness (COR)

As a guideline, commissioning and operational readiness (COR) activities mostly run in parallel, although the majority of operational readiness activities tend to occur towards the end of the overall commissioning process. The major COR activities generally consist of the stages shown below in Figure 3.0.

<table>
<thead>
<tr>
<th>ID</th>
<th>Stage</th>
<th>Description</th>
<th>By</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Factory acceptance tests</td>
<td>Element and system testing prior to delivery to Site</td>
<td>Contractor</td>
<td>Certification by Contractor, with an opportunity for the Principal's Representative to witness.</td>
</tr>
<tr>
<td>2</td>
<td>Installation / operational checks</td>
<td>Covers all tests and checks with installation of elements of the Works.</td>
<td>Contractor</td>
<td>Certification by Contractor, with an opportunity for the Principal's Representative to witness.</td>
</tr>
<tr>
<td>ID</td>
<td>Stage Description</td>
<td>By</td>
<td>Requirement</td>
<td></td>
</tr>
<tr>
<td>----</td>
<td>------------------</td>
<td>----</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Site acceptance tests</td>
<td>Contractor</td>
<td>Certification by Contractor, with an opportunity for the Principal's Representative to witness.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>System integration tests and commissioning</td>
<td>Contractor and Other Contractors</td>
<td>Certification by Contractor, with an opportunity for the Principal's Representative to witness.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Integration with RailCorp Network</td>
<td>Contractor, Other Contractors and RailCorp as operator/owner</td>
<td>Certification by Contractor with an opportunity for the Principal's Representative to witness.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Acceptance tests</td>
<td>Contractor, Other Contractors and RailCorp as operator/owners</td>
<td>Certification by Contractor with an opportunity for the Principal's Representative to witness. All records and documentation provided and certified.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Accreditation of new infrastructure</td>
<td>Contractor, Other Contractors and RailCorp as operator/owners</td>
<td>All records and documentation provided and certified.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Pre-commercial operations and RailCorp staff training</td>
<td>RailCorp as operator/ owner and Contractor</td>
<td>Contractor to provide attendance and maintenance accompanied by RailCorp staff as part of the requirements for training and handover to Principal and operation.</td>
<td></td>
</tr>
</tbody>
</table>
5 COMMISSIONING

5.1 Commissioning Management Plan (CMP)

The Contractor must prepare a Commissioning Management Plan for the Works based on TCA Commissioning Management Plan (EN-SD-034).

The Commissioning Management Plan must be submitted to the Principal's Representative in accordance with TSR Prelude clause 2.4.2.

The Contractor is responsible for programming and co-ordinating all commissioning activities that are required to be carried out for the Works, including activities which may be carried out by third parties, all in accordance with the Commissioning Management Plan.

5.2 Commissioning Management Team (CMT)

The Principal will establish a Commissioning Management Team (CMT) which shall be responsible for the management and coordination of all commissioning activities. The CMT shall include representatives from the owner/operator, TCA and its Contractors and be formed at least nine months prior to the planned commissioning of any infrastructure, building, equipment or systems. If the contract duration is less than nine months, the CMT shall be formed as soon as practicable following construction contract award.

The role of the CMT shall be to:
- Define the objectives of the commissioning process;

Figure 3.0 - The 10 Stages of Commissioning and Operational Readiness

N.B Due to the staged delivery of the Auburn Stabling Facility, the contractor will not be required to participate in some of the above stages.

Annexure C includes a detailed break down of the staged delivery for the project for Commissioning and Operational Readiness Responsibilities for TCA, RailCorp and the contractor and covers all disciplines.
• Identify all commissioning activities;
• Review the schedule of infrastructure, buildings, equipment and systems that will need to be commissioned for each commissioning activity;
• Review the scope and timing of all commissioning activities required to meet the project objectives, the commissioning objectives and the project program;
• Define the organisation responsible for each commissioning activity and ensure that adequate resources are allocated to carry out the required activities;
• Allocate responsibility for monitoring of each activity to a member of the CMT; and
• Establish a program of regular meetings that will be required to monitor and coordinate the commissioning activities, including the nomination of a chair to facilitate progress and a secretariat to record minutes and outstanding actions.

On all projects, the seamless integration of new installations into the existing transport system is of major importance. Interfaces may also exist with other authorities or projects and these must also be managed. The CMT shall be responsible for the coordination of all interfaces and ensure that an appropriate interface agreement is in place, to minimise any impact on rail operations and customer service.

The Contractor must actively participate in CMT activities including attendance at CMT meetings.

5.3 Construction Compliance with Design

Inspection and testing must include certification of compliance with design documentation by the design consultants. This certification is required for the following elements (where applicable):

(a) all structural works, including foundations, superstructure, retaining walls, noise walls and the like;
(b) all mechanical ventilation and air conditioning services;
(c) all electrical services including lighting;
(d) all communications services, including cabling;
(e) all fire services, including those listed in Regulation 166 of the Environmental Planning and Assessment Regulation 2000;
(f) all glazing, including glazing support structures;
(g) all rail infrastructure works, including train rails, traction power works, earthing and bonding, high voltage electrical works, transformers, cabling and signalling works;
(h) verification of environment capping layer (remediation) during construction;
(i) anything else required by the Works Brief; and
(j) any other component of the Works that the Principal's Representative deems appropriate.
5.4 **Contractor's Commissioning Activity Plan (CCAP)**

The Contractor must prepare and implement a Contractor's Commissioning Activity Plan (CCAP) that identifies all commissioning activities to be carried out by the Contractor. The commissioning activities must validate that the Contractor's Activities satisfy the requirements of the Contract.

The CCAP must be submitted to the Principal's Representative in accordance with TSR Prelude.

The CCAP must include the following:

(a) a list of all applicable owner or operator standards covering commissioning;

(b) an organisation structure for the commissioning activities, including:

   (i) an organisation chart showing the personnel and their responsibilities for commissioning; and

   (ii) the personnel training, qualifications and/or certification required for each commissioning activity, including where necessary operating the Works during the commissioning,

(c) a detailed description of each of the stages of commissioning and operational readiness listed in TSR 01 Clause 4.1;

(d) a schedule of ITPs required for each stage of commissioning, extracted from the master schedule of ITPs prepared in accordance with TSR Q1;

(e) a list of all off and on-site acceptance tests that the Contractor must obtain to demonstrate compliance with the Contract and manufacturers recommendations. The Contractor may incorporate the acceptance tests into their ITPs;

(f) a commissioning program that:

   (i) identifies the different stages and activities;

   (ii) takes into account the activities of Other Contractors;

   (iii) identifies the critical path and linkages to all pre-requisite actions;

   (iv) identifies inter and intra contract links to any other interdependent predecessor and successor commissioning activities; and

   (v) identifies the duration of each component of the commissioning activities, and

(g) a detailed description of the safety management associated with the commissioning activities, including safety risk identification, analysis and mitigation, which recognises and addresses the additional hazards associated with working in an operational environment.

(h) an activity plan should list the details
6 OPERATIONAL READINESS

6.1 Operational Readiness Plan (ORP)

The Principal will prepare an Operational Readiness Plan (ORP) for the project based on TCA Operational Readiness Plan (EN-SD-033).

6.2 Operational Readiness Management Team (ORMT)

The Principal will establish an operational readiness management team ("ORMT") whose membership will include representatives of the Principal, the owner/operator, the Principal's technical advisors, the Contractor and Other Contractors.

The Contractor must:

(a) participate in the ORMT meetings and processes;

(b) provide information as required to facilitate Operational Readiness and the activities of the ORMT;

(c) undertake activities identified by the ORMT that are required to enable the Works to achieve a standard of Operational Readiness; and

(d) undertake activities identified by the ORMT to notify adjacent stakeholders about configuration/operation change.

A generic schedule of Operational Readiness activities is included in TCA Operational Readiness Plan (EN-SD-033).

7 TRAINING

The Contractor must develop and provide a program of appropriate training for operations and maintenance personnel. This training must cover the operation and maintenance of all assets provided as part of the Works that are not already in common use within the RailCorp CityRail network or region(s) for the location of the Works. The training must include specific 'train the trainer' courses and material.

The Contractor must provide to the Principal's Representative three full sets of training aids and material for the Principal's use in future training. All training aids and material must be of a good commercial standard and appropriate for the training to be conducted.

Personnel nominated by the Principal for training will be appropriately qualified to receive the specialised training required on the relevant systems.

The training must be linked to the Asset Management Information documentation developed in accordance with TSR A1, and must cover the role of RailCorp in the operation of the Works.

The Contractor must provide people to conduct all training who are appropriately skilled, qualified, experienced and competent in the field involved, and who have completed formal training in instruction techniques.

Scheduling of training courses must take into account the possibility that some trainees will be required to attend more than one course.
The Principal may direct training courses for additional personnel, and/or for new or modified equipment, at any time during the training period.

Training will be conducted on-Site wherever possible. When training is provided off-Site, it must be provided in the Sydney Metropolitan Region. Where access to particular equipment is required, training must be undertaken on equivalent duplicate equipment to that in the Works. Off-Site training must be supplemented with visits to the applicable installed system on-Site.

The Contractor must keep a register of attendance at training. These records must be submitted to the Principal’s Representative at completion of the training.
ANNEXURE A - Additional Project Requirements
Additional Project Requirements

Contractor Commissioning

Stage 1: Factory Acceptance Testing (FAT)
Equipment items and systems must be thoroughly tested by the Contractor at the vendor’s facilities prior to dispatch to Site for installation. Specific FAT procedures and Inspection and Test Plans (ITPs) in accordance with TSR Q1, must be developed by the Contractor to record the results. These documents must be submitted to the Principal’s Representative for review in accordance with clause 9.14 of the General Conditions of Contract at least 6 weeks prior to a FAT. Selected FATs will be witnessed by specialist engineering representatives from the Principal and RailCorp. The Contractor must issue formal notification to the Principal’s Representative at least two weeks before a FAT.

Stage 2: Installation / Operational Tests
Installation and operational tests must be carried out by the Contractor during and post the installation of individual subsystem and system components. Such tests will enable early identification and rectification of design and installation errors, prior to system site acceptance tests. The scope and results of the tests must be captured in the Contractor’s construction ITPs.

Stage 3: Site Acceptance Tests (SAT)
The Contractor must commence a SAT following completion of the installation of a system or a separable part thereof.

The following prerequisites must be met and documented by the Contractor, and accepted by the Principal’s Representative prior to the commencement of SAT for any system or subsystem:
(a) the construction and installation works are completed for that system and relevant construction ITPs are signed and closed;
(b) the upstream parts of the Works are operable and available, e.g. electrical power supply is commissioned before mechanical systems are tested;
(c) results for tests carried out earlier: (such as FAT and post-installation tests) are certified and submitted to the Principal’s Representative;
(d) commissioning procedures and ITPs are finalised and approved by the Principal;
(e) design documentation is updated to reflect ‘as constructed’ status of Works;
(f) draft Operation & Maintenance Manuals are prepared in accordance with TSR A1 and submitted to the Principal’s Representative for review in accordance with clause 9.14 of the General Conditions of Contract;
(g) safety measures are identified, implemented and verified by the Contractor;
(h) site personnel are notified of the scope and area of the testing activity; and
(i) all parties involved in witnessing testing are formally notified in advance.

The SAT covers testing, commissioning and validation of individual systems by the Contractor. The completion of this stage must be certified by the Contractor. This activity is to be carried out on system-by-system basis.
Specific SAT procedures and ITPs to record the results must be developed by the Contractor and submitted to the Principal’s Representative for review in accordance with clause 9.14 of the General Conditions of Contract at least 6 weeks prior to the SAT.

Selected SATs will be witnessed by the specialist engineering representatives from the Principal and RailCorp. The Contractor must issue formal notification to the Principal’s Representative at least two weeks before a SAT is conducted. The Principal’s Representative will advise the Contractor if the Principal’s and RailCorp’s representative(s) intend to attend a SAT. If the Principal confirms attendance, the SAT must not proceed unless the Principal’s and RailCorp’s representatives are present.

**Stage 4: System Integration tests and Commissioning (SITC)**

The Works must be tested by the Contractor across interfaces to demonstrate they operate in an appropriate manner between the systems, subsystems, equipment and services provided by the Contractor and by others excluding RailCorp. The Contractor must define the systems interfaces and the scope of works for the Contractor’s interconnected system tests.

Specific IST procedures and ITPs to record the results must be developed by the Contractor and submitted to the Principal’s Representative for review in accordance with clause 9.14 of the General Conditions of Contract at least 6 weeks prior to a SITC.

Selected SITC will be witnessed by specialist engineering representatives from the Principal and RailCorp. The Contractor must issue formal notification to the Principal’s Representative at least two weeks before an IST is conducted. The Principal’s Representative will advise the Contractor if the Principal’s and RailCorp’s representative(s) intend to attend a SITC. If the Principal confirms attending, the SITC must not proceed unless the Principal’s and RailCorp’s representatives are present.

The completion of Stage 4 must include the following:

- Building Code of Australia (BCA) compliance certificate covering construction and commissioning of the Works; to be provided by an accredited BCA certifier employed by the Contractor;
- Disability Discrimination Act (DDA) compliance certificate issued by an accredited Access Consultant employed by the Contractor;
- F&LS Engineer certificate issued by an accredited Fire Engineer employed by the Contractor; and
- Planning Approval conditions related to construction and commissioning activities by the Contractor must be closed-out and accepted by the Principal’s Representative.

In cases where activities and conditions related to BCA and F&LS are outside of the Contractor’s control and cannot be completed at the time of certification, the certificates with noted non-compliances will be accepted by the Principal’s Representative.

**Stage 5: Integration with RailCorp Systems**

The Works must be integrated with the existing RailCorp rail systems. It will be a joint commissioning task that involves the Contractor and RailCorp resources. The integration will be carried out following completion and certification of Stage 3 and 4 by the Contractor.
The Contractor must develop specific procedures and ITPs for Stage 5. The provision of inputs/information from RailCorp necessary to prepare Stage 5 test procedures and ITPs will be coordinated by the Principal's Representative. The Stage 5 completion must be certified by the Contractor based on the joint tests records countersigned by RailCorp.

**Stage 6: Acceptance Tests**

A series of Acceptance Tests must be carried out as a joint activity between the Contractor and RailCorp to demonstrate the integrated operation of all rail infrastructure and station systems and facilitate acceptance of these systems by the Principal. The scope of these tests must be developed by the Contractor in close cooperation with RailCorp. Specific Acceptance Test documentation must be developed by the Contractor from templates and examples agreed with the Principal's Representative.

All of the outstanding design, construction and commissioning conditions must be resolved by the Contractor and submitted to the Principal for the final closure.

The Contractor must rectify all Defects that may affect safe and reliable operation of railway. The rail systems and services must be checked by the Contractor for correct, reliable operation and adjusted/repairs, as required.

**Stage 7: Accreditation of New Infrastructure**

RailCorp will be required to submit an operations and maintenance safety assurance report (SAR), which includes safety and non-safety acceptance/assurance plans and processes) to Independent Transport Safety Regulator (ITSRR) to obtain the amendment of Accreditation to integrate the new railway line into the RailCorp Network. The Contractor is required to provide all necessary inputs to the design, construction and commissioning Safety Assurance Reports and support the Principal in development and submission of these documents. The timing for development of the Principal SARs will align with the design, construction and commissioning phases of the project as detailed in TRS T1. Operations and maintenance SAR will be developed by RailCorp following submission of the final design, construction and commissioning SARs by the Principal.

**Stage 8: Pre-commercial Operations and RailCorp Staff Training**

The Contractor must assist in the operation of the rail systems and services to enable pre-commercial operation of trains by RailCorp and training of RailCorp operations staff inclusive of 'train the trainer' in accordance with TSR 01 Clause 7.

The Contractor must support RailCorp in training of its maintenance personnel in the maintenance responsibilities by RailCorp maintainer(s).

RailCorp is responsible for developing and leading the program to liaise with the Emergency Services Organisations (ESO) such as Fire, Police and Ambulance. The Contractor must assist in ESO project familiarisation and training during emergency exercises. The Contractor’s role will include but be limited to the following:

(j) facilitate ESO familiarisation tours and site inductions;
(k) facilitate ESO meetings with RailCorp including provision of amenities such as toilet and meal room;
(l) identification and registration of ESO exercises participants; and
Steady (m) assist with desktop and field exercises.

Stage 9: Completion and Hand-over of Works to the Principal

The Contractor must assist the Principal in the formal acceptance and sign-off of the rail systems and services by RailCorp Chief Engineers.

RailCorp will assume operation of the facilities inclusive of all rail systems and services.

Stage 10: Setting to Work for Commercial Operation

The Contractor must provide assistance to the Principal in the finalisation and closure of the project documentation by others. The Contractor must assist RailCorp in the identification of all assumptions, constraints and operational requirements arising from the design. This information will form an input to operations procedures and emergency response plans by RailCorp.

The Contractor will provide inputs required to close operational Planning Approval conditions and procedural F&LS requirements related to the operation and maintenance of the Works.
List of Reference Documents

The following table identifies the reference documents applicable for reference and distribution under the various TCA infrastructure delivery models.

<table>
<thead>
<tr>
<th>Document</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Planning and Assessment Act 1979</td>
<td></td>
</tr>
<tr>
<td>Environmental Planning and Assessment Regulation 2000</td>
<td></td>
</tr>
<tr>
<td>Disability Discrimination Act 1992</td>
<td></td>
</tr>
<tr>
<td>Disability Standards for Accessible Public Transport 2002</td>
<td></td>
</tr>
<tr>
<td>Building Code of Australia</td>
<td></td>
</tr>
<tr>
<td>TCA Interim Asset Handover Procedure for Infrastructure (EN-PR-130)</td>
<td></td>
</tr>
<tr>
<td>TCA Commissioning Management Plan (EN-SD-034)</td>
<td></td>
</tr>
<tr>
<td>TCA Operational Readiness Plan (EN-SD-033)</td>
<td></td>
</tr>
</tbody>
</table>
ANNEXURE C - Commissioning and Operational Readiness Staged Delivery Responsibilities
<table>
<thead>
<tr>
<th>Stage of Commissioning and Operational Readiness (COR)</th>
<th>TCA Standard Requirements</th>
<th>TSRO 01 - Commissioning and Operational Readiness</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stages identified in this Annexure C as the Contractor's responsibility must be completed prior to the date for completion.</td>
<td>TCA Standard Requirements: 1. Stages of Commissioning and Operational Readiness (COR)</td>
<td>TSRO 01 Elements: Systems and Components</td>
<td>Based on Doc No: TCA 726.5, Version 5.0, Section 5.5</td>
</tr>
<tr>
<td>Stages of Commissioning and Operational Readiness (COR)</td>
<td>TCA Standard Requirements: 1. Stages of Commissioning and Operational Readiness (COR)</td>
<td>TSRO 01 Elements: Systems and Components</td>
<td>Based on Doc No: TCA 726.5, Version 5.0, Section 5.5</td>
</tr>
<tr>
<td>Stage 1: Preliminary Engineering</td>
<td>TCA Standard Requirements: 1. Stages of Commissioning and Operational Readiness (COR)</td>
<td>TSRO 01 Elements: Systems and Components</td>
<td>Based on Doc No: TCA 726.5, Version 5.0, Section 5.5</td>
</tr>
<tr>
<td>Stage 2: Detailed Design</td>
<td>TCA Standard Requirements: 1. Stages of Commissioning and Operational Readiness (COR)</td>
<td>TSRO 01 Elements: Systems and Components</td>
<td>Based on Doc No: TCA 726.5, Version 5.0, Section 5.5</td>
</tr>
<tr>
<td>Stage 3: Procurement</td>
<td>TCA Standard Requirements: 1. Stages of Commissioning and Operational Readiness (COR)</td>
<td>TSRO 01 Elements: Systems and Components</td>
<td>Based on Doc No: TCA 726.5, Version 5.0, Section 5.5</td>
</tr>
<tr>
<td>Stage 4: Construction</td>
<td>TCA Standard Requirements: 1. Stages of Commissioning and Operational Readiness (COR)</td>
<td>TSRO 01 Elements: Systems and Components</td>
<td>Based on Doc No: TCA 726.5, Version 5.0, Section 5.5</td>
</tr>
<tr>
<td>Stage 5: Commissioning</td>
<td>TCA Standard Requirements: 1. Stages of Commissioning and Operational Readiness (COR)</td>
<td>TSRO 01 Elements: Systems and Components</td>
<td>Based on Doc No: TCA 726.5, Version 5.0, Section 5.5</td>
</tr>
<tr>
<td>Stage 6: Handover</td>
<td>TCA Standard Requirements: 1. Stages of Commissioning and Operational Readiness (COR)</td>
<td>TSRO 01 Elements: Systems and Components</td>
<td>Based on Doc No: TCA 726.5, Version 5.0, Section 5.5</td>
</tr>
</tbody>
</table>

Note: The staged delivery will result in an isolated piece of infrastructure incorporating the main stabling yard, In April 2013, prior to later connection to the RailCorp network via a site at Clyde by 2011/2012 as part of the Clyde Local Area Upgrade Project (LUP).
<table>
<thead>
<tr>
<th>ID</th>
<th>Stages</th>
<th>By</th>
<th>Electrical/LV Distribution</th>
<th>Emergencies/Fire Management Systems</th>
<th>Security</th>
<th>Hydraulics/Pumping/Drains</th>
<th>Staff Facilities/Buildings</th>
<th>Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>3K, 4K, 6K, 11K, 33K, 132K</td>
<td>Lighting, Surge Protection, Switchgear</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Events Acceptance Tests</td>
<td>Contractor and Other Contractors</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
</tr>
<tr>
<td>2</td>
<td>Validation/Operational Tests</td>
<td>Contractor and Other Contractors</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
</tr>
<tr>
<td>3</td>
<td>Site Acceptance Tests</td>
<td>Contractor and Other Contractors</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
</tr>
<tr>
<td>4</td>
<td>System Integration Tests and Commissioning</td>
<td>Contractor and Other Contractors</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
</tr>
<tr>
<td>5</td>
<td>Migration with RAILCorp</td>
<td>Contractor, Other Contractors and RAILCorp as operator/owner</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
</tr>
<tr>
<td>6</td>
<td>Acceptance Tests</td>
<td>Contractor, Other Contractors and RAILCorp as operator/owner</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
</tr>
<tr>
<td>7</td>
<td>Acceptance of New Infrastructure</td>
<td>Contractor, Other Contractors and RAILCorp as operator/owner</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
</tr>
<tr>
<td>8</td>
<td>Pre-commercial operations and RAILCorp staff training</td>
<td>RAILCorp as operator/owner and Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
</tr>
<tr>
<td>9</td>
<td>Completion and Handover of works to the Principal</td>
<td>Contractor and RAILCorp as operator/owner</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
</tr>
<tr>
<td>10</td>
<td>Selling to Works for Commercial operations</td>
<td>RAILCorp as operator/owner</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
</tr>
</tbody>
</table>

**Note:** The staged delivery will result in an isolated piece of infrastructure. Based on Doc No. 911726_5.doc, Version 5.0, Section 5.5 "Stages in All Stages identified in this Annexure C as the Contractor’s responsibility."