

Managing Complex Projects

EGW-20-01

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1 Introduction

1.1 Purpose

- 1.1.1 This Work Instruction details the minimum requirements for a project classified as a Complex Project by the relevant Approval Authority under procedure EGP-20-01 Project Management.

1.2 Scope

- 1.2.1 This Work Instruction applies to all ARTC Complex Projects including capital works, major periodical maintenance business systems changes, IT projects, strategic and cultural change projects, property projects and all other projects which impact on the rail network.
- 1.2.2 Projects to be conducted as Simple Projects are to utilise EGW-20-02 Managing Simple Projects.

1.3 Relevant Procedure

- 1.3.1 This Work Instruction is referenced by the EGP-20-01 Project Management procedure.

1.4 Responsibilities

- 1.4.1 The Approval Authority is responsible for the implementation of this Work Instruction. The relevant project personnel as defined in the project organisation chart, or as per the EGW2001T-07 Roles and Responsibilities Allocation Report, are responsible for managing the process. EGW2001T-07 shall also contain the project delegations, if not documented in the Project Management Plan (PMP).

1.5 Reference Documents / Systems

- 1.5.1 The following documents and systems support this work instruction:
- EGP-20-01 Project Management
 - EGP2001T-05 Project Close out and Handover Checklist Environmental
 - EGP2001T-06 WHS Management Plan – ARTC Principal Contractor
 - EGP2001T-07 WHS Management Plan – ARTC Not Principal Contractor
 - EGP2001T-08 WHS Management Plan Checklist
 - EGP2001T-09 SWMS Checklist
 - EGP2001F-05 ARTC Project Risk Register Template
 - EGW2001T-01 Complex Project Management Plan
 - EGW2001T-02 Complex Project Checklist - Phase 1
 - EGW2001T-03 Complex Project Checklist - Phase 2
 - EGW2001T-04 Complex Project Checklist - Phase 3
 - EGW2001T-05 Complex Project Checklist - Phase 5
 - EGW2001T-06 Complex Project Checklist - Phase 6

- EGW2001T-07 Project Roles and Responsibilities Allocation Report
- EGW2001T-08 Concept Assessment Report
- EGW2001T-09 Project Feasibility Report
- EGW2001T-10 Product Description
- EGW2001T-11 Phase/Stage/Exception Plan
- EGW2001T-12 Work Package
- EGW2001T-13 Team Plan
- EGW2001T-14 Team Status Report
- EGW2001T-15 Project Progress Report
- EGW2001T-16 End Stage Report
- EGW2001T-17 Exception Report
- EGW2001T-18 Certificate of Practical Completion & Handover
- EGP2001T-01 Issue Log
- EGP2001T-02 Project Close out Report
- EGP2001T-03 Lessons Learnt Report
- EGP-03-01 Rail Network Configuration Management
- Safety Management System (SMS)
- Environmental Management System (EMS)
- FCA-FM-101 Capital Works Financial Closeout Form
- FCO-PR-022 Contracts Management
- FPR-PR-024 Purchasing Materials Procedure
- FIN-PR-038 Budget Variations Procedure
- FIN-PR-039 BIC Submission Procedure
- RM01 Risk Management
- FCA-PR-043 Delegation Policy, Principles and Guidelines
- FCA-RG-002 ARTC Expenditure Delegation & Disposal Authority Summary
- PPP-03 Records Management Policy
- Manage Accreditation – Variation and Change
- WHS-PR-001 Work Health & Safety
- Managing the Work Environment and Facilities Code of Practice
- Safe Design of Structures Code of Practice
- Construction Work Code of Practice

1.6 Definitions

1.6.1 All necessary definitions are provided in EGP-20-01 Project Management procedure.

1.7 Work Instruction Owner

1.7.1 The General Manager Technical Standards is the Work Instruction owner and is the initial point of contact for all queries relating to this instruction.

2 Roles and Responsibilities

2.0.1. A successful project has a need for direction, management, control and communication. It is crucial to the success of a Complex Project to establish and maintain an effective organisational structure. The incumbent for each of the roles may change for each of the Phases of a Complex Project.

2.0.2. EGP-20-01 sets out that the Approval Authority is generally the Executive General Manager (EGM) for the Division undertaking the project. The EGM always retains responsibility for the project, however may choose to delegate authority for some or all of the Approval Authority tasks to a General Manager. The General Manager may choose to delegate some or all of the Approval Authority tasks to a Project Delivery Manager, Infrastructure Manager, Delivery Manager or some other manager. All such delegations of authority are to be in writing and available in project records for audit purposes.

2.0.3. Where an Approval Authority has determined that a project will be managed as a Complex Project, a formal project organisation structure shall be established. A Project Roles and Responsibilities Allocation Report is to be prepared by the Project Manager and approved by the Approval Authority at the commencement of each Phase of the Project or if changes occur during the Phase.

2.0.4. The Approval Authority defines the requirements of the Project Assurance and delegates the responsibility for carrying out the assurance audits.

2.0.5. The organisation structure should address the roles and responsibilities as outlined below.

2.0.6. The delegated financial authorities of the parties with respect to the project must be clearly defined and endorsed by the Budget Investment Committee.

Refer: [EGW2001T-07 Project Roles and Responsibilities Allocation Report](#)

2.1 Approval Authority Responsibilities

2.1.1. The Approval Authority is the project's interface with corporate management and provides the overall direction for the project. The Approval Authority will review information provided by the Project Manager, or Steering Committee and provide direction on the project. The specific responsibilities of the Approval Authority are as follows, and the use of EGP2001T-04 Approval Authority Project Checklist is recommended:

- Determining whether the project is designated as a Simple Project or a Complex Project, as per Section 2.2 of EGP-20-01.
- Determining the project governance arrangements, and which project phases can be combined (if any).
- Appointing the members of the Steering Committee (if applicable).

- Appointing the Project Manager for each project phase (where applicable).
 - Where applicable, ensuring that on commencement the Project Manager has reviewed Lessons Learnt reports from earlier projects to apply to the current project.
 - Approving each version of the Project Management Plan through the phases of the project, and approving the entry into each phase of the project.
 - Approving other plans (if not incorporated into the Project Management Plan) such as Project Roles and Responsibilities, Quality Management Plan, Commercial Management Plan, Safety Management Plan, Inspection and Test Plan, Risk Management Plan and Environmental Management Plan.
 - Define the requirements of Project Assurance and delegate responsibility for carrying out the assurance audits.
 - Understanding and reacting to the risks to the project and ARTC. This can include reporting of particular risks and controls to the Safety and Environment Committee.
 - Reviewing the outputs from each project phase, and authorizing the commencement of the next phase (potentially expediting the project schedule by permitting low risk activities in a subsequent phase to be undertaken in parallel with an earlier project phase).
 - Approving changes and variations that are beyond the scope delegated to the Project Manager.
 - Approving changes in the project schedule which impact on the completion date
 - Determining project reporting requirements, and reviewing such reports to monitor progress, exceptions and to challenge the Project Manager on issues.
 - Ensuring that all agreed and required project documentation is completed at the correct stage of project implementation.
 - Determining and resolving any conflicts or disputes on the project that cannot be resolved by the Project Manager.
 - If necessary assisting the Project Manager in negotiating with external bodies.
 - Ensuring that the Lessons Learnt Report is uploaded to the Project Lessons Learnt SharePoint site and readily available for future reference across ARTC.
 - Approving the transition of residual risks and controls from the project to the Corporate Risk Register.
 - Approving project closure following review of the evidence for closure from the Complex Project Checklist supplied by the Project Manager.
 - Documenting decisions made to provide clarity and assist with the audit function.
 - Ensuring that the project business case outcomes are compared to the initial business case requirements.
- 2.1.2. In accordance with EGP-20-01, the Approval Authority may require that a Steering Committee is appointed with a number of management level representatives.

2.2 Steering Committee Responsibilities

- 2.2.1. The Steering Committee comprises a group of ARTC Managers and/or Executives that are appointed to provide overall direction of the project. The Steering Committee aims to

ensure that the objectives of the project are achieved and that the Project Manager has the support/guidance he/she requires to deliver a successful result within the cost, time, quality, environmental and safety parameters required. The specific responsibilities of the Steering Committee are to:

- Review progress of the project at regular intervals with respect to the technical direction and provide consolidated comments with respect to operations, maintenance, track, signalling, property etc or other areas that may impact on the project outcomes.
- Provide direction on technical issues raised by the Project Manager and make determinations on a preferred option, where more than one solution is possible.
- Consider interfaces with other activities and projects being undertaken by ARTC that may affect the project outcomes.
- Review and endorse submissions to the Approval Authority.
- Provide support to the Project Manager in the resolution of issues affecting the project.

2.3 Operational Representative Responsibilities

2.3.1. The Operational Representative is responsible for ensuring that what is produced meets the specified operational requirements without adversely impacting on other operations that may interface with the project. The Operational Representative is a part of the Steering Committee. The specific requirements of the Operational Representative are as follows:

- Ensure that any operation's resources required for the project are made available.
- Promote and maintain focus on the desired project outcome.
- Resolve conflicts and prioritise operational requirements.
- Endorse the Operational Specification.
- Sign off on final deliverables.
- Confirm that operational notices about the project are suitable.

2.3.2. The Approval Authority may provide Operational advice to the project team where there is no change to operational outcomes (e.g. an existing asset is being replaced with the same functionality).

2.4 Asset Representative Responsibilities

2.4.1. The Asset Representative is responsible for ensuring that what is produced is fit for purpose and within the constraints of the project objectives in terms of quality, functionality and ease of use. The Asset Representative is a part of the Steering Committee. The specific requirements of the Asset Representative are as follows:

- Ensure that any asset resources required for the project are made available.
- Promote and maintain focus on the desired project outcome.
- Resolve conflicts and prioritise project and asset management requirements.
- Sign off of final deliverables.

2.5 Technical Advisor(s) Responsibilities

2.5.1. The Technical Advisor(s) is/are part of the Steering Committee who will provide technical expertise to the Approval Authority. In order to deliver the successful capability a range of skills may need to be brought to bear to work on the project during its life. Where significant resources are required management representation from those areas of ARTC will need to be involved to oversee the nature of the work being done and ensure that the necessary ARTC technical standards are applied to the work.

2.6 Project Manager Responsibilities

2.6.1. The Project Manager is responsible for planning, executing, controlling and closing the project so that the project deliverables are capable of achieving the forecast business benefits. The Project Manager must ensure the project produces the required products, to the required standard of quality and within the specified constraints of time and cost. The specific requirements of the Project Manager are as follows:

- Produce the Project Management Plan and other associated management plans.
- Project risk management, including regular risk reviews and the maintenance of a Project Risk Register listing risks and controls.
- Issuing Work Packages to the Project areas.
- Manage the project to meet the cost, schedule and technical objectives, and deal with any deviations from plan.
- Monitoring overall progress and the use of resources, including initiation of corrective action where necessary.
- Manage the project costs and budgets.
- Ensure compliance with the ARTC Safety Management System (SMS) and rail safety accreditation, safety audits may be undertaken during the course of the project.
- Ensure compliance with the ARTC EMS, Project EIA, Approvals, Licences and permits and implementation of environmental mitigation measures on the site by the contractor.
- Reporting to the Approval Authority/Steering Committee.
- Setting up project controls including change control and configuration management.
- Communication with internal and external project stakeholders.
- Project administration.
- Direction and motivation of the project team in the work to be undertaken to deliver the project.
- Formal project closure activities.
- Compile reports as required by the Approval Authority/Steering Committee.

2.7 Contract Manager Responsibilities

2.7.1. For Complex Projects, the Contract Manager will often be separate to the Project Manager role. The Contract Manager must be appointed to the Project Support Team. Note that the Project Manager would generally administer the Contract in the role of

Contract Administrator / Superintendent (or Representative) or appoint a representative to undertake these functions under the contract with the third party.

2.7.2. The specific responsibilities of the Contract Manager are to:

- Ensure that the contract schedules comprehensively cover the ARTC requirements for timely delivery of data, documents and drawings.
- Compile contract scope and technical documents for engagement of third parties or procurement of materials in accordance with ARTC policies and procedures.
- Contribute to the success of the project with timely notice of new contracts, and negotiate to obtain value for money whilst meeting schedule and technical quality of deliverables.
- Ensure probity is maintained in the procurement of goods and services.
- Manage the contracts in accordance with the ARTC policies and procedures.
- Provide updates to the Contract Services Administrator to ensure the complete cycle of contractual documents is retained in the contracts management system per FCO-PR-022.
- Ensure finance systems are updated so that all commitments are captured and data is accurate.
- Have a thorough knowledge of the executed contract and the obligations that ARTC and the Contractor has under the terms and conditions of the contract.
- Ensure regulatory obligations are confirmed with the contracted party.
- Assist the Project Manager in managing all claims under the contract.
- Timely notification of variations (which alter the contract sum or budget) and any possible disputes to the Contract Services Administrator.

[Refer to FCO-PR-022 Contracts Management](#)

2.8 Team Leaders Responsibilities

2.8.1. The role of a team leader is to provide a point of contact between the Project Manager and the Team Members. This role may be performed by an external party providing consultancy or contracting services. The specific responsibilities of a Team Leader are as follows:

- Prepare plans for the team's work and agree these with the Project Manager
- Direct, motivate and monitor a work team
- Expedite information required by team members from the Project Manager or others as required
- Monitor progress of the work team and initiate corrective action where necessary.
- Advise the Project Manager of any major deviations from the team plan, recommended corrective actions, and help prepare Exception Report.
- Ensure that quality control within the work team is planned and performed correctly.
- Manage work team risks.
- Fatigue management

- Prepare Team Plan
(Refer: [EGW2001T-13 Team Plan](#))
- Prepare Team Status Report
(Refer: [EGW2001T-14 Team Status Report](#))

2.9 Project Assurance Function

2.9.1. The function of Project Assurance is to provide independent advice to the Project Manager and the Approval Authority to assess any relevant aspects of the project. In some cases this may be provided as a formal audit of aspects of the project. In other cases it may be via less formal operational, safety, commercial or finance input on relevant aspects of the project.

The following are examples of how Project Assurance might be used.

To check/audit/advise whether:

- Progress and cost reporting is accurate
 - All project risks have been identified and are being adequately addressed
 - The project outcome is going to meet the project objectives.
 - The proposed solution is achievable within the agreed cost and time parameters
 - The safety aspects of the project are being appropriately identified and managed
 - Appropriate procedures are being followed by the Project Manager and teams
[e.g. EGP-20-01, EGW-20-01, EGP-03-01 etc.](#)
 - Any other aspects of the project are in accordance with the Project Management Plan.
- 2.9.2. It is the responsibility of the Approval Authority to define the requirements of Project Assurance and delegate authority for carrying out the assurance functions as required.

2.10 Project Support Functions

2.10.1. The function of project support may include activities such as property, engineering, environment, safety management, configuration management, project technical authority, program update, risk management, finance / commercial, quality and admin, as assigned by the Project Manager.

2.11 Project Responsibilities Allocation Report

2.11.1. A report documenting project organisation and nominating incumbents is to be prepared by the Project Manager in a Project Roles and Responsibilities Allocation Report and is to be approved by the Approval Authority.

Refer: [EGW2001T-07 Project Roles and Responsibilities Allocation Report](#)

2.11.2. There is allowance for the information to be written into the PMP; however it must contain all of the information required by EGW2001T-07 Project Roles and Responsibilities Allocation report.

3 Project Delivery

3.1 Phased delivery

- 3.1.1. The project is to be delivered in Phases in accordance with EGP-20-01.
- 3.1.2. The level of effort and corresponding level of detail required is to be commensurate with the assessed risks for each Phase. The Phase deliverables may be re-sequenced or combined if the business case warrants and approval is given by the Approval Authority.
- 3.1.3. The Project Manager shall plan the project to ensure transition to a suitable project management structure as the project progresses from phase to phase.
- 3.1.4. This section of the Complex Project Work Instruction details project management procedures and responsibilities that are common to all project Phases.

3.2 Establish the project and the project team

- 3.2.1. The Approval Authority shall provide written approval for the project start and to proceed beyond each hold point. This may take the form of approved minutes from the Approval Authority meetings.
- 3.2.2. The Approval Authority shall endorse the appointment of the Project Manager and members of the Steering Committee (if appointed).
- 3.2.3. The Project Manager shall provide the Divisional Management Accountant with the current phase budget, cost breakdown structure (CBS) and future phase estimates to load into the financial system. This will form the baseline budget for the approved Phase and a cash flow estimate of total project costs for full delivery of the project.(i.e. Phase 2 budget would be uploaded and an estimate for Phases 3-6 also uploaded). This information is required for cash flows, revenue forecasts and assessment of future debt requirements.
- 3.2.4. The Project Manager shall ensure that a project code is created in the financial system with activity numbers aligned with the proposed Work Breakdown Structure (WBS).

3.3 Understanding the project inputs and outputs

- 3.3.1. The Project Manager shall consider what are the projects inputs and outputs, these include:
 - List the business outcomes the project has to achieve and how the outcomes will be demonstrated in the Project Management Plan. This can be achieved by describing the benefit to the business (either operational or financial) by the completion of the project. This activity ensures that the Project Manager is aware of the impact on the business outcomes of any variations proposed for the project.
 - List the project inputs and outputs, including training requirements, documentation, drawings and spares, in the Project Management Plan. Include how each output will be tested. Test methods can include inspection, analysis, demonstration and/or testing against requirements.
 - Prepare the Network Alteration Notice (NAN) and list the project outputs on the Configuration Change List (CCL) per EGP-03-01.

3.4 Project Management Plan

- 3.4.1. The Project Manager shall write the Project Management Plan (PMP).
- 3.4.2. The level of detail within the PMP should be appropriate for each project phase. The PMP structure should enable the plan to continue between Phases and to be updated as more information becomes available. The PMP should include reference to the items in this Section 3 below.
- 3.4.3. The Project Manager shall determine whether a PMP is required in Phase 1, this will depend on the complexity and risk profile of the project.
- 3.4.4. The PMP must be reviewed and updated at the beginning of each Phase to confirm that the necessary elements are included to project manage the Phase.
- 3.4.5. The PMP should also be reviewed at the end of each Phase to ensure that adequate planning has been undertaken for the next Phase and that these requirements are reflected in the Phase funding submission to the Approval Authority.
- 3.4.6. Consideration should be given to the structure of the PMP to facilitate communication of information within the project team. Depending on the nature of the project, it could be a single document, or a master document with reference a number of sub-plans. The PMP is a key project communications tool and should be made readily available to all team members.

[Refer to EGW2001T-01 – Project Management Plan, for a typical structure of a complex Rail Network Activity Plan](#)

The PMP should include the following sections. Some of these may not be required during the early Phases of the project, but all must be completed by the end of Phase 3.

- Objectives and Benefits
- Scope of Work
- Design Management Strategy (including a stakeholder management matrix)
- Interface Management
- Project Delivery Strategy
- Cost Management
- Program Management
- Risk Management
- Change Management (Cost and Program)
- Safety Management
- Quality Management
- Environmental Management
- Human Resources Management
- Communications Management
- Procurement Management
- Configuration Management

- Operational Readiness (commissioning and handover)
 - Regulator Notifications (if required)
 - Training Management
- 3.4.7. The PMP is to be signed by the Approval Authority.
- 3.4.8. The Complex Project Work Instruction Checklists are to be signed by the Approval Authority prior to the commencement of each Phase.
- 3.4.9. For capital works in the Hunter Valley, the PMP is to be endorsed by the Rail Capacity Group (RCG) at the end of Phase 3.

3.5 Define the project scope of work and work breakdown structure

- 3.5.1. The Project Manager shall define the scope of work and establish the work breakdown structure (WBS) to define a structure for the tasks required to deliver the Phase. This will be more detailed than the cost breakdown structure used in Finance 1,
- 3.5.2. The WBS is to be structured by discipline and include milestones for the completion of tasks, consider:
- Project management
 - Project approvals
 - Environmental Impact Assessment
 - Property acquisition
 - Civil / Structural works
 - Signalling works
 - Materials procurement
 - Manufacturing
 - Implementation / Construction
 - Commissioning and hand over
 - Warranty and defect management
 - Close out and Configuration Management
- 3.5.3. The WBS is to contain an appropriate level of detail to manage the project and also forms the basis of the financial project number structure (or Cost Breakdown Structure (CBS)) which should be developed to satisfy the following requirements:
- Major activities are budgeted, forecast and actual costs captured
 - Track costs by approved Phase
 - Individual assets can be identified to enable capitalisation of assets upon completion e.g. bridges, level crossings, track works etc.
 - Costs that may distinguish (or benchmark) the individual project are identified e.g. earthworks, level crossings, bridges etc.

- Allow sufficient detail in ARTC financial systems to meet the above requirements, but not to have an excessive number of small value activities which add administrative overhead for little perceivable benefit.

3.5.4. The WBS is to have a direct relationship to the project scope, program, budget and risk register.

3.6 Project interfaces and constraints

3.6.1. The Project Manager shall:

- Identify interfaces between discipline areas and stakeholders.
- List the key constraints identified from the project assessment and risk register.
- Document dependencies between discipline areas. This may be achieved through links between tasks in the project program.
- Consider the use of spatial tools such as GIS to show integrated project constraints.
- Where drawings are needed by more than one sub-contractor, the procedure set out in EGP-04-01 is to be followed.

3.7 Project Delivery Strategy

3.7.1. The Project Manager shall document the proposed project delivery strategy in the PMP. This is to address:

- Structure of work packages to be outsourced to third parties in each Phase of the project
- Delivery strategy for implementation ie. Construct from a design, Design and Construct, Early Contractor Involvement, Alliance etc
- Contracts to be used
- Rail Safety Accreditation requirements i.e. who holds appropriate accreditation for undertaking the works being carried out

3.8 Cost Management - Budgets and projected cash flows

3.8.1. The Project Manager shall establish the budget at the commencement of each Phase of the project. This should be based on the expenditure to date, the estimated costs to complete the current Phase plus the forecast budgets for the remaining Phases, as nominated in the most recent submission to the Approval Authority.

3.8.2. As part of the budget establishment, the Project Manager will liaise with the Management Accountant to ensure that the accounting and tax treatment envisaged is consistent with the project scope. To complete this requirement, the Management Accountant is to discuss the establishment of complex projects with the Corporate Accountant, especially where the purchase of land is a cost element.

3.8.3. The budget should be established at a level that allows efficient management of project costs. The cost breakdown structure should be closely aligned to the work breakdown structure (WBS) to ensure the relevance of the cost reporting when reviewing project performance and if applicable the creation of the fixed assets at successive commissionings or at project close.

- 3.8.4. The budget for each Phase should include a risk and opportunity provision (which may include a contingency) that should reflect the project risk profile. The project risk and opportunity provision (including any contingency) is to be approved by the Approval Authority.
- 3.8.5. Changes to the project budget are to be managed in accordance with the change management procedure described in the PMP.
- 3.8.6. The Project Manager shall monitor costs incurred against the agreed budget at regular intervals (minimum monthly). Where costs are identified as exceeding the planned budget, these instances must be reported to the Approval Authority for review. The Approval Authority may determine that a change should be initiated in accordance with the Change Management procedure and/or that the matter should be escalated to the required financial delegate.
- 3.8.7. The Project Manager shall provide monthly cash flows to the Divisional Management Accountant in accordance with the month end financial reporting deadlines.
- 3.8.8. At the end of each Phase (excluding Phase6), The Project Manager shall prepare an updated budget for the next Phase for submission for approval to the Approval Authority.

3.9 Program Management

- 3.9.1. The Project Manager shall schedule the projects activities using a recognised scheduling tool such as Microsoft Project or Primavera P6.
- 3.9.2. The project program is to be based on the work breakdown structure determined for the scope of work (refer to 3.4 above).
- 3.9.3. The program is to include all disciplines involved with the project.
- 3.9.4. Interfaces and dependencies between discipline areas are to be included in the project program.
- 3.9.5. Milestones are to be defined for key deliverables.
- 3.9.6. Track possession dates and Approval Authority meeting dates are review periods are to be shown on the program.
- 3.9.7. Allocate resources and / or a budget to tasks if earned value is to be tracked using the program.
- 3.9.8. Establish a program baseline prior to the commencement of each Phase. This will usually be established as part of the project approval for the Phase.
- 3.9.9. The Project Manager shall track the program on a regular basis (minimum monthly).
- 3.9.10. Changes to the delivery dates for each Phase are to be managed in accordance with the change management procedure described in the PMP.
- 3.9.11. Plan all activities related to project changes and assess the impacts on the project program when submitting the change request for approval.

3.10 Risk Management

- 3.10.1. Risks are to be assessed for each project Phase and for the overall project. The risk matrix (consequence and likelihood criteria) used to assess the risks for each Phase may be different from the risk matrix used to assess the project risks. The financial risk matrix used to assess the significance of risks for each Phase should reflect the value of that particular Phase. This will ensure that high risks are appropriately identified for each Phase of the project as well as for the project as a whole.
- 3.10.2. The Project Manager shall define project specific consequence and likelihood criteria for each project Phase with reference to Phase value, the project value and with reference to ARTC's Risk Management Procedure (RM01).
- 3.10.3. The Project Manager shall establish the project risk register in line with the project WBS to allow the risks to be tracked and managed against the associated work activity items. The risk register may be based on a Level 2 WBS (ie civil / structural, signalling, environmental, property etc). Where contingency sums are allocated against risks and drawn down through a change management process, the change in the project budget and corresponding change in the contingency should be able to be tracked through the WBS.
- 3.10.4. The Project Manager shall convene risk workshops and quantitatively evaluate risks and opportunities for the overall project and the next Phase of the project. The risk workshops are to be attended by key stakeholders from within ARTC including where applicable, Major Projects, Environmental, Operations, Maintenance, Property and Signalling. Update the project risk register with the outcomes from the risk workshop.
- 3.10.5. Where applicable (for example when assessing Phase 5 risks), anticipated costs and probabilities shall be assigned to risk and opportunity items to create a risk and opportunity provision (budget). The Project Manager may undertake a Monte-Carlo simulation on the overall project risk profile to derive a risk based contingency for the Phase. A determination will be made, in consultation with the relevant parties, to decide which party is best placed to manage each risk or opportunity and hence to hold the respective budget contingencies. It may be necessary to engage a third party risk manager to assist with this process.
- 3.10.6. During the early Phases, the risk management process should identify risks that could prevent the project from proceeding that are not within ARTC's control. Consider property acquisition, environmental legislation, heritage issues, technical constraints, utilities, related projects, future changes in systems or technologies, potential changes in project objectives and / or business case.
- 3.10.7. In addition to risks that may have a financial impact, operational risks must be considered that may impact on factors such as access and egress for maintainers, signalling communications, safety risks, possessions risks, commissioning risks, risks affecting particular project elements etc. These risks must be monitored and tracked on an ongoing basis alongside the risk and opportunity register used to derive budget contingencies. Where practical, all risks should be contained within the one risk register to facilitate tracking and close out at the end of the project.
- 3.10.8. The project risk register must be updated by the Project Manager at the end of each Phase, ensuring that risks that are no longer relevant are retired.

3.11 Change Management

- 3.11.1. Changes to the scope of work and / or program are to be managed in accordance with the Project Management Plan, may require review of previous environmental assessment.
- 3.11.2. The Project Manager shall notify the Approval Authority, Divisional Management Accountant and project planner (scheduler) of changes impacting on cost and / or program as soon as practicable after the change event occurring.
- 3.11.3. Where the change management procedure conflicts with the terms and conditions of particular contracts used to engage third parties, the provisions of those contracts take precedence over this procedure.

3.12 Safety Management

- 3.12.1. The Project Manager shall ensure that safety considerations are included in the Project Management Plan.
- 3.12.2. Safety responsibilities are to be defined and Workplace Health and Safety (WHS) are to be addressed.
- 3.12.3. The Project Manager shall verify that the relevant personnel working on the project have the required Rail Safe Worker competencies.

[Refer to HR08-003 Business Rules for Working in ARTC Rail Corridor](#)

- 3.12.4. The Project Manager shall determine and document that appropriate rail safety accreditation is held for undertaking the work that will be carried out. For works carried out by contractors, Safety Management System arrangements shall be agreed and documented. Consult with the Manager Rail Accreditation for assistance as required.
- 3.12.5. The Project Manager must determine if the change requires a variation to ARTC's accreditation, prepare the Application for Variation to Accreditation if required and ensure approval is granted before work commences. If the change does not require a variation to ARTC's accreditation, it may be a change that requires notification to the Rail Safety Regulator. The Project Manager must determine if the change requires notification, prepare a Notification of Change and submit within specified timeframe if required.

[Refer to Manage Accreditation – Variation and Change process](#)

3.13 Quality Management

- 3.13.1. The Approval Authority shall nominate the Project Assurance requirements and delegate responsibility for carrying out the assurance audits.
- 3.13.2. The Project Manager shall define the quality assurance requirements in the PMP and schedule the relevant quality reviews.
- 3.13.3. The quality assurance requirements include (if applicable); design reviews, configuration, internal / external quality, material supply, construction, commissioning, defects / omissions and handover documentation.
- 3.13.4. A Lessons Learnt Workshop is to be held at the end of each Phase. The results are to be recorded and included with the submission to the Approval Authority for endorsement of completion of that Phase. The outcomes from the Lessons Learnt Workshop are to be

reviewed by the Project Manager and Approval Authority and, where applicable, recommendations are to be made for system improvements. The reviewed Lessons Learnt will then be uploaded to the ARTC Lessons Learnt SharePoint Site.

- 3.13.5. All electronic and hard-copy reports and drawings are transmitted using a Data Transmittal Form.
- 3.13.6. Upload the As-Designed and As-Built drawings into the Drawing Management System (DMS).

[Refer to EGP-04-02 \(Drawing Management System \[DMS\]\)](#)

- 3.13.7. Independent (third party) verification is to be considered for critical elements of the project.

3.14 Environmental Management

- 3.14.1. The Project Manager shall consult with the relevant ARTC Environmental Officer to identify Environmental Impact Assessment (EIA), approvals, licence and permit requirements in accordance with ARTC's Environmental Management System (EMS) and applicable legislation.
- 3.14.2. Environmental Impact Assessments (EIA) must be completed and approved prior to physical works being undertaken on site.
- 3.14.3. In NSW and SA the Project Manager shall consult with the relevant ARTC Environmental Officer and determine the Environmental Protection Licence (EPL) requirements for the project.

3.15 Human Resources Management

- 3.15.1. The Project Manager shall produce an organisation chart showing all project participants and reporting structures, as part of the Project Roles and Responsibilities Report.
- 3.15.2. Define the key project roles and the responsibilities of each key team member, including sub-contractors and the required skills and rail safe worker competencies required.
- 3.15.3. The Project Manager shall ensure that adequate resources are available to deliver the project. Where resources identified in the organisation chart are not available, this is to be brought to the attention of the Approval Authority.

3.16 Communications Management

- 3.16.1. Project communications relate to both internal communications within the ARTC project team and external communications with stakeholders and the community.
- 3.16.2. The Project Manager shall set out a schedule of internal communications within the PMP, including
 - Meeting types and frequency
 - Communication formats
 - Project filing structure
 - Record keeping and document control
 - Identify risks to the project from failure in communications

- 3.16.3. The Project Manager shall list all stakeholders who may be affected by the project including: rail operators, authorities, utilities, environmental groups, land owners, nearby residents and businesses, politicians and associated government departments etc. Stakeholders are to be grouped into primary stakeholders who will have a direct influence on the scope or outcome of the project and secondary stakeholders who have an interest in the project, but do not have direct control on the outcomes.
- 3.16.4. A stakeholder management plan should be developed that is appropriate for the particular Phase of the project and complexity of stakeholder issues.
- 3.16.5. The Project Manager shall consult with the General Manager Media and Communications prior to any correspondence with the media.

3.17 Procurement Management

- 3.17.1. The Project Manager shall identify major services and materials to be procured and discuss with the Procurement and Contract team to utilise available inventory or to go to the market under contract or utilise an already open contract if suitable.
- [FPR-PR-024 Purchasing Materials Procedure describes the materials \(inventory\) purchasing process.](#)
- 3.17.2. The Approval Authority shall endorse the proposed method of procurement.
- 3.17.3. Where required, a Contract Manager is to be appointed to the Project Support Team (refer to Section 2.8.).
- 3.17.4. Procurement is to be in accordance with ARTC's Contract Management Procedure (FCO-PR-022). Consideration is to be given to:
- Number of tenderers and their ability to deliver
 - Current ARTC inventory (when procuring materials)
 - Accurate and comprehensive scope definition
 - Contract securities – bank guarantees
 - Warranties and responsibility for defects rectification
 - Insurance
 - Requirement for spare parts and user manuals
 - Alterations or additions to Schedule G: Environmental requirements
- 3.17.5. Contracts must be signed by a person with the appropriate level of delegated authority.

3.18 Configuration Management

- 3.18.1. The Project Manager shall undertake Configuration Management in accordance with [EGP-03-01 Rail Network Configuration Management](#)
[Guidance is also available in EGN-03-01 Configuration Management Manual](#)
- 3.18.2. A Network Alteration Notice (NAN) is to be raised in Phase 2 and an Engineering Job Number issued.
- 3.18.3. The NAN and Configuration Change List (CCL) are to be reviewed and updated in Phase 3 and communicated to the relevant stakeholders.

- 3.18.4. The NAN and CCL are to be updated in Phase 5 and the fixed asset register updated in accordance with the above configuration management procedure.
- 3.18.5. Rail Safety Regulators need to be notified of certain changes to railway operations. If required, the Project Manager shall prepare the Rail Safety Regulator AVA / Notification of Change documentation in accordance with the ARTC SMS 'Manage Accreditation – Variation and Change', for submission by GM Risk and Safety. This would normally be required in Phase 3 of a project.

3.19 Reporting

- 3.19.1. For each Phase, The Project Manager shall prepare a reporting schedule, including templates and frequency of updates, for:
- Project progress (inc design, implementation, property, community or environmental issues)
 - Program updates
 - Financial management and cost reporting
 - Risk management
 - Safety Management
 - Quality management
 - Configuration management
- 3.19.2. The Project Manager shall discuss the reports with the Approval Authority and ensure that material changes to scope, cost or program are presented to the Approval Authority.

3.20 Phase Approvals

3.20.1. At the end of each Phase, The Project Manager shall submit documents for approval to proceed to the next Phase, or providing evidence of completion of a Phase. The minimum requirements are noted in the table below. Additional reporting may be identified by the Project Manager and noted in the Project Management Plan.

Deliverables	Author	Purpose	Approver
Phase 1 – Concept Assessment			
Technical Reports	Designer	<ul style="list-style-type: none"> Document project issues Present Options Considered and Recommend Preferred Option(s) 	<ul style="list-style-type: none"> Approval Authority
Concept Assessment Report Refer to EGW2001T-08	Project Manager	<ul style="list-style-type: none"> Summary of Phase 1 outcomes inc. Preferred option (s), Delivery Strategy, Budgets, Program, Risks. 	<ul style="list-style-type: none"> Approval Authority
Preliminary Phase 2 Project Management Plan Refer to EGW2001T-01	Project Manager	<ul style="list-style-type: none"> Document delivery strategy for Phase 2. Document risks, budget, resource plan etc (ref Section 3 above) 	<ul style="list-style-type: none"> Approval Authority
Phase 2 Complex Project Checklist Refer to EGW2001T-03	Project Manager	<ul style="list-style-type: none"> Document to quality checklist to be complied with during Phase 2 	<ul style="list-style-type: none"> Approval Authority
Lessons Learnt Report Refer to EGP2001-T03	Project Manager	<ul style="list-style-type: none"> Document lessons learnt in Phase 1 	<ul style="list-style-type: none"> Approval Authority
Budget Investment Committee Submission Refer to FIN-PR-039	Project Manager	<ul style="list-style-type: none"> Presentation of Phase 1 outcomes and request for Phase 2 funding 	<ul style="list-style-type: none"> Approval Authority
ARTC Board Submission (where approval request > \$5M)	Project Manager	<ul style="list-style-type: none"> Presentation of Phase 1 outcomes and request for Phase 2 funding (where >\$5M) 	<ul style="list-style-type: none"> Approval Authority ARTC Board (Financial approval only)
Third Party Submissions (ie Rail Capacity Group for Hunter Valley works)	Project Manager	<ul style="list-style-type: none"> Presentation of Phase 1 outcomes and request for Phase 2 funding 	<ul style="list-style-type: none"> Approval Authority Third party approver (ie RCG)

Deliverables	Author	Purpose	Approver
Phase 2 – Project Feasibility			
Updated Phase 2 Project Management Plan Refer to EGW2001T-01	Project Manager	<ul style="list-style-type: none"> Document delivery strategy for Phase 2. Document risks, budget, resource plan etc (ref Section 3 above) 	<ul style="list-style-type: none"> Approval Authority
Technical Reports	Designer	<ul style="list-style-type: none"> Document project issues Evaluate feasibility of Preferred Option(s) and recommend preferred option 	<ul style="list-style-type: none"> Approval Authority
Project Feasibility Report Refer to EGW2001T-08	Project Manager	<ul style="list-style-type: none"> Summary of project outcomes inc. Preferred option, Delivery Strategy, Budgets, Program, Risks. 	<ul style="list-style-type: none"> Approval Authority
Preliminary Phase 3 Project Management Plan Refer to EGW2001T-01	Project Manager	<ul style="list-style-type: none"> Document delivery strategy for Phase 3. Document risks, budget, resource plan etc (ref Section 3 above) 	<ul style="list-style-type: none"> Approval Authority
Phase 3 Complex Project Checklist Refer to EGW2001T-04	Project Manager	<ul style="list-style-type: none"> Document to quality checklist to be complied with during Phase 2 	<ul style="list-style-type: none"> Approval Authority
Lessons Learnt Report Refer to EGP2001-T03	Project Manager	<ul style="list-style-type: none"> Document lessons learnt in Phase 2 	<ul style="list-style-type: none"> Approval Authority
Budget Investment Committee Submission Refer to FIN-PR-039	Project Manager	<ul style="list-style-type: none"> Presentation of Phase 2 outcomes and request for Phase 3 funding 	<ul style="list-style-type: none"> Approval Authority
ARTC Board Submission (where approval request > \$5M)	Project Manager	<ul style="list-style-type: none"> Presentation of Phase 2 outcomes and request for Phase 3 funding 	<ul style="list-style-type: none"> Approval Authority ARTC Board (Financial approval only)
Third Party Submissions (ie Rail Capacity Group for Hunter Valley works)	Project Manager	<ul style="list-style-type: none"> Presentation of Phase 1 outcomes and request for Phase 2 funding 	<ul style="list-style-type: none"> Approval Authority Third party approver (ie RCG)
Phase 3 – Project Assessment			
Updated Phase 3 Project Management Plan Refer to EGW2001T-01	Project Manager	<ul style="list-style-type: none"> Document delivery strategy for Phase 3. Document risks, budget, resource plan etc (ref Section 3 above) 	<ul style="list-style-type: none"> Approval Authority

Deliverables	Author	Purpose	Approver
Technical Reports	Designer	<ul style="list-style-type: none"> Document project issues Detailed design report noting design criteria, project scope and basis of design decisions 	<ul style="list-style-type: none"> Approval Authority
Project Assessment Report Refer to EGW2001T-08	Project Manager	<ul style="list-style-type: none"> Summary of project outcomes inc. detailed design, scope of work, Delivery Strategy, Budgets, Program, and Risks. 	<ul style="list-style-type: none"> Approval Authority
Preliminary Phase5 Project Management Plan Refer to EGW2001T-01	Project Manager	<ul style="list-style-type: none"> Document delivery strategy for Phase 3. Document risks, budget, resource plan etc (ref Section 5 above) 	<ul style="list-style-type: none"> Approval Authority
Lessons Learnt Report Refer to EGP2001-T03	Project Manager	<ul style="list-style-type: none"> Document lessons learnt in Phase 3 	<ul style="list-style-type: none"> Approval Authority
Budget Investment Committee Submission Refer to FIN-PR-039	Project Manager	<ul style="list-style-type: none"> Presentation of Phase 3 outcomes and request for Phase 5 funding 	<ul style="list-style-type: none"> Approval Authority
ARTC Board Submission (where approval request > \$5M)	Project Manager	<ul style="list-style-type: none"> Presentation of Phase 3 outcomes and request for Phase 5 funding 	<ul style="list-style-type: none"> ARTC Board (Financial approval only)
Third Party Submissions (ie Rail Capacity Group for Hunter Valley works)	Project Manager	<ul style="list-style-type: none"> Presentation of Phase 1 outcomes and request for Phase 2 funding 	<ul style="list-style-type: none"> Approval Authority Third party approver (ie RCG)
Phase 4 – Project Approval (maybe combined with Phase 3, at the discretion of the Approval Authority)			
Project Assessment Report Refer to EGW2001T-08	Project Manager	<ul style="list-style-type: none"> Summary of project outcomes inc. detailed design and scope of work, Delivery Strategy, Budgets, Program, Risks. 	<ul style="list-style-type: none"> Approval Authority
Budget Investment Committee Submission Refer to FIN-PR-039	Project Manager	<ul style="list-style-type: none"> Presentation of Phase 3 outcomes and request for Phase 3 funding 	<ul style="list-style-type: none"> Approval Authority
ARTC Board Submission (where approval request > \$5M)	Project Manager	<ul style="list-style-type: none"> Presentation of Phase 3 outcomes and request for Phase 5 funding 	<ul style="list-style-type: none"> ARTC Board (Financial approval only)
Third Party Submissions (ie Rail Capacity Group for Hunter Valley works)	Project Manager	<ul style="list-style-type: none"> Presentation of Phase 1 outcomes and request for Phase 2 funding 	<ul style="list-style-type: none"> Approval Authority Third party approver (ie RCG)

Deliverables	Author	Purpose	Approver
Regulator Approvals and Notifications	Project Manager	<ul style="list-style-type: none"> Prepare submissions for regulator approval or notification as required 	<ul style="list-style-type: none"> Regulator
Phase 5 – Project Implementation			
Updated Phase 5 Project Management Plan Refer to EGW2001T-01	Project Manager	<ul style="list-style-type: none"> Document delivery strategy for Phase 5. Document risks, budget, resource plan etc (ref Section 3 above) 	<ul style="list-style-type: none"> Approval Authority
Construction Environmental Management Plan	Project Manager	<ul style="list-style-type: none"> Document Environmental management measures for onsite implementation 	<ul style="list-style-type: none"> Approval Authority
End Stage Report Refer to EGW2001T-16	Project Manager	<ul style="list-style-type: none"> Confirmation that project objectives have been met Summary of performance against budget, program and quality. Summary of residual defects and omissions to be resolved in Phase 6. 	<ul style="list-style-type: none"> Approval Authority
As-built drawings (uploaded to DMS) Refer to EGP-04-02	Project Manager	<ul style="list-style-type: none"> Maintain ARTC Asset Register with current infrastructure drawings. 	<ul style="list-style-type: none"> Approval Authority
Configuration Change completed Refer to EGP-03-01	Project Manager	<ul style="list-style-type: none"> Completion of configuration change and notification to relevant parties of change in asset. 	<ul style="list-style-type: none"> Approval Authority
Practical Completion Certificate	Project Manager or Contract Manager (as nominated under the Contract)	<ul style="list-style-type: none"> Evidence of Practical Completion of the works 	<ul style="list-style-type: none"> Approval Authority
Lessons Learnt Report Refer to EGP2001-T03	Project Manager	<ul style="list-style-type: none"> Document lessons learnt in Phase 5 	<ul style="list-style-type: none"> Approval Authority
Phase 6 – Project Close Out			
Phase 6 Project Management Plan Refer to EGW2001T-01	Project Manager	<ul style="list-style-type: none"> Document delivery strategy for Phase 6. Document risks, budget, resource plan etc (ref Section 3 above) 	<ul style="list-style-type: none"> Approval Authority

Deliverables	Author	Purpose	Approver
Project Close Out Report Refer to EGP2001-T02	Project Manager	<ul style="list-style-type: none"> Provide Close Out Report on project. 	<ul style="list-style-type: none"> Approval Authority
Environmental Close Out Report	Project Manager	<ul style="list-style-type: none"> Demonstrate how conditions of approval have been met. Summarise outstanding environmental matters and allocate responsibility to an appropriate party. 	<ul style="list-style-type: none"> Approval Authority
Risk register closed out and residual risks transferred to Corporate Risk Register with any mitigation requirements	Project Manager	<ul style="list-style-type: none"> Residual risks tracked on corporate register together with any ongoing obligations of ARTC to mitigate these risks. 	<ul style="list-style-type: none"> Approval Authority ARTC Risk Manager
Lessons Learnt Report Refer to EGP2001-T03	Project Manager	<ul style="list-style-type: none"> Document lessons learnt in Phase 6 	<ul style="list-style-type: none"> Approval Authority
Capital Works Close Out Form Refer to FCA-FM-101 Capital Works Financial Close Out Form	Project Manager	<ul style="list-style-type: none"> Capitalisation of the Asset onto the ARTC Assets Register (Financial & Taxation) 	<ul style="list-style-type: none"> Approval Authority
Asset Disposal Notification Form (if required) Refer to FPR-FM-057	Project Manager	<ul style="list-style-type: none"> Correct disposal of assets, if required, on completion of the project. 	<ul style="list-style-type: none"> Approval Authority
Project Closure Notice	Project Manager	<ul style="list-style-type: none"> Formal completion of the project. Closure of financial cost codes, Archiving of registers, files and folders. 	<ul style="list-style-type: none"> Approval Authority
General			
Steering Committee Papers	Project Manager	<ul style="list-style-type: none"> Submissions to Steering Committee for decisions on technical issues as the project progresses. Number and timing of submissions will depend on the issues encountered during the course of the project. 	<ul style="list-style-type: none"> Steering Committee

4 Phase 1 - Concept Assessment

This phase involves a short review of whether a potential project would enable ARTC to better meet its strategic objectives as set out in the Corporate Plan, and would include documenting the business benefits, technical and regulatory issues, estimated costs and time to implement. Potential risks to the project should also be documented. The Approval Authority will consider the Concept Assessment and decide whether to proceed to the Project Feasibility Phase.

4.1 Approval to Proceed

4.1.1. Before starting Phase 1, a pre-concept assessment must have been completed and have been endorsed by the Approval Authority. The pre-concept assessment may be considered to be the AMP approved as part of the Annual Budget process or the current approved Corridor capacity strategy. For projects not included in these works programs, funding has to be approved to advance into Phase 1.

[Refer to FIN-PR-039 BIC Submission Procedure](#)

4.1.2. The proposal is to include

- Objectives
- Benefits
- Preliminary business case
- Evidence of consultation with key ARTC stakeholders ie Minutes of meetings, records of discussion, copies of e-mails etc.
- Description of the proposed work, required budget and order of magnitude project cost.

4.1.3. The Approval Authority shall provide written approval to commence work.

4.2 Purpose

4.2.1. The Concept Assessment consists of a preliminary review of the need or benefits of the proposal, cost and technical feasibility, and a cost / benefit to determine if the project should proceed to the next Phase. Assessment of demand factors may include documentation of consultation with relevant managers or if approved with customers, benefit analysis in terms of meeting key performance criteria and corporate goals and/or a preliminary economic analysis.

4.2.2. Supply factors may include assessment of technical feasibility, resource requirements, risk identification, preliminary financial analysis and estimate of cost.

4.2.3. In most cases, property and environmental matters are to be considered at this stage.

4.3 Phase 1 Scope

4.3.1. The Project Manager shall prepare a PMP in accordance with Section 4 of this Work Instruction.

The scope of the Concept Assessment is project specific.

It should consider and address:

- The project objectives,
 - The project benefits,
 - Options available to meet the objectives
 - Technical feasibility of the options
 - Confirmation of operational requirements and completion of operational modelling
 - Preliminary property strategy including opportunities and risks, owner profiling, land use profiling, budget estimates for acquisition, potential site access and compounds and easement relocations.
 - Preliminary environmental investigations, desk top identification of environmentally designated areas, site inspection (where required), assessment of potential impacts (eg: noise impact) and outline approvals strategy.
 - Risk Assessment; resulting in the preparation of a Risk Management Plan. Identification of “critical issues” that could prevent the project proceeding.
 - Preliminary identification and assessment of interface issues, including consideration of other interfacing systems; other interfacing projects; and what this project is likely to impact.
 - Preliminary consideration of rail safety accreditation requirements and whether approval from the Rail Safety Regulator will be required prior to work commencing.
 - A budget estimate for Phase 2
 - A Guide Cost Estimate for the complete project.
 - A business case for the project to proceed.
- 4.3.2. The Phase 1 scope of work is to be approved by the Steering Committee prior to commencement of the Phase 1 activities.
- 4.3.3. The steering committee may need to be consulted from time to time during the Concept Assessment to provide guidance on the options being considered.

4.4 Hold Point 1

4.4.1. The Approval Authority shall sign off the Concept Assessment Report prior to proceeding with Phase 2. At this stage, no further expenditure is to be incurred without the approval from the Approval Authority.

5 Phase 2 – Project Feasibility

This phase involves a more detailed documentation of the proposed project scope, including technical and operational specifications. Options for implementation should be analysed to best deliver the business objectives, using financial criteria and risk assessment. The preliminary Project Management Plan (PMP) prepared in Phase 1 should be updated. The Approval Authority will consider the Project Feasibility Report and decide whether to proceed to the Project Assessment Phase.

5.1 Approval to Proceed

- 5.1.1. The Approval Authority shall have signed off the Concept Assessment Report before starting Phase 2.
- 5.1.2. The critical path for infrastructure projects is often defined by the planning and environmental approvals and property acquisition. Depending on the required timing of the project, the Approval Authority may consider commencing these activities in Phase 2 and continuing them into Phase 3. Phase 2 funding requests should consider the duration of these activities across Phases 2 and 3.
- 5.1.3. Where the Concept Assessment report has demonstrated a robust business case and there are no high risks identified within the project risk register, the Approval Authority may consider combining Phases 2 and 3 to engage one party for the Project Feasibility and Project Assessment. A decision to combine phases shall be documented, with clarity provided regarding what reports are required. A hold point must still be retained at the end of Phase 2.

5.2 Purpose

- 5.2.1. The purpose of Phase 2 is to develop the recommended option(s) from the Concept Assessment Report and to assess the project feasibility.
- 5.2.2. The feasibility assessment is to determine the:
 - Technical feasibility of the project
 - The key project constraints
 - The key project risks and suitable mitigating measures
 - The feasibility design
 - The project budget
 - The business case to proceed
 - The preferred option to continue to Phase 3.

5.3 Phase 2 Scope

- 5.3.1. The Project Manager shall update the PMP in accordance with Section 3 of this Work Instruction.
- 5.3.2. The scope of the feasibility assessment is project specific.
- 5.3.3. It should consider and address:
 - Project definition and identification of constraints

- Project definition – Brief statement summarising why the project is required, the benefits it will achieve and what works are required to implement the project. This statement should be suitable for use in documentation used for the environmental approvals and other consultation documents. One clear project definition statement should be developed for use across all project documentation.
- Objectives
- Benefits and KPIs to assess how these will be measured
- Constraints
- Scope of work, defined through a work breakdown structure (WBS)
- Risk Assessment
- Confirmation that the project is still compliant with the approved business case.
- Phase 2 Project Planning
 - Updated Project Management Plan (refer to Section 3 above)
 - Project organisation chart noting interface dependencies between technical disciplines
 - Stakeholder consultation plan (e.g rail operators, community, authorities, utilities, politicians etc)
- Investigations
 - Investigations and consultation required to further define or mitigate risks
 - Investigations to provide source data for detailed designs including where applicable topographical survey, geotechnical investigations, contamination assessment etc.
- Feasibility Designs
 - Technical designs
 - Track and civil feasibility design
 - Signalling feasibility design
 - Deviations from ARTC Standards requiring waivers, type approvals etc. (it must be considered that waivers or Type Approvals may not be granted, and no assumption of approval can be made until waivers or Type Approvals are approved by the relevant ARTC authority.)
- Environmental Investigations and approvals, where program dictates that work should commence in Phase 2.
 - EIA to identify potential environmental impacts and required statutory approvals (e.g. In NSW Environmental Impact Statement for State Significant Projects greater than \$50M or Review of Environmental Factors for projects less than \$50M and without significant environmental impacts).
 - Consideration of referral to the Commonwealth Department under the EPBC Act for impacts on matters of national environmental significance.

- Identify site specific approvals, permits and licenses: water extraction licenses, heritage or indigenous heritage, clearing native vegetation, etc.
- Consider site environmental management measures with long lead times eg: drainage/soil erosion structures and associated community consultation.
- Property acquisition
 - Identification of property issues: property boundaries, acquisitions, lease agreements, third party requirements, rights of carriageway, easements etc.
 - Production of preliminary property acquisition plan
 - Production of preliminary lease plans
 - Production of preliminary plans showing easement adjustments
 - Negotiations relating to compulsory acquisition where required by the program
 - Identification of land that cannot be compulsory acquired: commonwealth land, national parks, land held by Aboriginal Land Councils etc
 - Identification of Level crossing closures
 - Identification of potential contamination of property to be acquired.
- Phase 3 Project Planning
 - Method of procurement and form of contract to be used for Phase 3. Procurement to be in accordance with ARTC Contract Management Procedures
 - Development of preliminary Phase 3 Project Management Plan
- Phase 3 Submission for Approval
 - Steering Committee papers during the course of the project to provide updates to the Steering Committee and, where required, to see direction on project matters.
 - Project Feasibility Report
[Refer to EGW2001T-09](#)
 - Risk assessment
 - Detailed cost estimate including contingency. Where applicable, a risk based contingency calculation (Monte Carlo simulation) for Phase 3 should be considered.

5.4 Hold Point 2

- 5.4.1. The Approval Authority shall sign off the Feasibility Assessment Report prior to proceeding with Phase 3. At this stage, no further expenditure is to be incurred without the approval from the Approval Authority.

6 Phase 3 - Project Assessment

This phase prepares the project documentation for stakeholder concurrence and formal project approval. Detailed design shall be undertaken in this phase to lower the overall project risk, and the Approval Authority may authorise obtaining permits, contract preparation, tendering, tender evaluation and purchase of certain long lead items if necessary. The PMP is completed in this phase, including a detailed risk assessment. Regulator notification may be required in this phase.

6.1 Approval to proceed

- 6.1.1. The Approval Authority shall have signed off the Project Feasibility Report before starting Phase 3.
- 6.1.2. In some cases it may be necessary or advisable to notify Regulators at an early stage of the project development. The Project Manager, in consultation with the Manager Accreditation, shall assess this and provide a recommendation to the Approval Authority. Planning, Rail Safety and Environmental Regulatory issues need to be considered.

6.2 Purpose

- 6.2.1. The purpose of Phase 3 is to develop the recommended option from the Feasibility Assessment to a detailed design can be implemented and, where possible, to obtain all statutory approvals licenses and permits required for the project to proceed.

6.3 Phase 3 Scope

- 6.3.1. The Project Manager shall update the Project Management Plan in accordance with Section 3 of this Work Instruction.
- 6.3.2. The scope of the Project Assessment is project specific.

It should consider and address:

- Project definition and identification of constraints
 - Project definition – Brief statement summarising why the project is required, the benefits it will achieve and what works are required to implement the project. This statement should be suitable for use in documentation used for the environmental approvals and other consultation documents. One clear project definition statement should be developed for use across all project documentation.
 - Objectives
 - Benefits and KPIs to assess how these will be measured
 - Constraints
 - Scope of work, defined through a work breakdown structure (WBS)
 - Risk Assessment
 - Confirmation that the project is still compliant with the approved business case.
- Phase 3 Project Planning
 - Updated Project Management Plan (refer to Section 3 above)

- Project organisation chart noting interface dependencies between technical disciplines
- Stakeholder consultation plan (e.g rail operators, community, authorities, utilities, politicians etc)
- Investigations
 - Investigations and consultation required to further define or mitigate risks
 - Investigations to provide source data for detailed designs including topographical survey, cadastral survey, geotechnical investigations, contamination assessment, pot holing to confirm location of utilities etc.
- Technical Designs
 - Technical designs
 - Track and civil detailed design
 - Signalling detailed design
 - Engineering specifications – reference ARTC standards and/or others where applicable.
 - Deviations from ARTC Standards requiring waivers, type approvals etc. (it must be considered that waivers or Type Approvals may not be granted, and no assumption of approval can be made until waivers or Type Approvals are approved by the relevant ARTC authority.)
- Environmental Investigations and approvals
 - Approval of EIA. Submit referral to the relevant Commonwealth Department under the Environmental Protection and Biodiversity (EPBC) Act for impact on matters of national environmental significance if required.
 - Investigation and management of Aboriginal heritage.
 - Obtain site specific approvals, permits and licenses: water extraction licenses, heritage or indigenous heritage, clearing native vegetation, etc.
 - In NSW and SA consider the requirement for EPL for the project or whether works will be under ARTC's EPL (where applicable).
 - Consultation strategy for communication with authorities, utilities, land owners and the community particularly in relation to noise, vibration, traffic and dust.
- Procurement of early Phase 5 works and materials during Phase 3, where these are required to meet the program. Note that these items are often undertaken at risk with the consent of the Approval Authority.
 - Enabling works: utility diversions, site decontamination, provision of site access etc,
 - Procurement of long lead time items ie. signalling equipment, rail, sleepers, turnouts etc
 - Preparation of design requirements for tender documents.
 - N.B No onsite works should be undertaken until the EIA approval has been obtained

- Property Issues
 - Identification of property issues: property boundaries, acquisitions, lease agreements, third party requirements, rights of carriageway, easements, noise and vibration impacts on adjoining owners etc.
 - Production of property acquisition plans
 - Production of lease plans
 - Production of plans showing easement adjustments
 - Third party agreements for investigations including survey, geotechnical, contamination, aboriginal heritage, flora and fauna etc.
 - Negotiations relating to compulsory acquisition and, where required, issue of Property Acquisition Notices (PANs),
 - Identification of land that cannot be compulsory acquired: commonwealth land, national parks, land held by Aboriginal Land Councils etc
 - Instigate level crossing closure process.
- Phase 5 Project Planning
 - Method of procurement and form of contracts to be used. Procurement to be in accordance with ARTC Contract Management Procedures.
 - Identification of the required project organisational structure.
 - Identification of long lead time (rail, sleepers, turnouts signalling equipment etc) items and placement of orders in Phase 3, if required to meet the project program.
 - Consideration of operational requirements: possessions planning, commissioning activities, amendments to RAS, training, documentation, etc,
 - Development of preliminary Phase 5 Project Management Plan.
 - WHS Compliance & Safety Management – Address safety requirements using the following documents as a guide where applicable:
 - ❖ [Safe Design of Structures Code of Practice](#)
 - ❖ [Construction Work Code of Practice](#)
 - ❖ [Managing the Work Environment and Facilities Code of Practice](#)

Project Managers are responsible to ensure that Safe Design of Structures and Construction Work requirements are added to the Scope of Work of applicable contracts. Where design of structures or construction work is carried out by ARTC staff, the Project Manager is responsible for ensuring that safety requirements are implemented.

In planning for the site works, reference should be made to Managing the Work Environment and Facilities Code of Practice:http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/626/Managing_the_Work_Environment_and_Facilities.pdf

For further guidance on compliance with WHS Legislation and Regulations, contact the ARTC Corporate Work Health & Safety Manager.

- Review of preliminary Construction Environmental Management Plan (CEMP), if beneficial to meet program.
- Identification of handover requirements including: spares, training, manuals, modifications to other areas ie upgrade of facilities in train control centre.
- Consider rail safety accreditation requirements and approvals, safety management system (SMS) arrangements and notification of change requirements.
- Configuration Change
 - Prepare the NAN and list the project outputs on the Configuration Change List (CCL)
[Refer to EGP-03-01](#)
- Phase 5 Submission for Approval
 - Steering Committee papers during the course of the project to provide updates to the Steering Committee and, where required, to see direction on project matters.
 - Project Assessment Report
[Risk assessment](#)
 - Detailed cost estimate including risk based contingency calculation (Monte Carlo simulation)

6.4 Hold Point 3

- 6.4.1. The Approval Authority shall sign off the Project Assessment Report prior to proceeding with Phase 4. At this stage, no further expenditure is to be incurred without the approval from the Approval Authority.

7 Phase 4 – Project Approval

This phase provides consideration of the Project Assessment Report, and the decision as to under what constraints the project may proceed. The Approval Authority agrees project governance and reporting requirements.

7.1 Purpose

- 7.1.1. Phase 4 obtains the formal approval from the Approval Authority or the ARTC Board for implementation of the Project.
- 7.1.2. The purpose of this Phase is to confirm that all previous requirements of the Steering Committee and the Approval Authority have been addressed and that the business case for the project has not been adversely affected by changes in scope.

7.2 Prepare Submission for the Approving Authority

- 7.2.1. The Project Manager shall prepare a submission for the Approval Authority. Central to this submission is the Project Management Plan for Phase 5, supported by the Phase 3 Project Assessment Report.
- 7.2.2. Note that for projects costing over \$5M, or for strategic importance a Board submission is required.

7.3 Board Review of Submission

- 7.3.1. The Board will authorise to proceed to project implementation, OR cancel, OR reprioritise.
[Refer: FCA-PR-043 Delegation Policy, Principles and Guidelines](#)

7.4 Regulator approvals and notifications

- 7.4.1. Regulators need to be notified of certain changes to railway operations. The Project Manager shall ensure appropriate approvals are gained or notifications are submitted. These may include:
 - Rail Safety – If a proposed change is outside the scope and nature of railway operations and conditions specified in ARTC's Notice of Accreditation, ARTC is required to apply to the rail safety regulator for a variation of accreditation. The regulator must approve the variation before the proposed change can commence.

If the change is within the scope and nature of ARTC's accreditation, ARTC may still need to submit a notification of change. It is a prescribed condition of accreditation that certain decisions, events or changes are notified to the regulator within specified timeframes. These changes do not require approval from the regulator however the change cannot commence until the specified notification period has passed. The regulator can request more information within the notification period and they can advise that a change should not proceed.

Refer to the ARTC SMS process 'Manage Accreditation – Variation and Change' for further guidance.

7.5 Hold Point 4

- 7.5.1. If not already obtained in Phase 3, obtain environmental and planning approvals including relevant licences and permits
- 7.5.2. At this stage in the project no further expenditure may be incurred without the written approval of the relevant Executive General Manager, the CEO or the Board.

8 Phase 5 - Project Implementation

8.1 Purpose

This phase involves procurement, project initiation and project delivery. Depending on the scope of the project, a staged approach to project delivery may be necessary.

This Phase could involve construction works, signalling works, implementation of IT software, changes to ARTC strategic or cultural systems or property acquisition or divestment.

8.2 General

- 8.2.1. The project team will generally change from a design team to a project implementation team. The Project Manager shall communicate the project history, risks and issues to any new team members. The Project Management Plan will be the key communications tool.
- 8.2.2. The majority of project expenditure will occur in Phase 5. The project management systems for this Phase will therefore reflect the increased level of project complexity. These may include proprietary contract management software to control contract documentation and implementation costs.

8.3 Project Management Plan

- 8.3.1. The preliminary Phase 5 Project Management Plan, developed during Phase 3, is to be updated to reflect the increased complexity of Phase 5 works.
- 8.3.2. During this Phase, the party responsible for implementation of the works is to produce project specific sub-plans to control the works. These are to be cross-referenced by the Project Management Plan. Sub-plans may include:
 - Project delivery plan – addressing implementation / construction of the works
 - Project communications plan – addressing internal and external communications
 - Project health, safety, environment and quality plan – addressing particular controls for managing the safety and quality of the works.
 - Project risk management plan – addressing the particular risks for project implementation
 - Cost management plan – addressing cost control and reporting requirements for implementation
 - Industrial relations plan – where required, for construction related projects
 - Testing and Commissioning plan – in particular for signalling works or IT projects
 - Environmental management plan

8.4 Resourcing Requirements

8.4.1. The Project Manager shall consider resourcing requirements for the implementation stage. In particular with respect to:

- Contract administration and financial control
- Document control
- Site surveillance and quality assurance

8.5 Safety, Quality and Environment

8.5.1. For construction works, The Project Manager shall ensure that the responsibilities for Safety, Quality and Environment are clearly defined with respect to:

- Establishment of parties holding rail safety accreditation for the works being undertaken.
- Principal Contractor for works in the Rail Corridor and those areas outside required for implementation.
- Compliance with the ARTC Environmental Management System (EMS), relevant EIA, licences, permits and approvals
- Third party interfaces with authorities, utilities, land owners and the community.
- Notifications to the rail regulator and management of variations to ARTC's rail accreditation, if required
- Compliance with the ARTC Configuration Management requirements per EGP-03-01.
- Environmental complaints and incident management.

8.6 Procurement

8.6.1. Procurement in Phase 5 must be in accordance with ARTC's Contract Management Procedure.

8.6.2. The Project Manager shall ensure that the items procured are in accordance with the approved design. Deviations from the approved design must be approved by the Approval Authority.

8.6.3. Ensure alterations or additions to Schedule G Environmental requirements are included.

8.7 Construction projects – start on site requirements

8.7.1. For construction related projects, The Project Manager shall ensure that the following items have been completed, or are being appropriately managed, prior to starting works on site:

- A signed contract is in place or appropriate arrangements have been made per FCO-PR-022,
- Compliance with statutory requirements,
- Establishment of legal property access,
- Engagement of consultant(s) / contractor(s), if required. (signed contracts in place).
- Establishment of project controls (in particular cost, time, quality, document control)

- Receipt of contract securities, certificates of currency for insurance etc. (as required by the form of contract),
- Receipt of Construction EMP. Any approvals, permits or licences.

8.8 Scope

8.8.1. The Phase 5 scope includes:

- Pre-Implementation
 - Phase 5 Contracts – scope, terms and conditions, bank guarantees, warranties and defect handling, documentation, spares, insurance etc,
 - Finalise outstanding statutory approvals, licences, permits etc.
 - Finalise outstanding property purchases, leases, rights or access etc
 - Required waivers to ARTC Standards approved
 - Any required Type Approvals granted
 - Arrange delivery of ARTC supplied materials, ie rail, sleepers, turnouts etc
 - Review and approve Construction Environmental Management Plan (CEMP)
 - Compliance with Workplace Health & Safety (WHS) requirements
 - Construction management plans including: Project delivery plan; Construction method statements; construction program; financial plan; communications plan; traffic management plans; health, safety, environment and quality plan; risk management plan; industrial relations plan; testing and commissioning plan etc
- Implementation
 - Dilapidation report of existing assets and surrounding site area
 - Enabling works including relocation of utilities and services affected by the works, protection of environmentally sensitive sites etc.
 - Implementation of the project
 - Temporary speed restriction management, where required
 - Monitoring progress including site surveillance and/or independent verification
 - Regular progress reporting on program, cost, quality and other issues by exception.
[Refer to EGW2001T-17.](#)
 - Quality control
 - Community consultation and notification to residents
- Commissioning and Handover
 - Inspection and Test Plans completed: Signalling ESC-21-01, 02, 03, 04, Track and Civil EGP-20-02. EGP-20-02 Inspection and Test Plans procedure can also be used for ITP guidance for other disciplines,
 - Commissioning Plan
 - Operational risk assessment with rail operators prior to commissioning

- Check signal sighting
- Update of permanent speed boards
- Notification to the rail regulator minimum of 28 days prior to network configuration change
- Demonstrate to users, operators and maintainers that the project outputs are ready for their use.
- [Refer to EGW2001T-18 Certificate of Practical Completion & Handover.](#)
- Place evidence of user acceptance into project records (e.g. SAFE Notice, Train Notice, Infrastructure Booking Authority (IBA), commissioning certificate. Refer to Network Rules).
- Conduct a Practical Completion walkthrough with the relevant ARTC Stakeholders, including maintenance staff.
- Place the maintainer signed Handover Certificate into project records.
- Defects and omissions inspections and management of defects correction.
- Conduct agreed training of users and maintainers.
- Deliver As-Built Drawings, upload them into the Drawing Management System (DMS) and provide the required number of field copies.
- Deliver design reports, user manuals, field documents and spares in agreed quantities & locations.
- Configuration change in accordance with EGP-03-01. Updated NAN with the final Configuration Change List (CCL).
- Route Access Condition (RAC) Notice raised where an update to the Route Access Standard (RAS) Manual is required.
- Complete environmental site inspection and desktop review with contractor to ensure conditions of approval and statutory approvals were met.
- Obtain environmental records for project from contractor and forward to Environmental Officer. The use of EGP2001T-05 Project Close out and Handover Checklist Environmental is recommended.
- Submit FCA-FM-101 Capital Works Close-Out Form after each stage of commissioning.

9 Phase 6 - Close Out

This Phase ensures that all aspects of the project have been completed, and that all related contracts are finalised in accordance with their terms and conditions. Lessons learnt are documented to the satisfaction of the Approval Authority. Any residual risks and controls are transferred from the project risk register to the ARTC Corporate Risk Register. After a period of use of the project outputs, the business benefits are assessed to determine the extent of deviation from the originally envisaged benefits.

9.1 Purpose

- 9.1.1. To close out the project including the financial and physical status of any new or altered infrastructure or changes to procedures or systems. Completion of configuration change in accordance with procedure EGP-03-01. Formally confirm the change of responsibilities.
- 9.1.2. Project Close-Out activities will commonly be carried out in parallel with the later activities in Phase 5 Implementation. For example, rectification of defects, completion of works as executed drawings and handover documentation. These tasks would be completed in parallel with project evaluation, lessons learnt etc.
- 9.1.3. Closing a Project has to be tailored to suit the needs of a particular project. For example, if the project is part of a program or a series of projects, this may affect how some of the fundamental principles, such as unfinished work, or project documentation are handled. The project may be closely connected with a subsequent project and may have been planned ahead that way. All the results of the first project feed into the subsequent one. If the project has delivered an intangible product, for example to bring about a change in philosophy, then the objective of ensuring operation and support arrangements are in place may not be appropriate.
- 9.1.4. Frequently infrastructure works are delivered in stages, with each stage being commissioned and accepted into network and the inspection prior to completion of the program of works. The staged works may be contracted to have their own securities and appropriate documentation. The documentation under this section may be modified to provide an overarching document for close out of the program of works with the "formal acceptance" of operators and asset managers at each stage being evidenced by "Certificates of Acceptance". Lessons learnt should be reviewed at the end of each stage and improvements carried forward directly to the next stage. The Close Out Report should be fully completed at the end of the program of works.

9.2 Scope of Work

- 9.2.1. The Project Manager shall ensure that the drawings, operation and maintenance manuals, warranties etc have been handed over to the relevant business units and that where required staff have been trained in the use of the new product or system.
- 9.2.2. The Project Manager shall prepare the Project Close Out Report covering:
 - Project closure notifications
 - Project evaluation
 - Project Changes

- Approved Changes
- Risk Management
- Environmental compliance
- Financial performance
- Asset capitalisation and disposals
- Post Project Review
- Lessons Learnt
- Project Documentation
[Refer to EGP2001-T02. This report template provides further details of the tasks required.](#)

The Steering Committee (where used) is to review and approve the Project Close Out Report and recommend it for acceptance by the Approval Authority.

The Approval Authority shall accept the report, if it is considered satisfactory.

Following acceptance of the Project Close Out Report by the Approval Authority, the Project Manager shall issue the Project Closure Notice.

- 9.2.3. The Project Manager shall ensure that configuration change is completed in accordance with EGP-03-01 including:
- Update the Asset Equipment Register
 - Update infrastructure As Built documentation
 - Any other asset management information including certificates, O&M Manuals, OEM Manuals, spares parts lists, etc.
- 9.2.4. The Project Manager shall organise a lessons learned workshop and produce a lessons learned report in accordance with EGP2001-T03. This report template provides further guidance on the items to be covered in the lessons learned workshop. The Project Manager shall prepare a Cost Report detailing final costs versus budget, with explanation of any variance. For capital projects, the cost report is to include a completed Capital Works Financial Closeout Form to allow the project to be capitalised to ARTC's fixed asset register.
[Refer: EGP2001-T03 Lessons Learnt](#)
[Refer: FIN-PR-039 BIC Submission](#)
[Refer: FCA-FM-101 Capital Works Financial Closeout Form](#)
- 9.2.5. In consultation with the Manager Risk Compliance transfer residual risks to the Corporate Risk Register when the project can no longer affect them.
If any risks remain post project, and have special individual mitigation controls, then these controls must also be transferred as a part of the initial risk being transferred in consultation with the Manager Risk Compliance.
- 9.2.6. The Project Manager shall close out all outstanding contractual requirements including returning bank guarantees.
- 9.2.7. The Project Manager shall negotiate responsibility for managing warranties with the relevant ARTC maintainer, or other manager as agreed.

- 9.2.8. The Project Manager shall assign responsibility for managing defects that occur within the contracted defects liability period to either the Contractor or the relevant ARTC maintainer.
- 9.2.9. The Project Manager in collaboration with the Divisional Management Accountant will complete a Capital Works Close Out Form (FCA-FM-101) and an Asset Disposal Notification Form (FPR-FM-057) if assets have been disposed in delivering the project.
- 9.2.10. Project documentation is to be collated and archived in accordance with ARTC policy and procedures
[Refer: PPP-03 Records Management Policy](#)

9.3 Project Completion

- 9.3.1. The Project Manager shall close down the project including
- Close all project registers (correspondence, documentation, drawings, risks, assets, finance)
 - Finalise the project Close Out Report (refer to EGP2001T-02)
 - Finalise the Environmental Close Out Report showing how approvals, licenses and permits have been met
 - Complete the Lessons Learnt report (refer to EGP 2001-T03)
 - Complete Financial Close Out (refer to FCA-FM-101)
 - Transfer residual risks to the Corporate Risk Register when the project can no longer affect them. Specific mitigating measures or controls must be transferred and communicated with the risk being transferred.
 - Update of Asset Register
 - Provide the relevant information to Property for Asset disposals (where applicable)
 - Archive project documentation per ARTC Records Management requirements
 - Identify operational or ongoing environmental commitments for input to WMS/Ellipse