Government of South Australia
Department for Transport, Energy and Infrastructure

PUBLIC TRANSPORT SERVICES

DESIGN LIFECYCLE MANAGEMENT PROCEDURE

PTS-MU-10-EG-PRC-00000023

STOP and THINK

Zero Harm

Document Control

DOCUMENT STATUS

Document Owner: Project Director			
Action	**Name and Position**	**Signature**	**Date**
Prepared By:	Doug Gillott, Principal Engineer, Rail Systems Coordination		30 Jul 10
Reviewed By:	Roydon Pye, Project Director, Rail		3rd Aug 10
Approved By:	Rob Taverner, Project Director		3 Aug 2010.
Document Review Schedule: This document is due for review on 31 January 2011			

DOCUMENT AMENDMENT RECORD

Rev	Change Description	Date	Prepared	Reviewed	Authorised
0	Initial Issue		Doug Gillott	Roydon Pye	Rob Taverner
1	Updated to PTS, minor corrections	29/07/10	Doug Gillott	Roydon Pye	Rob Taverner

Contents

1.0 INTRODUCTION AND CONTEXT

1.1 INTRODUCTION

The Public Transport Services Division operates, maintains and modifes the Adelaide Metropolitan Passenger Rail Network (AMPRN). This document, the Design Lifecycle Management Procedure, provides rail engineering teams with direction for the design management of projects that change the AMPRN system. This procedure exists within the Rail Engineering Management System (EMS). The RCom's EMS exists within the Public Transport Services Safety & Risk Management System (SRMS). Accreditation as a rail operator under the Rail Safety Act 2007 and ongoing compliance with the Rail Safety (General) Regulations 2008 depends on project teams following a structured and disciplined approach to the design lifecycle.

The guidance in this procedure is based on the discipline of systems engineering described in Australian Standard AS/NZS 15288:2003 Systems Engineering – System Lifecycle Planning and in EIA-632 Processes for Engineering a System. This procedure is one of the standardised Level 3 process documents that are drawn upon by higher level documents such as the Rail Program (Level 1) Systems Engineering Management Plan (SEMP) and/or project specific (Level 2) Project Engineering Management Plans (PEMP).

1.2 DOCUMENT PURPOSE AND SCOPE

The purpose of this design lifecycle management procedure is to provide detailed guidance for project directors, project engineering managers/team leaders, client engineers, contractors and any other stakeholders to use in planning and executing projects that make changes to the rail system. This procedure therefore applies to:

- Individual rail projects where it will be referenced in their Project Engineering Management Plan(s).
- Internal engineering entities (client engineers, contract staff) to whom it provides direction and guidance on the process used for design activities.
- External contractors, through elements of this procedure defined in their commercial contractual relationships
- Other stakeholders, to whom it provides guidance on where they will be involved in the design process, especially for buy-in and sell-off.

1.3 ACRONYMS, DEFINITIONS AND REFERENCED DOCUMENTS

See Appendix 1.

2.0 DESIGN LIFECYCLE MANAGEMENT

2.1 SYSTEMS ENGINEERING & DESIGN LIFECYCLE BASICS

2.1.1 Background to Systems Engineering

Systems Engineering (SE) is an internationally recognised engineering and management discipline to minimise the risks inherent in defining, developing, and transitioning new systems into being and to maximise the probability of the delivered capability meeting or exceeding its stated and unstated customer requirements. The systems engineering lifecycle approach is defined in detail in publications such as AS/NZS 15288:2003 Systems Engineering – System Lifecycle Process or Electronic Industries Alliance – 632 1999 Processes for Engineering a System. PTS has adopted the systems engineering design philosophy for rail projects. In all cases, the project team is expected to *appropriately tailor the systems engineering philosophy to suit the project needs*.

2.1.2 Relationships with Other References

This procedure has been developed through analysing the key reference documents that apply through legislation or good practice to the AMPRN. When applied, this procedure will contribute towards compliance with the Rail Safety (General) Regulations 2008 Schedule 1, Clause 16 General Engineering and Operational Systems Safety Requirements.

The AS/NZS 4292 Railway Safety Management series and the Engineering Safety Management (Yellow Book) represent the benchmark standards for rail sector engineering management. This procedure endeavours to bring together the collective wisdom of over 500 pages into direct and useful process guidance for the Adelaide Rail Program.

2.1.3 Safety Engineering

The seven stage approach to safety risk management in engineering used on the AMPRN is derived from the UK Yellow Book. This process is depicted below and is described in detail in the Rail Safety Engineering Guidelines (To be issued).

Figure 2 ARP Safety Engineering Framework

2.1.4 System Decomposition & Architecture

System decomposition means breaking down the highest level system into sub-systems and components to enable them to be handled as manageable packages. During the early design stages the engineering task will revolve around identifying these manageable packages and checking that there is a feasible way of meeting the requirements for each.

The resulting subsystem packages and the relationship between them are known as the system architecture. This is the framework upon which the system will be built and most probably managed and maintained for its life cycle until disposal.

2.1.5 Design Using the Systems Engineering Approach

The main elements of systems engineering are to undertake:

- Requirements Analysis – Developing a clear and unambiguous statement of the client's requirements, including decomposing the system requirements to manageable subsystem requirements
- Functional Design – Showing that the requirements are able to be met within the laws of physics and the current state of technology.
- Design Synthesis – Finding solutions that allow the requirements to be met within any other constraints that may be imposed upon the project. (May include constraints like budget, existing network features, need for concurrent operations, etc). The design solutions are mapped onto the system architecture.

Usually these will to some extent run in parallel as better information obtained from working on one subsystem will inform the activities on others. This means that changes are certain to occur during development and it is necessary to control and track these changes between different design groups and stakeholders.

2.1.6 Advice On Requirements

At the start of the design lifecycle the client's requirements are likely to be immature. The first task of the design team is to analyse the requirements, which will probably mean to:

- Separate Out Compounded Requirements – often requirements will be doubled up within the requirements statements, eg "provide an electrified rail network ready for gauge standardisation". Traceability is improved and requirements less likely to be overlooked if the requirements are individual.
- Remove Repeated Requirements – often the same requirement will be present in different forms.
- Resolve Conflicting Requirements – it is important to detect early if any of the requirements are in conflict with each other.
- Uncover Hidden or Implied Requirements – often requirements that refer to other legislation, standards or statements like "fit for purpose" can contain many hidden or implied requirements.

2.1.7 Total Lifecycle Approach

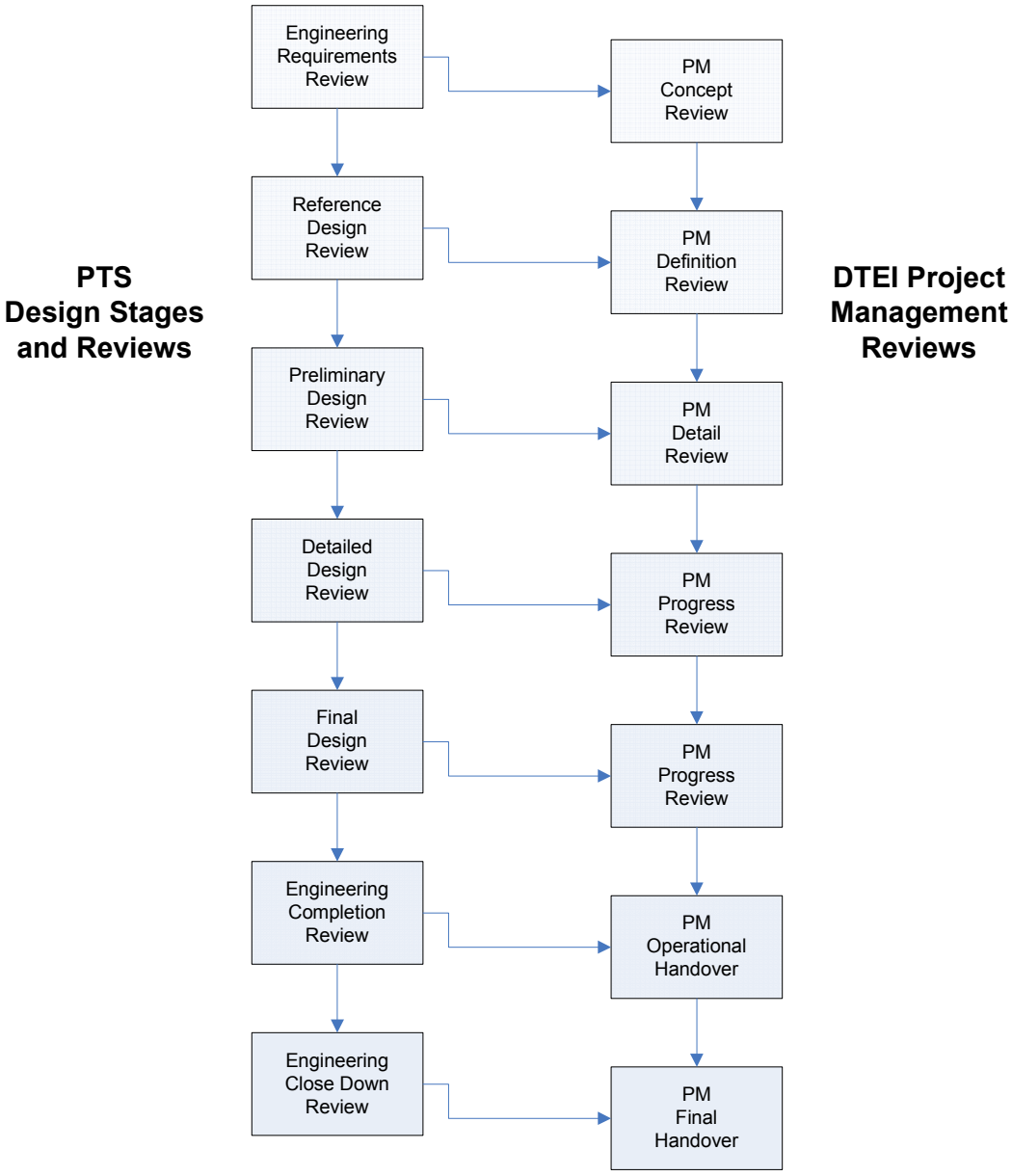
SE encompasses the entire lifecycle and is consistent with the lifecycle approach in the AS4292.1 Railway Safety Management General Requirements. A new system, or a change to a system, will pass through conception, design development, production/construction, testing, introduction into service, operational use, monitoring & maintenance, modification, and finally decommissioning & disposal. The initial design process has a large effect on the total cost of ownership and this must be considered from the earliest stages.

2.2 REVIEW CYCLE

The design process is best managed by breaking the total task into a series of **design stages** that lead to measurable **design stage reviews**. Almost every engineering organisation follows this approach but unfortunately most name their reviews differently. The design review cycle is aligned with the DTEI Project Management lifecycle to provide a common reference framework within the

PTS programs and projects. The design stage reviews are the markers that provide an end point for each of the design stages and give stakeholders the means to assess the progress being made.

The review cycle in this procedure is the starting point for the project team. The Project Engineering Management Plan (PEMP) is used to tailor the review cycle so that it optimally suits the individual needs of the project. Departures are permitted, but only in a controlled manner where the decision to use an alternative process is documented in the PEMP. Tailoring must be done with caution since departures from the recognised process will risk overlooking important steps.



The Relationship Between PTS Design Review Cycle and DTEI Project Management Review Cycle

2.3 ENGINEERING REQUIREMENTS DESIGN STAGE REVIEW (ERR)

The ERR is aligned to occur before and to inform the DTEI PM 200 Concept Review.

2.3.1 Objective

The objective of the ERR design stage is to inform and influence the conceptual outline of the intended project. It occurs in an environment where many options to meet broad requirements still exist.

2.3.2 Inputs

There are no prior inputs to the ERR design stage. By the time of the ERR review the work done should include:

- Development of a draft Functional Requirements Baseline (the document that contains the functional requirements for each of the options under consideration)
- Concept designs for the options under consideration
- Cost estimates for options in sufficient detail to support the required economic modeling
- Safety considerations for each option, with initial technical risks entered in the risk register
- Modelling, trade off and simulation studies used to develop the objectives and requirements
- Outline of an Acceptance & Commissioning Plan for each concept
- Outline Project Engineering Management Plan
- Outline impact statements for each concept for the in service monitoring and maintenance, modification, and decommissioning and disposal stages of the system lifecycle.

2.3.3 Outputs

The output from the ERR, or soon after the following PM Concept Review, should be:

- An agreed Functional Requirements Baseline
- A client preferred concept with the minimum number of options possible
- An agreed risk register
- A project-specific safety management plan that includes a description of the safety engineering approach
- Agreed outline PEMP and outline Acceptance & Commissioning Plan
- Acknowledgement of the in service impacts the changes will have

2.3.4 Stakeholder Agreement

The authorised representatives of project stakeholders must attend the ERR in order to be fully informed prior to the Concept Review. The ERR Minutes shall contain signature blocks for all stakeholders to complete indicating agreement, or agreement with specified actions, as a record of stakeholder acceptance.

2.4 REFERENCE DESIGN STAGE REVIEW (RDR)

The RDR is aligned to occur before and inform the DTEI PM 200 Definition Review.

2.4.1 Objective

The objective of the RDR design stage is to define the options in sufficient detail for just one to be selected at the PM Definition Review.

2.4.2 Inputs

The inputs to the RDR are:

- Any changes proposed to the Functional Requirements Baseline agreed at ERR
- Reference designs developed for the options agreed at the PM Concept Review
- An updated risk register
- An updated Safety Management Plan (SMP)
- An updated PEMP and Acceptance & Commissioning (A&C) Plan (including outline of inspection and test requirements)
- Outline of the Introduction Into Service Plan (includes monitoring and maintenance, training, modification, decommissioning and disposal aspects)
- Draft Configuration Items List (listing the proposed configuration items both hardware and software that will be managed within the proposed system)
- Draft Technical Interface Matrix (listing the technical interfaces between the changing system and other existing or proposed systems that will need to be managed)

2.4.3 Outputs

The output from the RDR, or soon after the following PM Definition Review, should be:

- Updated Functional Requirements Baseline including agreed changes
- A single reference design for progression
- Agreed updates to the risk register, SMP, PEMP, A&C Plan
- Agreed outline Introduction Into Service Plan
- Agreed Configuration Items List
- Agreed Technical Interface Matrix

2.4.4 Stakeholders

The authorised representatives of project stakeholders must attend the RDR in order to be fully informed prior to the Definition Review. The RDR Minutes shall contain signature blocks for all stakeholders to complete indicating agreement, or agreement with specified actions, as a record of stakeholder acceptance.

2.5 PRELIMINARY DESIGN STAGE REVIEW (PDR)

The PDR is aligned to occur before and inform the DTEI PM 200 Detail Review.

The Preliminary Design Stage Review will normally be conducted when the design is approximately 30% complete.

The use of the term “Preliminary Design” in this procedure differs from its definition in AS 4300-1995 General Conditions of Contract for Design and Construct where it means all activities prior to final design.

2.5.1 Objective

The objective of the preliminary design stage is to carry out sufficient design at the subsystem level to provide confidence that the flowed down requirements in the Functional Requirements Baseline are able to be achieved within the other constraints on the project.

2.5.2 Inputs

The inputs to the PDR are:

- Any changes proposed to the Functional Requirements Baseline agreed at RDR
- A draft system specification consistent with the Functional Requirements Baseline (which may also include subsystem specifications)
- Preliminary designs
- An updated risk register and developing safety engineering artifacts (including Hazard Log and updated technical risks in the risk register)
- An updated Safety Management Plan
- An updated PEMP and Acceptance & Commissioning (A&C) Plan (including firming up of the inspection and test requirements)
- Updated Introduction Into Service Plan (includes monitoring and maintenance, training, modification, decommissioning and disposal aspects)
- Updated Configuration Items List (listing the proposed configuration items that will be managed within the proposed system, both hardware and software)
- Updated Technical Interface Matrix (listing the technical interfaces between the changing system and other existing or proposed systems that will need to be managed)

2.5.3 Outputs

The output from the PDR, or soon after the following PM Detail Review, should be:

- Updated Functional Requirements Baseline including agreed changes
- An agreed system specification consistent with the Functional Baseline Requirements
- Agreed record of the progress of the preliminary designs (contained in the Minutes as this was the actual subject of the review)
- Agreed updates to the risk register, SMP, PEMP, A&C Plan, IIS Plan, Configuration Items List, Technical Interface Matrix

2.5.4 Stakeholders

The authorised representatives of project stakeholders must attend the PDR in order to be fully informed prior to the Detail Review. The PDR Minutes shall contain signature blocks for all stakeholders to complete indicating agreement, or agreement with specified actions, as a record of stakeholder acceptance.

2.6 DETAILED DESIGN STAGE REVIEW (DDR)

The DDR is aligned to occur before and inform a PM project progress review. Depending on the procurement approach the DDR may partly be performed by the Contractor with PTS design team personnel in attendance. In that situation the PTS design team will assess the Contractor's performance, obtain design information themselves and for transfer to other projects, and to inform acceptance of the design work. Regardless of who conducts the review, the PTS design team must ensure that their actions are completed independently.

The Detailed Design Stage Review will normally be conducted when the design is approximately 70% complete.

2.6.1 Objectives

The objective of the detailed design stage is to carry out sufficient design at the subsystem level to provide confidence that the flowed down requirements in the system specification are being achieved within the other constraints on the project. The detailed design stage may also enable initiation of construction/implementation/manufacture of "fast track" or prototype items.

2.6.2 Inputs

The inputs to the DDR are:

- Any changes proposed to the Functional Requirements Baseline agreed at PDR
- Any changes proposed to system specification agreed at PDR (which may also include subsystem specifications)
- Detailed designs
- An updated risk register and further developed safety engineering artifacts (including Hazard Log and updated technical risks in the risk register)
- An updated Safety Management Plan

- An updated PEMP and Acceptance & Commissioning (A&C) Plan (including finalisation of the inspection and test requirements)
- Updated Introduction Into Service Plan (includes monitoring and maintenance, training, modification, decommissioning and disposal aspects)
- Updated Configuration Items List (listing the proposed configuration items both hardware and software that will be managed within the proposed system)
- Updated Technical Interface Matrix (listing the technical interfaces between the changing system and other existing or proposed systems that will need to be managed)
- Draft Failure Recording, Analysis and Corrective Action System (FRACAS) database for the management of the changed system in service

2.6.3 Outputs

The outputs from the DDR, or soon after the following project progress review, should be:

- Updated Functional Requirements Baseline including agreed changes
- Updated system specification (which may also include subsystem specifications) consistent with the updated Functional Requirements Baseline
- Agreed record of the progress of the detailed designs (contained in the Minutes as this was the actual subject of the review)
- Key design information that informs the program systems integration team that is tying together the projects (presented to them in working groups such as the Technical Interface Working Group)
- Agreed updates to the risk register, SMP, PEMP, A&C Plan, IIS Plan, Configuration Items List, Technical Interface Matrix
- Agreed draft of the Failure Recording, Analysis and Corrective Action System (FRACAS) database for the management of the changed system in service

2.6.4 Stakeholders

The authorised representatives of project stakeholders must attend the DDR in order to be fully informed prior to the progress review. The DDR Minutes shall contain signature blocks for all stakeholders to complete indicating agreement, or agreement with specified actions, as a record of stakeholder acceptance.

2.7 FINAL DESIGN STAGE REVIEW (FDR)

The FDR is aligned to occur before and inform a PM project progress review. Depending on the procurement approach the FDR may partly be performed by the Contractor with PTS design team personnel in attendance. In that situation the PTS design team will assess the Contractor's performance, obtain design information themselves and for transfer to other projects, and to inform acceptance of the design work. Regardless of who conducts the review, the PTS design team must ensure that their actions are completed independently.

The Final Design Stage Review will normally be conducted when the design is 100% complete.

2.7.1 Objectives

The objective of the final design stage is to complete the design at the subsystem and system level showing that the flowed down requirements in the system specification have been met consistent with the other constraints on the project. The final design stage must enable the initiation of construction/ordering/implementation/manufacture of the full workscope. At the conclusion and acceptance of the FDR the status of construction drawings would normally be changed to "Issued For Construction".

2.7.2 Inputs

The inputs to the FDR are:

- Only in exceptional circumstances, any changes proposed to the Functional Requirements Baseline agreed at DDR
- Only in exceptional circumstances, any changes proposed to system specification agreed at DDR (which may also include subsystem specifications)
- Final designs
- An updated risk register and further developed safety engineering artifacts (including Hazard Log and updated technical risks in the risk register)
- An updated Safety Management Plan
- An updated PEMP and Acceptance & Commissioning (A&C) Plan (including finalisation of the inspection and test requirements)
- Updated Introduction Into Service Plan (includes monitoring and maintenance, training, modification, decommissioning and disposal aspects)
- Updated Configuration Items List (listing the proposed configuration items that will be managed within the proposed system)
- Updated Technical Interface Matrix (listing the technical interfaces between the changing system and other existing or proposed systems that will need to be managed)
- Updated draft Failure Recording, Analysis and Corrective Action System (FRACAS) database for the management of the changed system in service

2.7.3 Outputs

The outputs from the FDR, or soon after the following project progress review, should be:

- Updated Functional Requirements Baseline including agreed changes
- Updated system specification (which may also include subsystem specifications) consistent with the updated Functional Requirements Baseline
- Agreed record of the progress of the final design (contained in the Minutes as this was the actual subject of the review)
- Key design information that informs the program systems integration team that is tying together the projects (presented to them in working groups such as the Technical Interface Working Group)

- Agreed updates to the risk register, SMP, PEMP, A&C Plan, IIS Plan, Configuration Items List, Technical Interface Matrix

- Agreed updated draft Failure Recording, Analysis and Corrective Action System (FRACAS) database for the management of the changed system in service

2.7.4 Stakeholders

The authorised representatives of project stakeholders must attend the FDR in order to be fully informed prior to the progress review. The FDR Minutes shall contain signature blocks for all stakeholders to complete indicating agreement, or agreement with specified actions, as a record of stakeholder acceptance.

Depending on the commercial terms of the contract, there may be other acceptance certificates to be agreed as a result of the FDR, eg the Level 1 or Level 2 Design Certificates.

2.8 ENGINEERING COMPLETION REVIEW (ECR)

The ECR is aligned to occur before and inform the DTEI PM 302 Operational Handover Review. Operational handover occurs when the change to the rail system is ready to “go live”, that is, when it is about to be used for its normal purpose for real for the first time.

The ECR is conducted with the Contractor. At the conclusion of the DTEI-Contractor meeting the RCom design team must ensure that they complete their actions independently in order to properly inform the PM operational handover review.

2.8.1 Objectives

The objective of the ECR is to ensure that all design aspects of a change are satisfactorily completed before exposing the public to that change to the rail system.

2.8.2 Inputs

The inputs to the ECR are:

- A compliance statement demonstrating the level of system performance against the agreed Functional Requirements Baseline and specifications

- The outcome from the completed Acceptance & Commissioning Plan, including the inspection and test records detailing in a quantitative manner the performance against the requirements.

- Final designs with any waivers and production permits that may have been necessary during the construction/production period

- An updated risk register and further developed safety engineering artifacts (including Hazard Log and updated technical risks in the risk register)

- Draft Failure Recording, Analysis and Corrective Action System (FRACAS) database for the management of the changed system in service

- An updated Safety Management Plan

- Updated Introduction Into Service Plan (includes monitoring and maintenance, training, modification, decommissioning and disposal aspects)

- Final Configuration Items List (listing the configuration items that will be managed within the proposed system including details such as serialisation applied during construction or manufacture)
- Proposed final Failure Recording, Analysis and Corrective Action System (FRACAS) database for the management of the changed system in service
- Updated operator training packages, operator handbooks, and maintenance documents incorporating any changes that were necessary as a result of production
- Any outstanding defects lists, warranty claims, any other certificates of compliance, and the date of the expected final handover.

2.8.3 Outputs

The outputs from the ECR, or soon after the following operational handover review, should be:

- A system performance report that compares the "post testing" predicted performance of the changed rail system against the approved Functional Requirements Baseline including agreed changes
- Updated "as built" system design technical data package including system specification (which may also include subsystem specifications)
- Agreed updates to the risk register, IIS Plan
- Agreed FRACAS database format
- Final Configuration Items List (listing the configuration items that will be managed within the proposed system including details such as serialisation applied during construction or manufacture)
- Agreed Failure Recording, Analysis and Corrective Action System (FRACAS) database for the management of the changed system in service
- Final operator training packages, operator handbooks, and maintenance documents incorporating any changes that were necessary as a result of production
- Any outstanding defects lists, warranty claims, any other certificates of compliance, and the date of the expected final handover.

2.8.4 Stakeholders

The authorised representatives of project stakeholders must attend the ECR in order to be fully informed prior to the operational handover review. The ECR Minutes shall contain signature blocks for all stakeholders to complete indicating agreement, or agreement with specified actions, as a record of stakeholder acceptance.

Depending on the commercial terms of the contract, there may be other acceptance certificates to be agreed as a result of the ECR, eg the Level 1 or Level 2 Design Certificates, or other certificates of completion (eg training, software installation) or licences to hand over.

2.9 ENGINEERING CLOSE DOWN REVIEW (ECDR)

The ECDR is aligned to occur before and inform the DTEI PM 303 Final Handover Review. Final Handover Review occurs when all defect liability and warranty periods are about to expire and full

responsibility for operating the changed rail system is now with the RCom. (This may include transfer into another form of contract such as transition from capital acquisition contract to maintenance contract).

2.9.1 Objectives

The objective of the ECDR is to ensure that all design aspects of the work are completed satisfactorily, all design and configuration data has been received and any safety issues are properly transferred to the intended safety risk manager for the life of the changed system.

2.9.2 Inputs

The inputs to the ECDR are:

- An operator's report demonstrating the actual level of system performance under real life conditions against the agreed Functional Requirements Baseline and specifications
- The quantitative outcome from the operator's monitoring of the changed system since operational handover.
- Updated FRACAS with summary report
- An updated risk register (including Hazard Log and updated technical risks in the risk register)
- An updated Safety Management Plan
- Final Configuration Items List (listing the configuration items that will be managed within the proposed system including details such as serialisation applied during construction or manufacture)

2.9.3 Outputs

The outputs from the ECDR, or soon after the following final handover review, should be:

- A system performance report that compares the actual performance of the changed rail system against the approved Functional Requirements Baseline including agreed changes
- Agreed updates to the risk register
- An operating FRACAS database
- Any outstanding defects lists for ongoing management
- Properly transferred and accepted safety hazards where on going management of the risk is required.

2.9.4 Stakeholders

The authorised representatives of project stakeholders must attend the ECDR in order to be fully informed prior to the final handover review. The ECDR Minutes shall contain signature blocks for all stakeholders to complete indicating agreement, or agreement with specified actions, as a record of stakeholder acceptance.

APPENDIX 1 - ACRONYMS, DEFINITIONS AND REFERENCES

AMPRN	Adelaide Metropolitan Passenger Rail Network
AS/NZS	Australian/New Zealand Standard
DDR	Detailed Design Review
DTEI	Department for Transport, Energy and Infrastructure
ECDR	Engineering Close Down Review
ECR	Engineering Completion Review
EMS	Engineering Management System
ERR	Engineering Requirements Review
FDR	Final Design Review
FRACAS	Failure Recording, Analysis and Corrective Action System
IIS	Introduction Into Service
ISO	International Standards Organisation
PDR	Preliminary Design Review
PEMP	Project Engineering Management Plan
PM	Project Management
PTS	Public Transport Services
RCom	Rail Commissioner
RDR	Reference Design Review
SA	South Australia
SE	Systems Engineering
SEMP	Systems Engineering Management Plan
SMP	Safety Management Plan
SRMS	Safety & Risk Management System

Definitions

Term	Meaning
Adelaide Metropolitan Passenger Rail Network	The rail network created by the existing Adelaide light and heavy rail network and the combination of major projects underway at the time of issue of this SEMP providing for upgrades, electrification, rolling stock replacement, conversions and extensions. The rail network is considered to include elements of adjacent rail networks maintained and/or operated by PTS (eg some ARTC signals) or other operator's rolling stock on the Adelaide network.
Engineering Management System (EMS)	The subset of the Safety & Risk Management System that applies to engineering design, construction and installation, implementation and commissioning, monitoring and maintenance of the rail elements of the Adelaide public transport system.
Safety & Risk Management	The set of documented policies, procedures and practices that provide the framework for the safe provision of Adelaide public transport services. The

System (SRMS)	existence of the SRMS provides the documented and auditable evidence offered to the Rail Safety Regulator in support of accreditation of the RCom as a Rail Transport Operator under the Rail Safety Act 2007.
KNet	DTEI records management system based on the Hummingbird software application
PTS	The Public Transport Services component of the Public Transport Services and Strategic Projects Division.
Rail Commissioner (RCom)	The Rail Commissioner is a body corporate created by the South Australian Rail Commissioner Act 2009 to (paraphrased) construct railways, manage and maintain rail infrastructure and rolling stock, and operate railways.

Referenced Documents

- South Australian Rail Safety Act 2007.
- South Australian Rail Safety (General) Regulations 2008.
- South Australia Rail Commissioner Act 2009.
- Processes for Engineering a System, EIA-632-1998, Electronics Industries Alliance, January 1999.
- National Rail Safety Guideline – Preparation of a Rail Safety Management System, June 2008.
- AS 4292:2004 Railway Safety Management, 2006, Standards Australia (Parts 1 to 7).
- AS/NZS ISO 31000:2009 Risk Management – Principles and Guidelines (supercedes AS 4360:2004 Risk Management, 2004) Standards Australia.
- AS 15288:2003 Systems Engineering – System Lifecycle Processes.
- National Consensus Standard for Configuration Management, EIA-649-A, April 2004.
- Engineering Safety Management, Yellow Book, Issue 4, Rail Safety and Standards Board UK.
- Safety Management Standards, Draft, SA Rail Commissioner, September 2009.