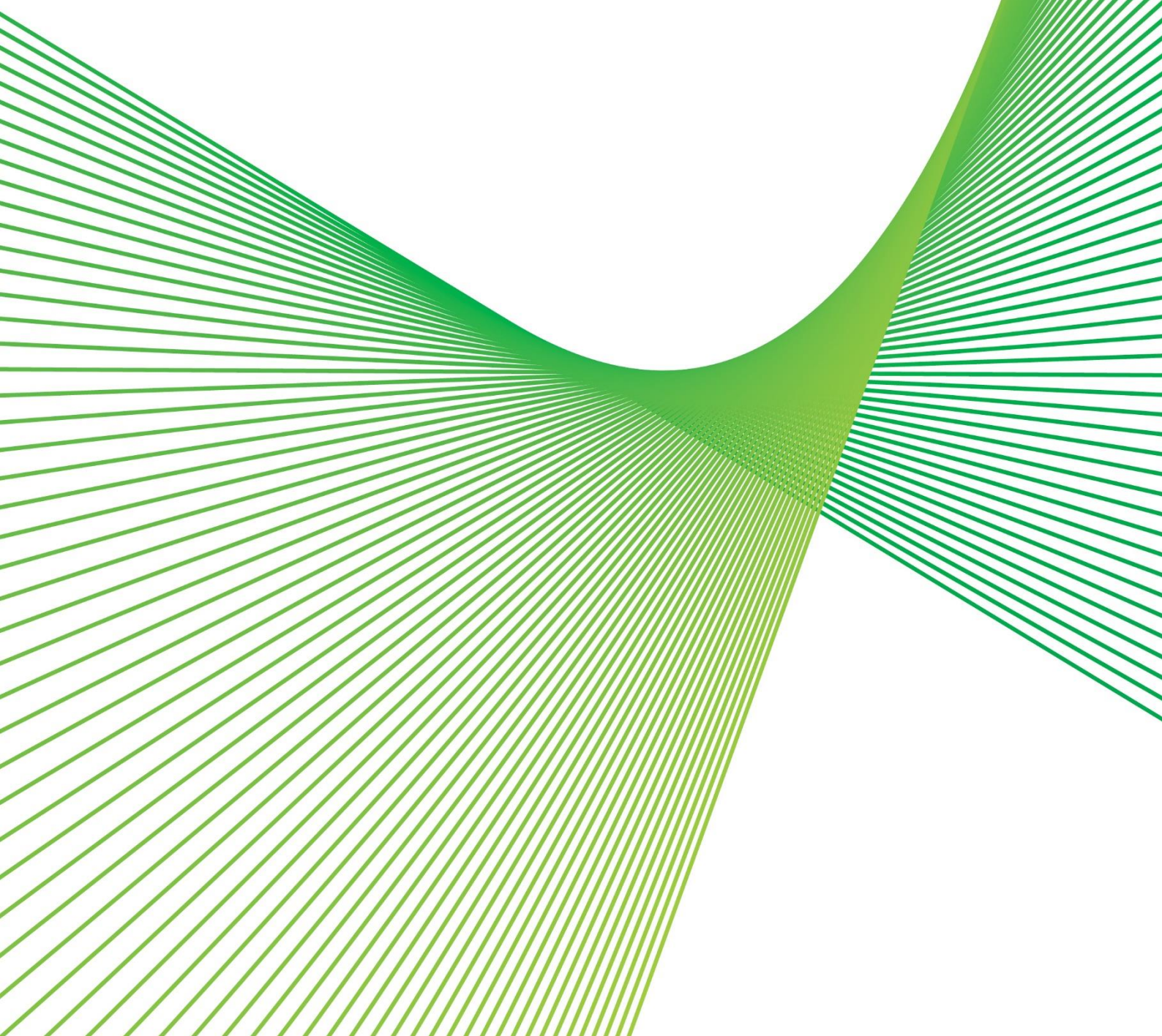


Deliverability Plan

2023-28 Revised Revenue Proposal

2 December 2022



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1. Abbreviations

Abbreviations used in this document are tabled below:

Table 1: Abbreviations

Abbreviation	Definition
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ALARP	As Low As Reasonably Practicable
BAU	Business As Usual
CSR	Concept Scoping Report
CPA	Contingent Project Application
D&C	Design and Construct
DG	Decision Gates
ECI	Early Contractor Involvement
EPC	Engineering, Construction and Procurement
FEL	Front End Loading
GM	General Manager
ICT	Information Communication Technology
IPART	Independent Pricing and Regulatory Tribunal
ISP	Integrated System Plan
IT	Information Technology
LLE	Long Lead Time Equipment
NCIPAP	Network Capability Incentive Parameter Action Plan
NEM	National Energy Market
NER	National Electricity Rules
NOSA	Need and Options Screening Assessment
NPV	Net Present Value
ODP	Optimum Development Path
OER	Options Evaluation Report
OIL	Optimised Investment List
OFS	Option Feasibility Study
PACR	Project Assessment Conclusions Report
PADR	Project Assessment Draft Report
PAD	Project Approval Document
PDM	Project Delivery Manual
PEC	Project EnergyConnect

Abbreviation	Definition
PEP	Project Execution plan
PMO	Project Management Office
PDM	Project Delivery Manual
QNI	Queensland – New South Wales Interconnector
TNSP	Transmission Network Service Providers
REZ	Renewable Energy Zones
RIT-T	Regulatory Investment Test for Transmission
VNI	Victoria – New South Wales Interconnector

2. Executive Summary

The program of augmentation (augex) and replacement (repex) projects Transgrid proposes to deliver in the 2023-28 regulatory period will be executed at the same time as another workstream of contingent and actionable major projects. These additional, massive infrastructure projects are not considered 'business as usual' (BAU) and sit outside of the reset process. They are the result of AEMO and the NSW Government making once-in-a-generation investments to build the transmission needed to support Australia's energy transition.

Transgrid recognises that success in delivering BAU is dependent on co-ordination and optimisation with the additional work streams. This strategy is essential for success of both programs due to pressures from the domestic and international markets competing for equipment, materials and resources.

The key elements of this strategy that safeguard and de-risk deliverability of Transgrid's Repex and Augex projects in this challenging environment include:

- **A new operating structure to mitigate deliverability risks** – Transgrid now has two separate delivery units (Delivery Business Unit and Major Projects Business Unit), each with their own separate sourcing strategies, capital planning, resourcing processes and contractor pools (Sections 5 and 6).
- **A proven project management methodology and BAU capability** – Even before the new operating structure was put in place, Transgrid delivered several major projects (including Queensland -NSW Interconnector (QNI) Minor and Victoria-NSW Interconnector (VNI) Minor projects Powering Sydney's Future, and Stockdill) on top of our BAU 2018-2023 work stream, on time and in line with the overall budget (Sections 7 and 10). This demonstrates that, even if our BAU Contingent Projects were to eventuate, we have capacity to deliver these over and above our forecast Repex and Augex programs.
- **New contracting strategies to overcome supply constraints** – Transgrid is mitigating deliverability risk by using different tiers of contractors to grow additional resources locally whilst providing longevity and certainty of work; Optimising the timing of Repex and Augex projects with major projects to assist ramp up of major project resourcing and resource leveling across the total program to maintain certainty of resourcing; lock-in contracts for contractors, equipment and materials; key panels to support long supply leads and early procurement; direct purchase of key and long lead time equipment; and risk mitigation actions to achieve an equitable risk allocation that contractors are willing to accept (Section 8).
- **Strong governance** – Our projects are subject to robust audits and multiple points of delivery accountability (Section 10.2).

While agreeing that the contingent projects are of a previously unseen scale, we note that, in terms of our 2023-28 forecast projects:

- Repex is in line with what was delivered in 2018-23
- Augex is lower than the 2018-23 period

In other words, Transgrid's proposed capex delivery program for 2018-23 is routine for the organisation.

Our deliverability risk assessment, including resource forecasting, shows that the above mitigations will enable Transgrid to secure the resource and supply requirements to continue to deliver our proposed capex projects on time and within budget. Given our many years of experience and well-established processes, backed by appropriate levels of planning and preparation, we believe Transgrid is well positioned to mitigate and optimise deliverability. We are ready to deliver the future grid, with our Major Projects Business Unit, while continuing to maintain the safety, security and reliability of the existing network, with our Delivery Business Unit.

3. Purpose and Scope

This document sets out our strategy and supporting processes to manage deliverability in the proposed network capex (repex and augex) investment (The Program) for the 2023-28 regulatory period as set out in our 2023-28 Revised Revenue Proposal. Our forecasting methodology is not included in the scope of this document.

The Program is a pipeline of projects, from investment assessment, capital planning, program delivery, asset operation through to retirement. These processes have been designed based on prudent financial and project management methodologies and incorporate appropriate asset management elements.

This document outlines our:

- Response to the challenges of our changing operating environment
- Operating model and objectives in response to the changing operating environment
- Two separate delivery programs: Major Projects and BAU Delivery
- Past capital program delivery performance
- Program delivery and resourcing strategy
- Capital planning processes
- Project management methodology
- Deliverability risk assessment, including resource requirements, risks and mitigations

4. Response to the Changing Operating Environment

The Program will be executed at the same time as another workstream of contingent and actionable major projects. These infrastructure projects are the result of AEMO and the NSW Government making once-in-a-generation investments to build the transmission needed to support Australia's energy transition.

The electricity system is transitioning away from coal and towards renewables at an accelerating rate – even faster than had been previously planned for. As the pace of the energy transition accelerates, the next 5–10 years is shaping up to be a period of significant transformation for the NSW power system, driven by:

- The retirement of ageing coal generators
- A significant increase in renewable generation and energy storage as coal retires – supported by investment in transmission infrastructure which is needed to facilitate the energy transition
- Changes in energy demand and usage patterns as a result of greater electrification, new green industries and increasing distributed energy resources

The announcement that the Eraring Power Station will close from August 2025 (seven years earlier than expected) highlights the potential for rapid changes and the importance of forward planning. This is highlighted in AEMO's 2022 Integrated System Plan (ISP), which states that the investment in new transmission required to transition Australia to a renewable energy-based power system needs to begin 'as urgently as possible'.

Our strategy, aligned with AEMO's roadmap, is to create a network capable of connecting geographically and technologically diverse, low-cost generation to deliver renewable energy to customers. We therefore need to act quickly to:

- Strengthen the transmission backbone
- Support the connection of new generation and storage capacity, including Renewable Energy Zones
- Deliver essential system security capabilities, assets and services.

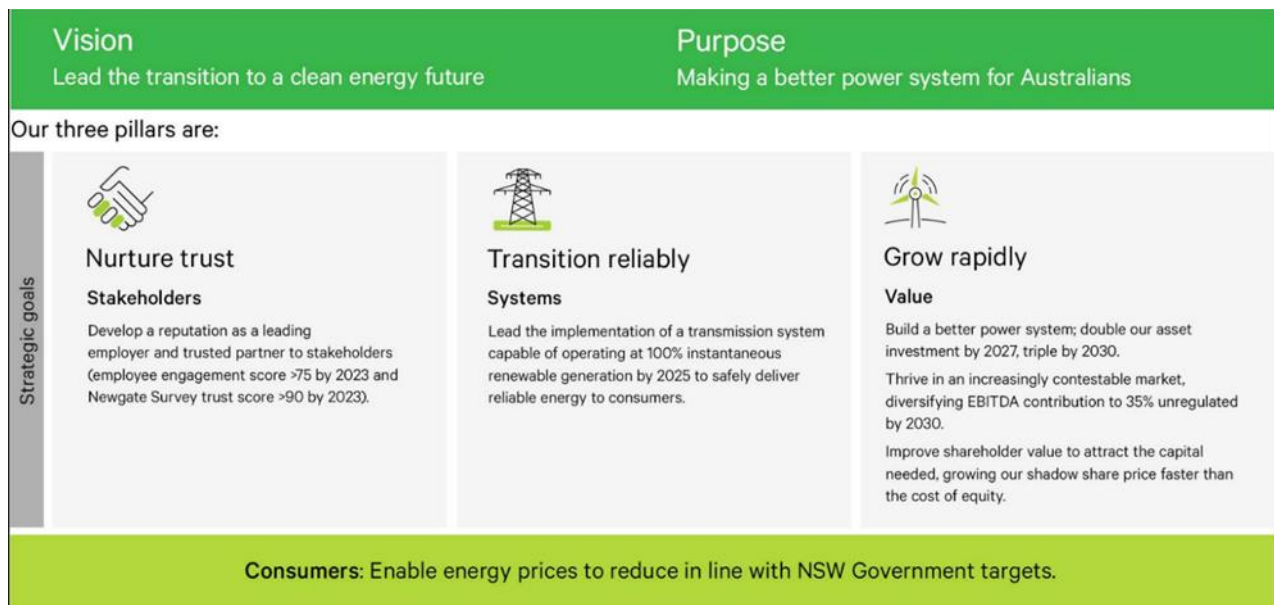
Transgrid is acting to bring forward delivery schedules and drive innovation at pace to deliver the energy transition in the best interests of consumers, while also continuing to maintain a safe, secure and reliable electricity supply.

5. New Operating Model

5.1. Our Strategy and Operating Model

Transgrid is facilitating the transition to decarbonisation (contingent and actionable projects) while maintaining the reliability and safety of our existing transmission assets (the Program). Our three strategic pillars to achieve this vision are described in Figure 1.

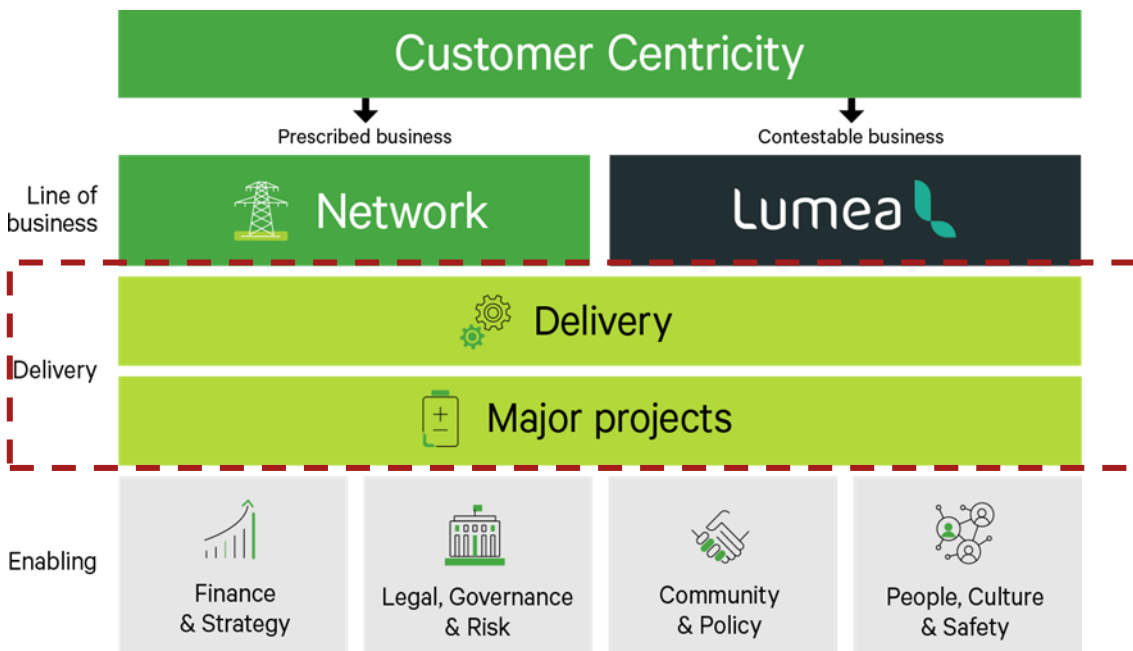
Figure 1: Our three strategic pillars



To successfully deliver both workstreams in the changing operating environment, we have restructured the business and implemented a new operating model with two separate and co-ordinated delivery functions (Figure 2) to mitigate and optimise deliverability:

- **Delivery** – focused on BAU project delivery and asset maintenance
- **Major projects** – focused on projects identified in AEMO's ISP

Figure 2: Our operating model



5.2. Our Capital Program Objectives

Our capital program focuses on achieving our business vision and aligns with our strategic pillars. This alignment is set out through the asset management objectives and performance indicators (Table 2) in our Network Asset Strategy document.

Table 2: Capital program objectives

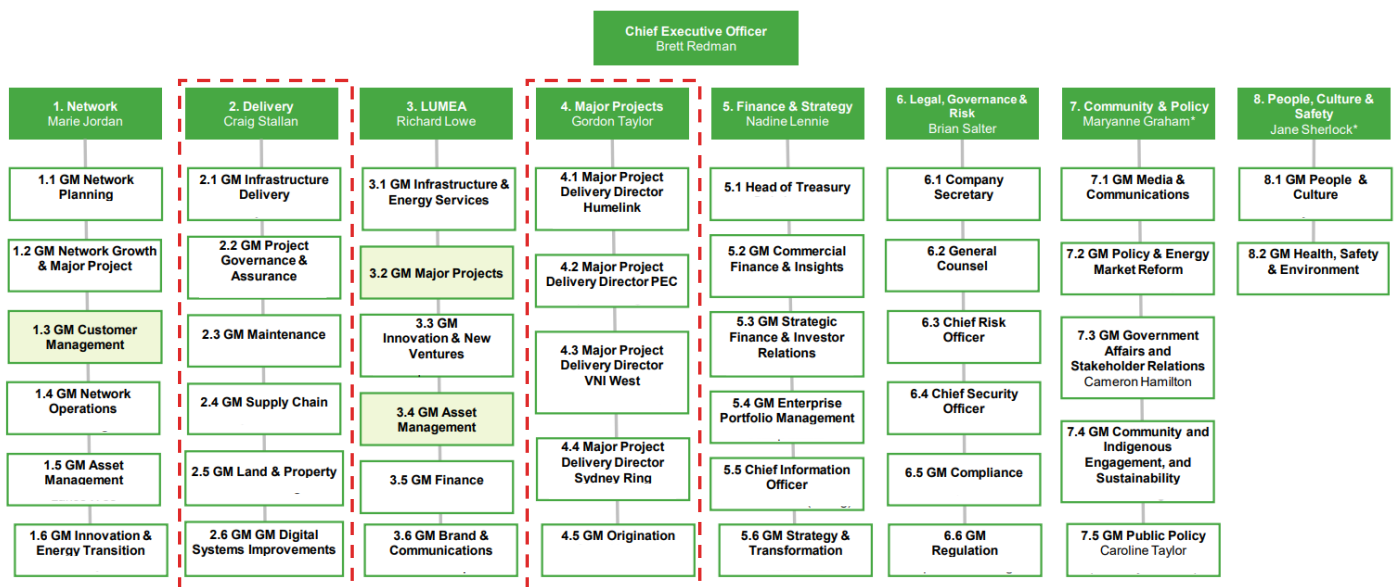
Strategic Pillar	Asset Management Objective	Performance indicators
Nurture trust	<ul style="list-style-type: none"> Manage assets efficiently to deliver security holder and consumer value Develop standing as industry leader for regulatory reform 	<ul style="list-style-type: none"> Incorporate new network connected technologies into the Asset Management System Meet Asset Management Program of Work budget targets Meet agreed capital works budget target
Transition reliably	<ul style="list-style-type: none"> Maintain network safety risk Maintain network reliability Support sustainable growth of the asset base by developing the right infrastructure 	<ul style="list-style-type: none"> Maintain Network Safety LTIs at zero Maintain 5-year average of high potential (loss of control) incidents Zero major non-compliances for all Network Management Systems Meet reliability planning standard Value identified for preferred network to support the energy transition
Grow rapidly	<ul style="list-style-type: none"> Support sustainable growth of the asset base by developing the right infrastructure 	<ul style="list-style-type: none"> Meet Asset Management Program of Work budget targets Meet agreed capital works budget target

Strategic Pillar	Asset Management Objective	Performance indicators
	<ul style="list-style-type: none"> • Ensure asset information is available to inform business wide decisions 	<ul style="list-style-type: none"> • Meet STPIS performance targets • Value identified for preferred network to support the energy transition

6. Two Separate Delivery Programs

Our new operating structure mitigates and optimises deliverability by establishing two separate delivery units – each with their own Executive General Manager (Figure 3) sourcing strategies, capital planning and delivery (resourcing and contractor pools) processes.

Figure 3: Our organisational structure



6.1. Major Projects Business Unit

6.1.1. Major Project Program

The Major Projects Business Unit focuses on managing the delivery of ISP projects, which are at various stages of delivery and development. Current projects include:

- EnergyConnect
- HumeLink
- VNI West

These projects will interconnect renewable generation across the states to ensure a more reliable and renewable Australian network. The Major Projects Business Unit has an opportunity to deliver efficiencies and benefits of scale across these ISP projects by integrating their construction into a single simultaneous program. The proposed combined program will:

- Provide certainty for system planners and the developers of renewable electricity and storage
- Facilitate investment at scale in local production of materials and assembly
- Allow materials (e.g., steel, substation equipment) to be purchased earlier and at a lower cost
- Offer significant scale, enabling limited construction resources to be secured against consistent demand
- Increase the confidence and retention of contractors by providing consistent work

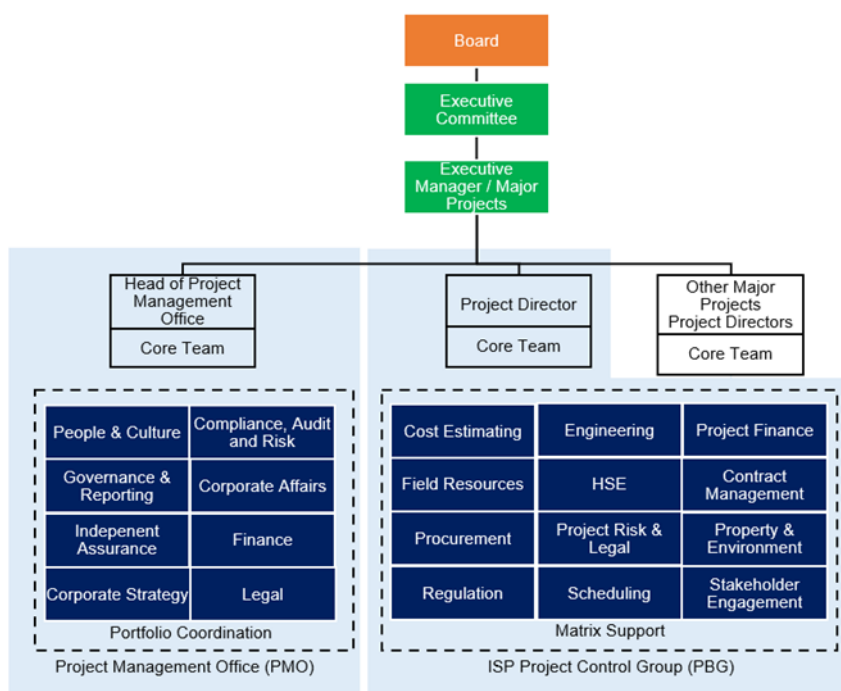
6.1.2. Major Project Group Structure

Major Project delivery is led by its own Executive General Manager, with each project appointed and led by a Project Director who is responsible for:

- Safe delivery of the project works
- The entire project life cycle through development and execution
- Project approvals, including planning and environmental permits
- Procurement and sourcing
- Managing and coordinating risk, and stakeholder and community engagement

Each Project Director is supported by a dedicated project team (Figure 4).

Figure 4: Major Projects Group structure



6.1.3. Major Projects Sourcing Strategy

The sourcing strategy for each major project is developed as the project progresses through early project planning (Figure 5). The strategy selected is governed by risk assessment, including assessing issues such as procurement and integration risks. Sourcing strategy options include EPC, Alliance or Design and Construct (D&C) delivery.

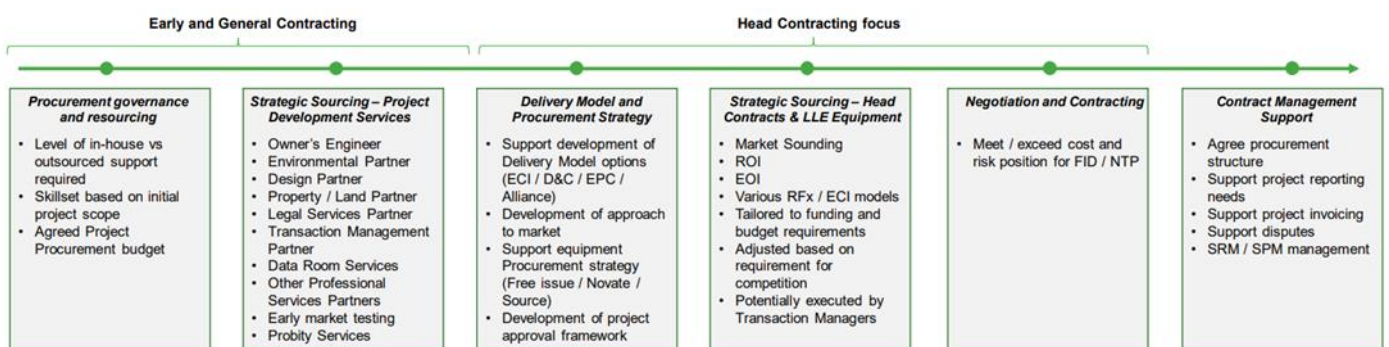
The contractors involved in delivering ISP major projects are typically major local and international contractors and consortiums who specialise in delivering projects of this size, scale and complexity. These are a different tier of contractor to those involved in BAU capital program delivery. Our ISP contractors typically have access to pools of international resources and expertise they can draw on to resource these projects.

Transgrid mitigates capacity risk by using these specialised contractors and also using Early Contractor Involvement (ECI) to identify preferred contractors based on their competency and capacity. Capacity is assessed during these early engagement phases and again during tender evaluation.

Our Project Management Methodologies and Project Implementation Plan set out the requirements for developing sourcing strategies and appropriate procurement processes. Selecting a preferred contractor occurs in accordance with a Board-approved formal tender evaluation plan. The evaluation process covers competency and capability to manage delivery capacity risk.

Major projects are also supported by various professional services contractors as required throughout the project lifecycle. This external project delivery expertise is sourced and scaled to the needs of the major project.

Figure 5: Major project procurement requirements



6.2. Delivery Business Unit

6.2.1. Delivery Program

Our Delivery Business Unit is responsible for executing our BAU construction programs, projects and maintenance work. Procurement & Supply Chain and Land & Property Management also fall under the Delivery umbrella which assists in the co-ordination and optimisation across both programs. This business unit contains all of the operational capabilities required to execute BAU projects and maintenance activities, including project development, procurement, construction, and commissioning for:

- **Augex projects** – BAU demand driven, compliance and economic benefits projects
- **Repex projects and programs** – transmission lines, substations and digital infrastructure
- **Non-network property and fleet**

Delivery also manages ongoing maintenance programs for the assets once commissioned.

6.2.2. Delivery Group Structure

Delivery is led by its own Executive General Manager, with General Managers leading each functional stream (Figure 3), including:

- **Infrastructure development** – delivering BAU projects within our capital works program - from concept design to commissioning
- **Project Governance & Assurance** – driving improvements across Delivery in conjunction with key delivery partners
- **Maintenance** – maintaining our assets and delivering an efficient and predictive program

- **Land and property** – managing our land and property assets
- **Supply chain** – providing end-to-end services to support delivery teams, including procurement, fleet, warehouse and logistics

6.2.3. Delivery Sourcing Strategy

Our BAU delivery currently has commercial panels for procuring network equipment, as well as outsourcing trades and professional labour and resources. These panels allow us to procure:

- Network equipment and free issue to contractors at better leveraged terms due to our collective buying and bargaining power
- Services and resources, both professional and trades labour, to address the fluctuations in program resourcing requirements.

These panel sourcing arrangements are described in Section 8.3.

Our sourcing strategy enables us to respond quickly to changes in work volumes, leveraging the expertise and capacity of our partners. Our long-term relationships with our suppliers and delivery partners allow us to mitigate market volatility risk.

7. Proven Delivery Performance

In the current regulatory period, before putting our new organisational structure in place, Transgrid successfully delivered a number of significant projects, including:

- Powering Sydney’s Future
- Stockdill substation
- QNI minor upgrade
- VNI minor upgrade

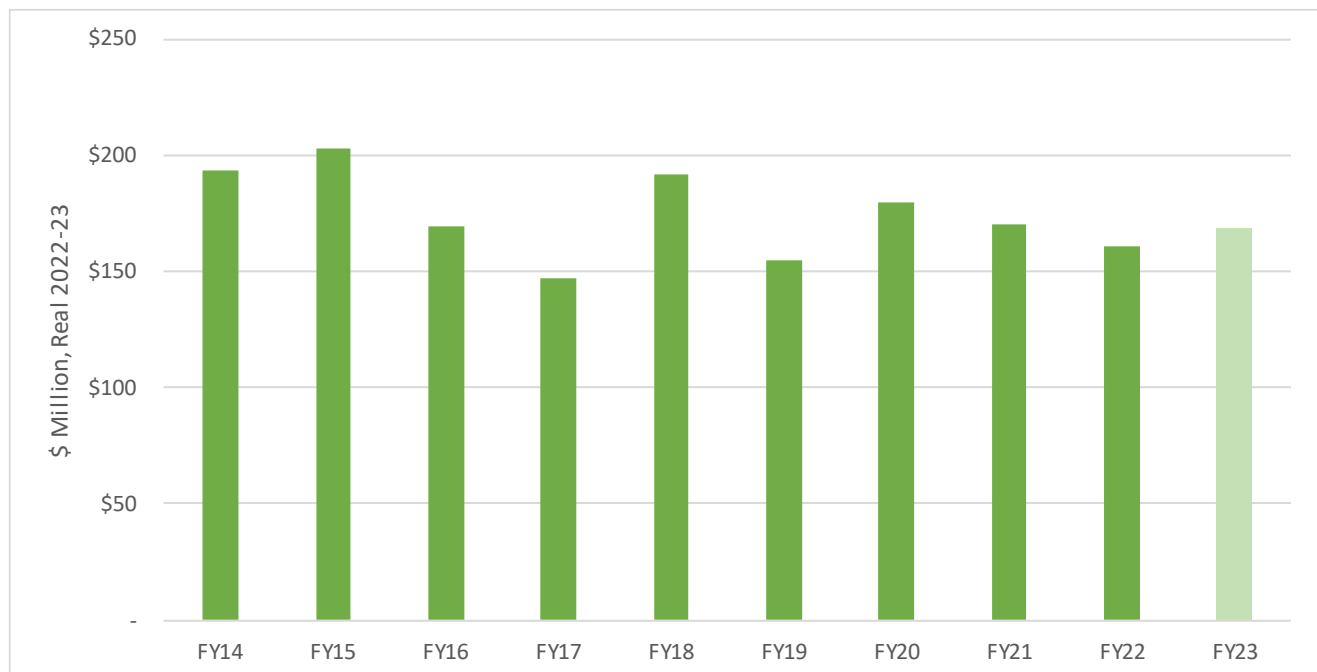
These were in addition to our BAU Repex program and additional maintenance works in the aftermath of unprecedented extreme natural hazard events, such as the 2019-20 bushfires, that damaged our assets requiring extensive repairs. They were delivered on time and within budget.

Even with our previous operating model, our robust internal processes and sourcing arrangements allowed us to successfully scale up to deliver increasing work volumes as they occurred. **This demonstrates Transgrid’s BAU capability to deliver the proposed Program. Even if our BAU Contingent Projects were to eventuate, we have capacity to deliver them over and above our forecast Repex and Augex programs.**

7.1. Repex delivery performance

Our Repex delivery performance has been steady over the current and previous regulatory periods as we continue to maintain a safe, secure and reliable network over time (Figure 6). We have well established processes in place to continue delivering our Repex program into the future.

Figure 6: Repex actual / estimates for previous and current regulatory period (\$Million, Real 2022-23)



7.2. Augex delivery performance

Our Augex delivery volume has changed with time as we respond to developments affecting the network to meet the needs of our customers. In the previous regulatory period, we ramped down our Augex delivery after the Western Sydney Supply Reinforcement project was completed. Whereas, in the current regulatory period, we ramped up to successfully deliver the Powering Sydney’s Future project, as well as AEMO’s Actionable ISP contingent projects that have arisen, on-time and on-budget (Figure 7).

Table 3: Major projects delivered in 2018-23 (\$Million, Real 2022-23)

Project	AER Determination allowance	Actual costs	Difference
Powering Sydney’s Future	273.2	236.3	-36.9
QNI Minor upgrade	252.9	254.1	1.2
VNI Minor upgrade	52.3	46.4	-5.9

Our successful delivery performance, despite the lumpy nature of Augex, is made possible by the resourcing and contracting strategies we have put in place to deliver these projects. For Augex projects, we typically rely on our delivery partners to provide detailed design and construction services and resources, with our internal resources providing oversight and governance for the various elements of the project. We are also able to supplement our internal resources with professional services contractors as required.

Figure 7: Augex actual/ estimates for previous and current regulatory period (\$Million, Real 2022-23)

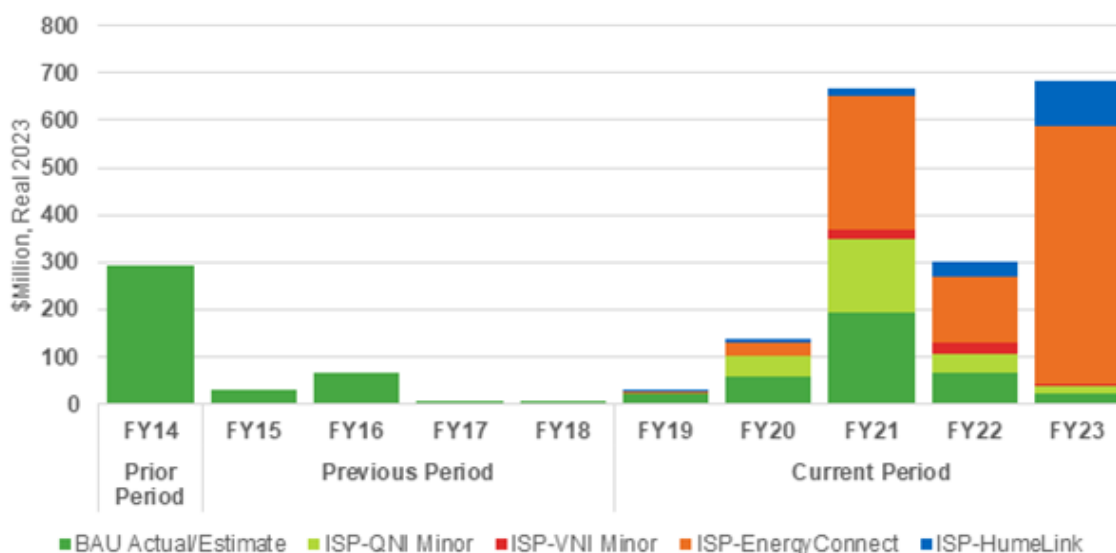


Figure 7 also shows AEMO’s Actionable ISP projects we have delivered or are delivering. These include QNI minor upgrade, VNI minor upgrade, EnergyConnect and HumeLink early works, which the AER approved through the contingent projects process during the 2018- 23 regulatory period. **This demonstrates our ability to deliver ISP projects and any BAU contingent projects which may arise in addition to our BAU Capex using our operating model and major projects sourcing strategy.**

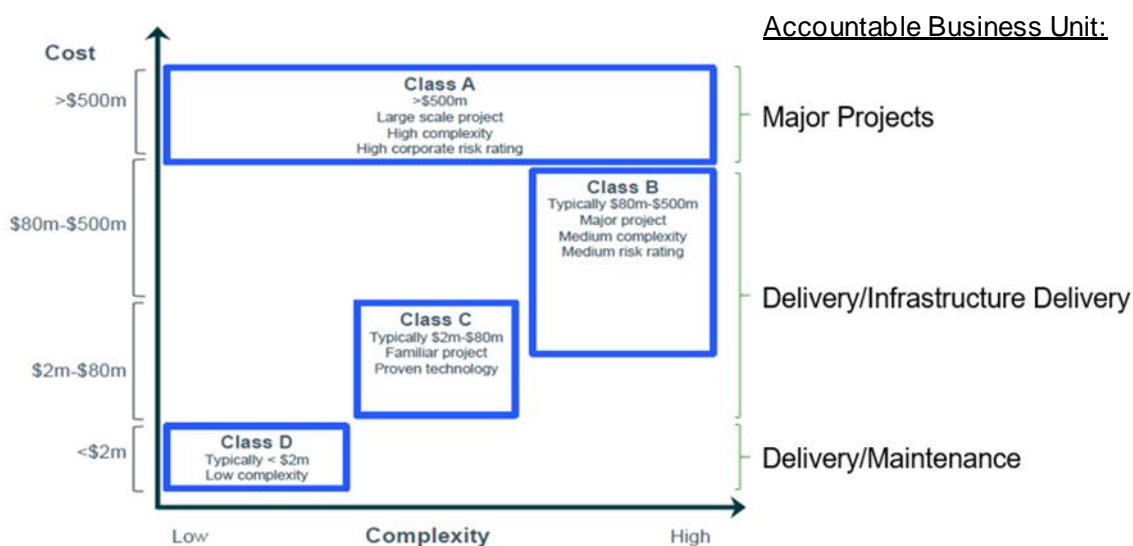
8. Program Delivery and Resourcing Strategy

The following sections set out how Transgrid delivers our BAU capital investment, planning and program delivery processes. It also provides an overview of BAU capital program delivery structures, project management methodologies, delivery resources, sourcing strategies, delivery risks and mitigation strategies.

8.1. Our Service Model

Our operating model (described in Section 5) has established two service lines, our Major Projects Business Unit and our Delivery Business Unit (each described in Section 6). Each project is classified to determine which Business Unit is accountable for the project delivery (Figure 8).

Figure 8: Project classifications



Each Business Unit and, in the case of Delivery, each General Manager, has dedicated internal resources who manage the delivery and sourcing strategy for project implementation and construction. Typical resourcing models for each class of project are:

- **Class A** – Internal dedicated project team supported by professional services contractors and large national/international delivery contractors (refer to Section 6.1)
- **Class B** – Internal dedicated project team supported by internal functional resources, professional services contractors, and tier 1 delivery contractors
- **Class C** – Internal functional project resources supported by professional services contractors and tier 1, 2 and 3 delivery contractors
- **Class D** – Internal delivery or functional project resources supported by professional services contractors and tier 2 or 3 delivery contractors.

The classification also denotes a project's:

- Minimum project management deliverables that must be prepared by the project team
- Governance structure
- Assurance requirements

These requirements are set out in Table 4.

Table 4: Governance, assurance & deliverables expectations

Class	Governance	Assurance	Deliverables
A	<ul style="list-style-type: none"> Accountable Executive supported by a Decision Board Define in a Governance & Assurance Plan 	<ul style="list-style-type: none"> All gates mandatory Define in a Governance & Assurance Plan Gate Reviews chaired by PGA Manager 	<ul style="list-style-type: none"> Core range of deliverables + optional deliverables as agreed with PGA Manager
B	<ul style="list-style-type: none"> Accountable Executive supported by a Decision Board Define in a Governance & Assurance Plan 	<ul style="list-style-type: none"> All gates recommended, PGA with Accountable Executive to decide. Define in a Governance & Assurance Plan Gate Reviews chaired by PGA Manager, peers or other independent lead 	<ul style="list-style-type: none"> Core range of deliverables, some tailoring and optional deliverables depending on project complexity and risk areas
C	<ul style="list-style-type: none"> Relevant Asset Line Manager Define within PEP 	<ul style="list-style-type: none"> All gates suggested – PGA to decide Gate Reviews chaired by peers 	<ul style="list-style-type: none"> Scaled back deliverables
D	<ul style="list-style-type: none"> Relevant Line Manager 	<ul style="list-style-type: none"> Scale back Gating; fit for purpose to project 	<ul style="list-style-type: none"> Minimum deliverables (PEP, Risk, Cost, Schedule)

8.2. Internal Resourcing Arrangements

8.2.1. Project Delivery Responsibilities

Project specific roles and responsibilities are documented in a Project Execution Plan (PEP) developed by the appointed Project Manager and approved by the Project Sponsor or Program Manager (or equivalent). The PEP provides clarity on the specific roles and responsibilities for each project.

Guidance on responsibilities for key roles with respect to project delivery from concept to close-out are captured in our standard Levels of Authority Matrix and standard RACI, included in Appendix C.

8.2.2. Infrastructure Delivery Structure

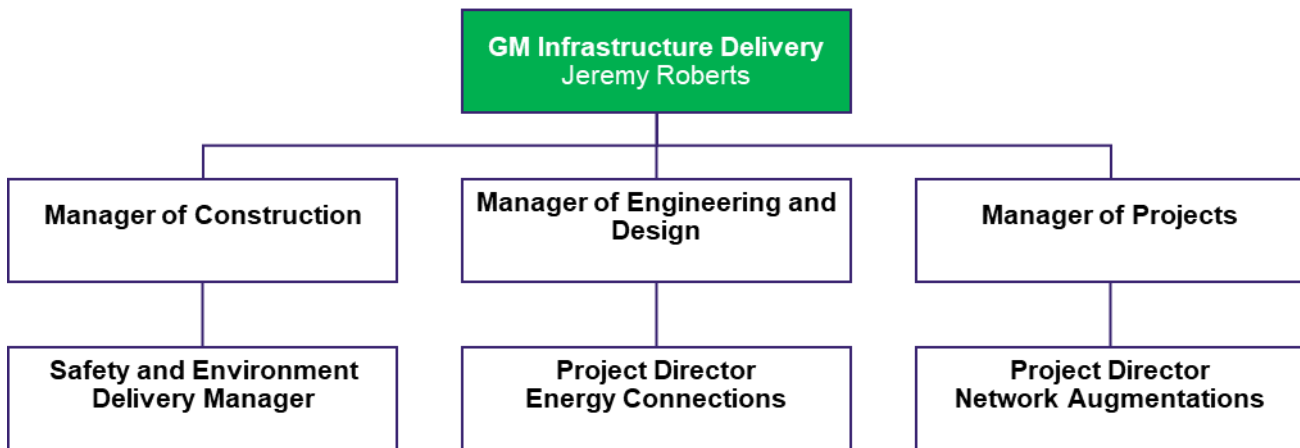
The General Manager (GM) Infrastructure Delivery is ultimately responsible for all Class B and C projects. Delivery responsibility is split between:

- Class B Projects – Project Directors
- Class C Projects – Manager of Projects

The project management personnel and systems support personnel report directly through to the respective Project Directors or Manager of projects.

The Safety and Environment Delivery Manager, Manager of Engineering and Design and Manager of Construction provide functional support to the Manager of Projects within the Program.

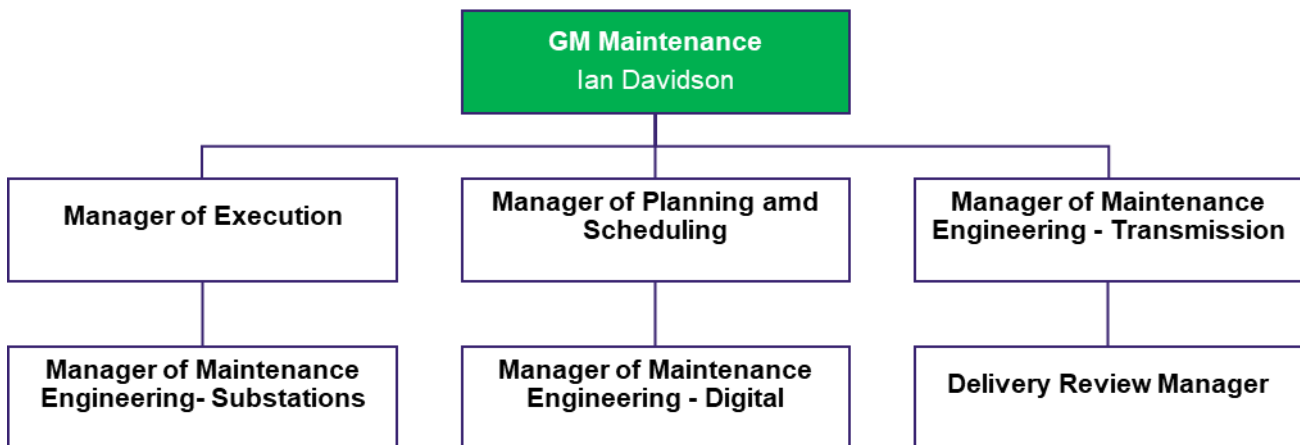
Figure 9: Infrastructure Delivery organisation structure



8.2.3. Maintenance Structure

The GM of Maintenance is responsible for delivering all Class D projects, which are then delegated according to the nature of the project to the respective lead shown in Figure 10.

Figure 10: Maintenance organisation structure



8.3. External Resourcing Arrangements

We currently have commercial panels for procuring standard equipment as well as outsourcing of trades and professional labour and resources. The suppliers on the panels are all signed up to agreed terms and conditions and represent companies that have worked with us before.

The various panels are tabulated in Appendix D. The following panels play a key role in delivering and resourcing the BAU Capex Program:

- **Construction Services Panels** – for underground and overhead transmission lines and substations.

- **Network Equipment Panels** – ranging from communications and IT equipment to HV equipment and includes both primary and secondary systems, as well as transmission line equipment (e.g., insulators and surge arrestors) and cables.
- **Professional and Technical Services Panels** – to deliver specialist procurement services as well as broader multi-discipline engineering and project management services.

Where necessary to address fluctuations in FTEs, project delivery resources are typically sourced through our professional and technical services panels, using secondment arrangements where outsourced personnel are embedded within a project team.

8.4. Resourcing strategy

Our project delivery resourcing strategy relies on internal resources for project management office (PMO), procurement and assurance activities and on external resourcing arrangements for detailed design and construction activities through our panel arrangements. A dedicated internal construction crew is maintained for some smaller projects in brownfield environments, supported by labour hire. The intent on maintaining this internal capability is to respond to network emergency events as well as maintaining a detailed understanding on performance and cost of the outsourced construction contracting methodology.

8.4.1. Repex Program

Our Repex Program is typically delivered using a mix of Transgrid's internal trades resources (supported by existing relationships with labour hire companies), the Construction Services Panel and other tier 2 / tier 3 contractors. The resource requirements for the repex component of the Program remains relatively flat for both the PMO and works labour hours, allowing for an internally resourced implementation plan for a portion of the works, with the remaining works delivered by our contractors. The use of internal resources for some projects allows us to use the Repex Program to retain key skill sets for operations and maintenance as well as for emergencies, critical response and repairs.

We use a program-style approach for specific types of projects (e.g., Transmission Line Refurbishments) to secure contractor resources and mitigate delivery risks. We provide a commitment of projects and spend to the selected contractors over a set period of time (typically in two or three-year blocks) to secure contract resources for the duration of the engagement, as well as to procure long lead time equipment. This arrangement allows contractors to lock in long-term work and enables flexibility in the delivery plan to optimise resource efficiency thereby minimising cost whilst also mitigating risks, such as weather events or outages. The Repex program is a key growth program for Tier 3 contractors to grow into Tier 2 contractors.

8.4.2. Augex Program

Because the Augex Program can be inherently lumpy, relative to the Repex Program, we use our construction and engineering panels for Augex delivery.

The construction services panel includes companies with design and construction capability, including design services. Contractors on this panel include tier 1 firms such as Downer, UGL, Zinfra, and CPP. These contractors have the capacity to undertake design and construction packages for Class B and Class C projects, including major greenfield and brownfield projects.

Each project has its own tailored procurement strategy or approach. For complex projects, this can also include ECI to assist in detailed development ahead of the delivery phase to mitigate delivery risks and obtain the contractor's firm proposal for the works.

This external resourcing and contracting approach allows us to cater for the step-up and step-down requirements for project resources required to deliver the Augex Program. The combination of the Repex and Augex contracting methodologies allows for the Tier 1 & 2 contractors to optimise timing for ramp up in resourcing and to flatten resource requirements by filling in low utilisation periods.

9. Capital Planning Process

9.1. Capital Investment Processes

Our established capital investment process adheres to the Asset Management Policy and Asset Management Objectives defined in our Network Asset Strategy, which is aligned with our business plan. The full details of the process are set out in our Prescribed Network Capital Investment Process.

The capital investment process is an ongoing cycle that seeks to identify needs and opportunities that will address the objectives described in Section 5.2.

The governance framework over the capital investment process incorporates our delegation of authority, defined accountabilities and responsibilities for project planning documents and project Decision Gates, including a range of appropriate governance roles and bodies. These requirements are detailed in Appendix A, Section A.3.

9.2. Investment Decision Gates

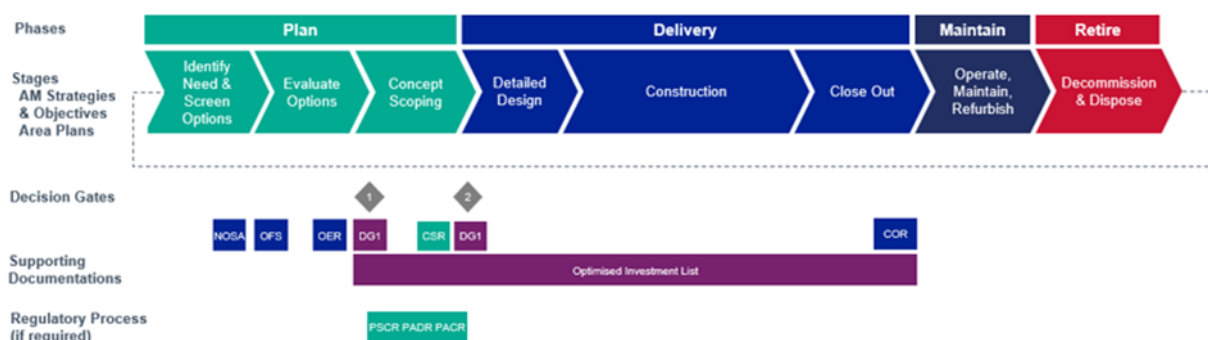
Potential investments are subject to Decision Gates (DG) review and approval, which incorporate the principles of Front End Loading (FEL) to ensure appropriate evaluation of options and value before significant spend is committed.

Appropriate documentation is required to support DG progression and key outputs that are used as inputs to the capital planning process. The documentation required to support decision making is set out in our Prescribed Network Capital Investment Process and described in Appendix A Section A.2. Our network investments have two DGs requiring approval from the delegate with appropriate Financial Authority:

- DG1 – Project Commencement
- DG2 – Project Approval

The asset lifecycle and DGs are shown in Figure 11.

Figure 11: Asset lifecycle phases & stages (ex-ante Network Projects)



Our network investment portfolio is validated for deliverability, applying the following lenses:

- Review of the program for key outage clashes and project dependencies to adjust optimal timing dates as necessary
- Deliverability / resource levelling is reviewed by considering the timing of individual projects and their associated S-curve within the project estimates.
- Consideration of project scope interactions across both repex and augex projects and programs.
- Board and Executive top-down challenge and committee review.

10. Project Management Methodology

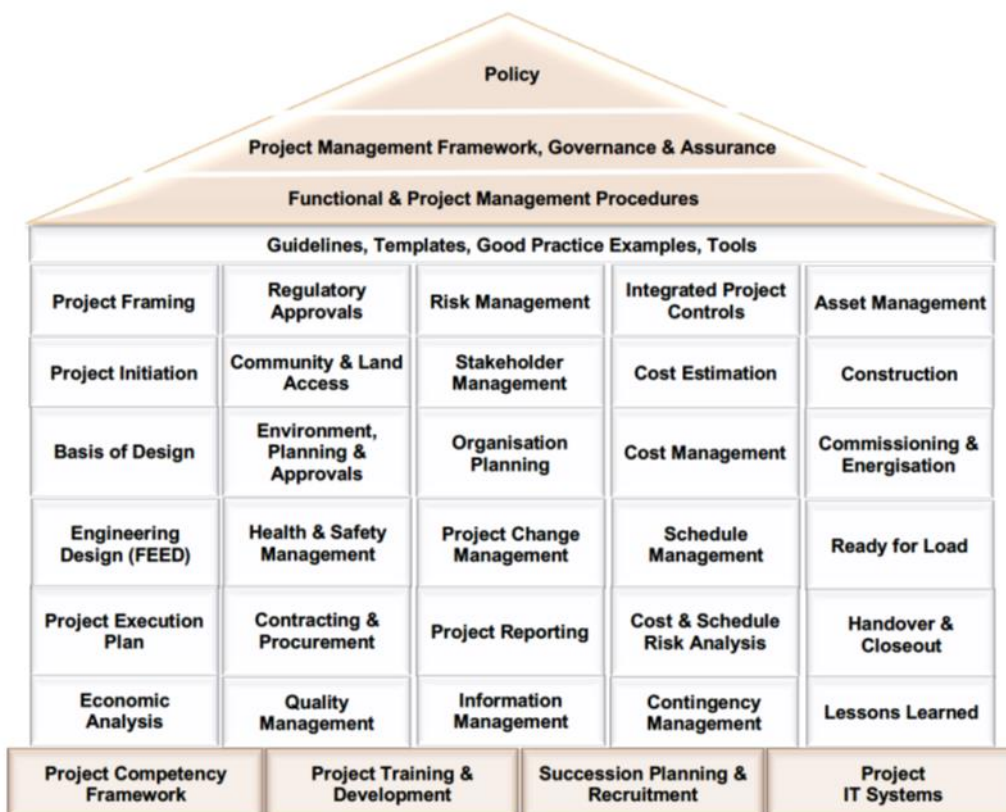
Transgrid’s Project Management System Framework is broadly aligned with the Project Management Institute of America’s Project Management Body of Knowledge (PMBOK). The Framework gives us a scalable project management methodology that can adapt to a range of electricity transmission infrastructure projects, from small repeatable projects to major projects of significant complexity and risk.

Our Framework is based on the following principles:

- **Integrated and multidiscipline approach** – Asset development is complex and a multidiscipline approach is required covering all aspects (e.g., technical, community, risk).
- **Front End Loading (FEL)** – Sufficient time and resources are required in the early phases to maximise the project’s potential return and value.
- **Assurance and governance** – Projects are responsible for undertaking assurance on their project and establishing governance structures to support effective project decision making.
- **Gated decision making** – Assurance reviews and formal decision gates ensure that a decision to proceed with a project is taken with a full understanding of the risks by the Accountable Executive.
- **Stakeholder management** – Projects actively engage sponsors and stakeholders, and plan for decisions.
- **Flexibility and scalability** – While there are minimum requirements, the content and depth of each activity is flexible and adapted to the specific project.

Figure 12 presents an overview of our project management framework.

Figure 12: Project management framework overview



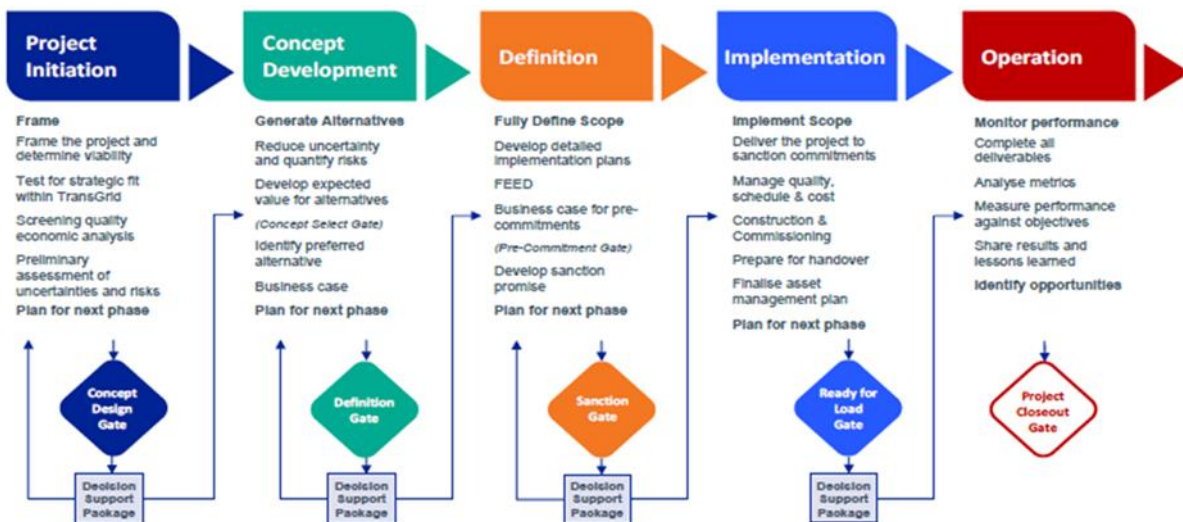
10.1. Project Phases

Each phase corresponds to a distinct stage in the project life cycle. Independent assurance reviews are required toward the end of each phase to ensure the project is ready to proceed.

The first two phases – Project Initiation and Concept Development – are concerned with identifying the project and determining its delivery value. Whereas, the subsequent three phases are focused on successful delivery (see Figure 13). Effective FEL ensures the project is properly framed and the optimum concept identified. At the end of project initiation, the project should be clearly framed, major risks and uncertainties identified, and the fundamental viability of the project determined.

Concept Development is a key phase for adding value to a project and is focused on assessing a range of alternative concepts and selecting the most appropriate concept which will maximise returns and minimise risks to Transgrid. At the end of Concept Development, a concept is selected for further study, the basis frozen and the scope closed. The Definition, Implementation and Operate phases are where the value is realised through detailed definition activities for the selected concept, followed by implementation and handover to operations. At the end of the Definition Phase a business case must be finalised, forming the basis for performance measurement.

Figure 13: Project phase activities



10.2. Project Governance

Our Project Management System Framework sets out the minimum requirements for governance. The governance of a project is the critical link between the executives responsible for determining and guiding the strategic direction of an organisation and those responsible for executing and supporting those strategies. Project governance refers to the management structures and the process for strategic project decision-making in relation to a particular project (refer Governance Procedure).

Project governance provides transparency and steering of the project team’s activities to enable the:

- Sponsor to make quality decisions to ensure that business objectives are achieved
- Creation of clear boundaries and decision rights for the Project Manager and Project Team to progress through the project phase.

Typical Governance Structures can include the sponsor acting solely or supported using a Decision Board or Steering Committee.

10.2.1. Auditing & Compliance

Project auditing and monitoring of compliance of project management and capital delivery with our prescribed processes is the responsibility of the GM Project Governance and Assurance.

The project compliance auditing program provides feedback to the system’s owners for continuous improvement of our systems and processes.

10.2.2. Authority Matrix

Our role authority limits are documented in the Financial Authorities procedure, summarised in Table 5 and Table 6.

Table 5: Roles with specific authorities

Title	Authority
Executive Managers Chief Financial Officer Group Financial Controller Managers	<ul style="list-style-type: none"> • Authorise the entering into of instruments and documents on behalf of, and so as to bind, TransGrid where such instruments or documents are necessary or desirable to implement or complete transactions which have previously been approved by the Board, Chief Executive Officer or another officer exercising their sub-delegated authority • Authorise the entering into of instruments and documents on behalf of TransGrid where such instruments or documents are necessary or desirable to progress projects and/or transactions, which do not result in any associated expenditure. These instruments and documents include Confidentiality Agreements, Non-binding Memorandums of Understanding.
Executive Manager/Strategy and Regulation	<ul style="list-style-type: none"> • Authorise prescribed transmission service prices in accordance with the National Electricity Rules and TransGrid’s Pricing Methodology as approved by the AER • Approve financial transfer payments by TransGrid to other TNSPs where such payments have been calculated in accordance with the revenue allocation process set out in the NER.
Chief Financial Officer	<ul style="list-style-type: none"> • Authority to manage Settlement Residue moneys paid to or required to be paid by TransGrid under the conditions laid down in the NER or other formal direction • Authority to manage Transmission Use of System moneys paid to or required to be paid by TransGrid under the conditions laid down in the NER, AER Revenue Determination or other formal direction.
Treasurer	<ul style="list-style-type: none"> • Authority to administer bank accounts including adding or removing online banking authorisers and account signatories • Authority to create and authorise payments and associated transactions (including entering into foreign currency transactions where applicable) in the banking system of an unlimited value, where the associated expenditure has already been approved in accordance with this Procedure • Authority to request loans, repay loans and pay associated finance charges where the relevant facility has already been approved in accordance with the Finance Documents • Authorise the entering into of instruments and documents on behalf of TransGrid where such instruments or documents are necessary or

Title	Authority
	desirable to implement or complete transactions associated with the Treasury function
Financial Controller	<ul style="list-style-type: none"> Authorise the entering into of instruments and documents on behalf of TransGrid where such instruments or documents are necessary or desirable to implement or complete transactions associated with the novated financing lease arrangements pertaining to salary sacrifice for motor vehicles allowable under the TransGrid Employees Award.
Manager/Procurement	<ul style="list-style-type: none"> Authorise the entering into of letters of acceptance, novations and assignments of contracts and orders, maintenance agreements, formal instruments of agreement as referred to in the TransGrid General Conditions of Contract and consultancy agreements on behalf of, and so as to bind, TransGrid where such instruments or documents are necessary or desirable to implement or complete transactions which have previously been approved by the Board, Chief Executive Officer or an officer exercising sub-delegated authority. Positions performing the role of managing the ongoing cleaning and maintenance of TransGrid's sites.
Manager/Field Support	<ul style="list-style-type: none"> Authorise expenditure for restocking and the acceptance of quotations for stock items, restocking, non-catalogue items, and works and services items and for the acceptance of quotations for disposal of surplus items.

Financial delegations for positions (including project manager positions) are highlighted below:

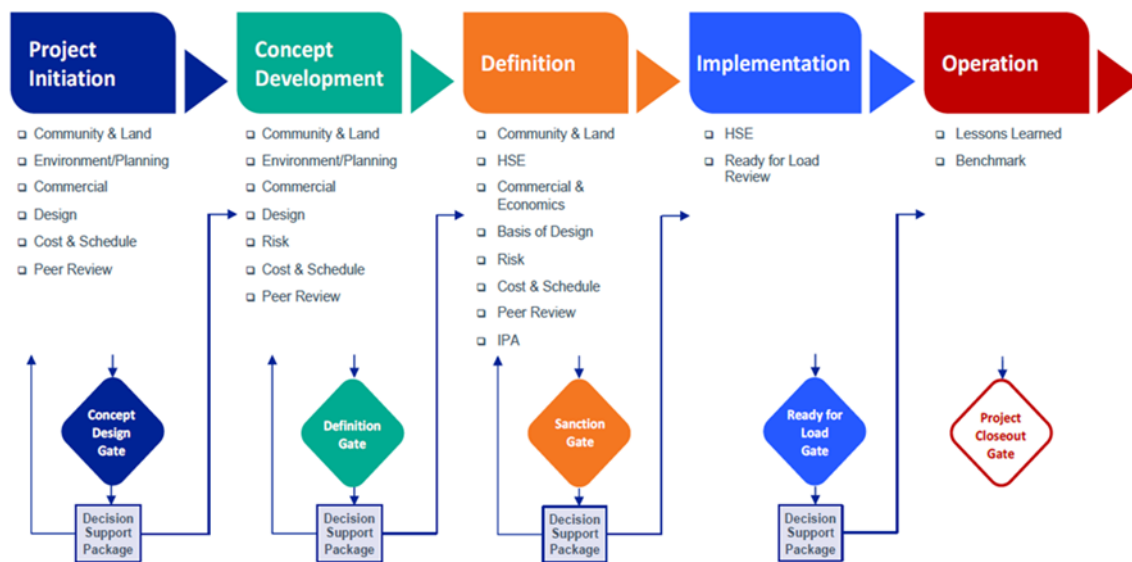
Table 6: Financial delegations

Level Below the CEO	Title or position description	Worked Example	Maximum Authority
1	Executive Manager	EM, Works Delivery	\$10,000,000
2	A position reporting to an Executive Manager at Level 1.	GM/Infrastructure Delivery	\$2,000,000
3	A position reporting to a Manager at Level 2.	Manager of Projects	\$100,000
4	A position reporting to a Manager at Level 3.	Operations Manager	\$50,000
5	A position reporting to a Manager at Level 4 in the Works Delivery function.	Project Manager	\$25,000
6	A position not listed above that is required to be granted financial delegation due to location or expediency.	Site Manager	\$10,000

10.3. Project Assurance

Project Assurance is the process of identifying and performing appropriate, independent and impartial reviews to confirm the work is appropriate and complete to the right quality, and that the risks are known with appropriate controls in place. The assurance process helps to maximise the value of an investment, reduce uncertainty and risk, and ensure that regulatory and operational requirements are delivered. The process is based on a series of decision points where opportunities and risks are considered, with input from all key project stakeholders.

Figure 14: Typical project assurance coverage

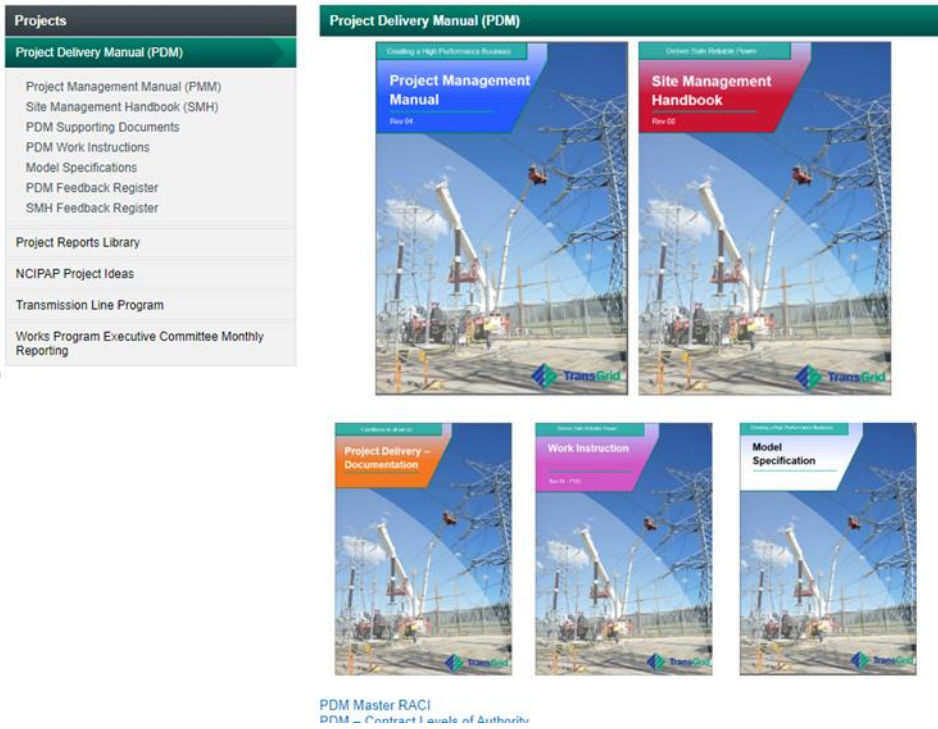


10.4. Project Systems

The Project Delivery Manual (PDM) and associated systems and processes are used to provide the systems approach to project management of the Program for all Class B, C and D projects. The PDM is maintained and developed by the Manager of Projects and is aligned with the PMBOK project management methodology.

PDM documents are accessed through our intranet as shown in Figure 15.

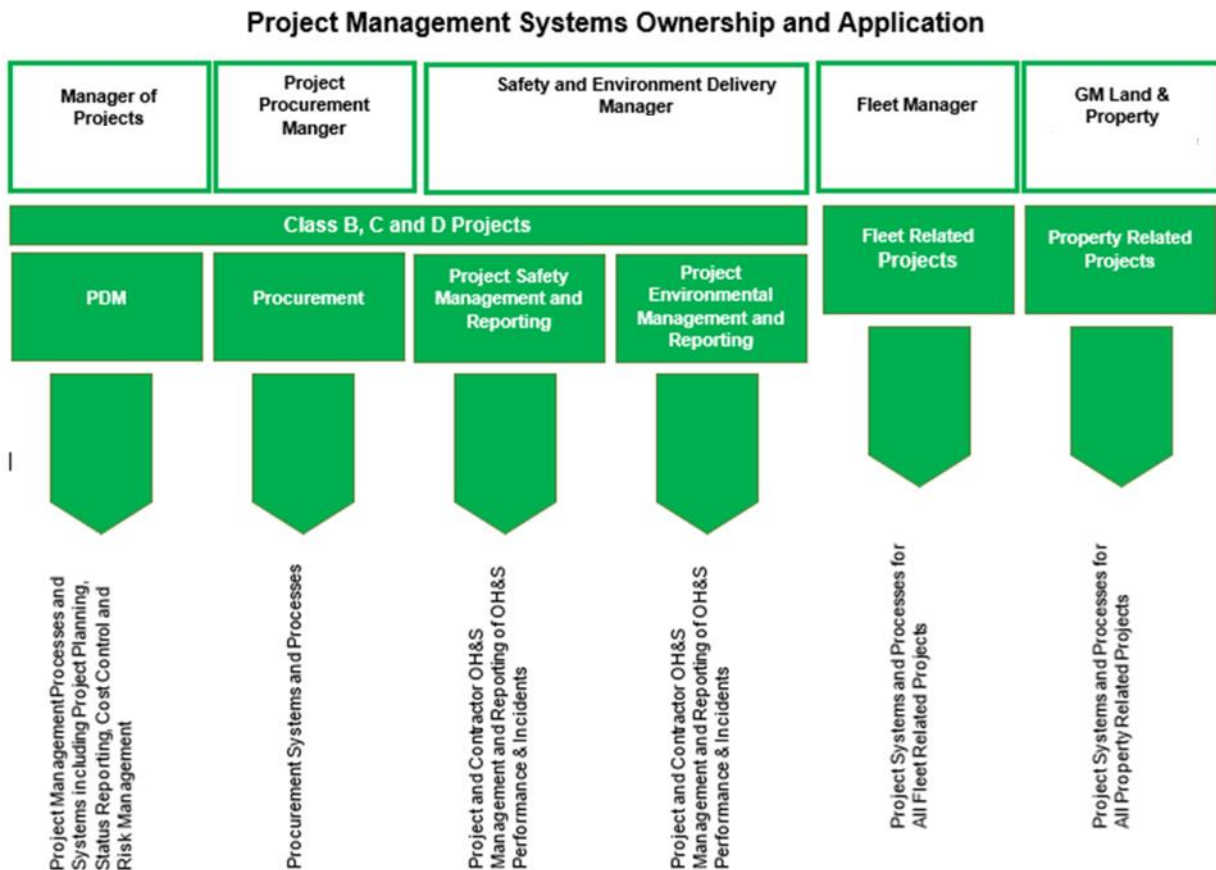
Figure 15: Project systems portal



The PDM is written around the project management and governance requirements for capital projects.

Figure 16 highlights the ownership and application of project management systems across the Program.

Figure 16: Project management systems ownership and application



10.5. Project Execution Planning

The progressive development of the PEP represents a key step in successful project planning. The PEP is the overarching project management document for the project, and its purpose is to detail, in increasing depth as the project develops, the strategy, tactics and plans for the Concept Development, Definition and Implementation phases of the project to meet the business requirements.

The PEP is a 'live' process for planning and executing a project, and integrating business goals as agreed with the sponsor. It defines roles and responsibilities of all parties involved in delivery, and documents decisions and plans that will determine the Project's path. Creation of the PEP promotes project ownership and single point accountability of the Project Manager. The PEP is updated when a material change in scope, cost or time is realised.

The PEP typically:

- Outlines the requirements of key stakeholders and states how those requirements will be met through project execution
- Explicitly states a defined and agreed Project Execution Strategy
- Addresses communications planning
- Outlines organisational structures, reporting lines, interfaces and responsibilities

- Outlines the management of design, procurement, fabrication, installation, construction, inspection, testing and pre-commissioning activities
- Outlines how the management of HSE, Quality, Human Resources (and Industrial Relations if applicable) is integrated into delivery
- Defines project documents and detailed sub plans (i.e., Quality Management Plan) to be developed to manage the specific project functions
- Identifies procedures and standards to be used by the Project Team to control the project
- Describes coordination, monitoring, auditing, inspection, reporting and review activities

10.6. Capital Project Delivery and Integration

Every project within the Program has a PEP approved per the Authority Matrix requirements in Section 10.2.2. The Project Management System Framework includes managing concurrent integrated functions, including:

- Scope management – including change management processes
- Risk management
- Safety
- Quality management
- Scheduling
- Cost estimation
- Cost management
- Commercial management
- Communications management and coordination

The PEP provides clarity on how all of the above are managed within the projects and the links and integration within the specific functions.

Importantly, the PEP articulates the project objectives, including project safety and environmental objectives, asset performance and handover timing objectives, as well as project cost objectives. As part of objective framing, the PEP makes clear the project KPIs, which must align with the Capital Program Objectives described in Section 5.2.

11. Deliverability Risk Assessment and Mitigation

11.1. Program Delivery Risks and their Mitigation Strategy

Key deliverability risks and their controls are summarised in Table 7.

Table 7: Deliverability risks

Key Risks	Controls
Resourcing Risk, including competition for skills	<ul style="list-style-type: none"> • Deliverability Plan • Repex Works Planning – program type to “lock in” contractor resources • Augex Works Planning – sourcing strategy and ECI • Use of Key Panels for Engineering and Construction Services • Use of key panels for equipment supply of long leads • Contracting strategy to achieve equitable allocation of risks (see below)
Equipment and material supply chain risk	<ul style="list-style-type: none"> • Use of existing panel contractors with terms and conditions acceptable to Transgrid • Program arrangements to “lock in” equipment and materials procurement early • Holding stocks in our warehouse • Early contractor involvement (refer below) for larger projects
Commercial Risks	<ul style="list-style-type: none"> • Use of existing panel contractors with terms and conditions acceptable to Transgrid • Early contractor involvement (refer below) for larger projects • Contracting strategy to achieve equitable allocation of risks (see below)
Governance – Multiple Points of Delivery Accountability	<ul style="list-style-type: none"> • Auditing of Program delivery against Transgrid’s own business processes • Program level reporting
Operational Readiness	<ul style="list-style-type: none"> • Asset Handover and Operational Readiness procedures
Capital Plan – under or overspend	<ul style="list-style-type: none"> • Program level reporting to Transgrid Executive

The GM Project Governance and Assurance provides program level compliance reporting back to the Executive regarding compliance with business processes and control effectiveness.

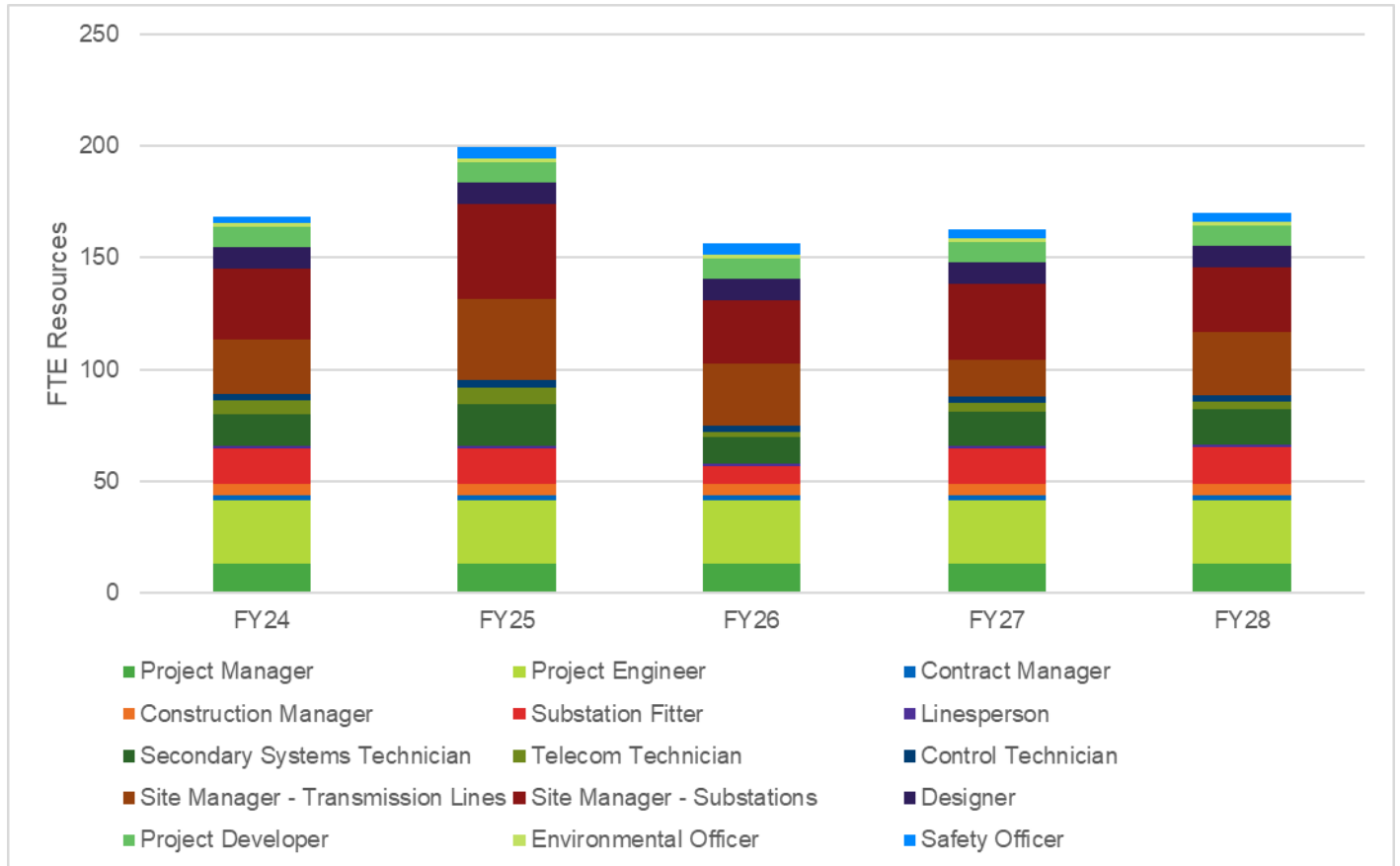
The GM Enterprise Portfolio Management is responsible for monitoring and reporting on Program progress against Plan to our Executive Leadership Team and monitoring the enterprise risks associated with any deviation from the plan.

11.2. Resource Forecast

We have forecast our internal FTE resource requirements based on the forecast network capex for the 2023-28 regulatory period. The internal resource requirements are based on our resourcing strategy

described in Internal Resourcing Arrangements, including using professional services panels to supplement our internal resources and construction services panels to resource delivery and construction.

Figure 17: Internal resource forecast 2023-28



The net number of FTEs required to deliver our forecast network capex program shows a relatively flat profile from year to year, with the exception of 2024-25 where the number of site managers required peaks relative to other years. This is driven by our Augex Program, which has a peak in project delivery for 2024-25.

The resource requirements for our proposed 2023-28 Program are similar to those in the current regulatory period. When we experienced peaks in our Augex Program profile, due to the delivery of Stockdill substation and Powering Sydney’s Future projects, we successfully managed the increase in resource requirement by leveraging resources in other parts of our BAU program. For example, using maintenance staff as site managers on capital projects on a temporary basis and contracting maintenance work with a service provider.

Forecasts indicate that Transgrid is capable of resourcing the net FTE requirements with appropriate levels of planning and preparation.

11.3. Working With Contractors

Risk assignment through lump sum contracting has been common practice for works contracts where scopes of work are clearly articulated and understood, and execution is within the contractor’s control. For larger contracts, such as D&C contracts, design risk can also be transferred to the contractor.

However, current experience within capital works contracting shows that contractors:

- Are risk averse and will push back on risks that they cannot control
- Are unwilling to take any escalation risks for projects exceeding 12 months, making lump sum pricing difficult to achieve
- Have very little control over overseas supply chains
- Have resourcing challenges due to a nationwide skills shortage, which makes them hesitant to guarantee a delivery schedule, resulting in push back against taking on liquidated damages risks.
- Are inflating pricing when asked to take on risk.

Where a contractor price includes tiers of subcontracting the risk provisions have a compounding effect, leading to quotes that can equate to twice the value of budgets based on benchmark or historical pricing.

To keep pricing under control and achieve an equitable risk allocation that contractors are willing to accept, Transgrid is embedding the following risk mitigation actions into the Program's contracting strategy:

Use of Tier 2 Contractors – Broadening the Base

Tier 2 contractors will be used for less complex works via a second tier within the panel. Tier 2 contractors will typically have a narrower skillset, but will come with self-execute capability, reducing the amount of subcontracting and tiered margins and risk provisions in proposed pricing.

Free Issue Equipment and Long Lead Equipment

Transgrid has more buying power than our contractors, enabling us to leverage more competitive terms for standard equipment and long lead items. Our pre-existing commercial relationships and supply arrangements allow us to order long lead time equipment (LLE) early and expedite delivery. We are therefore making direct purchase of key and long lead time equipment, with free issue to contractors, part of the Program's contracting strategy.

We are also hiring demand planners for LLE to address this risk and track critical purchase orders. Such equipment is typically pre-purchased across the Program, including forward booking manufacturing schedules.

Early Contractor Involvement

Larger more complex scopes, involving Tier 1 contractors and design and construction services, are typically driven through an ECI process. The process engages the contractor during the detailed feasibility stage of the works, allowing them to develop the design and price, which can then be awarded following project sanction. To encourage contractors to engage with the ECI process in constrained market conditions, Transgrid is evolving this process to ensure:

- An equitable allocation of risk
- Trust between the Transgrid and contractor teams
- A rapid escalation path for resolving issues
- Clarity of contract objectives and plan to achieve them

Strategies include modifying the contracting model by partnering with panel members to offer a "program style approach" where parcels of the program are pre-scheduled to lock in resource requirements and project margins.

Appendix A Our Capital Investment Processes

Our established capital investment process adheres to the Asset Management Policy and Asset Management Objectives as defined in the Network Asset Strategy which is in full alignment to our business plan. The full details of the process are set out in Transgrid's Prescribed Network Capital Investment Process.

The capital investment process includes DG that incorporate the principles of FEL to ensure appropriate evaluation of options and value before significant spend is committed.

The underlying principles and drivers that support achieving strategic and asset management objectives ensure that:

- Processes are aligned with the principles and requirements of the Asset Management Policy and the corporate financial guidance
- Investments add value to consumers in line with the National Electricity Objective developed by the Australian Energy Market Commission
- Investment decisions are evaluated based on sound economic benefits and involves quantitative analysis supported by quality asset information
- The process of investment decision making is transparent in terms of the evidence and methodology used to arrive at the final assessments

A.1 Assessment parameters

Financial Evaluation

TransGrid uses two key metrics to evaluate investment:

- NPV
- Internal Rate of Return.

Compliance obligations

TransGrid's key compliance and corporate obligations are derived from:

- Safety requirements
- License condition
- The NER and other relevant legislation

Projects that contribute directly to specific license or compliance requirements, such as NE R obligations or IPART reliability standards, are mandatory and would be considered for investment irrespective of their financial returns. In these circumstances, the solution option with the smallest negative NPV will be preferred.

Network Safety Requirements

The risk appetite statement approved by the Board stipulates that safety risks are managed to ALARP. This is consistent with the requirements of AS5577 Electricity Network Safety Management System. The core requirements of Transgrid's ENSMS are:

- Under the relevant safety acts risks whether network or work practice initiated, that may result in injury to people must have controls in place to reduce those risks as far as reasonably practicable. This involves removing hazards or implementing all reasonable controls with a bias towards safety and only not implementing when the cost is disproportionate.
- AS5577 requires that across the assets lifecycle network safety risks managed by:
 - Eliminating hazards so far as reasonably practicable
 - Where a hazard cannot be eliminated, the risk it presents shall be reduced ALARP by implementing all appropriate mitigations unless the cost is grossly disproportionate to the expected benefit

The method to demonstrate meeting of these requirements is not specified in the regulations or standards. Transgrid, based on international precedent, has developed objective processes and decision criteria to allow economic evaluation that can demonstrate consideration of practical alternatives when assessing investments. This process utilises disproportionality factors on the calculated risk costs when assessing options.

A project can be justified under ALARP if the investment cost is not disproportionate to the benefit, i.e., it does not exceed the calculated disproportionate benefits. For details on the process and decision criteria please refer to the Network Risk Assessment Methodology.

In assessing ALARP, the business must be able to demonstrate that it has properly identified and considered all relevant feasible options. This includes undertaking reasonable investigations to establish the expected costs and benefits as well as defining what would be the “largest reasonably acceptable incremental cost”.

Projects that meet ALARP requirements are mandatory, even though they may have negative NPVs. In these circumstances, the options with the smallest negative NPVs will be preferred.

A.2 Investment Decision Gate Requirements

Appropriate documentation is required to support each investment DG.

The types of documentation are described within Transgrid’s Prescribed Capital Investment Process.

Table 8 Documentation required to support decision gate approval

Document	Function
Need and Options Screening Assessment (NOSA)	<ul style="list-style-type: none"> • Sets out why a particular asset-related investment is being proposed, and briefly summarises potential options to address the need and/or opportunity. • Includes an assessment of the risks that give rise to the need and/or savings and other benefits that give rise to the opportunity. • Provides an indicative timing (if available) to address the need or capture the opportunity. Identifies options which require further study and those which can be screened out at that point. • Requests formally the OFS be undertaken. • Request when the timing of OFS will need to be completed.
Option Feasibility Study (OFS)	<ul style="list-style-type: none"> • Responds to a NOSA with a desktop review to determine likely feasibility and high-level cost ($\pm 25\%$ accuracy²) for nominated options.

Document	Function
	<ul style="list-style-type: none"> • The requirement for one or more OFSs is documented in the NOSA. • Each OFS must identify related needs and any potential efficiencies for each option in that need (e.g., whether the works can be bundled or undertaken at the same time)
Options Evaluation Report (OER)	<ul style="list-style-type: none"> • Summarises the need and/or opportunity, the options available to address that need and/or opportunity and the technical and commercial evaluation of those options and need date. In doing so, all practical options must be considered, such as increased maintenance, asset replacement and/or refurbishment, non-network (where applicable). • Includes any clarification on scoping activities for the preferred option. • Cost, discount rate, and time sensitivity analysis is required to be conducted during the OER stage to identify investment justification threshold.
Optimised Investment List (OIL)	<ul style="list-style-type: none"> • The OIL represents an optimised two-year snapshot of the capex portfolio. • The OIL contains projects at different stages of the project lifecycle with differing uncertainties. The OIL sets the overall capital outturn for the relevant financial years. • Optimisation is undertaken to deliver the highest benefit at the optimal cost based on funding constraint, risks and opportunities. • The OIL is submitted to the IRC and subsequently to the Board for approval on an annual basis. • Approval of the OIL (as noted in Board Meeting Minutes) will act as: <ul style="list-style-type: none"> • Project Commencement Approval (DG1) for those projects identified as yet to commence. • Portfolio annual budget approval. • Projects with a total estimated value exceeding \$15 million will require an individual Project Commencement (DG1) paper to be included as an attachment to the OIL.
Pre-Decision Gate 1(Pre- DG1)	<ul style="list-style-type: none"> • Funding approval from the Board to commence RIT-T on the contingent projects.
Decision Gate 1 (DG1)	<ul style="list-style-type: none"> • Costs based on OFS. • DG1 provides approval for scoping/development of the projects. • Emerging issues/projects related to current network raised outside of the annual OIL would require separate DG1 approval as per the Financial and Process Authorities (FPA) delegation. • Contingent Projects DG1 papers will be submitted separately for the Board approval. • DG1 baseline to be set upon the DG1 approval via OIL or separate DG1 papers. • DG1 will highlight the total project cost, need date, and DG1 to DG2 cost.
Concept Scoping Report (CSR)	<ul style="list-style-type: none"> • Report outlines the refined scope, cost estimate at P50/P90 and time to deliver the preferred option.

Document	Function
	<ul style="list-style-type: none"> The report will outline the delivery strategy, risks, safety in design, any required project approval (i.e., environmental, regulatory, community, property) and any project constraints (i.e., outage, staging, resources).
Project Approval Document (PAD) – DG2	<ul style="list-style-type: none"> DG2 confirms the preferred option as technically and commercially prudent to address the need and/or opportunity and provides full approval to proceed with the project. Approval is in accordance with the Financial and Process Authorities delegation. The DG2 nominal accuracy range shall be defined as P5-P95 values. If the range remains outside +/- 15%, further development is required to manage or eliminate the risks that are driving the excessive range of project outcomes. The PAD details the scope, need date, total project funding approval, breakdown of base cost, project risk contingency, efficiency considerations, Project Approved Cost (P50) and management contingency. Release of project contingency will be managed by Works Delivery and release of management contingency will be managed by the Head of Asset Management (refer to Appendix B) or the Project Director (for contingent projects).
Project Change Request (PCR)	<ul style="list-style-type: none"> Formally requests a change in the approved project cost, DG1 to DG2 cost, scope, and/or timing. Identifies project issues and recommends changes to address them. Explains clearly the reason for and the extent of the change (i.e., how much additional cost is required, what scope change is necessary and/or what extension of time is required for delivery.) Changes to the original business case benefits and/or risks must be considered before submitting a PCR. All options to accommodate the changes without incurring additional costs to the project needs to be evaluated. In the benefits realisation context, PCRs will be used to identify emergent benefits and/or changes in costs (e.g., efficiency) and/or risks and recommending their realisation.
Project Close Out Report (COR)	<ul style="list-style-type: none"> Reports on the completion of network-related projects. It will include a summary of any benefits and/or changes in costs and/or risks, project performance, efficiency, lessons learnt during the period between Concept Scoping and Close Out. This will also include acceptance of all asset information required to make decisions on the operation and maintenance of the assets.

A.3 Our Governance Framework Covering Investment Decisions

The following tables set out our governance accountabilities and responsibilities.

Table 9 Tasks, accountabilities and responsibilities for need identification and option screening

Task	Accountability	Responsibility
Complete analysis and gather supporting information to identify need and/or opportunity	Concept Owner	Concept Owner delegate
Register need and/or opportunity	Concept Owner	Concept Owner delegate
Assign Project Developer	Head of Project Development	Head of Project Development delegate
Conduct options screening	Concept Owner	Concept Owner delegate
Complete and approve NOSA	Concept Owner	Concept Owner delegate
Review of NOSA	Asset Analytics and Insight Manager	Asset Analytics and Insight Manager delegate

Table 10 Tasks, accountabilities and responsibilities for options evaluation

Task	Accountability	Responsibility
Quantify risk costs and savings (if applicable)	Concept Owner	Concept Owner delegate
Provide reliability risk input and market benefits for prescribed network capital investments	H/NP	H/NP delegate
Undertake RIT-T (Contingent Projects)	Head of Regulation	Head of Regulation delegate
Interface and coordination for Concept Owner	Asset Analytics and Insight Manager	Asset Analytics and Insight Manager delegate
Conduct options analysis and complete and submit OFS	H/PD	H/PD delegate
Approve OFS	H/PD	H/PD
Conduct commercial evaluation and complete and submit OER	Concept Owner	Concept Owner delegate
Endorse OER	Asset Analytics and Insight Manager	Asset Analytics and Insight Manager delegate
Approve OER	H/AM (for Repex) or H/NP (For Augex and NCIPAP)	H/AM (For Repex) or H/NP (For Augex and NCIPAP)
Create/update project forecast and milestone in PPM.	H/ID or Project Director	H/ID delegate or Project Director delegate
Prepare and Issue Optimised Investment List (OIL)	H/AM	Asset Analytics and Insight Manager
Draft and submit the DG1 papers comprising two-yearly budgets for the OIL and for projects with a total estimated value exceeding \$15 million	H/AM	Asset Analytics and Insight Manager

Task	Accountability	Responsibility
Endorse OIL– DG1 Board papers	IRC	IRC
Approve two-yearly budgets for OIL – DG1 Board papers	Board	Board
Prepare and review DG1 paper for emerging issues, contingent projects and Pre-DG1 Board Paper	H/AM	Asset Analytics and Insight Manager
Approve DG1 paper for emerging issues	H/AM or EM/NP&O or CEO or Board based on Delegated Financial & Process Authorities (Refer to Table 8)	H/AM or EM/NP&O or CEO or Board based on Delegated Financial & Process Authorities
Approve Pre-DG1 and DG1 Board papers for contingent projects	Board	EM/NP&O
Prepare Pre-DG1 Baseline (Contingent Projects)	Project Director	Project Director delegate
Prepare DG1 baseline	H/ID or Project Director	H/ID delegate or Project Director delegate
Upload Pre-DG1 (for Contingent Projects) and DG1 baseline	Head of Financial Planning & Analysis	Digital Finance Manager

Appendix B - Standard RACI

Item	Task	BG	NP&O	CS - Strategic Procurement	H/Infrastructure Delivery	Senior Program Manager	Program Manager (ID)	Construction Manager	Project Manager	Site Manager	Scheduler	HS&E	Portfolio Office	Field Resources	Customer and Stakeholder	Finance	Development Manager (PD)	Program Manager (PD)	Project Developer	Commissioning Group (ID)	
	Define Project																				
1	Attend bid development start up meeting (Contestable)				I	A	C		C											R	
2	Develop and coordinate OFS documents (Non-Contestable Projects)		I				I	C									A	R	R		
	Develop Concept																				
DESIGN MANAGEMENT																					
3	Allocate Project Developer								I								A	R			
4	Manage, coordinate, and deliver design deliverables						I		C									A	R		
5	Engagement and management of design contractors via ESP						I		I									C	R		
6	Review of design package						I		I	I								A	R		
7	Organise/manage design review meeting						C		A	I									R		
8	Coordinate responses to design RFIs from design contractor (inc. D & C)						I		C									I	R		

Item	Task	BG	NP&O	CS - Strategic Procurement	H/Infrastructure Delivery	Senior Program Manager	Program Manager (ID)	Construction Manager	Project Manager	Site Manager	Scheduler	HS&E	Portfolio Office	Field Resources	Customer and Stakeholder	Finance	Development Manager (PD)	Program Manager (PD)	Project Developer	Commissioning Group (ID)
9	Approval of design		A				I		I	I								A	R	
10	Issue Approved for Construction drawings to WD		A				I		I	I								A	R	
11	Ensure project design register (including status) is up to date during construction		C				I		A	R								A	R	
12	Provide Request for Design Services (RDS) to Project Development		I		I	I	A		R									I	I	
DEVELOPMENT OF PROJECT																				
13	Early Works phase project start up meeting (Contestable)	R		I	C	A	C		C											I
14	Project handover upon DG2 Approval from BG (Contestable)	A			C	I	I		I				I							I
15	Sign handover checklist from BG (Contestable)	I			A	R	R		I				I							I
16	Participate in discussions on Early Works with Client (Contestable)	C			I	A	C		R											I
17	Scope clarification with Asset Management		A				I		C											R
18	Coordination with BG for customer requirements	A					I		C											R

Item	Task	BG	NP&O	CS - Strategic Procurement	H/Infrastructure Delivery	Senior Program Manager	Program Manager (ID)	Construction Manager	Project Manager	Site Manager	Scheduler	HS&E	Portfolio Office	Field Resources	Customer and Stakeholder	Finance	Development Manager (PD)	Program Manager (PD)	Project Developer	Commissioning Group (ID)	
19	Engagement of construction contractors for ECI arrangements & budget pricing						I	I	R											C	
20	Develop Concept Scoping Report (CSR), Project Cost Estimate (PCE)	I	I				I		C								A	I	R		
21	Coordinate RIT-T						I		C										I	R	
22	Coordinate Planning Approvals						I		C										I	R	
23	Coordinate Property Acquisition						I		C										I	R	
24	Coordinate Environmental Approvals						I		C										I	R	
25	Coordinate Third Party Agreements						I		C										I	R	
26	Allocate Project Manager or engage external project management support resources				A	R	R		I	I									I	I	
27	Preparation of Infrastructure Delivery advice and estimate		I		A	C	C		R		C		R							I	
28	Coordinate estimates from estimating team and provide BOE					I	I		C								A	I	R		
29	Create PPM		A		I	I	I		I											C	
30	Set-up Project Management Systems (TeamBinder, Lessons Learnt Register, etc.)					I	I	I	A	C			R						I	C	

Item	Task	BG	NP&O	CS - Strategic Procurement	H/Infrastructure Delivery	Senior Program Manager	Program Manager (ID)	Construction Manager	Project Manager	Site Manager	Scheduler	HS&E	Portfolio Office	Field Resources	Customer and Stakeholder	Finance	Development Manager (PD)	Program Manager (PD)	Project Developer	Commissioning Group (ID)
31	Update schedule in PPM				A	C	C		R		R							I	C	
32	Project handover including all handover documentations				I	I	C		C		I		I				A	C	R	
33	Sign handover checklist from WD/PD				A	R	C		I		I		I					I	C	
34	Confirm delivery strategy - Project Delivery Model Tool completion			I	A	R	C		I		I		I					C		
35	Confirm Principal Contractor assignment (safety)				A	R	C	C	R	C		C								
36	Prepare Project Approval Document initiated from PDGS need site, monitor and manage the review and approval workflows				A	C	C		R											
37	Develop detail project/construction program		I	C	I	I	I	I	A	C	R	I			I					C
38	Complete bi-monthly Project Health Check					I	A		R	C										
39	Ensure scope of Project Agreements (i.e., customer contract) aligns with the latest approved PCE. (Contestable)	I			I		A		R									I	C	
40	Review exclusions and assumptions within the Project Agreement (Contestable)	I			I		A		R									I	C	

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PROJECT PLAN																				
41	Draft project plan			C			C	C	A	C		C			C				C	
42	Project Kick-Off Meeting			I	I	I	A	I	R	I		I			I		I	I	C	
43	Final Project Plan	I	I	C	I	C	A	C	R	C		C			C			I	I	
44	Draft Outage Plan					A	C	R	C		C								C	C
45	Draft Resource Plan					A	C	C	R	C	I								I	
46	Book detailed outages		C				I	C	A	R	C									
47	Ongoing Updates of Project Plan					I	C	C	A	C		I								
48	Pre & Post POS Audit Planning			I	I	I	C		A	I		I								
49	HS&E Audit planning				I	I	I	C	C	C		A								
STAKEHOLDER MANAGEMENT																				
50	Develop Stakeholder Communications Plan			I			C	C	A	C		I			R				C	
51	Implement Stakeholder Communications Plan			I			A	C	R	R		I			C					
52	Monitor and Record Stakeholder Interactions				I	I	A	C	R	R		I			C					
COST AND TIME MANAGEMENT																				

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53	Update and Maintain PPM program and forecast for the project with all resource assignments				I	I	A	C	R	C	R										
54	Develop & Maintain risk, change, opportunity, lessons learned registers in PPM				I	I	A	C	R	C										C	
55	Update monthly forecast				I	I	A	C	R	C										C	
PROJECT REPORTING																					
56	Prepare Weekly Report				A	R	R	C	R	C										C	
57	Prepare monthly executive and financial reports				A	C	C		R				I							C	
58	Report on individual project performance at Construction Monthly Review meeting				I	C	A		R											C	
59	Report on projects at a program level at Major Capital Program Review Meeting		I	I	A	R	R						I			I		R			
PROCUREMENT MANAGEMENT																					
60	Coordinate planning data for equipment specification		C				I		C									A	R		
61	Develop Project Procurement Plan			C			A		C									C	R		

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62	Arrange procurement of long lead time items to suit construction program and compile high level BOM prior to handover			R		I	I		C	I							A	C	R	
63	Track and monitor procurement of long lead time items			A		I	C		R	I										
64	Compile full detailed BOM			C		I	I	C	A	C			C							R
65	Order, track, and monitor of procurement of remaining Materials			R		I	I		A	I										C
66	Order, track, and monitor of procurement of minor construction material			C		I	I		A	R			C							
67	Identify inspection requirements (offsite)		C	C				C	A	I										
68	Manage equipment receipt on site			I				C	A	R										
69	Create Sourcing Request in iBuy			I					A											
70	Allocate Purchase Order/Quotation/Contract No			A					I											
71	Develop tender documentation			C	I	I	C	C	A	C		C								C
72	Issue tender			A	I	I	I	I	I	I										
73	Tender site inspections			A	I	I	C	C	R	C										I

Item	Task	BG	NP&O	CS - Strategic Procurement	H/Infrastructure Delivery	Senior Program Manager	Program Manager (ID)	Construction Manager	Project Manager	Site Manager	Scheduler	HS&E	Portfolio Office	Field Resources	Customer and Stakeholder	Finance	Development Manager (PD)	Program Manager (PD)	Project Developer	Commissioning Group (ID)	
74	Complete tender site inspection meeting minutes			A	I	I	I	C	R	I											
75	Issue tender site inspection meeting minutes			A	I	I	I	I	I	I										I	
76	Issue tender Addendum			A	I	I	I	C	R	I										I	
77	Preparation of tender evaluation matrix			C	I	I	A	C	R	C										C	
78	Tender clarification			R				C	A	C										C	
79	Complete tender evaluation			C	I	I	A	C	R	C										C	
CONTRACT AWARD																					
80	Review & Accept Letter of Offer			A	I		I		C												
81	Initiate iBuy Workflow with legal and Risk (ex DER process)			A	I		I		R												
82	Complete Contract Award Paper			I	A	C	C		R	I											
83	Tender Consolidation			A	I		I		R												
84	Issue Letter of Acceptance			A	I	I	I		I	I											
85	Carry out contract establishment meeting & issue minutes			C	I	I	A		R	C										C	
NOMINATION OF REPRESENTATIVES AND POSSESSION OF SITE																					

Item	Task	BG	NP&O	CS - Strategic Procurement	H/Infrastructure Delivery	Senior Program Manager	Program Manager (ID)	Construction Manager	Project Manager	Site Manager	Scheduler	HS&E	Portfolio Office	Field Resources	Customer and Stakeholder	Finance	Development Manager (PD)	Program Manager (PD)	Project Developer	Commissioning Group (ID)	
86	Nominate and issue Principal's Representative Letter (including Temporary arrangements)				A	I	R	I	C	I										C	
87	Nominate and issue Superintendent's Representative Letter (including Temporary arrangements)			A	I	I	I	I	I	I										I	
88	Draft and Issue Possession of Site Letter			C	I	C	A	C	R	C										I	
CONSTRUCTION RISK MANAGEMENT																					
89	Hold Workshop, Prepare, and Issue Safety in Design Report (SID)					I	C	C	C	C		C					A			R	
90	Arrange and Attend Construction Risk Management Workshop (HAZCON)				I	I	A	C	R	C		C								C	
91	Monitor and Manage Construction Risk				I	I	I	C	A	C		I								I	
CONSTRUCTION MANAGEMENT PLANS - CONTRACTOR DELIVERY																					
92	Review contractors QMP and ITPs						I	C	A	R										C	

Item	Task	BG	NP&O	CS - Strategic Procurement	H/Infrastructure Delivery	Senior Program Manager	Program Manager (ID)	Construction Manager	Project Manager	Site Manager	Scheduler	HS&E	Portfolio Office	Field Resources	Customer and Stakeholder	Finance	Development Manager (PD)	Program Manager (PD)	Project Developer	Commissioning Group (ID)
93	Review contractors Work Health Safety Management Plan (WHSMP)				I	I	I	C	A	C		R								
94	Review contractors CEMP				I	I	I	C	A	C		R								
95	Develop project information & management system folder structure for use and AMC handover				I	I	I	C	A	I										I
96	Approval for Commencement of Work (Hold Point)				I	A	R	C	C	C		C			C					
CONSTRUCTION MANAGEMENT PLANS - INTERNAL DELIVERY																				
97	Create risk register as an outcome of risk management workshop						A	C	R	C		C							C	
98	Prepare Quality Management Plan and ITPs (incl check sheets)						C	C	A	R									C	
99	Prepare Work Health Safety Management Plan (WHSMP)				I	I	C	C	R	C		A								
100	Prepare SWMS and pre-work risk assessment						I	A	I	R		C								
101	Preparation of CEMP				I	I	C	C	A	C		R								

Item	Task	BG	NP&O	CS - Strategic Procurement	H/Infrastructure Delivery	Senior Program Manager	Program Manager (ID)	Construction Manager	Project Manager	Site Manager	Scheduler	HS&E	Portfolio Office	Field Resources	Customer and Stakeholder	Finance	Development Manager (PD)	Program Manager (PD)	Project Developer	Commissioning Group (ID)
102	Develop project information & management system folder structure for use and AMC handover				I	I	I	C	A	I										I
103	Approval for Commencement of Work (Hold Point)				I	A	R	C	C	C		C			C					
	Deliver Project																			
CONTRACTOR DELIVERY																				
104	Carry out contract establishment meeting			C		I	C	C	A	I										
105	Review contract/construction program & update PPM						C	C	A	C	R									
106	Review contract/construction program & update project plan		I				A	C	R	C									C	
107	Ensure contractor readiness for commencement of site work					I	C	C	A	R										
108	Monitor, maintain, and update project budget/forecast		I	C		C	C	I	A	C										
109	Prepare, monitor, and manage Risk/Issue/Opportunity/lesson learned register			C		C	C	I	A	C		C	I		C				C	
110	Issue contractual instructions			I	I	I	I	C	A	R										
111	Contractor hand over induction							C	A	R										

Item	Task	BG	NP&O	CS - Strategic Procurement	H/Infrastructure Delivery	Senior Program Manager	Program Manager (ID)	Construction Manager	Project Manager	Site Manager	Scheduler	HS&E	Portfolio Office	Field Resources	Customer and Stakeholder	Finance	Development Manager (PD)	Program Manager (PD)	Project Developer	Commissioning Group (ID)	
112	Manage Project Change Request (PCR)		I		A	R	R	C	R	C			I								
113	Respond to Request For Information (RFI)			C			A	C	R	R									R		
114	Manage Extension of Times (EOTs)			I	I	C	C	C	A	C	I								C		
115	Manage Variations and claims			I	I	C	C	C	A	C									C		
116	Manage contractor-initiated VOs and EOT to BG (Contestable)	I		C	I	C	A		R	C											
117	Manage customer-initiated VOs and EOT (Contestable)	R			I	C	A		R	C											
118	Issue site direction and FWD							C	A	R											
119	Manage progress claims			I	I	I	C	C	A	C											
120	Measure progress against program for claims							C	A	R											
121	Ensure use of the project information management system (information, documentation, correspondences etc.) - TeamBinder or equiv.				I	I	R	R	A	R										R	
122	Establish and maintain up to date project information site library				I	I	I	C	I	A										C	
123	Facilitate Project Progress meeting						I	C	A	R											

Item	Task	BG	NP&O	CS - Strategic Procurement	H/Infrastructure Delivery	Senior Program Manager	Program Manager (ID)	Construction Manager	Project Manager	Site Manager	Scheduler	HS&E	Portfolio Office	Field Resources	Customer and Stakeholder	Finance	Development Manager (PD)	Program Manager (PD)	Project Developer	Commissioning Group (ID)	
124	Manage Nomination of Sub-Contractor Notices					A	I	C	R	C											
125	Issue certificate of Practical Completion			I	I	A	I	C	R	C										C	
TRANSGRID DELIVERY																					
126	Maintain risk register as an outcome of risk management workshop						A	C	R	R		C								C	
127	Maintain and update Quality plan and ITPs (incl check sheets)						A	I	R	R										C	
128	Maintain and update Work Health Safety Management Plan (WHSMP)				C	R	C	I	R	C		A									
129	Monitor and Review Compliance of SWMS and pre-work risk assessment						C	I	A	R		C									
130	Monitor control measures of CEMP				C	C	C	I	A	R		R									
131	Facilitate pre-start meeting							I	A	R											
132	Conduct regular site tool box meetings							I	A	R		C									
SITE MANAGEMENT																					
133	Allocation of Site Management				I	A	R	C	C	I											

Item	Task	BG	NP&O	CS - Strategic Procurement	H/Infrastructure Delivery	Senior Program Manager	Program Manager (ID)	Construction Manager	Project Manager	Site Manager	Scheduler	HS&E	Portfolio Office	Field Resources	Customer and Stakeholder	Finance	Development Manager (PD)	Program Manager (PD)	Project Developer	Commissioning Group (ID)	
134	Develop physical filing system structure for use on site				I	I	I	I	I	A			R								
135	Preparation of work package for resources allocation						I	I	A	R											
136	Enter construction resources in PPM						I		A	C	R										
137	Enter construction resources request in TRAC						I	I	A	R											
138	Allocation of resources to the project						A		C	C				R							
139	Return resources to resource pool and feedback on resources performance							C	A	R				I							
140	Ensure WSAT compliance (PSSR Training)				I	I	I	I	R	A		C		R							
141	Induction of all requested TransGrid staff to the project							I	A	R											
142	Monitor site compliance (Safety, Environmental, and Quality)				I	I	C	C	A	R		C									
143	Corrective actions & non-conformances				I	I	C	C	A	R		I									
144	Quality management						A	C	R	R											
145	Site progress meetings						C	C	A	R		C									

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146	Monitor site resources & progress against construction program						C	C	A	R	I										
147	Record safety statistics						I	I	A	R		I	I								
148	Incident management				I	I	R	C	A	R	I	C									
149	Fatigue management				A	R	R	C	R	R		C									
150	Manage external stakeholders after handover (including notification to landowner prior to construction)				I	I	A	C	R	R		I			C					C	
151	Co-ordinate works between contractor groups & stakeholders during construction						I	C	A	R					C						
152	Verify & record contractual/delays/variation matters on site						C	C	A	R											
153	Waste tracking						I	C	A	R		I									
154	Populate and provide Weekly Performance Report for all project resources					I	C	C	A	R											
COMMISSIONING																					
155	Prepare & issue commissioning plan						I	C	A	R										C	C
156	Review & approve contractors pre-commissioning plan						I	C	A	R										C	

Item	Task	BG	NP&O	CS - Strategic Procurement	H/Infrastructure Delivery	Senior Program Manager	Program Manager (ID)	Construction Manager	Project Manager	Site Manager	Scheduler	HS&E	Portfolio Office	Field Resources	Customer and Stakeholder	Finance	Development Manager (PD)	Program Manager (PD)	Project Developer	Commissioning Group (ID)
	Manage and perform secondary system and communication pre-commissioning activities for TransGrid delivered projects							I	A	I										R
157	Monitor pre-commissioning & commissioning activities						I	C	A	R									C	
158	Manage FAT			I				I	A	I									C	
159	Manage SCAT							I	A	I									C	
160	Pre-SAT site inspection for secondary system							C	A	R									C	
161	Manage SAT							C	A	R									I	
162	Provide 6-week AEMO notification of metering changes via Metering help desk		I					I	A	R			I*							
163	Manage provision of temporary protection settings for energisation		C					I	A	C									R	
164	Compile complete commissioning checklist							C	A	R									C	
	Complete AMC Pre-Energisation Checklist								A	R										C
165	Provide advice of alteration for update of Operating & Scoping Diagrams		I					I	A	R									I	

Item	Task	BG	NP&O	CS - Strategic Procurement	H/Infrastructure Delivery	Senior Program Manager	Program Manager (ID)	Construction Manager	Project Manager	Site Manager	Scheduler	HS&E	Portfolio Office	Field Resources	Customer and Stakeholder	Finance	Development Manager (PD)	Program Manager (PD)	Project Developer	Commissioning Group (ID)	
166	Submit clearance certificate and Request to Connect		I					I	A	R										I	
167	Manage Familiarisation Training (as required)							I	A	R											
	Close-out Project																				
168	QA documentation		I				I	C	A	R										I	
169	WAE drawings ESP		I				I		A											R	
170	WAE drawings D&C		I				I		R											C	
171	Sign off Line Rating Advice in PRIM		I			A		C	C	C										C	R
172	Update business system information for in-service equipment		R					I	A	R			R							C	
173	Manage provision of maintenance training packages (for Contract works)		I					I	A	R											I
174	Compile information for handover to Asset Manager (CC. Asset Monitoring Centre)		I	C	A			I	R	R										C	
175	Undertake handover to Asset Manager (CC O&M , AMC)		I			A	I	I	R	R										C	
176	Document defects/ warranty issues			I				I	A	R											

Item	Task	BG	NP&O	CS - Strategic Procurement	H/Infrastructure Delivery	Senior Program Manager	Program Manager (ID)	Construction Manager	Project Manager	Site Manager	Scheduler	HS&E	Portfolio Office	Field Resources	Customer and Stakeholder	Finance	Development Manager (PD)	Program Manager (PD)	Project Developer	Commissioning Group (ID)	
177	Manage defect rectification through to end of defect liability period		I	I				I	A	I			I								
178	Finalise defects and liabilities - Issue final payment certificate and release bank guarantee/security			A				I	R	C											
179	Complete project capitalisation		I		A	C	C	C	R							R					
180	Project closeout checklist				I	A	C	I	R	C			I								
181	Project closeout report		A		A	R	R	I	R	C	I		I		C					C	
182	Lessons learnt Workshop		I		I	I	A	C	R	C		C	I		C					C	I

Appendix C - Transgrid Professional and Contracting Panels

Selection only included.

Category/Sub Category	Name	Stream	Suppliers
Advisory Services	Advisory Services	Category 1 - Strategic Advice Category 2 - General Consultation & Transformation Category 3 - Market Modelling Category 4 - Regulation & Economic Services Category 4a - Policy	<ul style="list-style-type: none"> ACIL Allen, Baringa, Deloitte, Energeia, Ernst & Young (EY), Frontier, FTI, GHD, Houston Kemp, KPMG, LEK, Port Jackson Partners, PWC, FarrierSwier, Modelogic, Incenta, WSP
Construction Services / Underground Transmission Lines	Civil Works for Underground Cable	Construction Services	<ul style="list-style-type: none"> Garde
Construction Services / 1. Substations, 2.Overhead Transmission Lines	Construction Services Panel (Extension)	Construction Services	<ul style="list-style-type: none"> Downer, UGL, Zinfra, CPP
People & Safety	HSE Audit	Category 1 - Workplace Health and Safety	<ul style="list-style-type: none"> GHD (1st preferred) Soil Conservation Services J2M Shared Safety and Risk (Reserve – ErSed)
People & Safety	HSE Audit	Category 2 - Environmental	<ul style="list-style-type: none"> Urban Perspectives (1st preferred) GHD Treo Environment (Reserve – Soil Conservation Services)
People & Safety	HSE Audit	Category 3 - Environmental Management Services	<ul style="list-style-type: none"> Urban Perspectives (1st preferred) GHD Soil Conservation Services (Reserve- ErSed)

Category/Sub Category	Name	Stream	Suppliers
Legal Services	Legal Services	Tier one	<ul style="list-style-type: none"> • Allens • HSF • Clayton Utz • KWM • Corrs Chambers Westgarth
Delivery - Supply Chain	Procurement Operations Services Panel		<ul style="list-style-type: none"> • ArcBlue • KPMG • Infosys • Portland
Delivery - Land, Property & Approvals	Property Services Panel		<ul style="list-style-type: none"> • Opteon • JLL • Knight Frank
Recruitment Services	Recruitment Panel	Permanent Recruitment and Temporary Labour Hire	<ul style="list-style-type: none"> • Adecco, BMP Technologies, Chandler Macleod, Drake, Hudson, Libran IT, Michael Page, Peoplecorp, Resourceful Recruitment, Robert Walters, The Next Group, Zancott
Delivery - Land, Property & Approvals	Facilities Management		<ul style="list-style-type: none"> • BGIS
Delivery - Supply Chain	Fleet		<ul style="list-style-type: none"> • SG Fleet
ICT	Security Architecture Panel		<ul style="list-style-type: none"> • DXC and TML
ICT	Technology Services Panel		<ul style="list-style-type: none"> • Tech Mahindra and TCS setup. Negotiations outstanding for IBM and CapGemini.

Category/Sub Category	Name	Stream	Suppliers
Network Equip / Communications Eqp	DWDM Equipment	Network Equipment	<ul style="list-style-type: none"> Nokia
Network Equip / Communications Eqp	Nokia Network Equipment	Network Equipment	<ul style="list-style-type: none"> Nokia, Westcon (Nokia Distributor)
Network Equip / High Voltage Equip	33kV Metal Clad Switchgear	33kV Switchgear	<ul style="list-style-type: none"> Siemens
Network Equip / High Voltage Equip	Auxiliary Transformers	Dry type Auxiliary and Zig-Zag Earthing Transformers	<ul style="list-style-type: none"> TMC for Items 1-3 Dry Type, SGB-SMIT
Network Equip / High Voltage Equip	Capacitor Banks	Network Equipment	<ul style="list-style-type: none"> ONE, ABB
Network Equip / High Voltage Equip	High Voltage Equipment	High voltage plant, CB, VT, CT Disconnectors, Earth Switches	<ul style="list-style-type: none"> ABB, Siemens, GE, Mitsubishi, EPC, GFF, 50Hz, PLP
Network Equip / High Voltage Equip	Transformer Bushings 220kV and above	Network Equipment	<ul style="list-style-type: none"> 50Hz (primary supplier) and ABB (reserve)
Network Equip / High Voltage Equip	Transformer Bushings 66kV & 132kV	Network Equipment	<ul style="list-style-type: none"> 50Hz
Network Equip / High Voltage Equip, Transmission Line Equip	Misc. High Voltage Equipment	Insulators, Surge Arrestors, Line Traps	<ul style="list-style-type: none"> Graph (Only Item 1), Flowline, ABB, 50Hz, Siemens
Network Equip / Secondary Systems	Auxiliary Power Supply Equipment	DC power system, battery and chargers	<ul style="list-style-type: none"> SAFT HCB Eaton Vertiv Brodribb 6. ITCeSkron

Category/Sub Category	Name	Stream	Suppliers
Network Equip / Secondary Systems	Digital Substation	IEC61850 Software and hardware	<ul style="list-style-type: none"> • 2. DT Partners • 3. TEN • (Agreements with CSE Uniserve and Landis & Gyr expired May 2021 and there have been delays with renewal to 30/6/2022 for these suppliers)
Network Equip / Secondary Systems	DWDM – Non-Prescribed	Network Equipment	<ul style="list-style-type: none"> • Ciena
Network Equip / Secondary Systems	Enclosures Panel	Secondary systems panels and cubicles	<ul style="list-style-type: none"> • JBM Power • Walker Control
Network Equip / Secondary Systems	Ethernet Switches	Network Equipment	<ul style="list-style-type: none"> • CSE Uniserve
Network Equip / Secondary Systems	High Speed VF Protection Signalling Equipment	Network Equipment	<ul style="list-style-type: none"> • DEWAR
Network Equip / Secondary Systems	MPLS	Network Equipment	<ul style="list-style-type: none"> • Commtel
Network Equip / Secondary Systems	Nokia Network Equipment Support and Maintenance	Network Equipment	<ul style="list-style-type: none"> • Nokia
Network Equip / Secondary Systems	PLC	Network Equipment	<ul style="list-style-type: none"> • DEWAR, ABB
Network Equip / Secondary Systems	Protection Relays	IEDs	<ul style="list-style-type: none"> • ABB, GE, Siemens, CSE, SEL
Network Equip / Secondary Systems	RAD Multiplexers	Network Equipment	<ul style="list-style-type: none"> • Telecom Networks

Category/Sub Category	Name	Stream	Suppliers
Network Equip / Secondary Systems	Remote Terminal Unit	Network Equipment	<ul style="list-style-type: none"> CGI
Network Equip / Secondary Systems	Revenue Meters	Network Equipment	<ul style="list-style-type: none"> SEL, Plantweave
Network Equip / Transmission Line Eqp	Poles (extension under progress)	Network Equipment	<ul style="list-style-type: none"> Concrete poles - Rocla
Network Equip / Transmission Line Eqp	UGFO	Underground Fibre cables	<ul style="list-style-type: none"> Prysmian
Network Services / Easement Management	Access Track Maintenance	Network Services	<ul style="list-style-type: none"> Soil Conservation Service (SCS)
Network Services / Easement Management	LIDAR	Network Services	<ul style="list-style-type: none"> NM Group
Network Services / Easement Management	Vegetation Management	Network Services	<ul style="list-style-type: none"> Eastern Tree Service (ETS), Active Tree Services (ATS)
Network Services / Overhead Transmission Line Maintenance	Aerial Inspections	Network Services	<ul style="list-style-type: none"> Sydney Helicopters Pty Ltd
Network Services / Overhead Transmission Line Maintenance	Ancillary Services	Network Services	<ul style="list-style-type: none"> Zinfra
Network Services / Overhead Transmission Line Maintenance	Calibration Services	Network Services	<ul style="list-style-type: none"> TR PTY Ltd

Category/Sub Category	Name	Stream	Suppliers
Network Services / Overhead Transmission Line Maintenance	Climbing Inspections	Network Services	<ul style="list-style-type: none"> Zinfra
Network Services / Overhead Transmission Line Maintenance	UGI Inspections	Ground line Maintenance	<ul style="list-style-type: none"> UAM
Network Services / Substation Maintenance	Disposal of contaminated waste	Network Services	<ul style="list-style-type: none"> Blue-chip
Network Services / Substation Maintenance	HV Testing	Network Services	<ul style="list-style-type: none"> Verico (preferred supplier) Mondo (secondary supplier)
Network Services / Substation Maintenance	Oil Testing	Network Services	<ul style="list-style-type: none"> Verico (preferred supplier) Mondo (secondary supplier)
Network Services / Substation Maintenance	Transformer Oil	Network Services	<ul style="list-style-type: none"> Molekulis Pty. Ltd.
Network Services / Substation Maintenance	SF6 Gas Management	Network Services	<ul style="list-style-type: none"> ABB
Technical Services	Engineering Services	Type - 1 - Packaged Engineering Works (Complete Project Design)	<ul style="list-style-type: none"> AECOM, Aurecon, Beca, (APD - Reserve Member)
Technical Services	Engineering Services	Type 2 - Earthing Measurement and Design	<ul style="list-style-type: none"> Misi, APD
Technical Services	Engineering Services	Type 2 - Secondary Systems Design Works, Control Systems	<ul style="list-style-type: none"> CPP Electre, APD, (AECOM - Reserve Member)

Category/Sub Category	Name	Stream	Suppliers
Technical Services	Engineering Services	Type 2 - Secondary Systems Design Works, Protection and Market Metering Systems	<ul style="list-style-type: none"> DEL Engineering, APD
Technical Services	Engineering Services	Type 2 - Automation Design	<ul style="list-style-type: none"> DEL Engineering, APD, CGI
Technical Services	Engineering Services	Type 2 - Underground Cable Design	<ul style="list-style-type: none"> Cable Systems Engineering
Technical Services	Engineering Services	Type 2 - Independent Engineering Services	<ul style="list-style-type: none"> SMEC, APD, (AECOM, Aurecon and Beca Reserve)
Technical Services	Engineering Services	Type 2 - Geotechnical Services	<ul style="list-style-type: none"> SMEC, Douglas Partners (Aurecon and Beca - Reserve using Macquarie Geotech)
Technical Services	Engineering Services	Type 2 - Environmental assessment	<ul style="list-style-type: none"> WSP, Umwelt, AECOM, GHD (Reserve)
Technical Services	Engineering Services	Type 2 - Heritage Services	<ul style="list-style-type: none"> WSP, Umwelt, GHD (Reserve)
Technical Services	Engineering Services	Type 2 - Ecological Services	<ul style="list-style-type: none"> OzArk, Umwelt, AECOM (Reserve)
Technical Services	Engineering Services	Type 2 - Power Systems Analysis	<ul style="list-style-type: none"> Mitton, Digsilent, GHD, PSC, Aurecon (Reserve)
Technical Services	Engineering Services	Type 2 - Strategic Asset Mgt	<ul style="list-style-type: none"> AMCL, GHD, Aurecon, Jacobs, Cutler Merz (Reserve)

Category/Sub Category	Name	Stream	Suppliers
Technical Services	Engineering Services	Project Manager Services (Short Term or Long Term)	<ul style="list-style-type: none"> Any of ESP Panel Members
Technical Services	Quantity Surveying	Technical Services	<ul style="list-style-type: none"> TBH
Delivery - Land, Property & Approvals	Travel Services sub agreement		<ul style="list-style-type: none"> Qantas
Delivery - Supply Chain	Stationery		<ul style="list-style-type: none"> WINC
Delivery - Supply Chain	Logistics Services Provider		<ul style="list-style-type: none"> StarTrack (AusPost)
Construction Services / Telecommunications	Telecommunications Pre- qualification Panel	Telecommunications	<ul style="list-style-type: none"> Archos Group Wavelength T&T King
Delivery - Supply Chain	Mobile Plant & Site Facilities Hire		<ul style="list-style-type: none"> Borger Crane Hire and Rigging Boom Logistics Carrington Centurne Pty Ltd Lincon Logistics Pty Ltd Instant Access Australia Pty Ltd Riverina Crane Services Pty Ltd Rollers Australia Pty Ltd