

AMS – Victorian Electricity Transmission Network

Program Delivery

Program Delivery

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1 Executive Summary

SP AusNet's asset management system which delivers capital and operating expenditure works programs for the Victorian electricity transmission network is certified to the British Standard Institute's Publically Available Specification 55 (BSI PAS 55: 2008) Asset Management.

The creation, augmentation, acquisition or replacement of assets in the Victorian electricity transmission network follows the processes outlined in [SOP 18-59 Program/Project Life Cycle Communications](#). The Program Delivery Group within SP AusNet provides management and resources to manage the delivery of these programs.

SP AusNet nominates responsible staff to undertake three key roles to facilitate the delivery of capital and operating expenditure works programs as defined in [SOP 17-16 Program/Project Lifecycle](#):

- Project Sponsors – permanent roles whose duties include:
 - Project Planning and Tracking
 - Provide delivery requirements and support
 - Project closeout activities
- Project Managers – permanent roles whose duties include:
 - Conduct initial review of portfolio
 - Project optimisation, prioritisation and reporting
 - Conduct PMO review of business case
 - Approve and release project
 - Perform benefits analysis
- Project Initiators – specific duties undertaken are:
 - Receive customer application, determine requirements, record in portfolio
 - Develop scope and risk assessment
 - Develop business case, request review, submit and review approval
 - Develop customer quote and contract to deliver
 - Review project outcomes

Key information technology systems necessary for the delivery of works programs for the Victorian electricity transmission network include:

- Project Execution and Tracking (PET) which:
 - Monitors lifecycle stages (initiation-closeout)
 - Change control workflow
 - Provides 'Onelist' report
- Enterprise Project Management (EPM) which:
 - controls scheduling
 - workspace for issues and risks
 - status reporting.

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- Project Forecasting Tool (PFT) which:
 - Forecasts all capital projects
 - Tracks forecasts to baseline using S-curve model

A pivotal strategy in the delivery of future works programs is the establishment of an Enterprise Asset Management / Enterprise Resource Management system to:

- Provide enterprise wide standard initiation, estimation, approval and delivery processes for all programs and projects across the company
- Provide integrated reporting of up to date status with drill down capability for the enterprise program, individual programs and individual projects
- Provide integrated scheduling utilising full visibility of enterprise wide resources and constraints across all three networks
- Provide direct linkage to regulatory programs of work and direct input into regulatory submissions through long term network plans
- Increase productivity of project and program managers via a centralises enterprise system to manage, control and report r project progress
- Provide improved controls and tools to ensure project and program managers are fully accountable for all aspects of program cost, time and scope
- Provide improved toolsets in supporting enterprise systems for procurement, logistics, HR and resource planning

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2 Introduction

The Program Delivery Group within SP AusNet manages the delivery of SP AusNet's operational expenditure (OPEX) and capital expenditure (CAPEX) programs.

2.1 SCOPE

This strategy summarises the processes, systems and roles associated with the delivery of OPEX and CAPEX programs for SP AusNet's electricity transmission network. These processes, systems and roles are also used to deliver the works programs associated with SP AusNet's electricity distribution and gas distribution networks in Victoria.

2.2 Objectives

The objectives of the program delivery process, systems and roles are to:

- Ensure projects are delivered in a cost-effective and timely manner
- Ensure the required technical specifications, guidelines and standards for design are achieved for projects
- Maintain quality control during all phases of projects, with particular emphasis on the construction phase
- Use post implementation reviews to provide feedback to enable continuous improvement in program delivery

3 Planning and Control

The planning of CAPEX and OPEX programs is undertaken within the Program Delivery Group to ensure that:

- projects are delivered in a cost effective and timely manner
- resources are efficiently deployed
- network availability is maximised, and
- risks to supply security during construction are minimised

The works planning includes processes for the coordination of equipment outages between the various CAPEX and OPEX programs. Such processes include regular work planning meetings with Network Strategy & Development Division (NSD) and field services personnel and use of the Plant Outage Management System (POMS), within the Maximo 5 asset management software, to support the optimisation of plant outages for CAPEX and OPEX programs.

The management and control of works programs draw on management resources (on a functional basis) to deliver various aspects of each project, including project management and control, project estimation, engineering standards and field technical services. This structure ensures that processes and standards are developed and maintained to meet the ongoing needs of the business while retaining management expertise.

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To avoid inefficient resource utilisation and unnecessary construction or commissioning delays, SP AusNet includes known and probable project interrelationships in the scenario modelling undertaken to optimise the project scope, the delivery schedule and associated costs. These interrelationships are confirmed in each 'Business Case.

Documentation outlining the scope of future projects includes detailed specifications for new and existing primary and secondary assets, communications equipment and civil infrastructure to adequately define the extent of each project.

Delivery re-scheduling and scope amendment are often necessary to acknowledge changing circumstances during the long design, procurement, construction and commissioning timeframe of complex projects. To better manage the necessary amendments to the scope, costs and delivery schedules of authorised projects, SP AusNet utilises [SOP 17-16 Change Control Overlay](#) to define specific control processes and timing. This formal review, authorisation and communication process was first implemented in 2005. It utilises an electronic database and workflow engine to communicate authorised changes to responsible employees and authorised contractors.

To improve the planning, control and delivery of work programs, SP AusNet has formalised the roles of project sponsors, project managers and project initiators and nominates responsible employees to undertake each of these roles for each project. With particular emphasis on large complex projects and programs; SP AusNet nominates full time professional project sponsors and project managers to undertake well defined duties. The duties of a project initiator are also formally defined in the role statements of network planners and asset management engineers within NSD.

4 Project Lifecycle

The PMO was established in 2009 as a result of an internal Review which prompted a number of activities aimed at enabling the achievement of business outcomes. One of these activities includes the development of [SOP 17-16 Program/Project Lifecycle](#) which was rolled out and effective from the 1st April 2011.

The establishment of the PMO ensures that program management disciplines have oversight throughout the formally defined program/project lifecycle to ensure project deadlines are achieved. The Program Management and delivery vision creates a foundation for enhanced awareness and collaboration, increased efficiency, and more consistent delivery of the programs/projects at the designated time within the agreed cost and scope.

Dedicated and improved Program Management provides SP AusNet with:

- Greater decision making on funding allocation,
- Strategic management of the entire pipeline of programs/projects to ensure associated funding is optimised and business benefits maximised,
- An enterprise-view of the program of works to assist strategically and tactically with program/project management,
- Monitoring and reporting on all enterprise-wide programs and projects,
- Identifying, applying and reporting levers to adjust business outcomes,
- Implementation of clear methodologies for handling the portfolio and apply the right one for each program.

The Program Management function provides a portfolio management and reporting capability to improve works utilisation and delivery. Specifically Program Management:

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- Creates an enterprise view of all programs and projects to provide a greater management of capital expenditure,
- Provides quality reporting as a catalyst to ensure poor performing programs and projects can be improved in real-time (achieving program deadlines within cost),
- Takes an integrated view of all types of programs and projects,
- Provides effective review, data management and reporting tools.

Program Management focusses on improving the delivery of programs ensuring value based capital works and portfolio management will result in the following objectives being achieved, benefiting SP AusNet:

- A standardised program and project review and reporting regime that supports effective decision making,
- Maintenance of an optimised portfolio of works to ensure 100+% of programs and projects are identified and actively managed,
- Strategically push and pull levers to manage overall program expenditures and to generate and deliver better outcomes.

Critical interfaces for project delivery have been formalised in [SOP 17-16 Program/Project Lifecycle](#) which defines the intended process for successful program management at SP AusNet. This project lifecycle is shown in Figure 1.

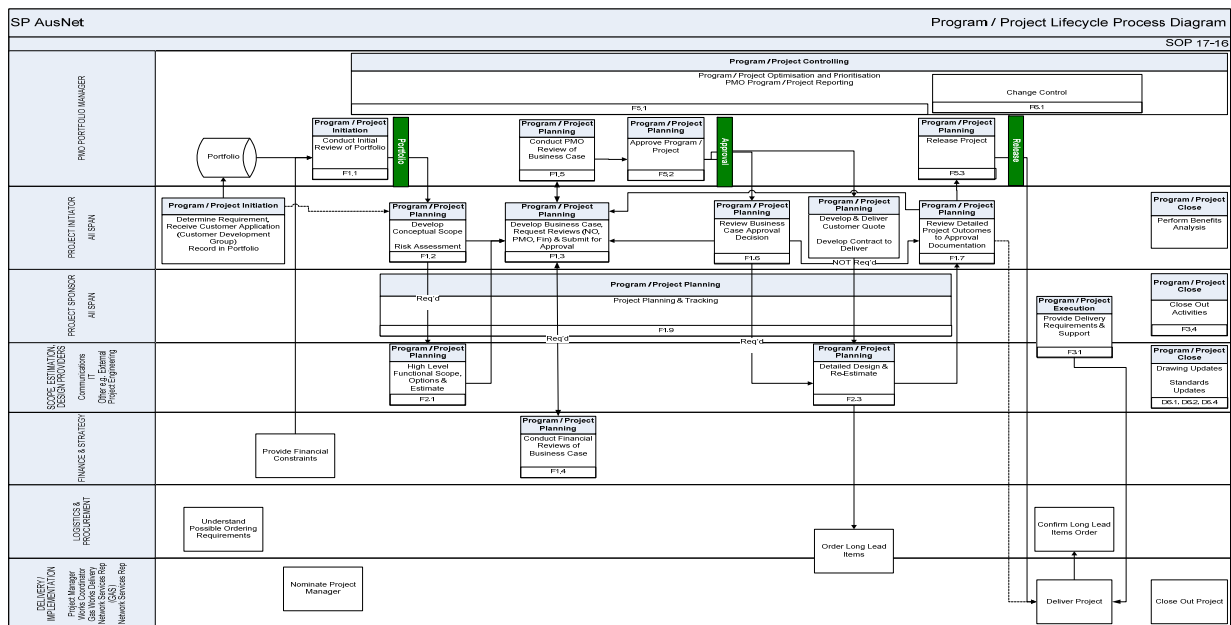


Figure 1 - Project Life Cycle

Individual project managers use unified systems to link the core project activities of planning, estimation and costing to control CAPEX project delivery. The project lifecycle is underpinned by processes and policies to ensure that program/project management practices, reporting and governance is in alignment with the organisations expectations.

The review process is now complete, with incorporation of 'Process Gateways' and integration of the Project Change Control process. Included within the project execution manual is the process for

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management of contract non-performance. There is continuous assessment and updating required, as the company moves forward.

4.1 Core Processes

Creation, augmentation or acquisition of assets follow the processes outlined in [SOP 18-59 Communications: Program/Project Life Cycle Directory](#).

This process requires a business case which must be completed in accordance with [SOP15-00 Manual for Completing a Business Case](#). A requirement of this process is the completion of the corporate finance [Project Evaluation Template \(NPV Models\)](#) which is a net present value (NPV) calculator and therefore requires life cycle costing of project options considered. The process includes a portfolio model in which projects can be prioritised.

Procurement of resources are undertaken in the relative Procurement Management System as defined in the [iProcurement Users Guide](#) and the [iProcurement System: Quick Procedure Guide](#). The resource model includes the use of internal and external resources in the delivery of maintenance and capital works programs. Strategic alliances have been formed with companies that provide design services, installation services and maintenance services.

Contract arrangements are performance based with benchmarking of costs and standards to ensure that quality and value is maintained throughout the contract.

Upon completion of projects, assets are transferred to the Fixed Asset Register. The process for the electricity transmission network is defined in [FIN 22-12 Create/Acquire Asset Process Transmission](#).

4.2 Core Systems

There are three core project management systems that support the PMO in monitoring of project performance, governance/compliance requirements and maintaining the administration requirements of programs/projects throughout the project lifecycle. Figure 2 below, outlines the core project management systems and functions performed.



Figure 2 - Core Project Management Systems and Functions

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4.3 Core Roles

The following roles have been established to coordinate and manage programs/projects within the portfolio as defined in [SOP 17-16 Program/Project Lifecycle](#).

4.3.1 Project Initiator

A Project Initiator is necessary to initiate the program/project. The Project Initiator is responsible for arranging a Project Sponsor, ensuring the development of a viable business case for approval and analysis or comment on business benefits achieved by the Program / Project.

A Project Initiator is nominated by the person inserting or requesting that a program/project be entered, into the portfolio. The nominee will be endorsed at the time the program/project is confirmed as part of the portfolio.

The Project Initiator is expected to request assistance and knowledge from any specialist source to achieve results at any point within the Lifecycle. The Project Initiator is required to liaise at all times with the Project Sponsor to ensure continued progress through the Lifecycle Process. For a customer project the Project Initiator will be the nominated communication link with the customer.

The Project Initiator will initiate and contribute to the Risk Assessment(s) required prior to Release of the Project for delivery / implementation.

4.3.2 Project Sponsor

A Project Sponsor is arranged by the Project Initiator following the selection of the Program / Project into the portfolio. The Project Sponsor is selected as being the most suitable to provide clear leadership and direction throughout the project's lifecycle, maintain alignment of the program/project plan. The Project Sponsor is in the best position to "adjudicate" on proposed scope, design, dollar and schedule changes.

The Project Sponsor is required to liaise at all times with the Program Management Office (PMO) to ensure continued movement through the Lifecycle Process. This will include prioritisation and optimisation of the program / project at various stages of that Lifecycle. These stages are shown in the SP AusNet Program / Project Lifecycle Process.

A project plan will be populated with tasks relevant to the program / project with start and finish dates discussed and agreed throughout the life of the program / project. The Project Sponsor will liaise with the relevant parties to ensure delivery to the plan and with the Project Initiator on the progress on the program / project.

The Project Sponsor is expected to request assistance and knowledge from any specialist source to achieve results at any point within the Lifecycle. The Project Sponsor will co-ordinate the Risk Assessment(s) required prior to Release of the Project for delivery / implementation.

4.3.3 Project Manager

The Network & Strategy Development Division (NSD) of SP AusNet has developed a Program / Project Lifecycle. A Project Manager can be nominated at the time of the Program / Project being confirmed as part of the Program Portfolio. A Project Manager has responsibility for the delivery of a Program / Project.

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The Project Manager is required to liaise at all times with the PMO to ensure continued movement through the Lifecycle Process which relies on the selection and prioritisation of the Program / Project at various stages of that Lifecycle.

The Project Manager is expected to request assistance from any specialist source to achieve results during the specific tasks requested within the Lifecycle.

The Project Manager may receive a request from the team completing a detailed design to place an order for long lead / items of interest with the Procurement Group. The request is made if items are identified and only when the specific item(s) and numbers of such item(s) are known. This is usually at the end of the detailed design phase.

The PMO will provide advice to the Project Manager that a project has been approved for release for delivery.

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5 Delivery Process

5.1 Summary Workflow

SOP 19-01 PET Quick Reference Workflow outlines the gating process for programs/projects selected into the program/project pipeline as per Figure 3 below:

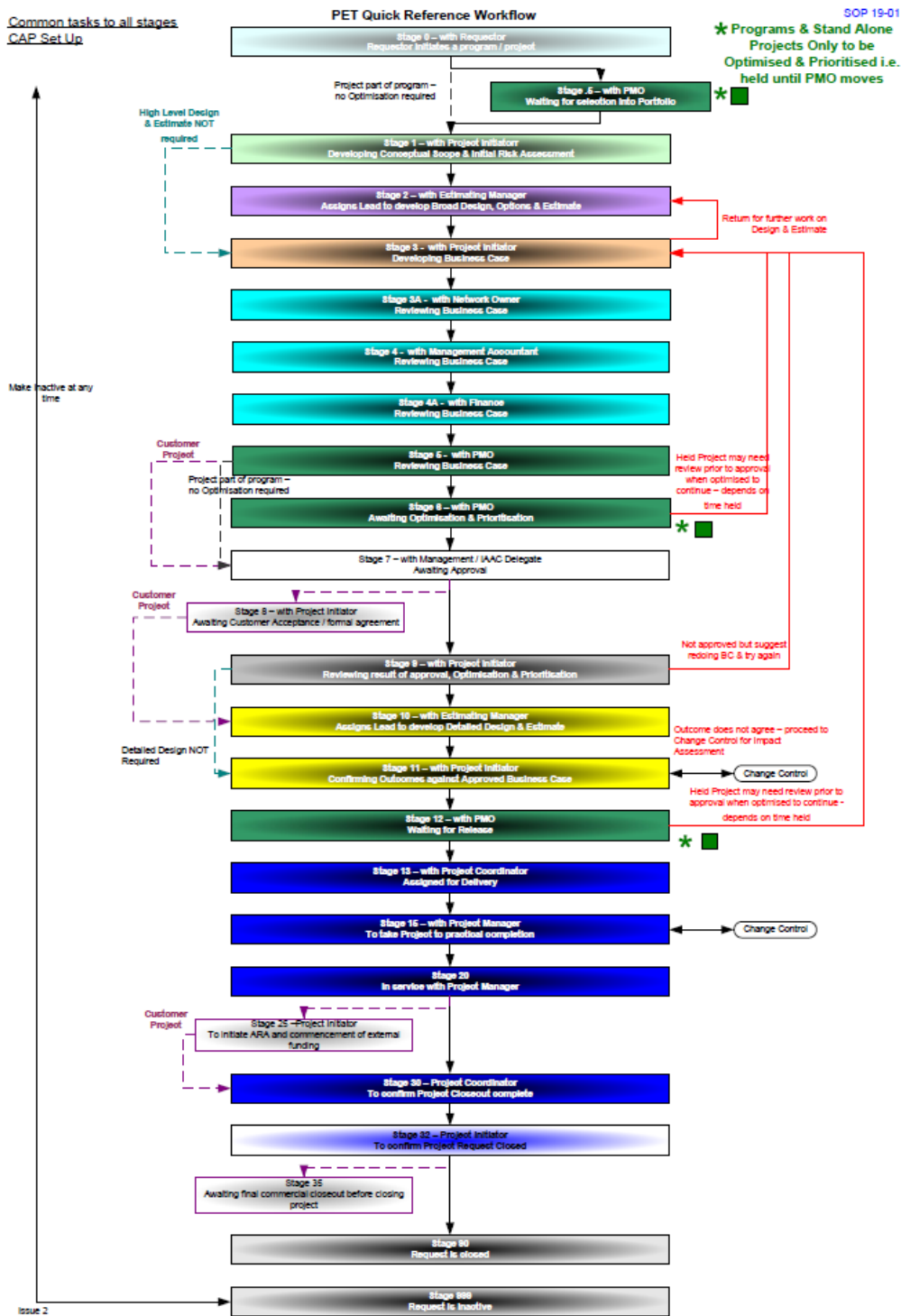


Figure 3 - Project Workflow

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5.2 Personnel

The resources model provides for both internal and external resources to deliver the CAPEX and OPEX programs. Strategic alliances have been formed with companies to provide design, installation and maintenance services. The contract arrangements are performance based, with benchmarking of costs and standards to ensure value is maintained throughout the contract.

Key internal resources are maintained within the Program Delivery Group to ensure strategic works and program control services can be sustained. These resources include field services staff that undertake recurrent, non-recurrent and emergency maintenance services, provide installation services for strategic CAPEX projects and provide site supervision, testing and commissioning services for the CAPEX program.

The retention, refreshment and enhancement of the maintenance, installation and supervisory and testing skills within the business are considered essential to the future success of SP AusNet.

Resource planning is based on current and future skill requirements for the delivery of sustainable CAPEX and OPEX programs. The opportunity has been taken to assess the synergies between the electricity transmission and distribution businesses, given the similarities within the resource planning area.

The resource planning process includes an assessment of the age profiles of current personnel. Also assessed are changes in requirements expected through the plant and equipment renewal programs, and general changes in the technologies used for the secondary systems, covering network protection and control schemes. The resource plan includes the recruitment and training of engineering, technical and trades staff to match forecasted changes in staffing through retirements and other departures, and to cover ongoing changes in technical requirements.

SP AusNet is aware not only of the premium on skilled resources within its own ranks, but also the national shortage of service providers with appropriately skilled and experienced resources in the electricity utility industry. This becomes most apparent during times of heavy capital expenditure, in particular, during the commissioning phase where scarce electrical testing skills are required. The engagement of skilled and experienced service providers is an enduring issue for engineering projects as there are few providers able to deliver the necessary services from a single Victorian office.

For further information refer to [AMS 10-23 Skills and Competencies](#).

5.3 Materials and Equipment

Planning for the supply of materials and equipment for the CAPEX program is carried out over a two-year timeframe. The data within the purchasing plan is used to coordinate the manufacturing and delivery requirements with the suppliers. Materials and equipment required for CAPEX projects are then purchased on a specific project basis to ensure that timing and specification details are met.

Period orders have been established with suppliers of major recurrent type items. These arrangements have been established through a tender process in which the items are offered under an agreed pricing basis with consistent specification and performance standards, as well as defined commercial terms. These period arrangements have generally been established for three-year terms.

A review of the supply arrangements for material and equipment is currently being undertaken. A strategic sourcing model is being used to develop revised arrangements that will secure supply for future program requirements, maximise the buying advantage for equipment throughout the

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organisation, and rationalise the specifications of materials and equipment. This strategic sourcing project will produce revised contract arrangements with the key suppliers by the end of 2006.

5.4 Work Scope

SP AusNet now utilises internal resources to prepare a more detailed preliminary scope of work for Front-End Engineering Design (FEED) studies and to assist contractors with the design and costing of a project during the FEED study. This produces a more cost-effective FEED study and has identified more opportunities for project cost savings.

A project 'kick off' meeting, including representatives from NSD and the Program Delivery Group, is held soon after Business Case approval. This meeting marks the formal handover of control of the project to the project manager and includes a brief of the project scope to ensure mutual understanding.

5.5 Estimation

SP AusNet recognises that cost management, including cost estimating, must be exercised in the broader context of project management. Estimating is an integral part of a system of interdependent core inputs of scope, time, cost and quality. The project budget results from approval of the business case equivalent estimate at the conclusion of the *Initiation Phase*. The *Project Estimate (Planning Estimate)*, which is based on a sound definition of the scope of the preferred option from the options analysis, is of critical importance in the economic justification (cost/benefit) of a project.

SP AusNet's Project Estimating Manual describes the methodologies, principles and procedures for the preparation of cost estimates for all major capital projects (Electricity Transmission and Distribution) developed by SP AusNet.

This manual covers the preparation of estimates during the establishment phase of projects in accordance with the Project Execution Manual. The Project Engineering Group is responsible for providing reliable cost information for:

- a) Initial justification of a project's Authority to Proceed (for example cost/benefit analysis)
- b) Ongoing cost development during the project's development, execution and finalisation phases, and
- c) Regular reviews of estimation data in order to facilitate continuous improvement

SP AusNet develops projects based on internal and external needs in order to address asset condition, load growth or embedded generation. Identifying and funding the highest priority works to meet these needs, and delivering them through an efficient program, is critical to realising the benefits of these outcomes for the business and customers.

All these processes rely on sound estimates of project cost and cost control to ensure the integrity of decisions relating to project justification, government priorities and programming. Incorrect estimates can lead to delay in funding and approval of a project, or impact on other projects, leading to economic loss as well as cost overruns.

Estimating in the current market environment requires a conservative but realistic view of the project scope together with the associated risks and contingencies, particularly in the early project stages where less detailed project information is available.

SP AusNet's estimating policy is founded on five key principles:

1. All projects are to be project managed in accordance with the Project Execution Manual.

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2. P90 estimates, prepared on an "unlikely to be exceeded but not excessively conservative" basis at various stages of the project life cycle will provide confidence in the processes of project priority, affordability and strategic fit.
3. Estimates are subject to a review and approval process based on consistent clear lines of responsibility and accountability that will ensure costing standards and control are applied to any budget information that is to be released.
4. Regular project and system reviews will be conducted to encourage and facilitate continuous improvement.
5. Project learning's will be shared to increase corporate knowledge.

Further information on SP AusNet's estimation methodology and framework can be found in the Project Estimating Manual.

5.6 Design

Design processes for capital works projects are provided by a pre-qualified panel of external design service providers. The contract arrangements with this panel provide processes that ensure market pricing, engineering and quality standards are maintained. The expertise for setting engineering standards and managing the design services is maintained within the business.

SP AusNet has recently completed a further review of the comprehensive technical specifications, guidelines and standards forming the Station Design Manual (SDM) for terminal stations. This SDM is published electronically. The SDM provides practical guidance to the design and to the Constructability, Operability and Maintainability (COM) review participants. The specifications, guidelines and standards within the SDM will be reviewed on an ongoing, improvement basis. These will be based on lessons from major projects and on changes to relevant Australian and international standards.

Contractual arrangements are now established between the design and installation contractors that require contractors to promptly address any design or installation issues between the parties. Contracts also specify service provider skill sets, resource deployment, issue response times and mandatory site visits to ensure that project risks are identified and promptly addressed.

5.7 Construction and Commissioning

A similar, pre-qualified panel of external contract installation service providers provide most of the installation services on the CAPEX projects. Installation resources are retained within the business to ensure that key strategic projects can be delivered to SP AusNet's schedule of works. Arrangements with installation service providers ensure that pricing remains competitive, with checks to ensure delivery and quality targets are maintained.

SP AusNet now undertakes detailed constructability analysis, coupled with scenario modelling prior to establishing the project scope and associated costs of each project. Modelling includes allowances for field operational labour and relevant plant availability penalties, based on recently completed projects. A careful check of the project plan is made at the tender stage to ensure relevant documentation is provided at the handover stage. Documentation such as plant test results is vital not only during commissioning, but also to support the ongoing operation and maintenance of the assets. The project plan clearly identifies responsibilities and authorities for the various phases on the work.

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For projects of significant size and complexity, a pre-commissioning inspection is held, either as part of, or in addition to the COM review process. This inspection focuses on the operability and maintainability of newly installed assets. It is held once construction is practically completed, but still well before commissioning to ensure there is sufficient time to address any problems that arise before the plant goes into service.

The project manager consolidates any defects identified from the pre-commissioning inspection, as well as those identified at earlier stages. The project manager is then responsible for ensuring that actions to rectify these defects are co-ordinated and implemented in the required timeframe. Where possible, defects should be addressed prior to commissioning to reduce the cost and degree of difficulty involved in rectifying any problems at a later time.

5.8 Quality Control

The control and supervision of all site works is achieved through the field services area. Procedures are in place to ensure standards are maintained for installation works in terms of safety, network security and quality of workmanship.

SP AusNet's quality management system addresses the requirements of the AS/NZS ISO 9001:2000 standard for Quality Management Systems and outlines the structure of documentation used, with emphasis on:

- Management Responsibility
- Policy formulation and dissemination.
- Resource management.
- Information use and analysis.

For projects of significant size and complexity, SP AusNet field representatives are on-site for the majority of the construction phase to ensure the contractor maintains standards of workmanship and quality.

In addition, SP AusNet undertakes formal technical compliance audits on-site during the construction phase to provide another dimension to quality control. Technical compliance auditing to ensure assets either owned or to be owned by SP AusNet maintain a level of quality in accordance with SP AusNet requirements shall be performed in accordance with the procedures defined below when appropriate:

- [QMS 20-10 System Audit](#)
- [QMS 21-12 Work Party Audit Guidelines – Transmission Compliance](#)
- [QMS 21-13 Work Party Audit Guidelines – Electricity Distribution](#)
- [QMS 21-14 Work Party Audit Guidelines - Gas](#)

Further information on the quality management system can be found in [AMS 10-01 Quality Management System Manual](#) and [QMS 21-11 Technical Compliance Audit Strategy](#).

5.9 Constructability, Operability and Maintainability Reviews

An important component of the delivery process is the use of Constructability, Operability and Maintainability (COM) reviews that are designed to test and confirm the appropriateness of technical decision-making at key stages in the development and execution of major network augmentation, refurbishment and replacement projects.

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SP AusNet has increased the emphasis on its design and COM review processes with broader and more frequent involvement of service providers, contractors and field staff.

Field staff, design and construction contractors are now integral members of formal design and COM reviews undertaken for each major project. Where relevant, COM reviews are now conducted on site to ensure relevant factors are considered in the construction planning process.

Further, there would also be a benefit in implementing a process to enable the construction contractor to review the design and identify possible improvements with respect to constructability. Timing may be an issue if the construction contract has not been awarded, however, one member of SP AusNet's construction contractors panel could be engaged to conduct the review as a separate task.

It is generally accepted that although the COM review process is sound, its application can be enhanced by implementing the identified actions within the required timeframes.

Further information can be found in [PEM 2.6 – COM Review](#) and [PEM 2.6 – COM Checklists](#).

5.10 Post Implementation Reviews

The Post Implementation Review (PIR) process aims to identify innovation and learning opportunities, to improve the productivity and efficiency of future projects.

PIRs are conducted internally on all projects, with key projects also undergoing a detailed PIR by independent, external consultants to ensure that improvements and innovations are fed back into future CAPEX and OPEX programs.

The PIR is intended to be completed within 6 months of practical completion of the project: that is, when infrastructure is functional, records have been updated and costs are substantially finalised. "Short form" PIRs are completed where appropriate on small scale projects utilising the pro-forma contained in the Project Execution Manual.

The PIR seeks input from the project manager, key participants and key organisations in the project delivery from conception through to operation. Key steps in project delivery include:

- Definition & Approval
- Specification, Design & Procurement
- Construction & Installation
- Commissioning & Handover
- Operation & Maintenance

The PIR usually consists of a series of structured interviews, focussed surveys and workshops conducted at locations convenient to participants, providing ready access to project documentation, and as required, the infrastructure site.

Further information on the PIR process can be found in the Post Implementation Review Policy & Procedure and [PEM - Overview - Perform Post Execution Review](#).

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5.11 Strategies

- Improve the planning and control of projects by:
 - Integrating the Enterprise Asset Management/Enterprise Resource Management system
 - Implementing Project Portfolio Management Solution (PPM)
 - Review of Governance methodology (standards, tools and templates) to align with Enterprise Wide PMO (EPMO)
 - Refinement of the specification of the scope of future projects
 - Review business case approval process to align with enterprise wide PMO strategy
 - Continue to develop engagement process for Involving the project manager in projects at the earliest opportunity
 - Streamline project staging (Lifecycle Review)
- Complete the creation and electronic publication of the Station Design Manual (SDM), which documents comprehensive technical specifications, guidelines and standards for terminal stations.
- Continue to monitor quality control during the construction phase of significant and complex projects by:
 - Having an SP AusNet field supervisor on site during the majority of work
 - Carrying out formal technical compliance audits
- Continue to improve the Constructability, Operability and Maintainability (COM) review process by:
 - Involving the construction contractor in the review of the design with respect to constructability
 - Carrying out pre-commissioning inspections
 - Ensuring identified actions from the reviews are implemented in the appropriate timeframe
- Refine the Post Implementation Review (PIR) process to identify innovation and learning opportunities to improve the productivity and efficiency of future projects.