Cost estimating, unit rates & program delivery

Contingent Project Application

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1 Cost Estimating

The purpose of this document is to describe the principles, methodologies and procedures AusNet Services followed to prepare cost estimates for the first tranche of REFCLs installations. These installations are required in order to comply with the Electricity Safety (Bushfire Mitigation) Amendment Regulations 2016.

REFCL installation involves substantial work at each designated zone substation along with work on the feeders to ensure that equipment can operate at the elevated voltages resulting from REFCL operation. AusNet Services has divided the REFCL program into 5 work streams:

- Zone substation – installing REFCLs at each of the Tranche 1 zone substations together with the associated works at the zone substation;
- Compatible equipment – upgrading line assets, such as the replacement of Automatic Circuit Reclosers, that are not compatible with REFCL operation;
- Network balancing – achieving line capacitive balancing, for example installation of balancing capacitors, to ensure that REFCLs operate as intended;
- Line hardening – replacing line surge arrestors that are not capable of sustaining REFCL operating voltages; and
- Victorian Distribution Code compliance – the installation of isolating transformers to ensure that AusNet Services maintains compliance with the maximum permissible voltage variations specified in the Victorian Distribution Code.

In addition to these 5 work streams, work to maintain the reliability of the network is planned involving the replacement of existing remote control switches (sectionalisers).

This document presents the approach to estimating the costs of each of these work streams and, where unit rates have been used, the relevant unit rates.

1.1 Zone substations

The approach used to estimate zone substation costs is to apply the methodology used by AusNet Services to estimate costs for zone substation rebuild or zone substation augmentation projects. This is a well-established estimating process which relies on a library of activities associated with zone substation works. The challenge in estimating the costs of REFCL installations is the unique nature of the REFCL works, particularly:

- There is currently only one supplier of REFCLs and the unit rate used is based on negotiations with the supplier. The supplier has not provided a firm cost for all the units required in Tranche 1 and there is risk that REFCLs may cost more than estimated.
- Not all zone substation equipment can be tested to determine whether the equipment can withstand the increased operating voltages associated with REFCL operation. It is possible that some zone substation equipment that will need to be replaced has not been included in the cost estimate.
- The timeframe to install REFCLs is challenging and substantial work is required at several of AusNet Services zone substations to enable REFCL operation. AusNet Services has made maximum use of standard designs and standard modular equipment to minimise the time taken to carry out REFCL works however, many of the standard designs are impacted by the use of a REFCL and the revision of standard designs may lead to different cost outcomes.

1.1.1 Standard estimating approach

Cost estimating forms part of AusNet Services Portfolio Framework which follows a standardised approach to developing, managing & reporting projects and programs of works. The Portfolio Framework is shown for reference in Figure 1.

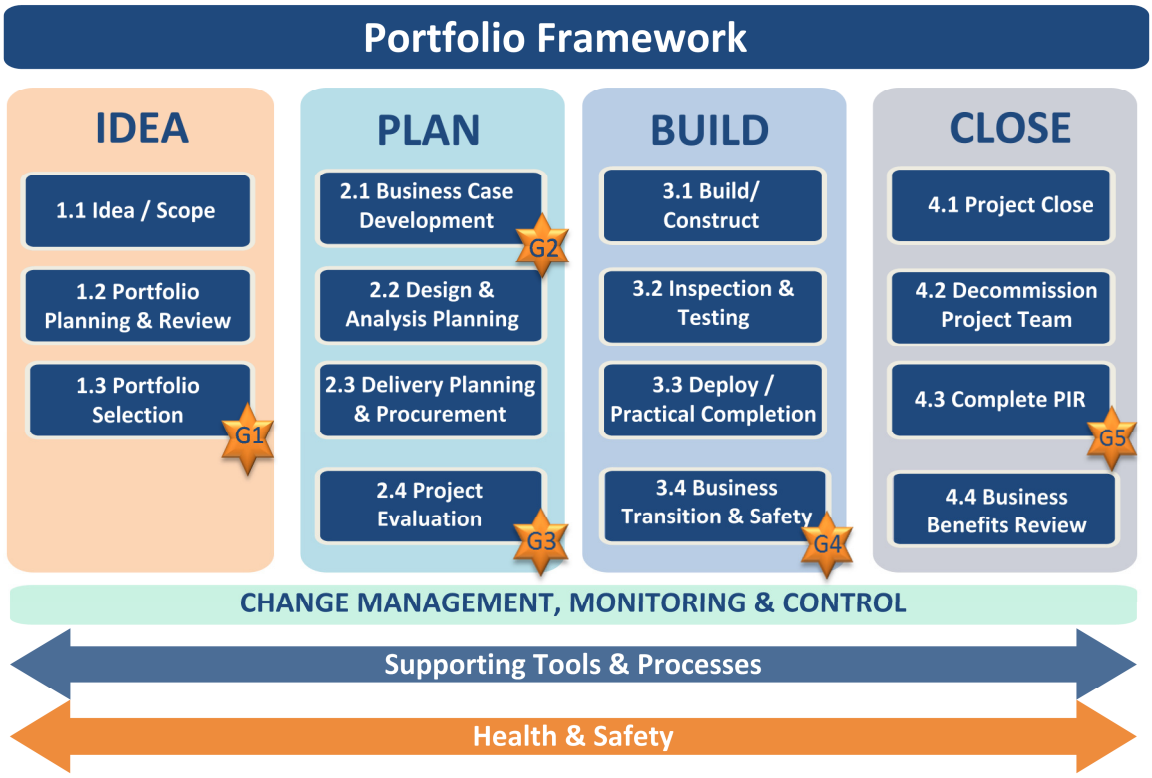

Figure 1 - Overview of portfolio framework.

For a normal zone substation rebuild or augmentation project, projects estimates, cost analysis and review are conducted at different stages of the project. The approach used to estimate the costs associated with REFCL installations at zone substations has followed the approach usually applied to projects in the Plan stage. (The Idea phase is not relevant to REFCL installation as the requirement is driven by a specific regulatory obligation.)

1.1.2 Estimating Outcome

The project cost estimates used to develop the REFCL capital expenditure forecast are on the basis of P(50) estimate outcomes. A P(50) estimate is an estimate which has a 50% confidence that the outturn cost will not exceed the estimate. i.e. for a portfolio of projects, 50% of the projects will exceed the P(50) estimated cost and 50% of projects will be delivered for less than the P(50) estimated cost.

The P(50) estimate does not include the Management Reserve that is derived for a project and included in the business case. A project's Management Reserve allowance is used to cover uncertainty, including unscoped cost items, and is released to the project manager through a change management process.

1.1.3 Estimating Rationale

AusNet Services recognises that cost management, including cost estimating, must be exercised in the broader context of project management. Estimating is an integral part of a system of interdependent core inputs of scope, time, cost, quality and uncertainty.

The projects developed for and information provided in the REFCL Contingent Project submission are based on AusNet Services' need to address safety and regulatory obligations in its distribution network. Identification and funding of the necessary works to meet these needs, and delivering them through an efficient program, is underpinned by sound project cost estimation.

Estimating in the current market environment requires a conservative but realistic view of the project scope together with the associated project components and uncertainties, particularly in the early project stages when detailed design is yet to be produced. Estimators must make provision for items that are considered likely to be required, having regard to such inputs as environmental determinants and community input on the final project scope.

1.1.4 Estimating Process

The process used to estimate zone substation REFCL costs comprised the following four steps:

- Developed high level conceptual scope
- Option development
- Design intent document
- Preparation of estimate

Conceptual scope

A conceptual scope was prepared for each zone substation in Tranche 1. This outlines, at a high level, the requirement that must be met, the background to the project and the key project drivers and constraints. This document is used as the basis for option development.

Option development

Several options were identified and developed for each zone substation. These options are described in the Planning Reports developed for each zone substation. The intent of the options development process is to identify credible options that will deliver the required services.

Where a credible option is identified, the cost of the option is estimated using the estimating process described below. The results of the estimated costs are detailed in the Planning Reports.

Design intent document

A Design intent Document (DiD) describes the preferred option in more detail than the conceptual scope. The DiD outlines the scope of the project, provides a sketch of the site showing the proposed locations of plant items, and states the key assumptions.

The DiD is the key input used by the estimator to prepare the cost estimate of the preferred option.

Preparation of estimate

The estimate is prepared using a database tool called Expert Estimator. Expert Estimator is a database consisting of resources such as labour, materials, mobile plant and group resources. The database is built up from first principles in accordance with the current standards and drawings. In addition, the estimate build up consists of resources with appropriate cost codes/Work Breakdown Structure (WBS).

Numerous Output reports can be created ranging from a project summary to individual components; these reports can be imported into Excel formats to produce outputs such as those required for business cases.

Expert Estimator resources (Materials and Services) are updated periodically in conjunction with period order contracts.

The group work tasks are built up from period order contracts with suppliers and plant and labour cost are based on services contracts.

Project indirect labour costs for the lifecycle of the project, including Project Management, design management, site management and Health, safety and environment management, are determined project by project. Project indirect labour costs incorporate:

1. Project development costs up to approval of Business Case.
2. Cost of project management, supervision and procurement services through the Plan, Build and Close Phase of the project.
3. Cost of engineering support during delivery.
4. Cost of project close-out.

Design costs are determined based on the complexity of the project based on historical quotations or outturn costs of typical zone substation rebuild and augmentation projects.

The Contractor Indirect Costs are built up from the activities undertaken by contractors. These costs include the non-direct labour and materials cost of the Installation Service Provider (ISP) such as:

1. Inductions
2. Site and shift allowances
3. Travel time or allowances

4. Living Away from Home Costs (accommodation, meals, etc.)
5. Contractor project management and supervision costs
6. Contractor Occupation Health & Safety and quality control costs
7. Contractor procurement and administration costs
8. Contractor support equipment including computers, faxes, phones, refrigerators, potable water, etc. for the contractor to perform their work on site
9. Contractor vehicles (plant is allowed in item costs)
10. Contractor site establishment and maintenance costs including huts, site clean-up, etc.
11. Contractor provision of huts and amenities for AusNet Services personnel
12. Contractor overheads and off-site support costs

The P(50) value is determined by a qualitative and quantitative assessment of project uncertainties derived through Monte Carlo simulation using @Risk® Simulation. This is the same process used to determine P(50) values for zone substation rebuild and augmentation projects. Further information on the process to determine P(50) values is available in the Project Cost Estimating Methodology document submitted to the AER as Appendix 7D of AusNet Services' Electricity Distribution Price Review 2016-20 proposal.

1.1.5 WBS Structure

An output from the cost estimating process is a Work Breakdown Structure (WBS) for each project. The WBS is used to define the separate areas or groups within the project. The structure is required to allow the allocation of funds, materials, labour and to facilitate the accurate reporting of project costs. As defined in the Business Case split spreadsheet, the groups include but are not limited to:

- Design
- Labour
- Materials
- Plant & equipment
- Contracts
- Meter costs

1.1.6 Unit rates – zone substation works

The unit costs used in the development of zone substation works are shown below. The zone substation works include the costs associated with zone substation feeder exits.

A number of cost items are not estimated using unit costs but are included in the zone substation works estimates. These cost items are:

- Design
- Project management
- Decommissioning and removal of existing equipment
- Operational outage costs (i.e. planning preparation of outages & network switching)
- AusNet Services internal labour costs (i.e. Project Management, Quality Assurance, Site Supervision and Engineering support)
- Contractor indirect costs.
- Planning and building permit applications
- Land acquisitions and easement creation
- Site surveys, geotechnical investigations and reports
- Primary fault injection testing
- Stress testing
- Additional cable ducts or cable trenches - assume existing is suitable and sufficient capacity
- Removal of contaminants such as asbestos, PCBs and contaminated soil

- Communication systems and schemes
- Community consultation

The unit rates are compiled based on the project cost estimating database Expert Estimator. This database is built up using a bottom up approach, with labour and materials itemised individually.

The following have been adopted in the preparation of the unit rates for works within the substation:

- Material costs are based on period contract pricing from suppliers as of April 2016
- Installation Service Provider (ISP) services agreement rates for labour and plant rates have been used to estimate construction costs
- The labour rate resources in Expert Estimator were last revised in 2014. An adjustment to bring these rates to current values has been made in the contingent project application cost model.

All rates are the direct cost of undertaking the activity and do not include overheads or finance charges.

The following items have been allowed for within the stations unit rates:

- Supply, installation, testing and commissioning of primary plant equipment
- Earthworks, foundations and structures (where applicable)
- Cabling (secondary and power) (where applicable)
- Protection and control associated with the equipment including interfacing works (where applicable)
- Earthing modifications

The following items have been excluded from the stations unit rates and are not included in the zone substation capex works estimates:

- Management reserve (contingency) – excluded as P(50) estimates do not include this item
- Cost escalations
- Financing cost and corporate overheads
- Written-down values
- Spares
- Operations and maintenance costs.

Table 1 - Zone substations Unit Rates

Category	Description	Rate
Station service transformer	Replace or install new station service transformer (500 or 750 kVA)	$C-I-C
AC changeover board	Installation of outdoor changeover board	$C-I-C
ASC	Installation of ASC	$C-I-C
22kV switchboard	Installation of 22 kV switchboard	$C-I-C
22kV Capacitor Banks	Installation of 22 kV capacitor banks	$C-I-C
Neutral Bus	Installation of neutral bus	$C-I-C
Neutral Bus controller	Installation of neutral bus controller	$C-I-C
Oil separator	Installation of Oil separator	$C-I-C
Protection – GFN panels	Interface, control panel and inverter	$C-I-C
Protection and control	Monitoring and backup protection scheme	$C-I-C
REFCL control room	Installation of the REFCL control room only - no protection panels	$C-I-C
Battery Room	Installation of modular battery room including batteries	$C-I-C
Cables	Tx to Switchboard 22kV 630mm2 XLPE single phase	$C-I-C
	S/S to Switchboard 22kV 185mm2 XLPE single phase	$C-I-C
	ASC to Neutral Bus 22kV 95mm2 XLPE single phase	$C-I-C

1.2 Compatible equipment

Compatible equipment involves upgrading and replacing line assets, Automatic Circuit Reclosers (ACRs) and Line Voltage Regulators, that are not compatible with REFCL operation. Four categories of compatible equipment are included in the cost estimate; replacement of ACRs, upgrade of ACRs, replacement of voltage regulators and upgrade of voltage regulator controllers.

1.2.1 Estimating basis

ACR and voltage regulator replacements are based on a material cost from AusNet Services current preferred suppliers plus an estimate of design, installation and commissioning hours based on the time taken to undertaken each of these activities for a typical replacement.

Similarly, ACR and voltage regulator upgrade costs are based on a control box material cost from AusNet Services current preferred suppliers plus an estimate of design, installation and commissioning hours based on the time taken to undertake each of these activities for a typical upgrade.

1.2.2 Assumptions

The following assumptions have been made in estimating compatible equipment costs.

- Existing poles are suitable for installing replacement ACRs i.e. no pole replacements are necessary
- No feeder line works are required when ACRs are replaced
- Installing new voltage regulators will have no impact on existing installations such as existing distribution transformer settings

1.2.3 Unit rates

Table 2 - Compatible Equipment Unit Rates

Category	Description	Rate
ACR upgrade	Replace control box on ACR	$39,803
ACR replacement	Replace pole-mounted ACR	$63,246
Voltage regulator upgrade	Replace control box on voltage regulator	$46,976
Voltage regulator replacement	Replace voltage regulator	$339,940

1.3 Network balancing

Network balancing involves balancing capacitance across each phase of the network within defined limits. This is achieved primarily by rotating phases along the feeder, by installing capacitor banks at various points on the feeder, and by the addition of a third phase on two wire network segments.

1.3.1 Estimating basis

To achieve capacitive balance a series of design activities are required followed by a series of field activities. These are supported by a number of other incidental items. The activities required are:

Design

- Patrol each feeder to record the phasing and to take photos
- An electrical operator identifies phases in the field using a phase detection instrument
- The capacitive balance of each feeder section is modelled and scenarios are developed to balance the network
- Models are validated after field activities are completed by installing measuring instruments and measuring results
- Asset management systems are updated to store the phasing information

Field

- Installation of single phase capacitors
- Installation of 3 phase capacitors
- Phase rotations
- Installing a third phase
- Unbonding third phase
- SWER phase rotations

Other

- Updating SAP & SDME systems to store capacitive balance information
- Replacing fuses with solid links
- Acquisition of phase identification detection instruments
- Correcting phase plates (labels)

Design costs are based on estimated time taken for each activity for each feeder. The total cost for each substation is proportional to the number of feeders emanating from the substation.

Field costs have been developed using a bottom-up build based on the following:

- Capacitor prices are based on a quotation from the current preferred capacitor supplier
- Capacitor installation rates are based on the current contract with AusNet Services primary delivery partner
- Phase rotations are based on current contract rates with AusNet Services primary delivery partner
- Installation of 3rd phase is based on an estimate of effort hours and materials
- Pole installations are based on current material costs and contract rates with AusNet Services primary delivery partner

Other costs described above, which represent approximately 10% of the total balancing costs have been apportioned to each zone substation based on the sum of the design and field costs for each zone substation.

1.3.2 Assumptions

The following assumptions have been made in estimating network balancing costs.

- The forecast is a desktop forecast and has not been based on an inspection of the assets at each location.
- A number of activities require new (non-standard) designs. It is assumed that these new designs are viable.
- New poles to support capacitor banks can be installed in appropriate locations

1.3.3 Unit rates

Table 3 - Network Balancing Unit Rates

Category	Description	Rate
Design	Design activities to determine network balancing requirements, validate balancing and record balancing information – per feeder	$23,938
Third conductor installation	Install 3rd conductor – per span	$C-I-C
Unbonding cable	Unbounding cable at either end – per location	$C-I-C
Phase rotation	Rotate phases – per rotation	$C-I-C
Balancing capacitors	Install balancing capacitors (single or three phase) – per installation	$54,782
Inherent works	Activities including the development of balancing capacitor solution, modification of Asset Management Systems, protection reviews for fuse removals, fuse removals and purchase of phase identification tools – per feeder	$39,885

1.4 Line hardening

Line hardening involves replacing existing surge arrestors with a new arrestor capable of sustaining REFCL operating voltages.

1.4.1 Estimating basis

Surge arrestor replacement costs are based on the material cost from the current preferred supplier of surge arrestors and an estimate of installation costs.

1.4.2 Assumptions

The following assumptions have been made in estimating surge arrestor replacement costs.

- Surge arrestors will be replaced on same structure without modification of the structure
- Like for like replacement – no additional surge arrestors required
- Average calculated number of surge arrestors units per site is 2.62.

1.4.3 Unit rates

Table 4 - Surge Arrestor Unit Rates

Category	Description	Rate
Surge arrestor	Replace surge arrestor on existing structure - per site - per unit	 $2,460 $940

1.5 Code compliance

Code compliance activities involve the installation of isolating transformers at high-voltage customer sites to ensure that AusNet Services maintains compliance with the maximum permissible voltage variations specified in the Victorian Distribution Code.

1.5.1 Estimating basis

The cost estimate was prepared using an AusNet Services standard cost estimating spreadsheet typically used to prepare costs for options analysis. The output from the estimating spreadsheet is a bottom-up estimate based on the component activities involved in designing, procuring, installing and commissioning an isolating transformer installation.

The cost of the transformer is based on the current cost of a typical sized distribution transformer. (A specific cost for an isolating transformer was not used.) The cost of other components such as the ACR, environmental controls (oil containment), civil works and fencing are based on typical costs for similar installation. (A typical similar installation is a ground mounted line voltage regulator.)

A standard 10 MVA transformer was selected.

1.5.2 Assumptions

The following assumptions have been made in estimating code compliance costs.

- An isolating transformer cost is similar to an equivalent sized distribution transformer
- Suitable land can be procured in an appropriate location
- Line works are limited to those adjacent to the location of the transformer

1.5.3 Unit rates

Table 5 - Code compliance Unit Rates

Category	Description	Rate
Code compliance	Install isolating transformer and associated equipment adjacent to high-voltage customer – per site	$1,180,000

1.6 Reliability maintenance

Reliability will be maintained by modifying the existing DFA scheme and replacing existing remote controlled switches (sectionalisers) to operate with REFCLs.

1.6.1 Estimating basis

Remote controlled switch replacement costs are based on the material cost from the current preferred supplier of gas switches and an estimate of installation costs. The unit rate does not include the cost of design or project related costs such as business case development, project management and asset data systems.

1.6.2 Assumptions

The following assumptions have been made in estimating remote controlled switch replacement costs.

- Switches will be replaced on same structure without modification of the structure
- Like for like replacement – no additional switches to be installed
- Existing communications systems are capable of operating with new switches

1.6.3 Unit rates

Table 6 – Reliability maintained Unit Rates

Category	Description	Rate
Remote control switch	Replace remote controlled switch on existing structure	$C-I-C

2 Program Delivery

2.1 Overview

The REFCL program presents a unique set of delivery challenges due to:

- Regulated timeframe requires simultaneous REFCL works at multiple zone substations and its feeders. Simultaneous design and construction works must be undertaken at various locations to meet the required timeframe.
- The impact of REFCLs on existing network equipment is uncertain. For example, testing of the network under REFCL voltages may expose weaknesses in cables or switchgear requiring multiple repairs in a short timeframe.
- There is little industry experience in operating REFCLs in a mode to reduce the risk of bushfire. For example, the operation and maintenance of network protection equipment is impacted by the REFCL considering earthing fundamentals will now change and few personnel have relevant experience.
- The first tranche of REFCL installations relies on a single supplier. Any delay in delivery of REFCL hardware or software can lead to project delays.
- The vast amount of works to be completed poses resourcing risks

To manage these delivery challenges, AusNet Services has taken a number of steps, in addition to standard governance and delivery procedures, to ensure the program can be delivered. These steps include:

- Establishing a formal program to oversee the REFCL program with a governance structure involving a steering committee and dedicated program manager
- Maximising the use of standard designs and standard components such as 22 kV switchboards and Neutral Bus switchboards
- Sharing REFCL experience and learning with Powercor
- Heightened engagement with Swedish Neutral to ensure products are of the standard required to meet the regulations and can be integrated effectively with our network
- Maximising the use of existing contracts and relationships to deliver the program

2.1.1 Structure

A simplified version of AusNet Services' structure showing responsibilities for key components of the Capital and Operating program is shown in Figure 1. The Network Engineering division is the group responsible for developing the overall program of Capital and Operating works. The Service Delivery division together with Planning, Performance and Operations division are responsible for delivering the program. Service Delivery is most affected by the size of the works program as the physical resources to deliver the program are retained or engaged by this division.

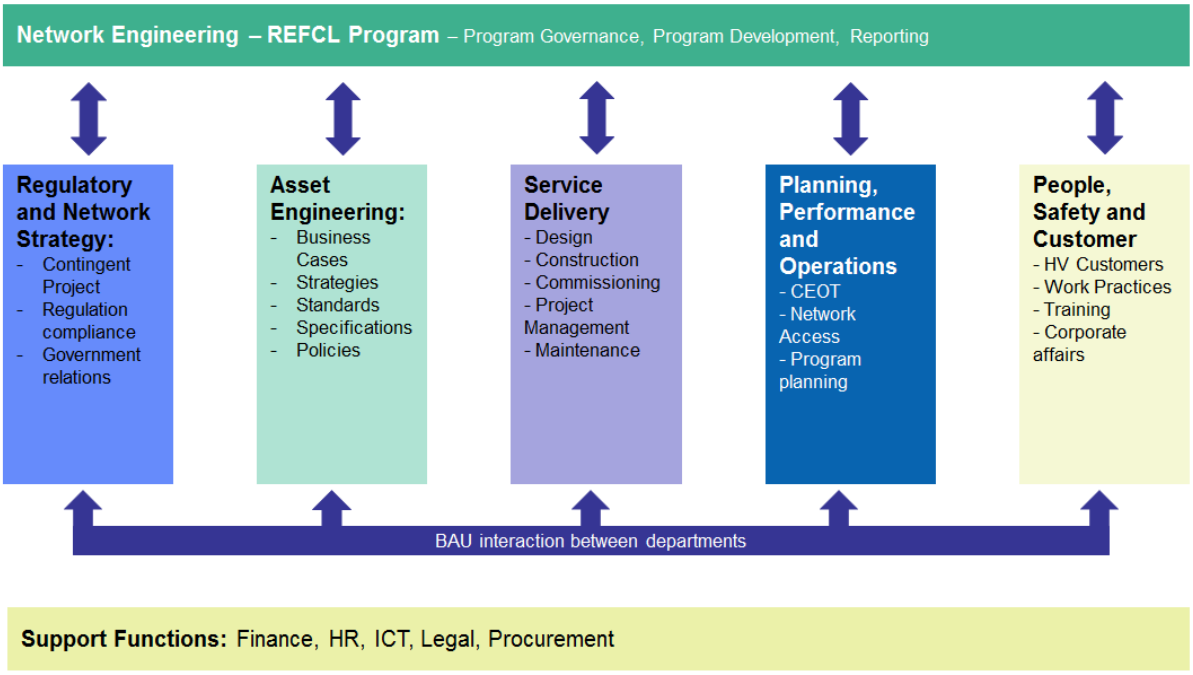

Figure 1: Simplified Organisational Structure

2.1.2 Operating Model

Service Delivery utilises a regional based structure with a hybrid operating model to deliver the works program as shown in Figure 2.

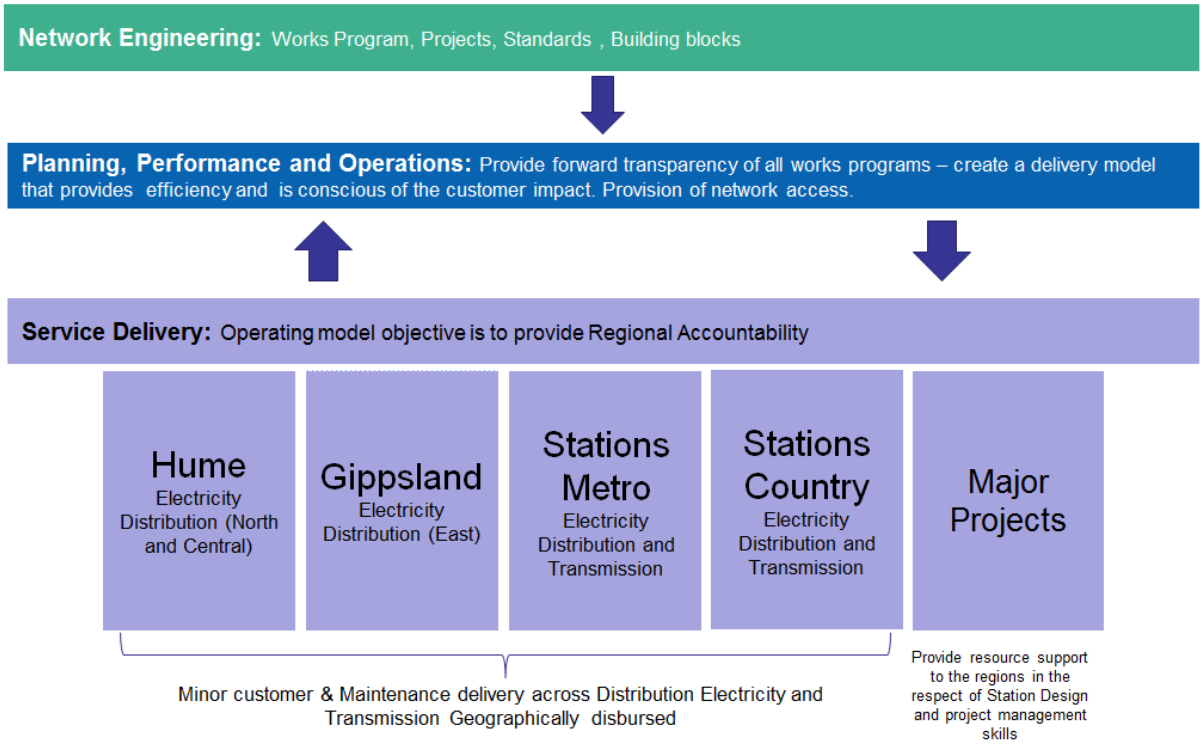

Figure 2: Service Delivery Regional Operating Model

Each of the regions is accountable for delivery of customer connections, maintenance and capital works programs. The regions will deliver the works program for the REFCL Program as part of their business as usual model and will be supported by:

- Planning, Performance and Operations including CEOT;
- Major Projects;
- Corporate functions including ICT, Legal and HR.

CEOT (control room) is within the Planning, Performance and Operations division which not only handles outage planning and network operations but also plans the delivery of the complete program and ensures a balance between work volumes and available resources. Major Projects undertakes design and manages the delivery of projects such as the REFCL zone substation projects, and provides project management support to the regions.

A hybrid operating model is utilised to deliver the program of works. This hybrid involves a mix of internal and external resources. The main elements of the model are:

- Internal teams dedicated to faults, minor capital and customer works;
- A mix of internal and fully outsourced teams by geographic location delivering comparable works programs;
- Capital Panels established to provide top-up resources for minor capital and capital surplus works in each region;
- Major Capital Panels established to facilitate efficient and safe delivery of major works.

The hybrid operating model is shown diagrammatically in Figure 3.

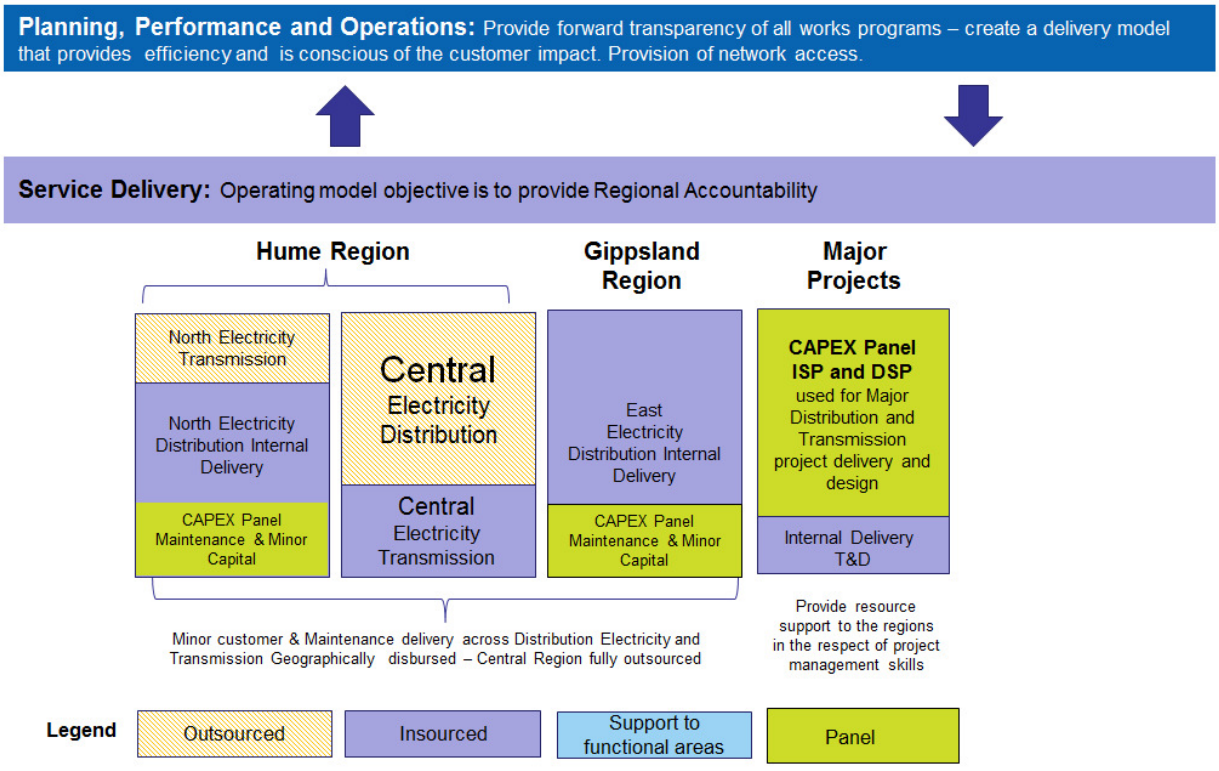

Figure 3: Service Delivery Hybrid Operating Model

2.1.2.1. REFCL delivery challenges

A number of initiatives have been taken to improve the delivery of the REFCL program.

Governance

A REFCL steering committee has been established with members including key general managers, the program manager and program director. The committee is accountable for the successful delivery of a functioning REFCL system across the 22kV electricity distribution network, in accordance with the regulated schedule and performance criteria. The committee:

- provides strategic and operational direction and support;
- acts as an escalation point for decision-making; and
- actively monitors the Program's critical risks and their mitigations, issues, budget and schedule.

The committee has been regularly meeting since March 2016.

Standard Designs

AusNet Services utilises a number of standard designs and modular construction to aid in the delivery of zone substation projects. For example, a standard modular 22 kV switchboard has been utilised in zone substation construction and rebuild projects. This switchboard has a number of advantages over the installation of stand-alone switchgear including the ability to fabricate and fit the building off-site in a factory and to readily relocate the switchboard should it no longer be required in its current location.

To deliver the REFCL program, the standard switchboard has been modified to ensure the circuit breakers are rated for REFCL operation and to include measuring transformers with minimum error to enable detection of low fault currents. The use of a pre-assembled switchboard speeds delivery of the program because the switchboard utilises a standard design and is assembled off-site by a supplier and delivered complete to site (already fitted with all the components and accessories such as air-conditioning). This reduces the design effort and on-site construction effort leading to more efficient and faster project delivery.

Shared experience

AusNet Services has fully commissioned a REFCL at one site and similarly Powercor has commissioned one REFCL. The operation of REFCLs to mitigate bushfire risk has not been undertaken elsewhere other than in Victoria and so there is no external knowledge or experience relating to the installation or operation of REFCLs for fire mitigation purposes. AusNet Services and Powercor have been sharing information on the installation and operation of their respective units to increase expertise and reduce risks, including the probability of unplanned customer interruptions.

In addition, Powercor and AusNet Services have shared the results of tests such as surge arrestor testing to reduce the time and cost of testing a statistically significant sample.

Furthermore, ongoing consultation and communication with European suppliers have assisted in the step change of moving from low impedance or solidly earthed networks to resonant earthed networks, which is quite common in Europe.

Relationship with key supplier

Swedish Neutral are currently the sole supplier of equipment that can meet the objectives of the Bushfire Mitigation Regulations as highlighted by the Kilmore South REFCL Trials. The Swedish Neutral product has been predominantly installed throughout Europe however its application as a Bushfire mitigation tool is a world first. Pushing the boundaries of this product has resulted in AusNet Services actively managing the relationship with a heightened consultative approach as efforts continue in installing a commercially ready product that can be integrated into our network to meet the onerous performance criteria prescribed in the Regulations.

Maximising use of existing contracts and relationships

Delivery of the program in the required timeframe would not be possible without using existing contracts and relationships. The procurement of equipment relies on established contracts with suppliers and enables the use of standard equipment such as the 22 kV switchboards. Additionally, the pre-qualified service providers (described below) will be used to deliver on-site work.

Establishment of REFCL program building blocks

Similarly with standard designs, AusNet Services has embarked on a journey to develop key building blocks such as strategies, policies, specifications, procedures and period order contracts to ensure the delivery challenges are minimised.

Due to the paradigm shift in earthing philosophy these building blocks are either newly created or require modifications to existing documents and contracts.

AusNet Services has a plan to implement all of these changes over the course of calendar year 2017. The priority issues to be resolved relating to the integration of REFCL technology include functionality of new ACRs and sectionalisers, active network balancing, HV customer transformer isolation solution and REFCL backup protection functionality.

2.1.2.2. Efficient Delivery

The combination of insourcing and outsourcing provides a sufficient pool of resources to complete the program. Additional external resources will be engaged to meet the peak workload. These additional resources are not retained when the volume of work reduces, after REFCL program completion, ensuring that internal resources are always fully occupied.

The establishment of pre-qualified panels of service providers using a competitive process ensures efficient costs and appropriate quality of services provided. Further, the cost and time taken to engage resources on a project is reduced.

The combination of regions with insourced and outsourced work provide opportunities for comparison and benchmarking of activities including costs, response and quality. This provides a sound basis for improvement of work processes to maximise efficiency.