January 2026

Powerlink 2027-32 Revenue Proposal

Project Pack

Current Transformer Replacement Programme

Project Status: Stage 1 Approved

Network Requirement

Powerlink's network is experiencing some premature failures of a 275kV current transformer particular make and model (current transformer subset). Powerlink has 451 of the 275kV oil-filled current transformer subset installed at 23 substation sites throughout the transmission network. Since 2011, there have been fourteen failures of this current transformer subset. The failed 275kV current transformers had been in service for between 10 to 24 years, well before the 40-year lifespan expected of a typical current transformer. Seven failed routine maintenance testing, and seven failed while energised, demonstrating an elevated risk associated with sites where the current transformer subset is installed. The correlation between time in service and likelihood of failure presents a risk to network reliability and operational stability, increasing the probability of unplanned outages and safety risks.

Powerlink must therefore take action to:

- avoid the increasing likelihood of unserved energy arising from failures of the current transformer subset in Queensland;
- avoid network and load interruptions due to loss of critical revenue metering, power system monitoring, telemetry, and protection system performance functions associated with failures of the current transformer subset; and
- remove the need for restricted access zones (RAZ). RAZ are necessary to ensure the safety of Powerlink personnel and contractors, however they hinder routine operational and maintenance activities that support the reliable operation of the network.

These current transformers perform functions such as revenue metering, power system monitoring, telemetry, and protection system performance which are key to managing the network. These functions are essential for Powerlink to meet its regulatory and operational compliance obligations as a Transmission Network Service Provider and cannot be substituted or eliminated through alternative systems.

As the identified need for the proposed investment is to meet reliability and service standards specified within Powerlink's Transmission Authority, guidelines and standards published by the Australian Energy Market Operator (AEMO), and Powerlink's ongoing compliance with Schedule 5.1 of the National Electricity Rules (NER), it is classified as a reliability corrective action under the NER. [1].

Recommended Option

The identified need and credible options are currently being assessed via a public Regulatory Investment Test for Transmission (RIT-T) consultation process expected to be completed by April 2026. Only one credible option to address the risk of premature failure of 275kV current transformers was identified in the Project Specification Consultation Report (PSCR) [1]:

Option 1: Replace identified current transformers in northern and central Queensland by 2029 and in southern Queensland by 2031.

Powerlink does not consider non-network options are likely to be able to meet the identified need to address the risk of the 275kV current transformer subset premature failures on Powerlink's network. A non-network solution would be unable to fully replicate the functionality that current transformers provide in the operation of the transmission network.

Cost and Timing

The estimated cost and timing to replace the identified subset of 275kV current transformers in different geographical areas is set out in Table 1 below:

Geographical area	Estimated cost[1]	Target commissioning date
North Queensland	$10.6 million (Nominal)	June 2027
Central Queensland	$8.7 million (Nominal)	June 2027
Southern Queensland (Surat)	$42.5 million (Real, 2025/26)[2] [3]	December 2029 [2]
Southern Queensland (Metro)	$41.1 million (Real, 2025/26) [5]	December 2029 [4]

Notes:

1. Based on recent Class 3 estimates. Estimates in the PSCR reflected earlier Class 5 estimates.
2. Adjusted to reflect the proportion of the project cost that relates to prescribed services assets.

Documents in Current Transformer Replacement Programme Project Pack

Public Documents

1. Addressing the risk of current transformer premature failures in Queensland – Project Specification Consultation Report – August 2025
2. CP.03106 Replace 275kV CTs – Surat – Project Scope Report
3. CP.03106 Replace 275kV CTs – Surat – Project Management Plan
4. CP.03107 Replace 275kV CTs – Metro – Project Scope Report
5. CP.03107 Replace 275kV CTs – Metro – Project Management Plan

28 AUGUST 2025

Addressing the risk of current transformer premature failures in Queensland

Project Specification Consultation Report

Preface

Powerlink Queensland is a Transmission Network Service Provider that owns, develops, operates and maintains Queensland's high-voltage electricity transmission network. The network transfers bulk power from Queensland generators to electricity distributors Energex and Ergon Energy (part of the Energy Queensland Group), and to a range of large industrial customers.

This Project Specification Consultation Report has been prepared in accordance with version 234 of the National Electricity Rules (NER), and the Regulatory Investment Test for Transmission (RIT-T) Instrument (November 2024) and RIT-T Application Guidelines (November 2024). The RIT-T Instrument and Application Guidelines are made and administered by the Australian Energy Regulator.

The NER requires Powerlink to carry out forward planning to identify future reliability of supply requirements, which may include replacement of network assets or augmentations of the transmission network. Powerlink must then identify, evaluate and compare network and non-network options (including, but not limited to, generation and demand side management) to identify the preferred option which can address future network requirements at the lowest net cost to electricity customers.

Powerlink also has obligations under the NER to address power system security requirements identified by the Australian Energy Market Operator in its annual System Security Reports.

The main purpose of this document is to provide details of the identified need, credible options, technical characteristics of non-network options, and categories of market benefits likely to impact selection of the preferred option. In particular, it encourages submissions from potential proponents of feasible non-network options to address the identified need.

This document also provides customers, stakeholders and communities with information on the potential investment/s (network and non-network) that are required in the near-term to meet an identified need, and offers the opportunity to provide input into the future development of the transmission network in Queensland.

More information on how Powerlink applies the RIT-T process is available on Powerlink's website.

A copy of this report will be made available to any person within three business days of a request being made. Requests should be directed to the Manager Network and Alternate Solutions by phone ((07) 3860 2111) or email (networkassessments@powerlink.com.au).

Powerlink acknowledges the Traditional Owners and their custodianship of the lands and waters of Queensland and in particular, the lands on which we operate. We pay our respect to their Ancestors, Elders and knowledge holders and recognise their deep history and ongoing connection to Country.

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Executive Summary

Premature failures of 275kV current transformers requires Powerlink to take action

Powerlink's network is experiencing some premature failures of a 275kV current transformer particular make and model (current transformer subset). These current transformers perform functions such as revenue metering, power system monitoring, telemetry, and protection system performance which are key to managing the network. Failures can also result in network and load interruptions as well as loss of containment of oil and sand.

Powerlink has 451 of the 275kV oil-filled current transformer subset installed at 23 substation sites throughout the transmission network. Since 2011, there have been fourteen failures of this current transformer subset. The failed 275kV current transformers had been in service for between 10 to 24 years, well before the 40-year lifespan expected of a typical current transformer. Seven failed routine maintenance testing, and seven failed while energised, demonstrating an elevated risk associated with sites where the current transformer subset is installed.

The correlation between time in service and likelihood of failure presents a risk to network reliability and operational stability, increasing the probability of unplanned outages and safety risks.

Powerlink must therefore take action to:

- avoid the increasing likelihood of unserved energy arising from failures of the current transformer subset in Queensland;
- avoid network and load interruptions due to loss of critical revenue metering, power system monitoring, telemetry, and protection system performance functions associated with failures of the current transformer subset; and
- remove the need for restricted access zones (RAZ). These hinder routine operational and maintenance activities that support the reliable operation of the network.

Powerlink has implemented measures to manage safety risks

Powerlink has established RAZs of 30 metres around each current transformer subset while they are energised to manage safety risk in the vicinity. The RAZs ensure that no personnel approach an energised current transformer subset and be exposed to risk of injury.

Powerlink is required to apply the Regulatory Investment Test for Transmission (RIT-T)

The estimated capital cost of the most expensive credible option for the program of work required to address the network and safety risks associated with the current transformer subsets in northern, central and southern Queensland meets the minimum threshold (currently $8 million) to apply the RIT-T. As the identified need for the proposed investment is to meet reliability and service standards specified within Powerlink's Transmission Authority, guidelines and standards published by the Australian Energy Market Operator (AEMO), and Powerlink's ongoing compliance with Schedule 5.1 of the National Electricity Rules (NER), it is classified as a reliability corrective action under the NER. The identified need is not discussed in AEMO's most recent Integrated System Plan (ISP) and is therefore subject to the application and consultation process for RIT-T projects that are not actionable ISP projects.

Powerlink has developed one credible network option to address the identified need

Summary of Credible Option

Option	Description	Breakdown of costs ($m, 2025)	Total Cost of option ($m, 2025)	Indicative annual O&M costs ($m, 2025)
1	Replacement of identified CTs Northern Queensland by 2029	9.69	86.35	0.45
	Replacement of identified CTs Central Queensland by 2029	8.76		
	Replacement of identified CTs Southern Queensland (Surat and Metro) by 2031	67.90		

Note: O&M denotes operations and maintenance.

Given that the functions performed by the current transformers are essential for Powerlink to meet its regulatory and operational compliance obligations as a Transmission Network Service Provider and cannot be fully replicated or eliminated through alternative options, replacement of the subset of current transformers is the only credible network option identified at the Project Specification Consultation Report (PSCR) stage. This option directly addresses the major risks resulting from premature failure of the current transformer subset installed across Powerlink's network.

Non-network options are not expected to address the identified need for this RIT-T

Powerlink does not consider non-network options are likely to be able to meet the identified need to address the risk of the 275kV current transformer subset premature failures on Powerlink's network. A non-network solution would be unable to fully replicate the functionality that current transformers provide in the operation of the transmission network. However, for completeness, this PSCR includes information on the required technical characteristics for non-network options.

Lodging a submission with Powerlink

Powerlink is seeking written submissions on this PSCR, on or before **28 November 2025**, particularly on the credible option presented in this PSCR.

Please address submissions to:

Manager Network and Alternate Solutions
Powerlink Queensland
PO Box 1193
VIRGINIA QLD 4014
Telephone: (07) 3860 2111
Email: networkassessments@powerlink.com.au

1. Introduction

1.1. Powerlink asset management and obligations

Powerlink's asset management approach ensures assets are managed in a manner consistent with overall corporate objectives to deliver safe, cost effective, reliable and sustainable services. Powerlink's approach to asset management delivers value to customers and stakeholders by optimising whole of life cycle costs, benefits and risks, while ensuring compliance with relevant legislation, regulations and standards. This is underpinned by Powerlink's corporate risk management framework and international risk assessment guidelines and methodologies.

1.2. Overview of the Regulatory Investment Test for Transmission

The purpose of a Regulatory Investment Test for Transmission (RIT-T) is to identify the preferred investment option that meets the identified network need. The preferred option maximises the present value of economic benefits, taking into account changes to Australia's greenhouse gas emissions where relevant. If the identified need is for a reliability corrective action, the preferred option may have a net economic cost.[1]

Powerlink applies the RIT-T to potential prescribed (regulated) investments in the transmission network where the estimated capital cost of the most expensive option exceeds $8 million.[2] The identified need referred to in this RIT-T – addressing the risk of current transformer failures in northern, central and southern Queensland – is not included in the Australian Energy Market Operator's (AEMO's) most recent Integrated System Plan (ISP), published in June 2024. As such, this RIT-T is subject to the application and consultation process for RIT-T projects that are not actionable ISP projects.[3]

This Project Specification Consultation Report (PSCR) is the first step in the RIT-T process.[4] The PSCR:

- describes the reasons why Powerlink has determined that investment is necessary (the identified need), together with the assumptions used in identifying this need, including whether the need is as an actionable project in AEMO's latest ISP;
- provides potential proponents of non-network solutions with information on the technical characteristics that a non-network solution would need to deliver, in order to assist proponents to consider whether they could offer an alternative solution;
- describes the credible option(s) that Powerlink currently considers may address the identified need;
- explains which (if any) categories of market benefits Powerlink expects to be material, or not material, for this RIT-T;
- describes how customers and stakeholders have been engaged with regarding the identified need; and
- provides stakeholders with the opportunity to comment on the credible option(s) presented.[5]

More information on the RIT-T process is provided in Appendix 1. Powerlink's compliance with RIT-T requirements in the National Electricity Rules (NER) and the RIT-T Application Guidelines is set out in Appendix 2.

[1] National Electricity Rules, clause 5.15A.1(c) and chapter 10, glossary ('net economic benefit').
[2] National Electricity Rules, clauses 5.15.3(a) and (b)(2) set the threshold at $5 million. The Australian Energy Regulator's (AER) latest cost threshold review increased the value to $8 million for three years from 1 January 2025.
[3] National Electricity Rules, rule 5.16.
[4] This RIT-T consultation process has been prepared in accordance with clauses 5.16.4(b) to (g) of the National Electricity Rules and AER, *Regulatory Investment Test for Transmission Application Guidelines*, November 2024.
[5] National Electricity Rules, clause 5.16.4(b).

2. Customer, non-network and community engagement

More than five million Queenslanders and 241,000 Queensland businesses depend on Powerlink's performance. Powerlink recognises the importance of engaging with a diverse range of customers and stakeholders who have the potential to affect, or be affected by, Powerlink activities and/or investments.

Together with our industry counterparts from across the electricity and gas supply chain, Powerlink has committed to the Energy Charter. The charter is a national CEO-led collaboration that supports the energy sector towards a customer-centric future. Powerlink joins other signatories in committing to progress the culture and solutions needed to deliver more affordable, reliable and sustainable energy systems. Powerlink's Energy Charter Disclosure Statement for 2023/24 shows Powerlink's achievements against the principles of the Energy Charter.

2.1. Powerlink takes a proactive approach to engagement

Powerlink regularly hosts a range of activities to provide timely and transparent information to customers and stakeholders within the broader community.

Powerlink's annual Transmission Network Forum (TNF) is a primary vehicle used to engage with the community, understand broader customer and industry views and obtain feedback on key topics. It also provides Powerlink with an opportunity to further inform its business network and non-network planning objectives. TNF participants include customers, landholders, environmental groups, Traditional Owners, government agencies, and industry bodies.

Engagement activities such as the TNF help inform the future development of the transmission network and assist Powerlink in providing services that align with the long-term interests of customers. Powerlink also incorporates feedback from these activities into a number of publicly available reports.

2.2. Working collaboratively with Powerlink's Customer Panel

Powerlink's Customer Panel provides a face-to-face opportunity for customer representatives to give their input and feedback about Powerlink's decision-making, processes and methodologies. The panel also provides Powerlink with a valuable avenue to keep customers and stakeholders better informed, and to receive feedback about topics of relevance, including RIT-Ts.

The Customer Panel is regularly advised on the publication of Powerlink's RIT-T documents, and is briefed quarterly on the status of current RIT-T consultations as well as upcoming RIT-Ts. This provides an ongoing opportunity for the Customer Panel to ask questions and provide feedback to further inform RIT-Ts, and for Powerlink to better understand the views of customers when undertaking the RIT-T consultation process.

Powerlink will continue to provide updates to and request input from the Customer Panel throughout the RIT-T consultation process.

2.3. Transparency on future network requirements

Powerlink's annual planning review findings are published in the Transmission Annual Planning Report (TAPR) and TAPR templates (available via the TAPR portal). It provides early information and technical data to customers and stakeholders on potential transmission network needs over a 10-year outlook period. The TAPR plays an important part in planning Queensland's transmission network and helping to ensure it continues to meet the needs of Queensland electricity customers and participants in the National Electricity Market (NEM).

Powerlink's 2024 TAPR identified an expectation that action would be required to manage the risk of current transformer failure. No submissions proposing credible and genuine non-network options have been received by Powerlink from prospective non-network solution providers in the normal course of business, in response to the publication of TAPRs, or as a result of stakeholder engagement activities.

2.4. Powerlink applies a considered approach to RIT-T engagement

Powerlink undertakes a considered and consistent approach to ensure an appropriate level of stakeholder engagement is undertaken for each individual RIT-T consultation. The scope of engagement activities is dependent upon various considerations, such as the characteristics and complexity of the identified need and potential credible options.

For all RIT-Ts, members of Powerlink's Non-network Engagement Stakeholder Register receive email notifications of publication of RIT-T reports. For projects where Powerlink identifies material or significant market benefits, additional activities such as webinars or dedicated engagement forums may be appropriate. For more information, see Powerlink's RIT-T stakeholder engagement matrix.

2.5. Community engagement

Powerlink recognises the importance of engaging with stakeholders who may reasonably be expected to be affected by the works required to meet the identified need described in this PSCR.

The engagement frameworks and strategies that underpin Powerlink's engagement approach include:

- The International Association for Public Participation (IAP2) spectrum[6], noting each stakeholder group has unique needs and requires an individual assessment on the spectrum;
- Powerlink's Stakeholder Engagement Framework, Community Engagement Strategy and Reflect Reconciliation Action Plan; and
- the Energy Charter Landholder and Community Better Practice Engagement Guide; and Better Practice Social Licence Guideline.

2.5.1. Powerlink assesses the requirement for community engagement based on the identified need

Powerlink undertakes an assessment of the potential for social and environmental impacts of anticipated replacement or augmentation projects well in advance of the identified need timing. Understanding if and when community engagement may be required, as well as the appropriate engagement approach, is an integral component of the early planning analysis needed to inform option identification, consideration of statutory processes (e.g. Ministerial Infrastructure Designation if required) and subsequent project development strategy and engagement plans.

Powerlink's engagement approach is tailored to maximise the accessibility of the proposed project's information to the stakeholder groups and/or communities affected by the project once the need to undertake community engagement is identified. Key stakeholders may include, but are not limited to, directly impacted and adjacent landholders, Traditional Land Owner groups, local residents, businesses and other organisations such as schools, community organisations and environmental groups as well as local government authorities and elected representatives within local and state governments.

[6] Refer to IAP2's website.

2.5.2 Assessment and basis of assessment on the need for community engagement

Powerlink has assessed that minimal community engagement is required given the scope of works under consideration for any proposed network option to meet the identified need. This is due to the network option under consideration which is to replace the current transformer subset within existing substations. Powerlink will provide notifications to nearby residents to ensure all affected parties are appropriately informed of project activities.

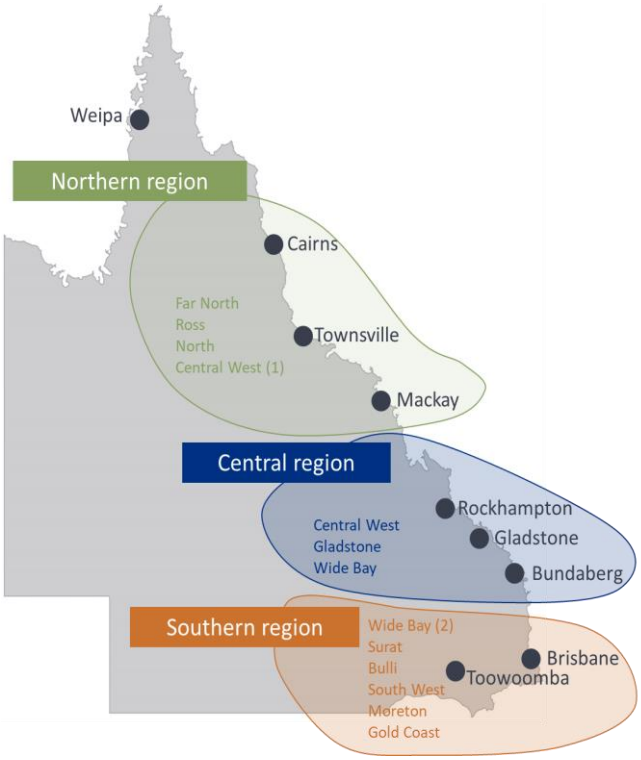
3. Identified Need

The identified need is the objective Powerlink seeks to achieve by investing in the network in accordance with the NER.[7] The RIT-T Application Guidelines note that network and non-network options can address the identified need.[8]

3.1. Geographical overview

Figure 3.1 provides an overview of where the 275kV current transformer subset is located within the northern, central and southern regions of Powerlink's network.

Figure 3.1: Overview of 275kV current transformer regional locations



Notes:

(1) Geographical zones as described in Powerlink's TAPR

[7] National Electricity Rules, chapter 10 (definition of 'identified need')
[8] AER, *Application Guidelines, Regulatory Investment Test for Transmission*, November 2024, page 13.

(2) Southern region includes substation sites within the Surat and Moreton zones

3.2. Background

Current transformers are installed at substations to measure and monitor the current flowing through transmission lines. They are a crucial component of the transmission network that perform functions including revenue metering, power system monitoring, telemetry, and protection system performance. These functions are critical in helping Powerlink meet its regulatory and operational compliance obligations as a Transmission Network Service Provider.

Current transformers can be of many different types and constructions (toroidal, optical, dry type, post type, etc.). The majority of post type current transformers in transmission networks are either gas-insulated sulphur hexafluoride (SF6) or oil-filled. A typical current transformer has an expected service life of approximately 40 years and they are tested every three years as part of routine maintenance. A failure of a current transformer can lead to network interruptions and involuntary load curtailment for customers. This is because Powerlink may be required to de-energise the equipment being monitored by the current transformer if it were to fail in service. Failure can also damage nearby equipment and cause potential harm to individuals in the vicinity.

As part of routine maintenance testing of the current transformer subset, seven were identified to be at high risk of failure and immediately removed from service. The failure details are shown in Incident Numbers 2 to 7 and 9 in Table 3.1.

There have been a further seven failures of this current transformer subset since 2011. These failures resulted in the loss of containment of oil and sand up to a diameter of 17 metres. These incidents did not result in any personnel injury, as no one was within range of the oil and sand at the time of failure. The failure details are shown in Incident Numbers 1, 8, 10, and 11 to 14 in Table 3.1.

Table 3.1: Details of 275kV current transformer failures on Powerlink's network

Incident Number	Failure type	Years in service	Date of failure	Consequence	Consequence comment
1	Loss of containment	10	30/10/2011	N/A	N/A
2	Testing failure	23	31/10/2011	N/A	N/A
3	Testing failure	23	18/04/2013	N/A	N/A
4	Testing failure	23	18/01/2016	N/A	N/A
5	Testing failure	24	10/06/2016	N/A	N/A
6	Testing failure	23	02/06/2018	N/A	N/A
7	Testing failure	24	09/11/2018	N/A	N/A
8	Loss of containment	17	26/11/2019	Fire	Debris (approximately 5 metres)
9	Testing failure	23	1/07/2020	N/A	N/A
10	Loss of containment	13	19/08/2020	Oil spill	Oil and sand (distance not recorded)
11	Loss of containment	18	29/11/2023	Fire	Debris and oil spray (approximately 16 metres)
12	Loss of containment	18	23/01/2024	Oil spill	Oil and sand only (approximately 2 metres)
13	Loss of containment	18	27/07/2024	Fire	Debris (approximately 17 metres)
14	Loss of containment	19	11/06/2025	Fire	Debris (approximately 10 metres)

Table 3.2 lists the quantity of 275kV current transformer subset per substation site in each region.

Table 3.2: Quantity of 275kV current transformer subset per substation in each region

Region	Substation	Quantity
Northern	Nebo	18
	Ross	6
	Chalumbin	3
	Strathmore	27
	Subtotal	**54**
Central	Broadsound	8
	Calvale	4
	Wurdong	9
	Larcom Creek	21
	Subtotal	**42**
Southern	Tarong	81
	Braemar	14
	Millmerran	3
	Halys	60
	Western Downs	15
	South Pine	5
	Belmont	18
	Mudgeeraba	4
	Woolooga	36
	Palmwoods	6
	Mt England	29
	Middle Ridge	18
	Goodna	12
	Abermain	12
	Teebar Creek	21
	Greenbank	21
	Subtotal	**355**
	Total Quantity	**451**

3.2.1. Powerlink has implemented measures to manage safety risks

Powerlink has established restricted access zones (RAZ) of 30 metres around each current transformer subset while they are energised to manage safety risks. However, these RAZs create significant access challenges at the affected substations, hindering routine operational and maintenance activities and further exacerbating the network reliability risks associated with this subset.

3.3. Description of identified need

Powerlink's Transmission Authority requires it to plan and develop the transmission network in accordance with good electricity industry practice, having regard to the value that end users of electricity place on the quality and reliability of electricity services. It allows load to be interrupted during a critical single network contingency, provided the maximum load and energy will not exceed 50 megawatts (MW) at any one time, or will not be more than 600 megawatt hours (MWh) in aggregate.[9] The Transmission Authority is also subject to a broader obligation under the *Electricity Act 1994* (the Electricity Act) that Powerlink operate, maintain (including repair and replace if necessary) and protect its transmission grid to ensure the adequate, economic, reliable and safe transmission of electricity.[10]

Premature failures present a risk to network reliability and operational stability, increasing the probability of unplanned outages and network disruptions.

This presents Powerlink with a range of reliability of supply, safety and compliance risks which put at risk Powerlink's ongoing compliance with the reliability and service standards set out in the NER, Powerlink's Transmission Authority and applicable regulatory instruments.

Powerlink must therefore take action to:

- avoid the increasing likelihood of unserved energy arising from failures of the current transformer subset in Queensland;
- avoid network and load interruptions due to loss of critical revenue metering, power system monitoring, telemetry, and protection system performance functions associated with failures of the current transformer subset; and
- remove the need for RAZs that hinder routine operational and maintenance activities that support the reliable operation of the network.

As the proposed investment is to meet reliability and service standards arising from Powerlink's Transmission Authority and to ensure Powerlink's ongoing compliance with Schedule 5.1 of the NER, it is a reliability corrective action under the NER.[11] A reliability corrective action differs from that of an increase in producer and consumer surplus (market benefit) driven need in that the preferred option may have a negative net economic outcome because it is required to meet an externally imposed obligation on the network business.[12]

3.4 Assumptions and requirements underpinning the identified need

The need to invest is driven by Powerlink's obligations to address the increasing risks to supply, safety and property arising from the condition of the category of 275kV current transformers. If not addressed, these risks

[9] Transmission Authority No. T01/98, section 6.2(c).
[10] *Electricity Act 1994* (Qld), section 34(1)(a).
[11] National Electricity Rules, clause 5.10.2 (definition of 'reliability corrective action').
[12] National Electricity Rules, clause 5.15A.1(c).

can lead to failures and extend the time taken to recover from outages, due to the time taken to install a replacement.

The *Electrical Safety Act 2002* also requires Powerlink to operate its network in a manner that ensures electrical risk to a person or property has been eliminated, so far as is reasonably practicable; or if it is not reasonably practicable to eliminate electrical risk to the person or property, the risk has been minimised so far as is reasonably practicable.[13]

Powerlink's must also plan, design, maintain and operate its network to meet the power quality standards and reliability obligations set out in the NER and in its Transmission Authority.[14]

It follows that the premature failures of the identified 275kV current transformer subset located across Powerlink's network compels Powerlink to undertake reliability corrective actions if it is to continue to meet its jurisdictional obligations and the standards for reliability of supply set out by AEMO and in the NER.

3.5 Consequences of failure

Powerlink has assessed the consequences of failure for a particular asset and risk scenario on a case-by-case basis, taking into account the type of asset, location of the asset, network connectivity, and operating and environmental conditions.

In the case of the category of 275kV current transformers requiring replacement for this RIT-T, the following safety, network, financial and environmental potential consequences have been identified.

Safety

- potential safety impacts to field personnel working in the vicinity of current transformers when loss of containment occurs with potential for fire and arcing nearby

Network

- interruptions to supply and extended outages
- reduced transfer limits and different patterns of generation dispatch

Financial

- replacement of a failed asset in an emergency manner
- damage to adjacent items of plant in the event of oil and sand release or fire
- clean-up and remediation of oil and other contaminants
- costs associated with supply of diesel generators or other sources of supply during prolonged outages
- delays to projects, rescheduling of planned works, and other business disruption costs

Environmental:

- loss of containment of oil
- release of greenhouse gases (SF6) into the environment

[13] *Electrical Safety Act 2002* (Qld), section 29.

[14] National Electricity Rules, Schedules 5.1a (System Standards) and 5.1.2 (Network Reliability), and Transmission Authority Number T01/98, Section 6, as amended 30 June 2014.

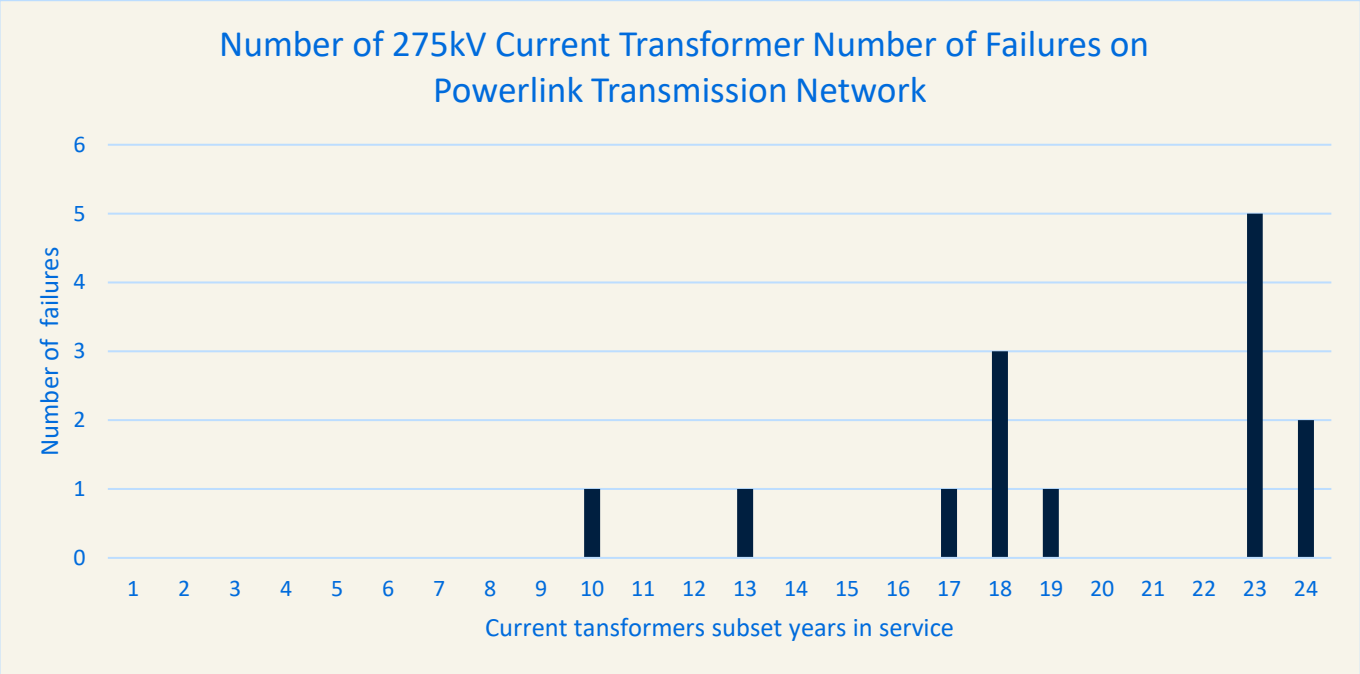
3.6 Likelihood of 275kV current transformer failure

The likelihood of consequence represents the moderating factors associated with the consequence. These factors can vary depending on the nature of the failure, the context and location of the asset, and preventative barriers or controls to mitigate the risk.

There have been seven containment failures of this current transformer subset since 2011, and a further seven that failed maintenance testing. The fourteen current transformer subset that failed had been in service for only 10 to 24 years. This is significantly short of the typical 40-year service life for this type of equipment and demonstrates a correlation between time in service and likelihood of failure (refer to Figure 3.1).

Figure 3.1: 275kV current transformer subset failure

Data includes containment failures and failed tests.



4. Required technical characteristics for non-network options

The information provided in this section is intended to enable interested parties to formulate and propose genuine and practicable non-network solutions.

A non-network solution that would allow Powerlink to avoid replacement of current transformers must be able to replicate the functionality, capacity, and reliability of the entire substation where these current transformers are located.

Powerlink is not aware of any technically feasible non-network options that are capable of meeting the identified need, but invites submissions from proponents of such options.

4.1. Common criteria for proposed network support services

Powerlink has identified the following common criteria that must be satisfied if proposed network support services are to meet supply requirements.[15]

Size and location

- Proposed solutions must be large enough, individually or collectively, to avoid replacement of current transformers at the substations described in Table 3.2. However, the level of support depends on the location and type of network support offered.
- Due to the bulk nature of the transmission network, aggregation of sub 10MW non-network solutions will be the sole responsibility of the non-network provider.
- Notwithstanding the location of any solution, each proposal would require assessment in relation to technical constraints pertinent to the network connection, such as impacts on intra-regional transfer limits, fault level, system strength, maintaining network operability and quality of supply.

Operation

- A non-network option would need to be capable of operating on a continuous basis over a period of years and would be required to provide notice of cessation of network support services several years in advance to allow Powerlink to address the identified need in time to meet its reliability of supply obligations.
- If a generation service is proposed (either standalone or in conjunction with other services), such operation will be required regardless of the market price.
- Proponents of generation services are advised that network support payments are intended for output that can be demonstrated to be additional to the plant's normal operation in the NEM.
- Where there are network costs associated with a proposed non-network option, including asset decommissioning, these costs form part of the scope of a non-network option and will be included in the overall cost of a non-network option as part of the RIT-T cost-benefit analysis.

Reliability

- Proposed services must be capable of reliably meeting electricity demand under a range of conditions and, if a generator must meet all relevant NER requirements related to grid connection.
- Powerlink has obligations under the NER, its Transmission Authority and connection agreements to ensure supply reliability is maintained to its customers. Failure to meet these obligations may give rise to liability. Proponents of non-network options must also be willing to accept any liability that may arise from its contribution to a reliability of supply failure.

Timeframe and certainty

- Proposed services must be able to be implemented in sufficient time to meet the identified need as shown in Table 5.1, using proven technology and, where not already in operation, provision of information in relation to development status such as financial funding and development timeline to support delivery within the required timeframe must be provided.

[15] Powerlink's Network Support Contracting Framework provides a general guide to assist potential non-network solution providers. This framework outlines the key contracting principles that are likely to appear in any network support agreement.

Duration

- The agreement duration for any proposed service will provide sufficient flexibility to ensure that Powerlink is pursuing the most economic long run investment to address the condition risks arising from the 275kV current transformers.

5. Potential credible network options to address the identified need

Powerlink has developed one credible network option that is capable of addressing the identified need. This option addresses the identified need of maintaining existing electricity services, ensuring an ongoing reliable, safe and cost-effective supply to customers in northern, central and southern Queensland and to minimise the risk in the Powerlink sites where this 275kV current transformer subset is installed.

Option 1 seeks to address the risks associated with current transformer subset premature failures in northern, central and southern Queensland by replacement of the current transformer subset through a state-wide replacement program. Under Option 1, design will commence in 2026, construction works will commence in 2026, and commissioning will be completed by July 2031.

A summary of this option is shown in Table 5.1.

Table 5.1: Summary of credible option

Option	Description	Breakdown of costs ($m, 2025)	Total Cost of option ($m, 2025)	Indicative annual O&M costs ($m, 2025)
1	Replacement of identified current transformers Northern Queensland by 2029	9.69	86.35	0.45
	Replacement of identified current transformers Central Queensland by 2029	8.76		
	Replacement of identified current transformers Southern Queensland (Surat and Metro) by 2031	67.90		

Note: O&M denotes operations and maintenance.

The credible option addresses the major risks resulting from the identified current transformer subset to allow Powerlink to meet its reliability of supply and safety obligations under its Transmission Authority, the Electricity Act and Schedule 5.1 of the NER, by the replacement of the current transformer subset across Powerlink's network.

Powerlink does not consider that the credible option being considered will have a material inter-network impact, based on AEMO's screening criteria.[16]

[16] National Electricity Rules, clause 5.16.4(b)(6)(ii). AEMO has published guidelines for assessing whether a credible option is expected to have a material inter-network impact.

5.1. Options considered but not progressed

Powerlink's initial assessment considered two options, other than the credible option discussed in this PSCR, that potentially met the identified need. Table 5.2 summarises the reasons the additional options could not be included as credible options to be assessed in this PSCR.

Table 5.2: Options considered but not progressed

Option	Reason(s) for not progressing
Replacement of the identified current transformers and existing live tank circuit breakers with dead-tank circuit breakers including current transformers as one item	Prohibitive cost due to significant site works required including civil, electrical and secondary system changes and disproportionate to the magnitude of the estimated cost of the credible option being considered. It would be cost effective only in few cases where circuit breakers are nearing their end of serviceable life. Longer outage duration due to increased work.
Reducing safety risk through the use of diverter shields, enabling access to substations for maintenance and project activities(Note 1)	Lack of certainty of effectiveness as a trial of this option has not been fully assessed at the time of PSCR publication. Safety risk is not fully mitigated and smaller RAZs will remain. Reliability risk may not be adequately mitigated.

Note:

(1) The feasibility of this option will be further assessed prior to Project Assessment Draft Report (PADR) publication.

6. Materiality of Market Benefits

The NER requires RIT-T proponents to quantify a number of classes of market benefits for each credible option, unless the proponent can demonstrate that a specific category(ies) is/are unlikely to materially affect the outcome of the assessment of credible options.[17]

6.1. Market benefits that are material for this RIT-T assessment

Powerlink considers the benefits that could be material are as follows:

- **Involuntary load shedding:** Powerlink considers that changes in involuntary load shedding (expected unserved energy) may be material to the RIT-T assessment.
- **Changes in patterns of generation dispatch**: Powerlink considers that variations in transmission network constraints or power flows may materially influence the outcome of the RIT-T assessment.

[17] National Electricity Rules, clauses 5.15A.2(b)(4), (5) and (6). See also AER, *Regulatory Investment Test for Transmission*, November 2024, paragraphs 10 to 13.

6.2. Market benefits that are not material for this RIT-T assessment

A discussion of each market benefit under the RIT-T that Powerlink considers not to be material is presented below.

- **Changes in voluntary load curtailment**: replacement of at risk assets under the credible option by itself does not affect prices in the wholesale electricity market. It follows that changes in voluntary load curtailment will not be material for the purposes of this RIT-T.
- **Changes in costs for other parties**: the effect of replacement of at-risk assets under the credible option considered are localised to the substation they are located at and do not affect the capacity of transmission network assets and therefore are unlikely to change generation investment patterns (which are captured under the RIT-T category of 'costs for other parties')
- **Differences in the timing of expenditure**: the credible option for asset replacement does not affect the capacity of transmission network assets, the way they operate, or transmission flows. Accordingly, differences in the timing of expenditure of unrelated transmission investments are unlikely to be affected.
- **Changes in network losses**: the credible option is not expected to provide any changes in network losses as replacing at risk assets does not affect the characteristics of primary transmission assets.
- **Changes in ancillary services cost**: there is no expected change to the costs of Frequency Control Ancillary Services (FCAS), Network Control Ancillary Services (NCAS), or System Restart Ancillary Services (SRAS) due to credible option under consideration. These costs are therefore not material to the outcome of the RIT-T assessment.
- **Changes in Australia's greenhouse gas emissions**: Powerlink does not consider that the credible option will materially affect Australia's greenhouse gas emissions, and the cost of quantifying any greenhouse gas emission benefits would involve a disproportionate level of effort compared to the additional insight it would provide.
- **Competition benefits:** Powerlink does not consider that the credible option will materially affect competition between generators, and generators' bidding behaviour and, consequently, considers that the techniques required to capture any changes in such behaviour would involve a disproportionate level of effort compared to the additional insight it would provide.
- **Option value**: Powerlink does not consider that the identified need for the option considered in this RIT-T is affected by uncertain factors about which there may be more clarity in future. As a consequence, option value is not a relevant consideration for this RIT-T.
- **Costs associated with social licence activities:** Powerlink does not consider that the cost of social licence activities is material given there is only one credible option under consideration in this RIT-T and therefore not material to the outcome of the RIT-T assessment.

6.3. Consideration of market benefits for non-network options

Powerlink notes that non-network options may impact the wholesale electricity market (for example by displacing generation output). Accordingly, it is possible that several of the above classes of market benefits will be material where there are credible non-network options, depending on the specific form of the option.

Where credible non-network options are identified as part of the consultation process on this PSCR, Powerlink will assess the materiality of market benefits associated with these options. Where the market benefits are considered material, these will be quantified as part of the cost-benefit analysis.

7. Base Case

7.1. Modelling a base case under the RIT-T

In a RIT-T that is not an actionable ISP project, the base case is the situation in which the RIT-T proponent does not implement a credible option to meet the identified need, and continues with business-as-usual (BAU) activities.[18]

The assessment undertaken in the PADR will compare the costs and benefits of credible options to address the risks arising from an identified need with a base case. As characterised in the RIT-T Application Guidelines, the base case reflects a state of the world in which the issues arising from these current transformers are only addressed through standard operational activities, with escalating safety, financial, environmental and network risks.[19]

To develop the base case, the existing reliability and safety issues are managed by undertaking operational maintenance or operational measures only. This results in an increase in overall risk levels as the condition and availability of the asset deteriorates over time. These increasing risk levels are assigned a monetary value that is used to evaluate the credible options designed to offset or mitigate these risk costs.

The base case therefore includes the costs of work associated with operational maintenance and the risk costs associated with the failure of the assets. The costs associated with equipment failures are modelled in the risk cost analysis and are not included in the operational maintenance costs.

The base case acts as a benchmark and provides a clear reference point in the cost-benefit analysis to compare and rank the credible options against each other over the same timeframe.

8. Cost Estimation

8.1. Regulatory requirements

Where the estimated capital cost of the preferred option exceeds $103 million, a RIT-T proponent must:

- outline the process undertaken to ensure cost estimates are accurate to the extent practicable having regard to the purpose of the relevant stage of the RIT-T, noting the inclusion of RIT-T reopening triggers apply at the PADR stage;
- for all credible options, including the preferred option, apply the Association for the Advancement of Cost Engineering (AACE) cost estimation classification system, or identify an alternative system/arrangements and explain why the alternative is more appropriate/suitable than the AACE system.[20]

Further, for each credible option a RIT-T proponent must specify to the extent practicable and in a manner that is fit-for-purpose for the stage of the RIT-T:

- key inputs and assumptions adopted in deriving the cost estimate;
- main components of the cost estimate;

[18] AER, *Regulatory Investment Test for Transmission*, November 2024, glossary ('base case').
[19] AER, *Application Guidelines, Regulatory Investment Test for Transmission*, November 2024, page 21.
[20] AER, *Application Guidelines, Regulatory Investment Test for Transmission*, November 2024, pages 28-29.
NER, clauses 5.15.3(a) and (b)(7) set the threshold at $100 million The AER's latest cost threshold review increased the value to $103 million for three years from 1 January 2025.

- methodologies and processes applied to derive the cost estimate;
- reasons in support of key inputs and assumptions adopted and methodologies and processes applied; and
- the level of, and basis for, any contingency allowance that has been included in the cost estimate.[21]

At the PADR and PACR stages of a RIT-T, RIT-T proponents must include a quantification of costs, including a breakdown of operating and capital expenditure for each credible option.[22] At the PSCR stage however, information for each credible option is only required on total indicative capital and operating and maintenance costs, to the extent practicable.[23]

8.2. Basis of Estimation

The basis for the estimation of costs for the credible option presented in Table 5.1 of this PSCR is as described in Powerlink's Cost Estimation Methodology.[24] The estimates are informed by the level of specific project information available across the program of work and to the extent practicable for individual sites at the time of PSCR publication and will be updated accordingly in the PADR.

8.3. Key inputs and assumptions

Option 1: Replacement of current transformers in Northern and Central Region by 2029 and Southern Region by 2031

A Class 5 Estimate has been produced for Option 1 (see Table 5.1) with an accuracy range of -50% to +100%.

Powerlink has made the following scope assumptions in producing this estimate:

- The new current transformers will have Polymer insulators with SF6 gas and will be replaced on the existing foundations with either new structures or adaptor plates.
- All identified current transformers will be replaced under outage conditions.
- Sites are divided into three categories depending on accessibility; that is, easy, medium or hard as determined by the project team depending on the complexity to access the site due to restricted access zones. Construction methodology is developed for each scenario and included in the cost estimate.
- The cost estimate includes use of shipping containers as the solution for access to the sites, due to the RAZ zones.

Powerlink's Cost Estimation Methodology also provides context to the class of estimate discussed in this section.

9. Submission Requirements and Next Steps

Powerlink invites submissions and comments in response to this PSCR from Registered Participants, AEMO, potential non-network providers and any other interested parties.

This RIT-T is not a tender process – submissions are requested so that Powerlink can fulfil its regulatory obligations to analyse non-network options. In the event that a non-network option appears to be a genuine and practicable alternative that could satisfy the RIT-T, Powerlink will engage with that proponent or proponents to confirm cost inputs and commercial terms.

[21] AER, *Application Guidelines, Regulatory Investment Test for Transmission*, November 2024, page 29.
[22] National Electricity Rules, clauses 5.16.4(k)(3) and (v)(1).
[23] National Electricity Rules, clause 5.16.4(b)(6)(v).
[24] The methodology is available on the RIT-T Consultations page of Powerlink's website.

9.1. Submissions from non-network providers

Submissions should be presented in a written form and should clearly identify the author of the submission, including contact details for subsequent follow-up if required. If parties prefer, they may request to meet with Powerlink ahead of providing a written response.

Submissions from potential non-network providers should contain the following information:

- details of the party making the submission (or proposing the service);
- how the proposed solution would meet the identified need described in this PSCR;
- technical details of the project (capacity, proposed connection point if relevant, etc.) to allow an assessment of the likely impacts on future supply capability;
- sufficient information to allow the costs and benefits of the proposed service to be incorporated in a comparison in accordance with AER's RIT-T Application Guidelines;
- an assessment of the ability of the proposed service to meet the technical requirements of the NER;
- timing of the availability of the proposed service; and
- other material that would be relevant in the assessment of the proposed service.

Powerlink will publish submissions on the PSCR, subject to any claim of confidentiality by the person making the submission. Where confidentiality over part or all of a submission is made, this should be clearly identified. Powerlink may also explore whether a redacted or non-confidential version of the submission can be made available.[25]

Powerlink is required to use all reasonable endeavours not to disclose any confidential information it receives. The obligation is subject to a number of exceptions, including that disclosure may be made:

- with the consent of the person providing the information; or
- to the AER, Australian Energy Market Commission or any other regulator having jurisdiction over Powerlink under the NER or otherwise.[26]

It should be noted that Powerlink is required to publish the outcomes of the RIT-T analysis. If parties making submissions elect not to provide specific project cost data for commercial-in-confidence reasons, Powerlink may rely on cost estimates from independent specialist sources.

[25] AER, *Application Guidelines, Regulatory Investment Test for Transmission*, November 2024, page 70.
[26] National Electricity Rules, rule 8.6.

9.2. Next steps

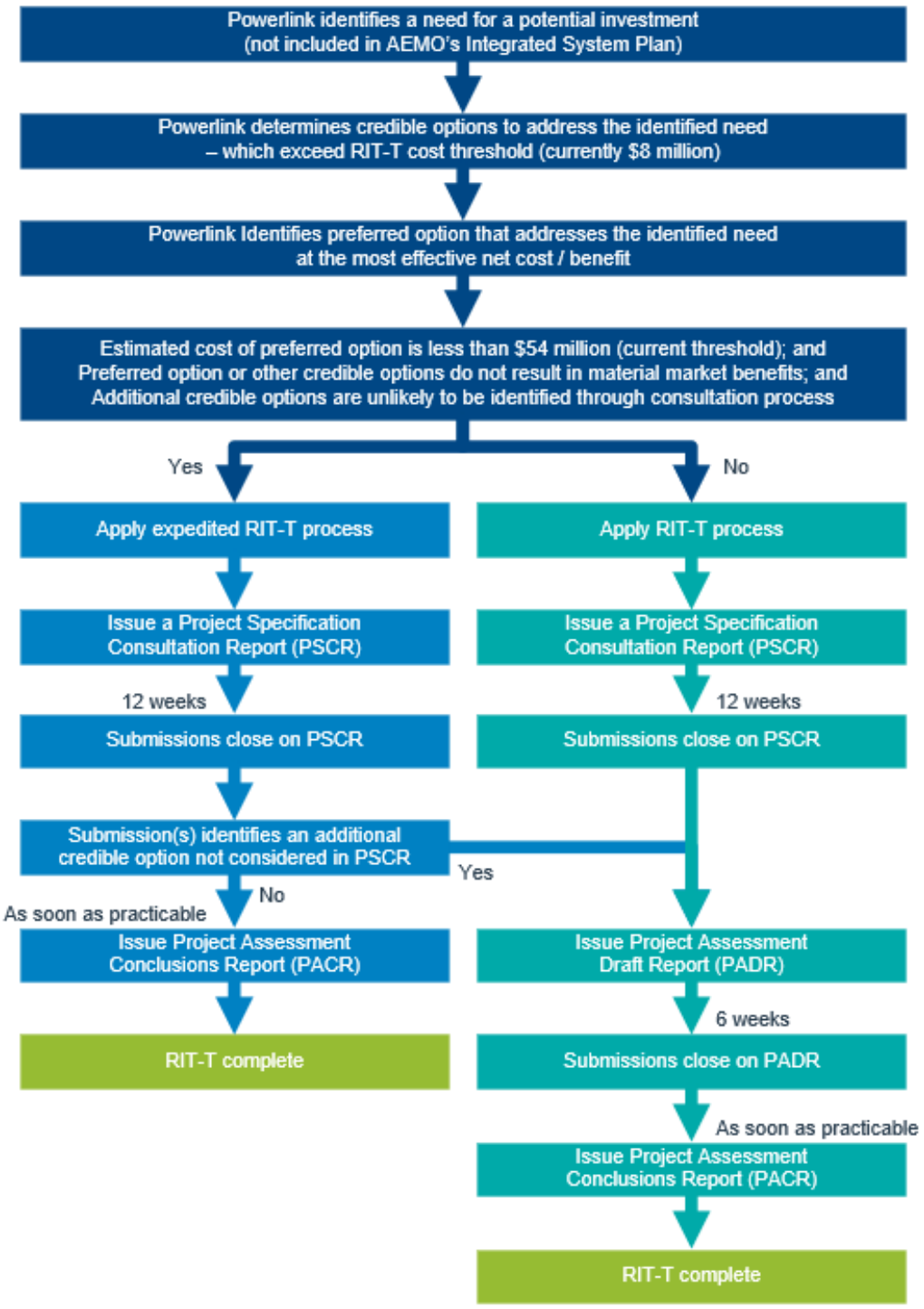
Powerlink intends to carry out the following process to assess what action, if any, should be taken to address future supply requirements.

Part 1	PSCR Publication	29 August 2025
Part 2	Submissions due on PSCR Have your say on the credible options and propose non-network options	28 November 2025
Part 3	PADR Publication	January 2026
Part 4	Submissions due on PADR	March 2026
Part 5	Publication of PACR Powerlink's response to any further submissions received and final recommendation on the preferred option for implementation	April 2026

Powerlink reserves the right to amend the timetable at any time. Amendments to the timetable will be made available on the Powerlink website (www.powerlink.com.au/rit-t-consultations).

Appendix 1: RIT-T Process

The flow chart below illustrates the RIT-T process where the need is not an actionable project in AEMO's ISP.



Appendix 2: Compliance Checklists

NER Requirements for RIT-T

Table A2.1 outlines Powerlink's compliance with PSCR content requirements set out in sub-paragraphs (1) to (6) of clause 5.16.4(b) of the NER.

Table A2.1: NER Compliance Checklist

Sub-para	Requirement	Section of PSCR
(1)	Description of identified need	3.3
(2)	Assumptions used to identify the identified need	3.4
(3)	Technical characteristics of the identified need that a non-network option would be required to deliver	4.1
(4)	Discussion of identified need or credible options to meet the identified need in most recent ISP	N/A
(5)	Description of credible options	5
(6)	For each credible option, information about:	
	(i) technical characteristics of the option;	5
	(ii) whether the option is reasonably likely to have a material inter-network impact;	5
	(iii) the classes of market benefit that are likely / not likely to be material	6.1 – 6.2
	(iv) estimated construction timetable and commissioning date	5
	(v) indicative capital and operating and maintenance costs	5

N/A denotes not applicable.

RIT-T Application Guidelines Compliance Checklist

Table A2.2 outlines Powerlink's compliance with binding requirements included in the RIT-T Application Guidelines.

Table A2.2: RIT-T Application Guidelines Compliance Checklist

Section of Guidelines	Topic	Requirements	Section of PSCR
3.2.5	Social licence principles	Consider social licence issues in the identification of credible options, and include information about when and how social licence considerations have affected the identification and selection of credible options.	2.5
3.4.3	Value of emissions reduction	The VER, reported in dollars per tonne of emissions (CO2 equivalent), is used to value emissions within a state of the world. A RIT-T proponent is required to use the then prevailing VER under relevant legislation or, otherwise, in any administrative guidance.	N/A
3.5	Valuing costs	Costs are the present value of the following direct costs: • Constructing or providing the credible option; • Operating and maintenance costs; • Costs of complying with relevant laws, regulations and administrative requirements; and Costs of removing and disposing of existing assets (particularly for asset replacement programs).	5.1
3.5.3	Social licence costs	Provide the basis for any social licence costs, including any reference to best practice	N/A
3.5A.1	Cost estimation accuracy	Outline cost estimation process (as applicable to stage of the RIT-T)	8.2
3.5A.2	Cost estimation information	Details of inputs, assumptions and methodologies for each credible option (as applicable to the stage of the RIT-T)[27]	8.3
3.6	Market benefit classes	Apply market benefit classes consistently across all credible options	N/A
3.7.3	Market benefits	Calculation of changes in Australia's greenhouse gases	6.2
3.8.2	Sensitivities	Sensitivity analysis on all credible options	N/A*

[27] Although the provisions in section 3.5A.2 of the RIT-T Application Guidelines are not included in the table of binding requirements at Appendix C of the Guidelines, Powerlink has added them to the compliance checklist as the provisions are expressed as being binding in section 3.5A.2 of the Guidelines.

Section of Guidelines	Topic	Requirements	Section of PSCR
3.9.4	Contingency allowance	Details of any contingency allowance included in a cost estimate for a credible option	N/A
3.11.2	Concessional finance	Provide sufficient detail about a concessional finance agreement	N/A
4.1	Community engagement	Description of assessment of requirement for community engagement and, as applicable, how engagement has been undertaken and any relevant concerns sought to be addressed, and how the proponent plans to engage with stakeholder groups.	2.5

Notes:

N/A denotes not applicable.

** Powerlink will include sensitivity analysis in the PADR.*

Contact us

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Project Scope Report

CP.03106

Replace 275kV CTs - Surat

Proposal – Version 1

Document Control

Change Record

Issue Date	Revision	Prepared by	Reviewed by	Approved by	Background
19/11/2024	1	[redacted]	[redacted]	[redacted]	Initial issue

Related Documents

Issue Date	Responsible Person	Objective Document Name
15 Oct 2024	[redacted]	PIF Southern (Surat) 275kV CT Replacement for managing failure risk (A5653682)

Document Purpose

The purpose of this Project Scope Report is to define the business (functional) requirements that the project is intended to deliver. These functional requirements are subject to Powerlink's design and construction standards and prevailing asset strategies, which will be detailed in documentation produced during the detailed scoping and estimating undertaken by DTS (or OSD), i.e. it is not intended for this document to provide a detailed scope of works that is directly suitable for estimating.

Project Contacts

Project Sponsor	[redacted]
Strategist – HV Asset Strategies	[redacted]
Strategist – Digital Asset Strategies	[redacted]
Project Manager	TBC
Design Manager	TBC

Project Details

1. Project Need & Objective

Powerlink has 520 275kV current transformers (CTs) of a particular make and model (current transformer subset) installed within the network. There has been a concerning trend with this variant of CT where one of the failure modes is considered a 'catastrophic failure', which results in an expulsion of oil, fire and sand up to a radius of 20 meters.

There have been six of these catastrophic failure modes in Powerlink's network and as such the safety risk associated with people attending these sites with the current transformer subset installed is elevated. There is also safety risk associated with people performing work at or near bay marshalling kiosks, as these also experienced arcing patterns during this failure mode.

Restricted access zones (RAZ) of 30 meters have been established around these CTs to manage safety risks. However, this now poses significant challenges for the delivery of maintenance tasks and several regulated and non-regulated projects that require access to these substations. Additionally, it presents a considerable risk to operational stability and network reliability.

Due to the high failure rate becoming progressively difficult to manage with the escalating safety risk and increasing probability of unplanned outages, it is recommended that all of the current transformer subset be replaced across the network.

Due to the large number of CTs planned for replacement, the works have been separated into individual projects/stages based on region and priority to replace a total of 514 CTs. The program of CT replacement projects is as follows:

- CP.03104 Replace 275kV CTs – Northern;
- CP.03105 Replace 275kV CTs – Central;
- CP.03106 Replace 275kV CTs – Surat (this project); and

- CP.03107 Replace 275kV CTs – Metro.

The objective of this project (CP.03106) is to replace 275kV CTs in the Surat region by June 2029. Priority 1 CTs (identified in Attachment 1) are to be replaced by June 2025.

This project will follow the two (2) stage approval process.

2. Project Drawing

Not applicable

3. Deliverables

The following deliverables must be provided in response to this Project Scope Report:

1. A report (e.g. Concept Estimate Report) detailing the works to be delivered, high level staging, resource requirements and availability, and outage requirements and constraints

    a. A class 5 estimate (minimum);

    b. A basis of estimate document and risk table, detailing the key estimating assumptions and delivery risks;

    c. Outline staging and outage plans; and

    d. As this project will follow the two (2) stage approval process, provide a separate estimate for stage 2 development phase costs including project planning, procurement, design and preliminary works as well as project work associated with priority 1 sites. Also provide the schedule and time information to align with 2-stage approval.

2. A report (i.e. Project proposal) detailing the works to be delivered, proposed staging of delivery, a detailed project schedule, resource requirements and confirmation of availability, and outage requirements and including the following deliverables:

    a. A class 3 estimate (minimum), based upon published design advices detailing key design elements with MSP RFQ;

    b. A basis of estimate document and risk table, detailing the key estimating assumptions and delivery risks; and

    c. A detailed project staging and outage plan that includes primary plant and secondary systems outages.

4. Project Scope

4.1. Original Scope

The following scope presents a functional overview of the desired outcomes of the project. The proposed solution presented in the estimate must be developed with reference to the remaining sections of this Project Scope Report, in particular *Section 7 Special Considerations*.

Briefly, the project consists of replacing 236 current transformers at five substations in the Surat region with suitable alternative current transformers . Priority 1 CTs (identified in Attachment 1) are to be replaced by June 2025. All other CTs are to be replaced by June 2029.

The substations included in the scope of this project are:

- H018 Tarong;
- R002 Braemar;
- R004 Millmerran;
- S002 Halys; and
- S005 Western Downs.

4.1.1. Transmission Line Works

Not applicable

4.1.2. Substation Works

Design, procure, install, test and commission replacement of the 275kV CTs as listed in Attachment 1 for the five Powerlink substations, including:

- design, manufacture and installation of custom adaptor structures incorporating utilisation of current transformer foundations;
- removal of existing CTs;
- installation, testing and commissioning of replacement to Powerlink standard;
- modification of secondary systems as required, including cabling and monitoring systems;
- recovery and disposal of redundant current transformer units in accordance with Powerlink standard practice; and
- update of drawing records, SAP and config. files accordingly.

4.1.3. Telecoms Works

Not applicable

4.1.4. Easement/Land Acquisition & Permits Works

Not applicable

4.2. Key Scope Assumptions

Not applicable

4.3. Variations to Scope (post project approval)

Not applicable

5. Key Asset Risks

Priority is to be given to CTs with priority 1 rating as per the Attachment 1. It is expected that the CTs associated with the priority 1 rating will be replaced by June 2025 to mitigate significant operational and safety risk.

In general, consideration should be given to asset priority, in conjunction with other aspects such as related projects, remote end coordination, outage availability, resources etc, to determine the optimal delivery strategy and staging that minimises outage and resource requirements whilst appropriately addressing asset risk.

Asset risk management shall be in accordance with the Asset Risk Management Process Guideline (A4870713).

6. Project Timing

6.1. Stage 1 Approval Date

This project will follow the two-stage approval process. The anticipated date for Stage 1 approval is December 2024.

6.2. Site Access Date

Access to site is immediately available, with appropriate access management controls, given that all works are within operational substations.

6.3. Commissioning Date

The latest date for the commissioning of the new assets included in this scope and the decommissioning and removal of redundant assets is June 2029. Priority 1 CTs are to be replaced by June 2025.

7. Special Considerations

- CP.02986 CVT Replacement – South Phase 3 project incorporates CVT replacements at Tarong, Braemar, Millmerran, Halys and Western Downs. CT and CVT replacements may be coordinated to optimise outage and resource requirements where CT replacement activities are not impacted.
- All CTs up to 7 cores shall be replaced with post type SF6 polymer insulated CTs as per Powerlink standard.
- As 8 core SF6 polymer insulated CT is currently not available:
    - where the existing 8 core CT has less than 8 cores being used, replace the CT with 7 core post type SF6 polymer insulated CT;
    - where the existing 8 core CT utilises all 8 cores, oil filled Polymer type post CTs could be used as a replacement.

8. Asset Management Requirements

Equipment shall be in accordance with Powerlink equipment strategies.

Unless otherwise advised Deepesh Poudel will be the Project Sponsor for this project. The Project Sponsor must be included in any discussions with any other areas of Network and Business Development including Asset Strategies & Planning.

9. Asset Ownership

The works detailed in this project will be Powerlink Queensland assets.

10. System Operation Issues

Operational issues that should be considered as part of the scope and estimate include:

- impact of Restricted Access Zones currently in place;
- interaction of project outage plan with other outage requirements;
- likely impact of project outages upon grid support arrangements; and
- likely impact of project outages upon the optical fibre network.

11. Options

Not applicable

12. Division of Responsibilities

Not applicable

13. Related Projects

Project No.	Project Description	Comm Date	Comment
Other Related Projects			
CP.02986	CVT Replacement Phase 3	June 2028	This project incorporates CVT replacements at sites with 275kV CT replacements. Where relevant, the CT and CVT replacements shall be coordinated to optimise outage and resource requirements.

Attachment 1: List of CTs to be replaced under CP.03106

Site	Functional Location	Equipment	Function Location Description	Priority
H018 Tarong (87 CTs)	H018-C40-500--5002CTA	20053046	0 COUPLER CB CT A	Refer Note 1
	H018-C40-500--5002CTB	20053050	0 COUPLER CB CT B	Refer Note 1
	H018-C40-500--5002CTC	20053051	0 COUPLER CB CT C	Refer Note 1
	H018-C40-875--8752CTA	20053058	875 BLACKWALL 275kV CURRENT TRANSF A	Refer Note 1
	H018-C40-875--8752CTB	20053061	875 BLACKWALL 275kV CURRENT TRANSF B	Refer Note 1
	H018-C40-875--8752CTC	20053060	875 BLACKWALL 275kV CURRENT TRANSF C	Refer Note 1
	H018-C40-8812-8812CTA	20053038	8812 FDR CB CT A	Refer Note 1
	H018-C40-8812-8812CTB	20053039	8812 FDR CB CT B	Refer Note 1
	H018-C40-8812-8812CTC	20053040	8812 FDR CB CT C	Refer Note 1
	H018-C41-501--5012CTA	20053052	1 COUPLER CB CT A	Refer Note 1
	H018-C41-501--5012CTB	20053053	1 COUPLER CB CT B	Refer Note 1
	H018-C41-501--5012CTC	20053054	1 COUPLER CB CT C	Refer Note 1
	H018-C41-827--8272CTA	20053068	827 BLACKWALL 275kV CURRENT TRANSF A	Refer Note 1
	H018-C41-827--8272CTB	20053069	827 BLACKWALL 275kV CURRENT TRANSF B	Refer Note 1
	H018-C41-827--8272CTC	20053070	827 BLACKWALL 275kV CURRENT TRANSF C	Refer Note 1
	H018-C41-837--8372CTA	20053041	837 MT ENGLAND 275KV CB CT A	Refer Note 1
	H018-C41-837--8372CTB	20053042	837 MT ENGLAND 275KV CB CT B	Refer Note 1
	H018-C41-837--8372CTC	20053043	837 MT ENGLAND 275KV CB CT C	Refer Note 1
	H018-C42-502--5022CTA	20053055	2 COUPLER CB CT A	Refer Note 1
	H018-C42-502--5022CTB	20053056	2 COUPLER CB CT B	Refer Note 1
	H018-C42-502--5022CTC	20053057	2 COUPLER CB CT C	Refer Note 1
	H018-C42-831--8312CTA	20053045	831 MIDDLE RIDGE 275KV CT A	Refer Note 1
	H018-C42-831--8312CTB	20053048	831 MIDDLE RIDGE 275KV CT B	Refer Note 1
	H018-C42-831--8312CTC	20053044	831 MIDDLE RIDGE 275KV CT C	Refer Note 1
	H018-C42-832--8322CTA	20053062	832 SOUTH PINE 275kV CURRENT TRANSF A	Refer Note 1

Site	Functional Location	Equipment	Function Location Description	Priority
	H018-C42-832--8322CTB	20053063	832 SOUTH PINE 275kV CURRENT TRANSF B	Refer Note 1
	H018-C42-832--8322CTC	20053064	832 SOUTH PINE 275kV CURRENT TRANSF C	Refer Note 1
	H018-C43-503--5032CTA	20053092	3 COUPLER 275KV CT A	Refer Note 1
	H018-C43-503--5032CTB	20053093	3 COUPLER 275KV CT B	Refer Note 1
	H018-C43-503--5032CTC	20053094	3 COUPLER 275KV CT C	Refer Note 1
	H018-C43-593--5932CTA	20053083	SPARE 3 CB CT A	Refer Note 1
	H018-C43-593--5932CTB	20053084	SPARE 3 CB CT B	Refer Note 1
	H018-C43-593--5932CTC	20053085	SPARE 3 CB CT C	Refer Note 1
	H018-C43-841--8412CTA	20053098	841 FDR (1 GEN) CB CT A	Refer Note 1
	H018-C43-841--8412CTB	20053099	841 FDR (1 GEN) CB CT B	Refer Note 1
	H018-C43-841--8412CTC	20053100	841 FDR (1 GEN) CB CT C	Refer Note 1
	H018-C44-504--5042CTA	20053086	4 COUPLER CB CT A	Refer Note 1
	H018-C44-504--5042CTB	20053087	4 COUPLER CB CT B	Refer Note 1
	H018-C44-504--5042CTC	20053088	4 COUPLER CB CT C	Refer Note 1
	H018-C44-842--8422CTA	20053101	842 FDR (2 GEN) CB CT A	Refer Note 1
	H018-C44-842--8422CTB	20053105	842 FDR (2 GEN) CB CT B	Refer Note 1
	H018-C44-842--8422CTC	20053103	842 FDR (2 GEN) CB CT C	Refer Note 1
	H018-C44-8870-88702CTA	20053077	8870 HALYS 275kV CB CURRENT TRANSF A	Refer Note 1
	H018-C44-8870-88702CTB	20053078	8870 HALYS 275kV CB CURRENT TRANSF B	Refer Note 1
	H018-C44-8870-88702CTC	20053079	8870 HALYS 275kV CB CURRENT TRANSF C	Refer Note 1
	H018-C45-505--5052CTA	20053089	5 COUPLER CB CT A	Refer Note 1
	H018-C45-505--5052CTB	20053090	5 COUPLER CB CT B	Refer Note 1
	H018-C45-505--5052CTC	20053091	5 COUPLER CB CT C	Refer Note 1
	H018-C45-843--8432CTA	20053106	843 FDR (3 GEN) CB CT A	Refer Note 1
	H018-C45-843--8432CTB	20071508	843 FDR (3 GEN) CB CT B	Refer Note 1
	H018-C45-843--8432CTC	20053102	843 FDR (3 GEN) CB CT C	Refer Note 1

Site	Functional Location	Equipment	Function Location Description	Priority
	H018-C45-8871-88712CTA	20053080	8871 HALYS 275kV CIRCUIT BREAKER CT A	Refer Note 1
	H018-C45-8871-88712CTB	20053081	8871 HALYS 275kV CIRCUIT BREAKER CT B	Refer Note 1
	H018-C45-8871-88712CTC	20053082	8871 HALYS 275kV CIRCUIT BREAKER CT C	Refer Note 1
	H018-C46-506--5062CTA	20053095	6 COUPLER CB CT A	Refer Note 1
	H018-C46-506--5062CTB	20053096	6 COUPLER CB CT B	Refer Note 1
	H018-C46-506--5062CTC	20053097	6 COUPLER CB CT C	Refer Note 1
	H018-C46-594--5942CTA	20053047	SPARE 4 CB CTA	Refer Note 1
	H018-C46-594--5942CTB	20053049	SPARE 4 CB CTB	Refer Note 1
	H018-C46-594--5942CTC	20053059	SPARE 4 CB CTC	Refer Note 1
	H018-C46-844--8442CTA	20053107	844 FDR (4 GEN) CB CT A	Refer Note 1
	H018-C46-844--8442CTB	20053108	844 FDR (4 GEN) CB CT B	Refer Note 1
	H018-C46-844--8442CTC	20053109	844 FDR (4 GEN) CB CT C	Refer Note 1
	H018-C47-581--5812CTA	20058535	1 CAPACITOR 275kV CT A	Refer Note 1
	H018-C47-581--5812CTB	20058536	1 CAPACITOR 275kV CT B	Refer Note 1
	H018-C47-581--5812CTC	20058537	1 CAPACITOR 275kV CT C	Refer Note 1
	H018-C48-508--5082CTA	20053065	8 COUPLER CB CT A	Refer Note 1
	H018-C48-508--5082CTB	20053066	8 COUPLER CB CT B	Refer Note 1
	H018-C48-508--5082CTC	20053067	8 COUPLER CB CT C	Refer Note 1
	H018-C48-8869-88692CTA	20053071	8869 HALYS 275kV CIRCUIT BREAKER CT A	Refer Note 1
	H018-C48-8869-88692CTB	20053072	8869 HALYS 275kV CIRCUIT BREAKER CT B	Refer Note 1
	H018-C48-8869-88692CTC	20053073	8869 HALYS 275kV CIRCUIT BREAKER CT C	Refer Note 1
	H018-C49-509--5092CTA	20036402	9 COUPLER 275KV CT A	Refer Note 1
	H018-C49-509--5092CTB	20036354	9 COUPLER 275KV CT B	Refer Note 1
	H018-C49-509--5092CTC	20036398	9 COUPLER 275KV CT C	Refer Note 1
	H018-C49-8828-88282CTA	20036400	8828 TARONG NORTH 275KV CT A	Refer Note 1
	H018-C49-8828-88282CTB	20036403	8828 TARONG NORTH 275KV CT B	Refer Note 1

Site	Functional Location	Equipment	Function Location Description	Priority
	H018-C49-8828-88282CTC	20036399	8828 TARONG NORTH 275KV CT C	Refer Note 1
	H018-C49-8868-88682CTA	20053074	8868 HALYS 275kV CIRCUIT BREAKER CT A	Refer Note 1
	H018-C49-8868-88682CTB	20053075	8868 HALYS 275kV CIRCUIT BREAKER CT B	Refer Note 1
	H018-C49-8868-88682CTC	20053076	8868 HALYS 275kV CIRCUIT BREAKER CT C	Refer Note 1
	H018-C50-542--5422CTA	20065021	1 & 2 TRANSFORMER 275KV CURRENT TRANSF A	Refer Note 1
	H018-C50-542--5422CTB	20065022	1 & 2 TRANSFORMER 275KV CURRENT TRANSF B	Refer Note 1
	H018-C50-542--5422CTC	20065023	1 & 2 TRANSFORMER 275KV CURRENT TRANSF C	Refer Note 1
	H018-C50-543--5432CTA	20053009	3 & 4 TRANSFORMER 275KV CURRENT TRANSF A	Refer Note 1
	H018-C50-543--5432CTB	20053010	3 & 4 TRANSFORMER 275KV CURRENT TRANSF B	Refer Note 1
	H018-C50-543--5432CTC	20053011	3 & 4 TRANSFORMER 275KV CURRENT TRANSF C	Refer Note 1
R002 Braemar (68 CTs)	R002-C01-501--501CTA	20065599	1 COUPLER 275kV CT A	Refer Note 2
	R002-C01-501--501CTB	20065600	1 COUPLER 275kV CT B	Refer Note 2
	R002-C01-501--501CTC	20065601	1 COUPLER 275kV CT C	Refer Note 2
	R002-C01-8840-8840CTA	20050820	8840 BRAEMAR 2 PS 275kV CT A	Refer Note 2
	R002-C01-8840-8840CTB	20050819	8840 BRAEMAR 2 PS 275kV CT B	Refer Note 2
	R002-C01-8840-8840CTC	20050818	8840 BRAEMAR 2 PS 275kV CT C	Refer Note 2
	R002-C02-502--502CTA	20065602	2 COUPLER 275kV CT A	Refer Note 2
	R002-C02-502--502CTB	20065603	2 COUPLER 275kV CT B	Refer Note 2
	R002-C02-502--502CTC	20065604	2 COUPLER 275kV CT C	Refer Note 2
	R002-C02-8839-8839CTA	20050823	8839 BRAEMAR PS 275kV CT A	Refer Note 2
	R002-C02-8839-8839CTB	20050822	8839 BRAEMAR PS 275kV CT B	Refer Note 2
	R002-C02-8839-8839CTC	20050821	8839 BRAEMAR PS 275kV CT C	Refer Note 2
	R002-C02-8883-8883CTA	20070306	8883 KUMBARILLA PARK 275KV CT A	Refer Note 2
	R002-C02-8883-8883CTB	20070307	8883 KUMBARILLA PARK 275KV CT B	Refer Note 2
	R002-C02-8883-8883CTC	20070308	8883 KUMBARILLA PARK 275KV CT C	Refer Note 2

Site	Functional Location	Equipment	Function Location Description	Priority
	R002-C03-503--503CTA	20065605	3 COUPLER 275kV CT A	Refer Note 2
	R002-C03-503--503CTB	20065606	3 COUPLER 275kV CT B	Refer Note 2
	R002-C03-503--503CTC	20065607	3 COUPLER 275kV CT C	Refer Note 2
	R002-C03-8838-8838CTA	20070311	8838 BRAEMAR PS 275kV CT A	Refer Note 2
	R002-C03-8838-8838CTB	20070312	8838 BRAEMAR PS 275kV CT B	Refer Note 2
	R002-C03-8838-8838CTC	20071333	8838 BRAEMAR PS 275kV CT C	Refer Note 2
	R002-C03-8882-8882CTA	20050826	8882 KUMBARILLA PARK 275KV CT A	Refer Note 2
	R002-C03-8882-8882CTB	20050825	8882 KUMBARILLA PARK 275KV CT B	Refer Note 2
	R002-C03-8882-8882CTC	20050824	8882 KUMBARILLA PARK 275KV CT C	Refer Note 2
	R002-C10-5010-50102CTA	20050830	10 COUPLER 275kV CT A	Refer Note 2
	R002-C10-5010-50102CTC	20050832	10 COUPLER 275kV CT C	Refer Note 2
	R002-C10-8820-8820CTA	20050827	8820 WESTERN DOWNS 275kV CT A	Refer Note 2
	R002-C10-8820-8820CTB	20050828	8820 WESTERN DOWNS 275kV CT B	Refer Note 2
	R002-C10-8820-8820CTC	20050829	8820 WESTERN DOWNS 275kV CT C	Refer Note 2
	R002-C11-5011-5011CTA	20068411	11 COUPLER 275kV CT A	Refer Note 2
	R002-C11-5011-5011CTB	20068412	11 COUPLER 275kV CT B	Refer Note 2
	R002-C11-5011-5011CTC	20068407	11 COUPLER 275kV CT C	Refer Note 2
	R002-C11-542--542CTA	20068410	2 TRANSF 275kV CT A	Refer Note 2
	R002-C11-542--542CTB	20068415	2 TRANSF 275kV CT B	Refer Note 2
	R002-C11-542--542CTC	20068409	2 TRANSF 275kV CT C	Refer Note 2
	R002-C11-8864-8864CTA	20068413	8864 WESTERN DOWNS 275kV CT A	Refer Note 2
	R002-C11-8864-8864CTB	20068414	8864 WESTERN DOWNS 275kV CT B	Refer Note 2
	R002-C11-8864-8864CTC	20068408	8864 WESTERN DOWNS 275kV CT C	Refer Note 2
	R002-C12-5012-50122CTA	20062114	12 COUPLER 275kV CB CTA	Refer Note 2
	R002-C12-5012-50122CTB	20062115	12 COUPLER 275kV CB CTB	Refer Note 2

Site	Functional Location	Equipment	Function Location Description	Priority
	R002-C12-5012-50122CTC	20062116	12 COUPLER 275kV CB CTC	Refer Note 2
	R002-C12-8863-8863CTA	20062102	8863 D/DOWNS SOLAR FARM 275kV CT A	Refer Note 2
	R002-C12-8863-8863CTB	20062103	8863 D/DOWNS SOLAR FARM 275kV CT B	Refer Note 2
	R002-C12-8863-8863CTC	20062104	8863 D/DOWNS SOLAR FARM 275kV CT C	Refer Note 2
	R002-C13-5013-50132CTA	20062117	13 COUPLER 275kV CB CTA	Refer Note 2
	R002-C13-5013-50132CTB	20062118	13 COUPLER 275kV CB CTB	Refer Note 2
	R002-C13-5013-50132CTC	20062119	13 COUPLER 275kV CB CTC	Refer Note 2
	R002-C13-8862-8862CTA	20062106	8862 DARLING DOWNS PS 275kV CT A	Refer Note 2
	R002-C13-8862-8862CTB	20062107	8862 DARLING DOWNS PS 275kV CT B	Refer Note 2
	R002-C13-8862-8862CTC	20062105	8862 DARLING DOWNS PS 275kV CT C	Refer Note 2
	R002-C14-5014-50142CTA	20062120	14 COUPLER 275kV CB CTA	Refer Note 2
	R002-C14-5014-50142CTB	20062121	14 COUPLER 275kV CB CTB	Refer Note 2
	R002-C14-5014-50142CTC	20062122	14 COUPLER 275kV CB CTC	Refer Note 2
	R002-C14-8861-8861CTA	20062108	8861 DARLING DOWNS PS 275kV CT A	Refer Note 2
	R002-C14-8861-8861CTB	20062109	8861 DARLING DOWNS PS 275kV CT B	Refer Note 2
	R002-C14-8861-8861CTC	20062110	8861 DARLING DOWNS PS 275kV CT C	Refer Note 2
	R002-C15-5015-50152CTA	20062111	15 COUPLER 275kV CB CTA	Refer Note 2
	R002-C15-5015-50152CTB	20062112	15 COUPLER 275kV CB CTB	Refer Note 2
	R002-C15-5015-50152CTC	20062113	15 COUPLER 275kV CB CTC	Refer Note 2
	R002-C15-8860-8860CTA	20062123	8860 DARLING DOWNS PS 275kV CT A	Refer Note 2
	R002-C15-8860-8860CTB	20062124	8860 DARLING DOWNS PS 275kV CT B	Refer Note 2
	R002-C15-8860-8860CTC	20062125	8860 DARLING DOWNS PS 275kV CT C	Refer Note 2
	R002-C51-5051-5051CTA	20065596	51 COUPLER 275kV CT A	Refer Note 2

Site	Functional Location	Equipment	Function Location Description	Priority
	R002-C51-5051-5051CTB	20065597	51 COUPLER 275kV CT B	Refer Note 2
	R002-C51-5051-5051CTC	20065598	51 COUPLER 275kV CT C	Refer Note 2
	R002-C51-8841-8841CTA	20050817	8841 BRAEMAR 2 PS 275kV CT A	Refer Note 2
	R002-C51-8841-8841CTB	20050816	8841 BRAEMAR 2 PS 275kV CT B	Refer Note 2
	R002-C51-8841-8841CTC	20050815	8841 BRAEMAR 2 PS 275kV CT C	Refer Note 2
R004 Millmerran (3 CTs)	R004-M01-1CAP-1CAPCTA	20070248	1 CAPACITOR 330kV BALANCE CT A	3
	R004-M01-1CAP-1CAPCTB	20070249	1 CAPACITOR 330kV BALANCE CT B	3
	R004-M01-1CAP-1CAPCTC	20070250	1 CAPACITOR 330kV BALANCE CT C	3
S002 Halys (60 CTs)	S002-C01-501--501CTA	20068271	1 COUPLER 275kV CURRENT TRANSFORMER A	3
	S002-C01-501--501CTB	20068273	1 COUPLER 275kV CURRENT TRANSFORMER B	3
	S002-C01-501--501CTC	20068269	1 COUPLER 275kV CURRENT TRANSFORMER C	3
	S002-C01-8866-8866CTA	20068247	8866 COOPERS GAP 275kV CT A	3
	S002-C01-8866-8866CTB	20068245	8866 COOPERS GAP 275kV CT B	3
	S002-C01-8866-8866CTC	20068250	8866 COOPERS GAP 275kV CT C	3
	S002-C02-502--502CTA	20068263	2 COUPLER 275kV CURRENT TRANSFORMER A	3
	S002-C02-502--502CTB	20068243	2 COUPLER 275kV CURRENT TRANSFORMER B	3
	S002-C02-502--502CTC	20068238	2 COUPLER 275kV CURRENT TRANSFORMER C	3
	S002-C02-8867-8867CTA	20068227	8867 WESTERN DOWNS 275kV CT A	3
	S002-C02-8867-8867CTB	20068268	8867 WESTERN DOWNS 275kV CT B	3
	S002-C02-8867-8867CTC	20068267	8867 WESTERN DOWNS 275kV CT C	3
	S002-C03-503--503CTA	20068233	3 COUPLER 275kV CURRENT TRANSFORMER A	3
	S002-C03-503--503CTB	20068266	3 COUPLER 275kV CURRENT TRANSFORMER B	3
	S002-C03-503--503CTC	20068259	3 COUPLER 275kV CURRENT TRANSFORMER C	3
	S002-C03-8815-8815CTA	20068253	8815 BRAEMAR 275kV CT A	3
	S002-C03-8815-8815CTB	20068249	8815 BRAEMAR 275kV CT B	3
	S002-C03-8815-8815CTC	20068257	8815 BRAEMAR 275kV CT C	3

Site	Functional Location	Equipment	Function Location Description	Priority
	S002-C03-8884-8884CTA	20074510	8884 BLACKWALL 275kV CT A	2
	S002-C03-8884-8884CTB	20074511	8884 BLACKWALL 275kV CT B	2
	S002-C03-8884-8884CTC	20074512	8884 BLACKWALL 275kV CT C	2
	S002-C04-504--504CTA	20068230	4 COUPLER 275kV CURRENT TRANSFORMER A	3
	S002-C04-504--504CTB	20068246	4 COUPLER 275kV CURRENT TRANSFORMER B	3
	S002-C04-504--504CTC	20068241	4 COUPLER 275kV CURRENT TRANSFORMER C	3
	S002-C04-8814-8814CTA	20068270	8814 BRAEMAR 275kV CT A	3
	S002-C04-8814-8814CTB	20068256	8814 BRAEMAR 275kV CT B	3
	S002-C04-8814-8814CTC	20068255	8814 BRAEMAR 275kV CT C	3
	S002-C04-8885-8885CTA	20074513	8885 BLACKWALL 275kV CT A	3
	S002-C04-8885-8885CTB	20074514	8885 BLACKWALL 275kV CT B	3
	S002-C04-8885-8885CTC	20074515	8885 BLACKWALL 275kV CT C	3
	S002-C06-506--506CTA	20068261	6 COUPLER 275kV CURRENT TRANSFORMER A	1
	S002-C06-506--506CTB	20068254	6 COUPLER 275kV CURRENT TRANSFORMER B	1
	S002-C06-506--506CTC	20068226	6 COUPLER 275kV CURRENT TRANSFORMER C	1
	S002-C06-8811-8811CTA	20068223	8811 CALVALE 275kV CT A	1
	S002-C06-8811-8811CTB	20068237	8811 CALVALE 275kV CT B	1
	S002-C06-8811-8811CTC	20068225	8811 CALVALE 275kV CT C	1
	S002-C06-8870-8870CTA	20068272	8870 TARONG 275kV CT A	3
	S002-C06-8870-8870CTB	20068235	8870 TARONG 275kV CT B	3
	S002-C06-8870-8870CTC	20068229	8870 TARONG 275kV CT C	3
	S002-C07-507--507CTA	20068228	7 COUPLER 275kV CURRENT TRANSFORMER A	1
	S002-C07-507--507CTB	20068220	7 COUPLER 275kV CURRENT TRANSFORMER B	1
	S002-C07-507--507CTC	20068222	7 COUPLER 275kV CURRENT TRANSFORMER C	1
	S002-C07-8810-8810CTA	20068252	8810 CALVALE 275kV CT A	1
	S002-C07-8810-8810CTB	20068242	8810 CALVALE 275kV CT B	1
	S002-C07-8810-8810CTC	20068265	8810 CALVALE 275kV CT C	1
	S002-C07-8871-8871CTA	20068262	8871 TARONG 275kV CT A	3
	S002-C07-8871-8871CTB	20068260	8871 TARONG 275kV CT B	3
	S002-C07-8871-8871CTC	20068221	8871 TARONG 275kV CT C	3
	S002-C08-508--508CTA	20068251	8 COUPLER 275kV CURRENT TRANSFORMER A	3
	S002-C08-508--508CTB	20068224	8 COUPLER 275kV CURRENT TRANSFORMER B	3
	S002-C08-508--508CTC	20068236	8 COUPLER 275kV CURRENT TRANSFORMER C	3

Site	Functional Location	Equipment	Function Location Description	Priority
	S002-C08-8868-8868CTA	20068240	8868 TARONG 275kV CT A	3
	S002-C08-8868-8868CTB	20068239	8868 TARONG 275kV CT B	3
	S002-C08-8868-8868CTC	20068232	8868 TARONG 275kV CT C	3
	S002-C09-509--509CTA	20068244	9 COUPLER 275kV CURRENT TRANSFORMER A	3
	S002-C09-509--509CTB	20068248	9 COUPLER 275kV CURRENT TRANSFORMER B	3
	S002-C09-509--509CTC	20068258	9 COUPLER 275kV CURRENT TRANSFORMER C	3
	S002-C09-8869-8869CTA	20068264	8869 TARONG 275kV CT A	3
	S002-C09-8869-8869CTB	20068234	8869 TARONG 275kV CT B	3
	S002-C09-8869-8869CTC	20068231	8869 TARONG 275kV CT C	3
S005 Western Downs (18 CTs)	S005-C01-501--501CTA	20067951	1 COUPLER 275kV CURRENT TRANSFORMER A	1
	S005-C01-501--501CTB	20067952	1 COUPLER 275kV CURRENT TRANSFORMER B	1
	S005-C01-501--501CTC	20067953	1 COUPLER 275kV CURRENT TRANSFORMER C	1
	S005-C01-8865-8865CTA	20067954	8865 KOGAN CREEK PS 275kV CT A	1
	S005-C01-8865-8865CTB	20067955	8865 KOGAN CREEK PS 275kV CT B	1
	S005-C01-8865-8865CTC	20067956	8865 KOGAN CREEK PS 275kV CT C	1
	S005-C01-8904-8904CTA	20068291	8904 COOPERS GAP 275kV CT A	3
	S005-C01-8904-8904CTB	20068289	8904 COOPERS GAP 275kV CT B	3
	S005-C01-8904-8904CTC	20068287	8904 COOPERS GAP 275kV CT C	3
	S005-C02-8867-8867CTA	20068284	8867 HALYS 275kV CT A	3
	S005-C02-8867-8867CTB	20068280	8867 HALYS 275kV CT B	3
	S005-C02-8867-8867CTC	20068286	8867 HALYS 275kV CT C	3
	S005-C03-503--503CTA	20068296	3 COUPLER 275kV CURRENT TRANSFORMER A	3
	S005-C03-503--503CTB	20068282	3 COUPLER 275kV CURRENT TRANSFORMER B	3
	S005-C03-503--503CTC	20068294	3 COUPLER 275kV CURRENT TRANSFORMER C	3
	S005-C03-8820-8820CTA	20068295	8820 BRAEMAR 275kV CT A	3
	S005-C03-8820-8820CTB	20068297	8820 BRAEMAR 275kV CT B	3
	S005-C03-8820-8820CTC	20068285	8820 BRAEMAR 275kV CT C	3

Note 1: At H018 Tarong, 12 CT units are to be prioritised as **Priority 1** through detailed design to allow access to the control building, de-risk Tarong North, and facilitate connection of Tarong BESS.

Note 2: At R002, 9 units are to be prioritised as **Priority 1** through detailed design to allow access to the control building and de-risk Darling Downs Generation. A further 12 units are to be prioritised as **Priority 2** through detailed design to allow access to the control building and de-risk Braemar Generation.

CP.03106 Replace 275kV CTs

Surat

Project Management Plan

Version History

Version	Date	Section(s)	Summary of amendment
1.0	August 2025	N/A	Initial issue

Table of Contents

1. Executive Summary

Powerlink has 520 275kV current transformers (CTs) of a particular make and model (current transformer subset) installed within the network. There has been a concerning trend with this variant of CT, where one of the failure modes is considered a catastrophic failure' which results in an expulsion of oil, fire and sand, up to a radius of 20 meters.

There have been six of these catastrophic failure modes in Powerlink's network and as such the safety risk associated with people attending these sites with the current transformer subset installed is elevated. There is also a safety risk associated with people performing work at or near bay marshalling kiosks, as these also experienced arcing patterns during this failure mode.

Restricted access zones (RAZ) of 30 meters have been established around these CTs to manage safety risks. However, this now poses significant challenges for the delivery of maintenance tasks and several regulated and non-regulated projects that require access to these substations. Additionally, it presents a considerable risk to operational stability and network reliability.

Due to the high failure rate becoming progressively difficult to manage with the escalating safety risk and increasing probability of unplanned outages, it is recommended that all the current transformer subset be replaced across the network.

Due to the large number of CTs planned for replacement, the works have been separated into individual projects/stages based on region and priority to replace a total of 514 CTs. The program of CT replacement projects is as follows:

- CP.03104 - Replace 275kV CTs – Northern (54 CTs)
- CP.03105 - Replace 275kV CTs – Central (42 CTs)
- CP.03106 - Replace 275kV CTs – Surat (236 CTs)
- CP.03107 - Replace 275kV CTs – Metro (182 CTs)

The objective of project **CP.03106** is to replace the 275kV ICTs in the **Surat** region by June 2029; however, this timeline is no longer feasible. The revised projected completion date is December 2029.

Replacement of Priority 1 CTs (identified in Attachment 1) commenced in August 2024, initially under an Engineering Task Request (ETR) process and then under capital works via early release of funds. 39 CTs have been replaced to date under this project (see table below for details) resulting in actual costs of $8,158,913 (as of 12th August 2025).

CP.03106	CTs replaced	CTs in service	Total
H018 – Tarong	18	69	87
R002 – Braemar	3	65	68
R004 – Millmerran	0	3	3
S002 – Halys	12	48	60
S005 – Western Downs	6	12	18

This is a class 3 estimate, and the project will use a two-stage approval process.

	Date
Project Proposal and Project Estimate - date submitted	29/08/2025
Full Approval Project Approval Advice (PAA) - date received	5/06/2026

1.1 Overview of Estimated Costs

The following table summarises the average cost of a CT replacement.

Total Cost excluding Risk & Contingency	Baseline CT Number	Base Cost	Escalated Cost
Total Project Estimated Cost		$56,677,482	$59,602,300
Average replacement cost per CT	**236**	$240,159	$252,552

Table above shows the average costs of CT replacement.

2. Project Definition

2.1 Project Scope

Briefly, the project consists of replacing 236 275kV current transformers at five substations in the Surat region with suitable alternative current transformers.

The substations included in the scope of this project are:

- H018 Tarong (87 CTs)
- R002 Braemar (68 CTs)
- R004 Millmerran (3 CTs)
- S002 Halys (60 CTs)
- S005 Western Downs (18 CTs)

Design, procure, install, test and commission replacement of the 275kV CTs as listed in Attachment 1 for the five Powerlink substations.

- Design, manufacture and installation of structures utilising existing current transformer foundations.
- Removal of existing CTs.
- Installation, testing and commissioning of replacement to Powerlink standard.
- Modification of secondary systems, including cabling and monitoring system.
- Recovery and disposal of redundant current transformer units in accordance with Powerlink standard practice.

2.2 Exclusions

The following items are excluded from the Proposal Estimate:

- New marshalling kiosks and foundations are excluded.
- 8 Core CTs are excluded from the pricing as they cannot be procured, but this issue has been resolved using 7C CTs and modified designs.
- Extreme weather conditions are excluded.
- Installation of containers are not required going forward.
- FAM travel and accommodation costs are now included as overhead, not as direct project costs, and are therefore excluded from the project estimate.
- Rescheduling of planned works due to any future network constraints.
- Additional engineering controls (other than approved shielding barriers) that may be required for access has been excluded.

2.3 Assumptions

The following key assumptions were made for this Proposal Estimate:

- The new CTs will be replaced on the existing foundations with either new structures or adaptor plates.
- All CTs will be replaced under outage & outages are available to perform the works.
- Secondary Systems work is minimal including some replacement of CT Links and cabling within the existing marshalling kiosks.
- All Construction and Commissioning work is by Field Delivery or Energy Queensland and a dedicated work crew will be allocated to undertake the works.
- The project schedule and timeline are structured around the availability of a single field crew for the entire duration of the program.
- All resources required to deliver this project are available.
- The procurement cost includes the cost of the new CTs as per the current contract price for a 7 core CT, sufficient SF6 gas (per 52kg bottle) for the new CTs, new structures and allowance for new CT links and cable.

- R002 Braemar, S002 Halys and H018 Tarong substation sites currently presents operational challenges that necessitate the installation of shielding barriers between several diameters to facilitate the planned CT replacement works. Additional funding has been allocated in the estimate to accommodate this requirement.
- No further containers are required to be installed under this project.

2.4 Project Interaction

Interactions with other projects and Engineering Task Request (ETRs) as follow:

Project Number and Description	Planned Commissioning Date	Comment
CP.02986 - CVT Replacement - South Phase 3 - Project Scope Report	Dec 2029	• 9 CVT to be replaced at H018 Tarong • 28 CVT to be replaced at R002 Braemar
CP.03104 - Replace 275kV CTs	June 2029	• CT Replacement works (Northern)
CP.03105 - Replace 275kV CTs	June 2029	• CT Replacement works (Central)
CP.03107 - Replace 275kV CTs	Dec 2029	• CT Replacement works (Metro)
OR.02325 - H018 Tarong 1T and 4T Transformer Decommissioning	Aug 2026	• Possible interaction between work crews on site
CP.02584 - Tarong 275/66/11kV Transformers Replacement	April 2029	• Possible interaction between work crews on site
CP.02981 - H018 Tarong Generator Metering Replacement	Oct 2026	• Possible interaction between work crews on site

2.5 Project Risk

Project risks identified during the proposal phase for the remaining scope of works is as follows:

No	Category	Risk Description	Impact	Consequence (L/M/H)	Likelihood	Cost ($)
1	People / Human	MSP Labour constraints	Moderate	M	Possible	$980,826
2	Natural Events	Abnormal Weather Events	Moderate	M	Possible	$1,189,512
3	Design	Design Constraints	Moderate	M	Possible	$500,850
4	Delivery	Outage Constraints	Moderate	M	Possible	$688,665
5	Delivery	Requirement of Live Subs	Moderate	M	Possible	$605,190
6	Delivery	Generation charges for outage support	Moderate	M	Possible	$1,189,512
Total Risk						**$5,154,555**

2.6 Lessons Learned

- Implementing effective programming and scheduling is crucial for the success of these CT replacement projects. The projects are coordinated as a program of works, with an interactive schedule that must accommodate varying priorities across different sites. Given the interdependency of the various sites, the system priorities may shift, necessitating flexibility and adaptability in the execution of tasks.
- Observations from the ETR indicate that efficiency has increased in several areas, such as preparation, material delivery, coordination of maintenance crews, and development of work plans. Additionally, the timely ordering of materials are necessary to prevent delays in site works.
- Incorporation of feedback from site into modified designs.
- Development of RAZ Entry work plans are crucial to the safe delivery of the program of works.
- The requirement of shielding and barriers to enable site works to proceed is required at several sites.

3. Project Financials

3.1 Project Estimate

3.1.1 Estimate Summary

Refer to Section 13 for further details. The estimated total shown below is inclusive of actual costs incurred to date (August 2025). Stage 1 approvals have been granted to cover planned works until full approval is received in June 2026.

		Sub Total $	Total $
Estimate Class	3		
Estimate accuracy (+% / - %)	15% to 25%		
Base Estimate		$56,677,482	
[redacted]		[redacted]	
[redacted]			[redacted]
[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	
[redacted]			[redacted]
[redacted]			[redacted]6

3.1.2 Costs forecasts

The current projected costs through to completion is $53,786,443, including current actuals of $8,168,982.

3.1.3 Asset Write-Off Table

Functional Location	Description	Asset	Book val.	Write-off %	Write-off Value	Currency
R002-C01-501-	275kV 1 COUPLER BAY	119060	877,984.12	15%	$ 131,697.62	AUD
R002-C02-502-	275kV 2 COUPLER BAY	119061	877,984.12	15%	$ 131,697.62	AUD
R002-C02-8883	8883 FEEDER BAY	123074	1,956,591.83	15%	$ 293,488.77	AUD
R002-C03-503-	275kV 3 COUPLER BAY	119062	874,067.89	15%	$ 131,110.18	AUD
R002-C03-8882	8882 FEEDER BAY	123075	1,956,591.76	15%	$ 293,488.76	AUD
R002-C12-5012	275kV 12 COUPLER BAY	118571	1,147,537.03	15%	$ 172,130.55	AUD
R002-C12-8863	8863 FEEDER BAY	118572	1,547,109.63	15%	$ 232,066.44	AUD
R002-C13-5013	275kV 13 COUPLER BAY	118574	1,147,537.03	15%	$ 172,130.55	AUD
R002-C13-8862	8862 FEEDER BAY	118575	1,547,109.63	15%	$ 232,066.44	AUD
R002-C14-5014	275kV 14 COUPLER BAY	118577	1,147,537.03	15%	$ 172,130.55	AUD
R002-C14-8861	8861 FEEDER BAY	118578	1,547,109.63	15%	$ 232,066.44	AUD
R002-C15-5015	275kV 15 COUPLER BAY	118580	1,147,537.03	15%	$ 172,130.55	AUD
R002-C15-8860	8860 FEEDER BAY	118581	1,547,109.63	15%	$ 232,066.44	AUD
R002-C51-5051	275kV 51 COUPLER BAY	119063	874,067.89	15%	$ 131,110.18	AUD
S005-C01-8865	8865 275kV FEEDER BAY	132988	1,387,003.81	15%	$ 208,050.57	AUD
Business Area G Negotiated Services					$ 2,937,431.71	AUD
H018-C49-509-	275kV 9 COUPLER BAY (Mixed Business Area - N	118539	229,392.69	7.5%	$ 17,204.45	AUD
H018-C49-8828	8828 FEEDER BAY	112545	648,209.80	15%	$ 97,231.47	AUD
R002-C01-8840	8840 FEEDER BAY	112817	1,315,967.47	15%	$ 197,395.12	AUD
R002-C02-8839	8839 FEEDER BAY	112818	1,315,967.47	15%	$ 197,395.12	AUD
R002-C03-8838	8838 FEEDER BAY	112819	1,315,967.47	15%	$ 197,395.12	AUD
R002-C51-8841	8841 FEEDER BAY	112820	1,315,967.40	15%	$ 197,395.11	AUD

Business Area N Non-Regulated Business					$ 904,016.39	AUD
H018-C40-500-	275kV 0 COUPLER BAY	117936	726,791.88	15%	$ 109,018.78	AUD
H018-C40-875-	875 FEEDER BAY	117937	797,442.76	15%	$ 119,616.41	AUD
H018-C40-8812	8812 FEEDER BAY	117938	797,442.76	15%	$ 119,616.41	AUD
H018-C41-501-	275kV 1 COUPLER BAY	117939	745,945.49	15%	$ 111,891.82	AUD
H018-C41-827-	827 FEEDER BAY	117940	952,038.95	15%	$ 142,805.84	AUD
H018-C41-837-	837 FEEDER BAY	117941	952,038.95	15%	$ 142,805.84	AUD
H018-C42-502-	275kV 2 COUPLER BAY	117942	815,048.59	15%	$ 122,257.29	AUD
H018-C42-831-	831 FEEDER BAY	117943	1,197,865.71	15%	$ 179,679.86	AUD
H018-C42-832-	832 FEEDER BAY	117944	1,077,370.92	15%	$ 161,605.64	AUD
H018-C43-503-	275kV 3 COUPLER BAY	117945	684,741.88	15%	$ 102,711.28	AUD
H018-C43-593-	275kV SPARE 3 FEEDER BAY	117946	868,729.29	15%	$ 130,309.39	AUD
H018-C43-841-	841 FEEDER BAY	117947	1,051,134.51	15%	$ 157,670.18	AUD
H018-C44-504-	275kV 4 COUPLER BAY	117948	952,744.17	15%	$ 142,911.63	AUD
H018-C44-842-	842 FEEDER BAY	117949	1,085,315.16	15%	$ 162,797.27	AUD
H018-C44-8870	8870 FEEDER BAY	117950	1,298,373.72	15%	$ 194,756.06	AUD
H018-C45-505-	275kV 5 COUPLER BAY	117951	951,333.58	15%	$ 142,700.04	AUD
H018-C45-843-	843 FEEDER BAY	117952	929,308.39	15%	$ 139,396.26	AUD
H018-C45-8871	8871 FEEDER BAY	117953	1,143,777.73	15%	$ 171,566.66	AUD
H018-C46-506-	275kV 6 COUPLER BAY	117954	683,331.25	15%	$ 102,499.69	AUD
H018-C46-594-	SPARE 4 FEEDER BAY	117955	656,766.19	15%	$ 98,514.93	AUD
H018-C46-844-	844 FEEDER BAY	117956	895,127.76	15%	$ 134,269.16	AUD
H018-C47-581-	275kV 1CAPACITOR BAY	117783	1,493,084.83	15%	$ 223,962.72	AUD
H018-C48-508-	275kV 8 COUPLER BAY	117957	1,036,163.34	15%	$ 155,424.50	AUD
H018-C48-8869	8869 FEEDER BAY	117958	1,226,917.66	15%	$ 184,037.65	AUD
H018-C49-509-	275kV 9 COUPLER BAY (Mixed Business Area - R	118539	371,718.84	7.5%	$ 27,878.91	AUD
H018-C49-8868	8868 FEEDER BAY	117959	1,226,917.66	15%	$ 184,037.65	AUD
H018-C50-542-	275kV 2 TRANSF BAY	117961	1,117,961.36	15%	$ 167,694.20	AUD
H018-C50-543-	275kV 3 TRANSF BAY	117962	1,103,576.34	15%	$ 165,536.45	AUD
R002-C10-5010	275kV 10 COUPLER BAY	122626	1,686,555.94	10%	$ 168,655.59	AUD
R002-C10-8820	8820 FEEDER BAY	122628	2,103,547.90	15%	$ 315,532.19	AUD

R002-C10-8820	8820 FEEDER BAY	122628	2,103,547.90	15%	$ 315,532.19	AUD
R002-C11-5011	275kV 11 COUPLER BAY	122629	1,619,404.52	15%	$ 242,910.68	AUD
R002-C11-542-	275kV 2 TRANSFORMER BAY	122631	2,268,223.18	15%	$ 340,233.48	AUD
R002-C11-8864	8864 FEEDER BAY	122630	2,123,991.28	15%	$ 318,598.69	AUD
R004-M01-1CAP	330kV 1 CAPACITOR 200MVAR	120516	743,792.84	15%	$ 111,568.93	AUD
S002-C01-501-	275kV 1 COUPLER BAY	122183	901,870.61	15%	$ 135,280.59	AUD
S002-C01-8866	8866 275kV FEEDER BAY	122184	1,470,539.83	15%	$ 220,580.97	AUD
S002-C02-502-	275kV 2 COUPLER BAY	122186	933,172.12	15%	$ 139,975.82	AUD
S002-C02-8867	8867 275kV FEEDER BAY	122187	1,500,537.14	15%	$ 225,080.57	AUD
S002-C03-503-	275kV 3 COUPLER BAY	122189	901,870.61	15%	$ 135,280.59	AUD
S002-C03-8815	8815 275kV FEEDER BAY	122190	1,470,539.83	15%	$ 220,580.97	AUD
S002-C03-8996	8884 275kV FEEDER BAY	122191	1,111,346.92	15%	$ 166,702.04	AUD
S002-C04-504-	275kV 4 COUPLER BAY	122192	901,870.61	15%	$ 135,280.59	AUD
S002-C04-8814	8814 275kV FEEDER BAY	122193	1,470,539.83	15%	$ 220,580.97	AUD
S002-C04-8885	8885 275kV FEEDER BAY	122194	1,111,346.89	15%	$ 166,702.03	AUD
S002-C06-506-	275kV 6 COUPLER BAY	122195	901,870.61	15%	$ 135,280.59	AUD
S002-C06-8811	8811 275kV FEEDER BAY	122196	1,470,539.83	15%	$ 220,580.97	AUD
S002-C06-8870	8870 275kV FEEDER BAY	122197	1,470,539.83	15%	$ 220,580.97	AUD
S002-C07-507-	275kV 7 COUPLER BAY	122198	901,870.61	15%	$ 135,280.59	AUD
S002-C07-8810	8810 275kV FEEDER BAY	122199	1,470,539.83	15%	$ 220,580.97	AUD
S002-C07-8871	8871 275kV FEEDER BAY	122200	1,470,539.83	15%	$ 220,580.97	AUD
S002-C08-508-	275kV 8 COUPLER BAY	122201	901,870.61	15%	$ 135,280.59	AUD
S002-C08-8868	8868 275kV FEEDER BAY	122202	1,470,539.83	15%	$ 220,580.97	AUD
S002-C09-509-	275kV 9 COUPLER BAY	122204	901,870.61	15%	$ 135,280.59	AUD
S002-C09-8869	8869 275kV FEEDER BAY	122205	1,469,235.44	15%	$ 220,385.32	AUD
S005-C01-501-	275kV 1 COUPLER BAY	121098	1,104,264.77	15%	$ 165,639.72	AUD
S005-C01-8904	8866 275kV FEEDER BAY	121100	1,427,249.49	15%	$ 214,087.42	AUD
S005-C02-8867	8867 275kV FEEDER BAY	121103	1,519,292.49	15%	$ 227,893.87	AUD
S005-C03-503-	275kV 3 COUPLER BAY	121104	1,070,693.17	15%	$ 160,603.98	AUD
S005-C03-8820	8820 275kV FEEDER BAY	121105	1,427,249.48	15%	$ 214,087.42	AUD
Business Area R Regulated Business					$10,108,242.21	AUD
				Total	$13,949,690.31	AUD

3.2 Approved Released Budget

The approved release budget to execute the project is as follows:

	Total $	Control Management
Project Estimate	$59,602,300	Project Manager & Sponsor
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

3.3 Planned Costs (Forecasted Cash Flow)

Description	275kV CTS: Actual Cost: 5 Surat Sites		SP2 - Replacement of 197 X 275kV CTs to 5 Surat Sites		TOTAL CP.03106 ESTIMATE	
Financial Year	Unescalated Cost $	Escalated Cost $	Unescalated Cost $	Escalated Cost $	Unescalated Cost $	Escalated Cost $
To June 2026	8,109,568	8,109,568	6,568,332	6,568,332	14,677,900	14,677,900
To June 2027			10,834,627	11,192,169	10,834,627	11,192,169
To June 2028			18,471,236	19,653,211	18,471,236	19,653,211
To June 2029			8,289,090	9,092,914	8,289,090	9,092,914
To June 2030			4,274,587	4,834,472	4,274,587	4,834,472
To June 2031			130,042	151,634	130,042	151,634
Total	**8,109,568**	**8,109,568**	**48,567,914**	**51,492,732**	**56,677,482**	**59,602,300**

4. Project Planning Strategy

4.1 Milestones

The following milestones are required by the project team to deliver the project:

Milestones	Planned Dates
Class 3 Estimate Submitted	29/08/2025
NBD Review Completion	20/11/2025
RIT – Process Complete	04/06/2026
Project Approval (issue of PAN)	05/06/2026
Project Commissioning Date	30/12/2029

4.2 Project Staging

The high-level project staging are as follows:

Stage	Activity/Stage Description	High Level Timing
All	Design and Procurement	Aug 2025 - Dec 2029
1	R002 Braemar	Jan 2026 - Dec 2026
2	S005 Western Downs	Sept 2026 - October 2026
3	S002 Halys	June 2027 - Sept 2027
4	H018 Tarong	Sept 2027 - April 2028
5	S002 Halys	April 2028 - July 2028
6	H018 Tarong	April 2029 - July 2029
7	R002 Braemar	Sept 2029 - Dec 2029

For detail staging, refer to the Project Staging Plan (refer to section 13).

4.3 Project Schedule

Please see Project Server for proposed project schedule:

4.4 Network Impacts and Outage Planning

Accessing the Network for the staging and commissioning of the project works is required to be planned to reduce an impact to the network for the Project commissioning. This is to enable less effect to other Network operational requirements.

An outage plan is being developed by the Project Team as part of the project proposal on the likelihood of the outages required for this project.

4.5 Project Delivery Strategy

Strategy to deliver the project as follows:

Description	***Responsibility***							
	Main Site				***Remote End(s)***			
	Powerlink	***Contractor***	***MSP – O&SD***	***MSP - Ergon***	***Powerlink***	***Contractor***	***MSP – O&SD***	***MSP***
Primary Design Systems (PSD):								
Civil and Structural	☒	☐	☐	☐	☐	☐	☐	☐
Electrical	☒	☐	☐	☐	☐	☐	☐	☐
Secondary Systems Design (SSD):								
Automation (Circuitry and Systems Configurations)	☒	☐	☐	☐	☐	☐	☐	☐
Telecommunication System Design (TSD):								
Construction:								
Construction (support structures, plant and equipment installation and demolition Works)	☐	☐	☒	☐	☐	☐	☐	☐
Secondary Systems Installation (loose panel's installation, panel modification, IED replacement, etc.)	☐	☐	☒	☐	☐	☐	☐	☐
Testing and Commissioning:								
Factory Acceptance Test	☐	☐	☐	☐	☐	☐	☐	☐
Site Acceptance Test (partial)	☐	☐	☒	☐	☐	☐	☐	☐
System Cut Over and Commissioning	☐	☐	☒	☐	☐	☐	☐	☐

4.6 Procurement Strategy

The procurement strategy for services and selected items are listed below. All other services and items shall be procured in accordance with Powerlink's Procurement Standard.

Description	Procurement Method
Services:	
MSP – OSD	RFQ
MSP – Ergon	RFQ – Service Level Agreement
Primary Plant and Equipment:	
HV Plant and Equipment	Period Contractors
Structures	Standing Offer arrangement with preferred/preapproved suppliers
Hardware and fittings	Standing Offer arrangement with preferred/preapproved suppliers

5. References

The following documents are applicable to this Project Management Plan.

Document name and hyperlink		Version	Date
Project Scope Report		**V 1.0**	**Nov 24**

6. Attachments

6.1 List of CTs to be replaced under CP.03106

Site	Functional Location	Equipment	Function Location Description	Priority
H018 Tarong (87 CTs)	H018-C40-500--5002CTA	20053046	0 COUPLER CB CT A	Refer Note 1
	H018-C40-500--5002CTB	20053050	0 COUPLER CB CT B	Refer Note 1
	H018-C40-500--5002CTC	20053051	0 COUPLER CB CT C	Refer Note 1
	H018-C40-875--8752CTA	20053058	875 BLACKWALL 275kV CURRENT TRANSF A	Refer Note 1
	H018-C40-875--8752CTB	20053061	875 BLACKWALL 275kV CURRENT TRANSF B	Refer Note 1
	H018-C40-875--8752CTC	20053060	875 BLACKWALL 275kV CURRENT TRANSF C	Refer Note 1
	H018-C40-8812-8812CTA	20053038	8812 FDR CB CT A	Refer Note 1
	H018-C40-8812-8812CTB	20053039	8812 FDR CB CT B	Refer Note 1
	H018-C40-8812-8812CTC	20053040	8812 FDR CB CT C	Refer Note 1
	H018-C41-501--5012CTA	20053052	1 COUPLER CB CT A	Refer Note 1
	H018-C41-501--5012CTB	20053053	1 COUPLER CB CT B	Refer Note 1
	H018-C41-501--5012CTC	20053054	1 COUPLER CB CT C	Refer Note 1
	H018-C41-827--8272CTA	20053068	827 BLACKWALL 275kV CURRENT TRANSF A	Refer Note 1
	H018-C41-827--8272CTB	20053069	827 BLACKWALL 275kV CURRENT TRANSF B	Refer Note 1
	H018-C41-827--8272CTC	20053070	827 BLACKWALL 275kV CURRENT TRANSF C	Refer Note 1
	H018-C41-837--8372CTA	20053041	837 MT ENGLAND 275KV CB CT A	Refer Note 1
	H018-C41-837--8372CTB	20053042	837 MT ENGLAND 275KV CB CT B	Refer Note 1
	H018-C41-837--8372CTC	20053043	837 MT ENGLAND 275KV CB CT C	Refer Note 1
	H018-C42-502--5022CTA	20053055	2 COUPLER CB CT A	Refer Note 1
	H018-C42-502--5022CTB	20053056	2 COUPLER CB CT B	Refer Note 1
	H018-C42-502--5022CTC	20053057	2 COUPLER CB CT C	Refer Note 1

Site	Functional Location	Equipment	Function Location Description	Priority
	H018-C42-831--8312CTA	20053045	831 MIDDLE RIDGE 275KV CT A	Refer Note 1
	H018-C42-831--8312CTB	20053048	831 MIDDLE RIDGE 275KV CT B	Refer Note 1
	H018-C42-831--8312CTC	20053044	831 MIDDLE RIDGE 275KV CT C	Refer Note 1
	H018-C42-832--8322CTA	20053062	832 SOUTH PINE 275kV CURRENT TRANSF A	Refer Note 1
	H018-C42-832--8322CTB	20053063	832 SOUTH PINE 275kV CURRENT TRANSF B	Refer Note 1
	H018-C42-832--8322CTC	20053064	832 SOUTH PINE 275kV CURRENT TRANSF C	Refer Note 1
	H018-C43-503--5032CTA	20053092	3 COUPLER 275KV CT A	Refer Note 1
	H018-C43-503--5032CTB	20053093	3 COUPLER 275KV CT B	Refer Note 1
	H018-C43-503--5032CTC	20053094	3 COUPLER 275KV CT C	Refer Note 1
	H018-C43-593--5932CTA	20053083	SPARE 3 CB CT A	Refer Note 1
	H018-C43-593--5932CTB	20053084	SPARE 3 CB CT B	Refer Note 1
	H018-C43-593--5932CTC	20053085	SPARE 3 CB CT C	Refer Note 1
	H018-C43-841--8412CTA	20053098	841 FDR (1 GEN) CB CT A	Refer Note 1
	H018-C43-841--8412CTB	20053099	841 FDR (1 GEN) CB CT B	Refer Note 1
	H018-C43-841--8412CTC	20053100	841 FDR (1 GEN) CB CT C	Refer Note 1
	H018-C44-504--5042CTA	20053086	4 COUPLER CB CT A	Refer Note 1
	H018-C44-504--5042CTB	20053087	4 COUPLER CB CT B	Refer Note 1
	H018-C44-504--5042CTC	20053088	4 COUPLER CB CT C	Refer Note 1
	H018-C44-842--8422CTA	20053101	842 FDR (2 GEN) CB CT A	Refer Note 1
	H018-C44-842--8422CTB	20053105	842 FDR (2 GEN) CB CT B	Refer Note 1
	H018-C44-842--8422CTC	20053103	842 FDR (2 GEN) CB CT C	Refer Note 1
	H018-C44-8870-88702CTA	20053077	8870 HALYS 275kV CB CURRENT TRANSF A	Refer Note 1
	H018-C44-8870-88702CTB	20053078	8870 HALYS 275kV CB CURRENT TRANSF B	Refer Note 1

Site	Functional Location	Equipment	Function Location Description	Priority
	H018-C44-8870-88702CTC	20053079	8870 HALYS 275kV CB CURRENT TRANSF C	Refer Note 1
	H018-C45-505--5052CTA	20053089	5 COUPLER CB CT A	Refer Note 1
	H018-C45-505--5052CTB	20053090	5 COUPLER CB CT B	Refer Note 1
	H018-C45-505--5052CTC	20053091	5 COUPLER CB CT C	Refer Note 1
	H018-C45-843--8432CTA	20053106	843 FDR (3 GEN) CB CT A	Refer Note 1
	H018-C45-843--8432CTB	20071508	843 FDR (3 GEN) CB CT B	Refer Note 1
	H018-C45-843--8432CTC	20053102	843 FDR (3 GEN) CB CT C	Refer Note 1
	H018-C45-8871-88712CTA	20053080	8871 HALYS 275kV CIRCUIT BREAKER CT A	Refer Note 1
	H018-C45-8871-88712CTB	20053081	8871 HALYS 275kV CIRCUIT BREAKER CT B	Refer Note 1
	H018-C45-8871-88712CTC	20053082	8871 HALYS 275kV CIRCUIT BREAKER CT C	Refer Note 1
	H018-C46-506--5062CTA	20053095	6 COUPLER CB CT A	Refer Note 1
	H018-C46-506--5062CTB	20053096	6 COUPLER CB CT B	Refer Note 1
	H018-C46-506--5062CTC	20053097	6 COUPLER CB CT C	Refer Note 1
	H018-C46-594--5942CTA	20053047	SPARE 4 CB CTA	Refer Note 1
	H018-C46-594--5942CTB	20053049	SPARE 4 CB CTB	Refer Note 1
	H018-C46-594--5942CTC	20053059	SPARE 4 CB CTC	Refer Note 1
	H018-C46-844--8442CTA	20053107	844 FDR (4 GEN) CB CT A	Refer Note 1
	H018-C46-844--8442CTB	20053108	844 FDR (4 GEN) CB CT B	Refer Note 1
	H018-C46-844--8442CTC	20053109	844 FDR (4 GEN) CB CT C	Refer Note 1
	H018-C47-581--5812CTA	20058535	1 CAPACITOR 275kV CT A	Refer Note 1
	H018-C47-581--5812CTB	20058536	1 CAPACITOR 275kV CT B	Refer Note 1
	H018-C47-581--5812CTC	20058537	1 CAPACITOR 275kV CT C	Refer Note 1
	H018-C48-508--5082CTA	20053065	8 COUPLER CB CT A	Refer Note 1
	H018-C48-508--5082CTB	20053066	8 COUPLER CB CT B	Refer Note 1

Site	Functional Location	Equipment	Function Location Description	Priority
	H018-C48-508--5082CTC	20053067	8 COUPLER CB CT C	Refer Note 1
	H018-C48-8869-88692CTA	20053071	8869 HALYS 275kV CIRCUIT BREAKER CT A	Refer Note 1
	H018-C48-8869-88692CTB	20053072	8869 HALYS 275kV CIRCUIT BREAKER CT B	Refer Note 1
	H018-C48-8869-88692CTC	20053073	8869 HALYS 275kV CIRCUIT BREAKER CT C	Refer Note 1
	H018-C49-509--5092CTA	20036402	9 COUPLER 275KV CT A	Refer Note 1
	H018-C49-509--5092CTB	20036354	9 COUPLER 275KV CT B	Refer Note 1
	H018-C49-509--5092CTC	20036398	9 COUPLER 275KV CT C	Refer Note 1
	H018-C49-8828-88282CTA	20036400	8828 TARONG NORTH 275KV CT A	Refer Note 1
	H018-C49-8828-88282CTB	20036403	8828 TARONG NORTH 275KV CT B	Refer Note 1
	H018-C49-8828-88282CTC	20036399	8828 TARONG NORTH 275KV CT C	Refer Note 1
	H018-C49-8868-88682CTA	20053074	8868 HALYS 275kV CIRCUIT BREAKER CT A	Refer Note 1
	H018-C49-8868-88682CTB	20053075	8868 HALYS 275kV CIRCUIT BREAKER CT B	Refer Note 1
	H018-C49-8868-88682CTC	20053076	8868 HALYS 275kV CIRCUIT BREAKER CT C	Refer Note 1
	H018-C50-542--5422CTA	20065021	1 & 2 TRANSFORMER 275KV CURRENT TRANSF A	Refer Note 1
	H018-C50-542--5422CTB	20065022	1 & 2 TRANSFORMER 275KV CURRENT TRANSF B	Refer Note 1
	H018-C50-542--5422CTC	20065023	1 & 2 TRANSFORMER 275KV CURRENT TRANSF C	Refer Note 1
	H018-C50-543--5432CTA	20053009	3 & 4 TRANSFORMER 275KV CURRENT TRANSF A	Refer Note 1
	H018-C50-543--5432CTB	20053010	3 & 4 TRANSFORMER 275KV CURRENT TRANSF B	Refer Note 1
	H018-C50-543--5432CTC	20053011	3 & 4 TRANSFORMER 275KV CURRENT TRANSF C	Refer Note 1
	R002-C01-501--501CTA	20065599	1 COUPLER 275kV CT A	Refer Note 2

Site	Functional Location	Equipment	Function Location Description	Priority
R002 Braemar (68 CTs)	R002-C01-501--501CTB	20065600	1 COUPLER 275kV CT B	Refer Note 2
	R002-C01-501--501CTC	20065601	1 COUPLER 275kV CT C	Refer Note 2
	R002-C01-8840-8840CTA	20050820	8840 BRAEMAR 2 PS 275kV CT A	Refer Note 2
	R002-C01-8840-8840CTB	20050819	8840 BRAEMAR 2 PS 275kV CT B	Refer Note 2
	R002-C01-8840-8840CTC	20050818	8840 BRAEMAR 2 PS 275kV CT C	Refer Note 2
	R002-C02-502--502CTA	20065602	2 COUPLER 275kV CT A	Refer Note 2
	R002-C02-502--502CTB	20065603	2 COUPLER 275kV CT B	Refer Note 2
	R002-C02-502--502CTC	20065604	2 COUPLER 275kV CT C	Refer Note 2
	R002-C02-8839-8839CTA	20050823	8839 BRAEMAR PS 275kV CT A	Refer Note 2
	R002-C02-8839-8839CTB	20050822	8839 BRAEMAR PS 275kV CT B	Refer Note 2
	R002-C02-8839-8839CTC	20050821	8839 BRAEMAR PS 275kV CT C	Refer Note 2
	R002-C02-8883-8883CTA	20070306	8883 KUMBARILLA PARK 275KV CT A	Refer Note 2
	R002-C02-8883-8883CTB	20070307	8883 KUMBARILLA PARK 275KV CT B	Refer Note 2
	R002-C02-8883-8883CTC	20070308	8883 KUMBARILLA PARK 275KV CT C	Refer Note 2
	R002-C03-503--503CTA	20065605	3 COUPLER 275kV CT A	Refer Note 2
	R002-C03-503--503CTB	20065606	3 COUPLER 275kV CT B	Refer Note 2
	R002-C03-503--503CTC	20065607	3 COUPLER 275kV CT C	Refer Note 2
	R002-C03-8838-8838CTA	20070311	8838 BRAEMAR PS 275kV CT A	Refer Note 2
	R002-C03-8838-8838CTB	20070312	8838 BRAEMAR PS 275kV CT B	Refer Note 2
	R002-C03-8838-8838CTC	20071333	8838 BRAEMAR PS 275kV CT C	Refer Note 2
	R002-C03-8882-8882CTA	20050826	8882 KUMBARILLA PARK 275KV CT A	Refer Note 2
	R002-C03-8882-8882CTB	20050825	8882 KUMBARILLA PARK 275KV CT B	Refer Note 2
	R002-C03-8882-8882CTC	20050824	8882 KUMBARILLA PARK 275KV CT C	Refer Note 2
	R002-C10-5010-50102CTA	20050830	10 COUPLER 275kV CT A	Refer Note 2
	R002-C10-5010-50102CTC	20050832	10 COUPLER 275kV CT C	Refer Note 2

Site	Functional Location	Equipment	Function Location Description	Priority
	R002-C10-8820-8820CTA	20050827	8820 WESTERN DOWNS 275kV CT A	Refer Note 2
	R002-C10-8820-8820CTB	20050828	8820 WESTERN DOWNS 275kV CT B	Refer Note 2
	R002-C10-8820-8820CTC	20050829	8820 WESTERN DOWNS 275kV CT C	Refer Note 2
	R002-C11-5011-5011CTA	20068411	11 COUPLER 275kV CT A	Refer Note 2
	R002-C11-5011-5011CTB	20068412	11 COUPLER 275kV CT B	Refer Note 2
	R002-C11-5011-5011CTC	20068407	11 COUPLER 275kV CT C	Refer Note 2
	R002-C11-542--542CTA	20068410	2 TRANSF 275kV CT A	Refer Note 2
	R002-C11-542--542CTB	20068415	2 TRANSF 275kV CT B	Refer Note 2
	R002-C11-542--542CTC	20068409	2 TRANSF 275kV CT C	Refer Note 2
	R002-C11-8864-8864CTA	20068413	8864 WESTERN DOWNS 275kV CT A	Refer Note 2
	R002-C11-8864-8864CTB	20068414	8864 WESTERN DOWNS 275kV CT B	Refer Note 2
	R002-C11-8864-8864CTC	20068408	8864 WESTERN DOWNS 275kV CT C	Refer Note 2
	R002-C12-5012-50122CTA	20062114	12 COUPLER 275kV CB CTA	Refer Note 2
	R002-C12-5012-50122CTB	20062115	12 COUPLER 275kV CB CTB	Refer Note 2
	R002-C12-5012-50122CTC	20062116	12 COUPLER 275kV CB CTC	Refer Note 2
	R002-C12-8863-8863CTA	20062102	8863 D/DOWNS SOLAR FARM 275kV CT A	Refer Note 2
	R002-C12-8863-8863CTB	20062103	8863 D/DOWNS SOLAR FARM 275kV CT B	Refer Note 2
	R002-C12-8863-8863CTC	20062104	8863 D/DOWNS SOLAR FARM 275kV CT C	Refer Note 2
	R002-C13-5013-50132CTA	20062117	13 COUPLER 275kV CB CTA	Refer Note 2
	R002-C13-5013-50132CTB	20062118	13 COUPLER 275kV CB CTB	Refer Note 2
	R002-C13-5013-50132CTC	20062119	13 COUPLER 275kV CB CTC	Refer Note 2
	R002-C13-8862-8862CTA	20062106	8862 DARLING DOWNS PS 275kV CT A	Refer Note 2
	R002-C13-8862-8862CTB	20062107	8862 DARLING DOWNS PS 275kV CT B	Refer Note 2
	R002-C13-8862-8862CTC	20062105	8862 DARLING DOWNS PS 275kV CT C	Refer Note 2

Site	Functional Location	Equipment	Function Location Description	Priority
	R002-C14-5014-50142CTA	20062120	14 COUPLER 275kV CB CTA	Refer Note 2
	R002-C14-5014-50142CTB	20062121	14 COUPLER 275kV CB CTB	Refer Note 2
	R002-C14-5014-50142CTC	20062122	14 COUPLER 275kV CB CTC	Refer Note 2
	R002-C14-8861-8861CTA	20062108	8861 DARLING DOWNS PS 275kV CT A	Refer Note 2
	R002-C14-8861-8861CTB	20062109	8861 DARLING DOWNS PS 275kV CT B	Refer Note 2
	R002-C14-8861-8861CTC	20062110	8861 DARLING DOWNS PS 275kV CT C	Refer Note 2
	R002-C15-5015-50152CTA	20062111	15 COUPLER 275kV CB CTA	Refer Note 2
	R002-C15-5015-50152CTB	20062112	15 COUPLER 275kV CB CTB	Refer Note 2
	R002-C15-5015-50152CTC	20062113	15 COUPLER 275kV CB CTC	Refer Note 2
	R002-C15-8860-8860CTA	20062123	8860 DARLING DOWNS PS 275kV CT A	Refer Note 2
	R002-C15-8860-8860CTB	20062124	8860 DARLING DOWNS PS 275kV CT B	Refer Note 2
	R002-C15-8860-8860CTC	20062125	8860 DARLING DOWNS PS 275kV CT C	Refer Note 2
	R002-C51-5051-5051CTA	20065596	51 COUPLER 275kV CT A	Refer Note 2
	R002-C51-5051-5051CTB	20065597	51 COUPLER 275kV CT B	Refer Note 2
	R002-C51-5051-5051CTC	20065598	51 COUPLER 275kV CT C	Refer Note 2
	R002-C51-8841-8841CTA	20050817	8841 BRAEMAR 2 PS 275kV CT A	Refer Note 2
	R002-C51-8841-8841CTB	20050816	8841 BRAEMAR 2 PS 275kV CT B	Refer Note 2
	R002-C51-8841-8841CTC	20050815	8841 BRAEMAR 2 PS 275kV CT C	Refer Note 2
R004 Millmerran (3 CTs)	R004-M01-1CAP-1CAPCTA	20070248	1 CAPACITOR 330kV BALANCE CT A	3
	R004-M01-1CAP-1CAPCTB	20070249	1 CAPACITOR 330kV BALANCE CT B	3
	R004-M01-1CAP-1CAPCTC	20070250	1 CAPACITOR 330kV BALANCE CT C	3
S002 Halys (60 CTs)	S002-C01-501--501CTA	20068271	1 COUPLER 275kV CURRENT TRANSFORMER A	3
	S002-C01-501--501CTB	20068273	1 COUPLER 275kV CURRENT TRANSFORMER B	3
	S002-C01-501--501CTC	20068269	1 COUPLER 275kV CURRENT TRANSFORMER C	3

Site	Functional Location	Equipment	Function Location Description	Priority
	S002-C01-8866-8866CTA	20068247	8866 COOPERS GAP 275kV CT A	3
	S002-C01-8866-8866CTB	20068245	8866 COOPERS GAP 275kV CT B	3
	S002-C01-8866-8866CTC	20068250	8866 COOPERS GAP 275kV CT C	3
	S002-C02-502--502CTA	20068263	2 COUPLER 275kV CURRENT TRANSFORMER A	3
	S002-C02-502--502CTB	20068243	2 COUPLER 275kV CURRENT TRANSFORMER B	3
	S002-C02-502--502CTC	20068238	2 COUPLER 275kV CURRENT TRANSFORMER C	3
	S002-C02-8867-8867CTA	20068227	8867 WESTERN DOWNS 275kV CT A	3
	S002-C02-8867-8867CTB	20068268	8867 WESTERN DOWNS 275kV CT B	3
	S002-C02-8867-8867CTC	20068267	8867 WESTERN DOWNS 275kV CT C	3
	S002-C03-503--503CTA	20068233	3 COUPLER 275kV CURRENT TRANSFORMER A	3
	S002-C03-503--503CTB	20068266	3 COUPLER 275kV CURRENT TRANSFORMER B	3
	S002-C03-503--503CTC	20068259	3 COUPLER 275kV CURRENT TRANSFORMER C	3
	S002-C03-8815-8815CTA	20068253	8815 BRAEMAR 275kV CT A	3
	S002-C03-8815-8815CTB	20068249	8815 BRAEMAR 275kV CT B	3
	S002-C03-8815-8815CTC	20068257	8815 BRAEMAR 275kV CT C	3
	S002-C03-8884-8884CTA	20074510	8884 BLACKWALL 275kV CT A	2
	S002-C03-8884-8884CTB	20074511	8884 BLACKWALL 275kV CT B	2
	S002-C03-8884-8884CTC	20074512	8884 BLACKWALL 275kV CT C	2
	S002-C04-504--504CTA	20068230	4 COUPLER 275kV CURRENT TRANSFORMER A	3
	S002-C04-504--504CTB	20068246	4 COUPLER 275kV CURRENT TRANSFORMER B	3
	S002-C04-504--504CTC	20068241	4 COUPLER 275kV CURRENT TRANSFORMER C	3

Site	Functional Location	Equipment	Function Location Description	Priority
	S002-C04-8814-8814CTA	20068270	8814 BRAEMAR 275kV CT A	3
	S002-C04-8814-8814CTB	20068256	8814 BRAEMAR 275kV CT B	3
	S002-C04-8814-8814CTC	20068255	8814 BRAEMAR 275kV CT C	3
	S002-C04-8885-8885CTA	20074513	8885 BLACKWALL 275kV CT A	3
	S002-C04-8885-8885CTB	20074514	8885 BLACKWALL 275kV CT B	3
	S002-C04-8885-8885CTC	20074515	8885 BLACKWALL 275kV CT C	3
	S002-C06-506--506CTA	20068261	6 COUPLER 275kV CURRENT TRANSFORMER A	1
	S002-C06-506--506CTB	20068254	6 COUPLER 275kV CURRENT TRANSFORMER B	1
	S002-C06-506--506CTC	20068226	6 COUPLER 275kV CURRENT TRANSFORMER C	1
	S002-C06-8811-8811CTA	20068223	8811 CALVALE 275kV CT A	1
	S002-C06-8811-8811CTB	20068237	8811 CALVALE 275kV CT B	1
	S002-C06-8811-8811CTC	20068225	8811 CALVALE 275kV CT C	1
	S002-C06-8870-8870CTA	20068272	8870 TARONG 275kV CT A	3
	S002-C06-8870-8870CTB	20068235	8870 TARONG 275kV CT B	3
	S002-C06-8870-8870CTC	20068229	8870 TARONG 275kV CT C	3
	S002-C07-507--507CTA	20068228	7 COUPLER 275kV CURRENT TRANSFORMER A	1
	S002-C07-507--507CTB	20068220	7 COUPLER 275kV CURRENT TRANSFORMER B	1
	S002-C07-507--507CTC	20068222	7 COUPLER 275kV CURRENT TRANSFORMER C	1
	S002-C07-8810-8810CTA	20068252	8810 CALVALE 275kV CT A	1
	S002-C07-8810-8810CTB	20068242	8810 CALVALE 275kV CT B	1
	S002-C07-8810-8810CTC	20068265	8810 CALVALE 275kV CT C	1
	S002-C07-8871-8871CTA	20068262	8871 TARONG 275kV CT A	3
	S002-C07-8871-8871CTB	20068260	8871 TARONG 275kV CT B	3

Site	Functional Location	Equipment	Function Location Description	Priority
	S002-C07-8871-8871CTC	20068221	8871 TARONG 275kV CT C	3
	S002-C08-508--508CTA	20068251	8 COUPLER 275kV CURRENT TRANSFORMER A	3
	S002-C08-508--508CTB	20068224	8 COUPLER 275kV CURRENT TRANSFORMER B	3
	S002-C08-508--508CTC	20068236	8 COUPLER 275kV CURRENT TRANSFORMER C	3
	S002-C08-8868-8868CTA	20068240	8868 TARONG 275kV CT A	3
	S002-C08-8868-8868CTB	20068239	8868 TARONG 275kV CT B	3
	S002-C08-8868-8868CTC	20068232	8868 TARONG 275kV CT C	3
	S002-C09-509--509CTA	20068244	9 COUPLER 275kV CURRENT TRANSFORMER A	3
	S002-C09-509--509CTB	20068248	9 COUPLER 275kV CURRENT TRANSFORMER B	3
	S002-C09-509--509CTC	20068258	9 COUPLER 275kV CURRENT TRANSFORMER C	3
	S002-C09-8869-8869CTA	20068264	8869 TARONG 275kV CT A	3
	S002-C09-8869-8869CTB	20068234	8869 TARONG 275kV CT B	3
	S002-C09-8869-8869CTC	20068231	8869 TARONG 275kV CT C	3
S005 Western Downs (18 CTs)	S005-C01-501--501CTA	20067951	1 COUPLER 275kV CURRENT TRANSFORMER A	1
	S005-C01-501--501CTB	20067952	1 COUPLER 275kV CURRENT TRANSFORMER B	1
	S005-C01-501--501CTC	20067953	1 COUPLER 275kV CURRENT TRANSFORMER C	1
	S005-C01-8865-8865CTA	20067954	8865 KOGAN CREEK PS 275kV CT A	1
	S005-C01-8865-8865CTB	20067955	8865 KOGAN CREEK PS 275kV CT B	1
	S005-C01-8865-8865CTC	20067956	8865 KOGAN CREEK PS 275kV CT C	1
	S005-C01-8904-8904CTA	20068291	8904 COOPERS GAP 275kV CT A	3
	S005-C01-8904-8904CTB	20068289	8904 COOPERS GAP 275kV CT B	3

Site	Functional Location	Equipment	Function Location Description	Priority
	S005-C01-8904-8904CTC	20068287	8904 COOPERS GAP 275kV CT C	3
	S005-C02-8867-8867CTA	20068284	8867 HALYS 275kV CT A	3
	S005-C02-8867-8867CTB	20068280	8867 HALYS 275kV CT B	3
	S005-C02-8867-8867CTC	20068286	8867 HALYS 275kV CT C	3
	S005-C03-503--503CTA	20068296	3 COUPLER 275kV CURRENT TRANSFORMER A	3
	S005-C03-503--503CTB	20068282	3 COUPLER 275kV CURRENT TRANSFORMER B	3
	S005-C03-503--503CTC	20068294	3 COUPLER 275kV CURRENT TRANSFORMER C	3
	S005-C03-8820-8820CTA	20068295	8820 BRAEMAR 275kV CT A	3
	S005-C03-8820-8820CTB	20068297	8820 BRAEMAR 275kV CT B	3
	S005-C03-8820-8820CTC	20068285	8820 BRAEMAR 275kV CT C	3

Project Scope Report

CP.03107

Replace 275kV CTs - Metro

Proposal – Version 2

Document Control

Change Record

Issue Date	Revision	Prepared by	Reviewed by	Approved by	Background
19/11/2024	1	[redacted]	[redacted]	[redacted]	Initial issue
7/10/2025	2	[redacted]	[redacted]	[redacted]	Middle Ridge CT list updated (Attachment 1)

Related Documents

Issue Date	Responsible Person	Objective Document Name
15 Oct 2024	[redacted]	PIF Metro 275kV CT Replacement for managing failure risk (A5653174)

Document Purpose

The purpose of this Project Scope Report is to define the business (functional) requirements that the project is intended to deliver. These functional requirements are subject to Powerlink's design and construction standards and prevailing asset strategies, which will be detailed in documentation produced during the detailed scoping and estimating undertaken by DTS (or OSD), i.e. it is not intended for this document to provide a detailed scope of works that is directly suitable for estimating.

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Project Sponsor	[redacted]
Strategist – HV Asset Strategies	[redacted]
Strategist – Digital Asset Strategies	[redacted]
Project Manager	[redacted]
Design Manager	TBC

Project Details

1. Project Need & Objective

Powerlink has 520 275kV current transformers (CTs) of a particular make and model (current transformer subset) installed within the network. There has been a concerning trend with this variant of CT where one of the failure modes is considered a 'catastrophic failure' which results in an expulsion of oil, fire and sand up to a radius of 20 meters.

There have been six of these catastrophic failure modes in Powerlink's network and as such the safety risk associated with people attending these sites with the current transformer subset installed is elevated. There is also a safety risk associated with people performing work at or near bay marshalling kiosks as these also experienced arcing patterns during this failure mode.

Restricted access zones (RAZ) of 30 meters have been established around these CTs to manage safety risks. However, this now poses significant challenges for the delivery of maintenance tasks and several regulated and non-regulated projects that require access to these substations. Additionally, it presents a considerable risk to operational stability and network reliability.

Due to the high failure rate becoming progressively difficult to manage with the escalating safety risk and increasing probability of unplanned outages, it is recommended that all of the current transformer subset be replaced across the network.

Due to the large number of CTs planned for replacement, the works have been separated into individual projects/stages based on region and priority to replace a total of 514 CTs. The program of CT replacement projects is as follows:

- CP.03104 Replace 275kV CTs – Northern;
- CP.03105 Replace 275kV CTs – Central;
- CP.03106 Replace 275kV CTs – Surat; and

- CP.03107 Replace 275kV CTs – Metro (this project).

The objective of this project is to replace 275kV CTs in the metro region by June 2029. Priority 1 CTs (identified in Attachment 1) are to be replaced by June 2025.

This project will follow the two (2) stage approval process.

2. Project Drawing

Not applicable

3. Deliverables

The following deliverables must be provided in response to this Project Scope Report:

1. A report (e.g. Concept Estimate Report) detailing the works to be delivered, high level staging, resource requirements and availability, and outage requirements and constraints

    a. A class 5 estimate (minimum);

    b. A basis of estimate document and risk table, detailing the key estimating assumptions and delivery risks;

    c. Outline staging and outage plans; and

    d. As this project will follow the two (2) stage approval process, provide a separate estimate for stage 2 development phase costs including project planning, procurement, design and preliminary works as well as project work associated with priority 1 sites. Also provide the schedule and time information to align with 2-stage approval.

2. A report (i.e. Project proposal) detailing the works to be delivered, proposed staging of delivery, a detailed project schedule, resource requirements and confirmation of availability, and outage requirements and including the following deliverables:

    a. A class 3 estimate (minimum), based upon published design advices detailing key design elements with MSP RFQ;

    b. A basis of estimate document and risk table, detailing the key estimating assumptions and delivery risks; and

    c. A detailed project staging and outage plan that includes primary plant, and secondary systems outages.

4. Project Scope

4.1. Original Scope

The following scope presents a functional overview of the desired outcomes of the project. The proposed solution presented in the estimate must be developed with reference to the remaining sections of this Project Scope Report, in particular *Section 7 Special Considerations*.

Briefly, the project consists of replacing 182 current transformers at eleven substations in the metro region with suitable alternative current transformers. Priority 1 CTs (identified in Attachment 1) are to be replaced by June 2025. All other CTs are to be replaced by June 2029.

The substations included in the scope of this project are:

- H002 South Pine;
- H003 Belmont;
- H004 Mudgeeraba;
- H005 Woolooga;
- H009 Palmwoods;
- H012 Mt England;
- H014 Middle Ridge;
- H038 Goodna;
- H062 Abermain;
- H063 Teebar Creek; and
- S003 Greenbank.

4.1.1. Transmission Line Works

Not applicable

4.1.2. Substation Works

Design, procure, install, test and commission replacement of the 275kV CTs as listed in Attachment 1 for the eleven Powerlink substations including:

- design, manufacture and installation of custom adaptor structures incorporating utilisation of current transformer foundations;
- removal of existing CTs;
- installation, testing and commissioning of replacement CTs to Powerlink standard;

- modification of secondary systems as required, including cabling and monitoring systems;
- recovery and disposal of redundant current transformer units in accordance with Powerlink standard practice; and
- update of drawing records, SAP and config. files accordingly.

4.1.3. Telecoms Works

Not applicable

4.1.4. Easement/Land Acquisition & Permits Works

Not applicable

4.2. Key Scope Assumptions

Not applicable

4.3. Variations to Scope (post project approval)

Not applicable

5. Key Asset Risks

Priority is to be given to CTs with priority 1 rating as per the Attachment 1. It is expected that the CTs associated with the priority 1 rating will be replaced by June 2025 to mitigate significant operational and safety risk.

In general, consideration should be given to asset priority, in conjunction with other aspects such as related projects, remote end coordination, outage availability, resources etc, to determine the optimal delivery strategy and staging that minimises outage and resource requirements whilst appropriately addressing asset risk.

Asset risk management shall be in accordance with the Asset Risk Management Process Guideline (A4870713).

6. Project Timing

6.1. Stage 1 Approval Date

This project will follow the two-stage approval process. The anticipated date for Stage 1 approval is December 2024.

6.2. Site Access Date

Access to site is immediately available, with appropriate access management controls, given that all works are within operational substations.

6.3. Commissioning Date

The latest date for the commissioning of the new assets included in this scope and the decommissioning and removal of redundant assets is June 2029. Priority 1 CTs are to be replaced by June 2025.

7. Special Considerations

- CP.02986 CVT Replacement – South Phase 3 project incorporates CVT replacements at South Pine, Belmont, Mudgeeraba, Woolooga, Palmwoods, Mt England, Middle Ridge, Goodna, Abermain, Teebar Creek and Greenbank. CT and CVT replacements may be coordinated to optimise outage and resource requirements where CT replacement activities are not impacted.
- All CTs up to 7 cores shall be replaced with post type SF6 polymer insulated CTs as per Powerlink standard.
- As 8 core SF6 polymer insulated CT is currently not available:
    - where the existing 8 core CT has less than 8 cores being used, replace the CT with 7 core post type SF6 polymer insulated CT;
    - Where the existing 8 core CT utilises all 8 cores, oil filled Polymer type post CTs could be used as a replacement.
- Project team shall consider selecting a substation to trial to replace the IMB300 CTs with Non-conventional Instrument Transformer (NCIT) based on Rogowski coil for one bay. The cost associated with this trial shall be separately estimated.

8. Asset Management Requirements

Equipment shall be in accordance with Powerlink equipment strategies.

Unless otherwise advised Boon Pang will be the Project Sponsor for this project. The Project Sponsor must be included in any discussions with any other areas of Network and Business Development including Asset Strategies & Planning.

9. Asset Ownership

The works detailed in this project will be Powerlink Queensland assets.

10. System Operation Issues

Operational issues that should be considered as part of the scope and estimate include:

- impact of Restricted Access Zones currently in place;
- interaction of project outage plan with other outage requirements;
- likely impact of project outages upon grid support arrangements; and
- likely impact of project outages upon the optical fibre network.

11. Options

Not applicable

12. Division of Responsibilities

Not applicable

13. Related Projects

Project No.	Project Description	Comm Date	Comment
Other Related Projects			
CP.02986	CVT Replacement Phase 3	June 2028	This project incorporates CVT replacements at sites with 275kV CT replacements. Where relevant, the CT and CVT replacements shall be coordinated to optimise outage and resource requirements.

Attachment 1: List of CTs to be replaced under CP.03107

Site	Functional location	Equipment	Func. Loc. Desc.	Priority
H003 Belmont (18 CTs)	H003-C06-8837-88372CTA	20061327	8837 MURARRIE 275kV CT A	1
	H003-C06-8837-88372CTB	20061328	8837 MURARRIE 275kV CT B	1
	H003-C06-8837-88372CTC	20061329	8837 MURARRIE 275kV CT C	1
	H003-C02-502--5022CTA	20042979	2 COUPLER 275KV CB CT A	3
	H003-C02-502--5022CTB	20042980	2 COUPLER 275KV CB CT B	3
	H003-C02-502--5022CTC	20042981	2 COUPLER 275KV CB CT C	3
	H003-C02-817--8172CTA	20042982	817 BLACKWALL 275KV CB CT A	3
	H003-C02-817--8172CTB	20042983	817 BLACKWALL 275KV CB CT B	3
	H003-C02-817--8172CTC	20042984	817 BLACKWALL 275KV CB CT C	3
	H003-C06-506--5062CTA	20049719	6 COUPLER 275KV BKR/CT A	3
	H003-C06-506--5062CTB	20049720	6 COUPLER 275KV BKR/CT B	3
	H003-C06-506--5062CTC	20049721	6 COUPLER 275KV BKR/CT C	3
	H003-C06-829--8292CTA	20050027	829 LOGANLEA 275KV CB CT A	3
	H003-C06-829--8292CTB	20050028	829 LOGANLEA 275KV CB CT B	3
	H003-C06-829--8292CTC	20050029	829 LOGANLEA 275KV CB CT C	3
	H003-C07-546--5462CTA	20042987	6 TRANSFORMER 275kV BKR/CT A	3
	H003-C07-546--5462CTB	20042986	6 TRANSFORMER 275kV BKR/CT B	3
	H003-C07-546--5462CTC	20042985	6 TRANSFORMER 275kV BKR/CT C	3
H002 Southpine (5 CTs)	H002-C01-507--5072CTB	20056674	7 COUPLER 275kV CB CT B	3
	H002-C01-507--5072CTC	20050031	7 COUPLER 275kV CB CT C	3
	H002-C01-809--8092CTA	20063598	809 ROCKLEA 275KV CB CT A	3
	H002-C01-809--8092CTB	20063597	809 ROCKLEA 275KV CB CT B	3
	H002-C01-809--8092CTC	20063611	809 ROCKLEA 275KV CB CT C	3
H004 Mudgeeraba (4CTs)	H004-C03-836--836CTB	20071496	836 GREENBANK 275KV CURRENT TRANSF B	3
	H004-C51-584--5842CTA	20041903	4 CAPACITOR 275KV CT A	3
	H004-C51-584--5842CTB	20041904	4 CAPACITOR 275KV CT B	3
	H004-C51-584--5842CTC	20041905	4 CAPACITOR 275KV CT C	3
H005 Woolooga (36 CTs)	H005-C01-501--501CTA	20055423	1 COUPLER 275kV CURRENT TRANSFORMER A	3
	H005-C01-501--501CTB	20055424	1 COUPLER 275kV CURRENT TRANSFORMER B	3
	H005-C01-501--501CTC	20055425	1 COUPLER 275kV CURRENT TRANSFORMER C	3
	H005-C01-813--8132CTA	20055438	F813/2 CALLIOPE RIVER 275kV CT A	3
	H005-C01-813--8132CTB	20055439	F813/2 CALLIOPE RIVER 275kV CT B	3
	H005-C01-813--8132CTC	20055440	F813/2 CALLIOPE RIVER 275kV CT C	3
	H005-C02-502--502CTA	20055432	2 COUPLER 275kV CURRENT TRANSFORMER A	3
	H005-C02-502--502CTB	20055433	2 COUPLER 275kV CURRENT TRANSFORMER B	3
	H005-C02-502--502CTC	20055434	2 COUPLER 275kV CURRENT TRANSFORMER C	3

Site	Functional location	Equipment	Func. Loc. Desc.	Priority
	H005-C02-807--807CTA	20055426	807 SOUTH PINE 275kV CT A	3
	H005-C02-807--807CTB	20055427	807 SOUTH PINE 275kV CT B	3
	H005-C02-807--807CTC	20055428	807 SOUTH PINE 275kV CT C	3
	H005-C02-814--8142CTA	20055441	814 CALLIOPE RIVER TEE GIN GIN 275kV CTA	3
	H005-C02-814--8142CTB	20055442	814 CALLIOPE RIVER TEE GIN GIN 275kV CTB	3
	H005-C02-814--8142CTC	20055443	814 CALLIOPE RIVER TEE GIN GIN 275kV CTC	3
	H005-C03-503--503CTA	20055435	3 COUPLER 275kV CURRENT TRANSFORMER A	3
	H005-C03-503--503CTB	20055436	3 COUPLER 275kV CURRENT TRANSFORMER B	3
	H005-C03-503--503CTC	20055437	3 COUPLER 275kV CURRENT TRANSFORMER C	3
	H005-C03-810--810CTA	20055414	810 PALMWOODS 275kV CT A	3
	H005-C03-810--810CTB	20055415	810 PALMWOODS 275kV CT B	3
	H005-C03-810--810CTC	20055416	810 PALMWOODS 275kV CT C	3
	H005-C03-8850-88502CTA	20055444	8850 TEEBAR CREEK 275kV CT A	3
	H005-C03-8850-88502CTB	20055445	8850 TEEBAR CREEK 275kV CT B	3
	H005-C03-8850-88502CTC	20055446	8850 TEEBAR CREEK 275kV CT C	3
	H005-C04-504--504CTA	20055417	4 COUPLER 275kV CURRENT TRANSFORMER A	3
	H005-C04-504--504CTB	20055418	4 COUPLER 275kV CURRENT TRANSFORMER B	3
	H005-C04-504--504CTC	20055419	4 COUPLER 275kV CURRENT TRANSFORMER C	3
	H005-C04-545--545CTA	20055420	5 TRANSFORMER 275kV CIRCUIT BREAKER CT A	3
	H005-C04-545--545CTB	20055421	5 TRANSFORMER 275kV CIRCUIT BREAKER CT B	3
	H005-C04-545--545CTC	20055422	5 TRANSFORMER 275kV CIRCUIT BREAKER CT C	3
	H005-C05-505--505CTA	20055429	5 COUPLER 275kV CURRENT TRANSFORMER A	3
	H005-C05-505--505CTB	20055430	5 COUPLER 275kV CURRENT TRANSFORMER B	3
	H005-C05-505--505CTC	20055431	5 COUPLER 275kV CURRENT TRANSFORMER C	3
	H005-C07-584--584CTA	20055168	4 STATIC COMPENSATOR 275KV CTA	3
	H005-C07-584--584CTB	20055169	4 STATIC COMPENSATOR 275KV CTB	3
	H005-C07-584--584CTC	20055170	4 STATIC COMPENSATOR 275KV CTC	3
H009 Palmwoods (6 CTs)	H009-C01-583--5832CTA	20044981	3 CAPACITOR 275KV CT A	3
	H009-C01-583--5832CTB	20044982	3 CAPACITOR 275KV CT B	3
	H009-C01-583--5832CTC	20044984	3 CAPACITOR 275KV CT C	3

Site	Functional location	Equipment	Func. Loc. Desc.	Priority
	H009-C02-810--8102CTA	20071494	810 WOOLOOGA 275KV CT A	3
	H009-C02-810--8102CTB	20071491	810 WOOLOOGA 275KV CT B	3
	H009-C02-810--8102CTC	20063614	810 WOOLOOGA 275KV CT C	3
H012 Mt England (29 CTs)	H012-C01-581--5812CTA	20044377	1 CAPACITOR 275KV CT A	3
	H012-C01-581--5812CTB	20044378	1 CAPACITOR 275KV CT B	3
	H012-C01-581--5812CTC	20044379	1 CAPACITOR 275KV CT C	3
	H012-C01-582--5822CTA	20058505	2 CAPACITOR 275kV CT A	3
	H012-C01-582--5822CTB	20058506	2 CAPACITOR 275kV CT B	3
	H012-C01-582--5822CTC	20058507	2 CAPACITOR 275kV CT C	3
	H012-C02-823--8232CTA	20039365	CT 823 WIVENHOE PS UNIT 1 275KV BKR/CT A	3
	H012-C02-823--8232CTB	20039363	CT 823 WIVENHOE PS UNIT 1 275KV BKR/CT B	3
	H012-C02-823--8232CTC	20039362	CT 823 WIVENHOE PS UNIT 1 275KV BKR/CT C	3
	H012-C03-824--8242CTA	20039364	CT 824 WIVENHOE PS UNIT 2 275KV BKR/CT A	3
	H012-C03-824--8242CTB	20039361	CT 824 WIVENHOE PS UNIT 2 275KV BKR/CT B	3
	H012-C03-824--8242CTC	20039360	CT 824 WIVENHOE PS UNIT 2 275KV BKR/CT C	3
	H012-C04-837--8372CTB	20049728	837 TARONG 275kV CB CURRENT TRANS B	3
	H012-C04-8823-8823CTB	20050030	8823 ABERMAIN 275KV CURRENT TRANSF B	3
	H012-C05-505--5052CTA	20053007	5 COUPLER 275KV BKR/CT A	3
	H012-C05-505--5052CTB	20063599	CT 5 COUPLER 275KV BKR/CT B	3
	H012-C05-505--5052CTC	20063600	CT 5 COUPLER 275KV BKR/CT C	3
	H012-C05-802--8022CTA	20063609	802 BLACKWALL 275KV BKR/CT A	3
	H012-C05-802--8022CTB	20053006	802 BLACKWALL 275KV BKR/CT B	3
	H012-C05-802--8022CTC	20063610	802 BLACKWALL 275KV BKR/CT C	3
	H012-C05-8812-88122CTA	20063606	8812 TARONG 275kV BKR/CT A	3
	H012-C05-8812-88122CTB	20063607	8812 TARONG 275kV BKR/CT B	3
	H012-C05-8812-88122CTC	20063608	8812 TARONG 275kV BKR/CT C	3
	H012-C06-506--5062CTA	20063591	CT 6 COUPLER 275KV BKR/CT A	3
	H012-C06-506--5062CTB	20063592	CT 6 COUPLER 275KV BKR/CT B	3
	H012-C06-506--5062CTC	20063593	CT 6 COUPLER 275KV BKR/CT C	3
	H012-C06-825--8252CTA	20063603	CT 825 SOUTH PINE 275KV BKR/CT A	3
	H012-C06-825--8252CTB	20063604	CT 825 SOUTH PINE 275KV BKR/CT B	3
	H012-C06-825--8252CTC	20063605	CT 825 SOUTH PINE 275KV BKR/CT C	3
H014 Middle Ridge (18 CTs)	H014-C03-8848-88482CTA	20056134	8848 GREENBANK 275kV CT A	3
	H014-C03-8848-88482CTB	20056135	8848 GREENBANK 275kV CT B	3

Site	Functional location	Equipment	Func. Loc. Desc.	Priority
	H014-C03-8848-88482CTC	20056136	8848 GREENBANK 275kV CT C	3
	H014-C04-504--5042CTA	20056140	4 COUPLER 275kV CB CT A	3
	H014-C04-504--5042CTB	20056141	4 COUPLER 275kV CB CT B	3
	H014-C04-504--5042CTC	20056142	4 COUPLER 275kV CB CT C	3
	H014-C04-545--5452CTA	20056143	5 TRANSFORMER 275KV BKR/CT A	3
	H014-C04-545--5452CTB	20056144	5 TRANSFORMER 275KV BKR/CT B	3
	H014-C04-545--5452CTC	20057974	5 TRANSFORMER 275KV BKR/CT C	3
	H014-C04-8849-88492CTA	20056137	8849 GREENBANK 275kV CT A	3
	H014-C04-8849-88492CTB	20056138	8849 GREENBANK 275kV CT B	3
	H014-C04-8849-88492CTC	20056139	8849 GREENBANK 275kV CT C	3
	~~H014-M03-3CAP-3CAPCTA~~	~~20070272~~	~~3 CAPACITOR 330kV BALANCE CT A~~	~~3~~
	~~H014-M03-3CAP-3CAPCTB~~	~~20070273~~	~~3 CAPACITOR 330kV BALANCE CT B~~	~~3~~
	~~H014-M03-3CAP-3CAPCTC~~	~~20070274~~	~~3 CAPACITOR 330kV BALANCE CT C~~	~~3~~
	~~H014-M04-4CAP-4CAPCTA~~	~~20070275~~	~~4 CAPACITOR 330kV BALANCE CT A~~	~~3~~
	~~H014-M04-4CAP-4CAPCTB~~	~~20070276~~	~~4 CAPACITOR 330kV BALANCE CT B~~	~~3~~
	~~H014-M04-4CAP-4CAPCTC~~	~~20070277~~	~~4 CAPACITOR 330kV BALANCE CT C~~	~~3~~
H038 Goodna (9 CTs)	H038-C04-8819-8819CTA	20052552	8819 BLACKWALL 275KV CURRENT TRANSF A	Note 1
	H038-C04-8819-8819CTB	20052553	8819 BLACKWALL 275KV CURRENT TRANSF B	Note 1
	H038-C04-8819-8819CTC	20052554	8819 BLACKWALL 275KV CURRENT TRANSF C	Note 1
	H038-C07-541--5412CTA	20052564	1 TRANSFORMER 275kV CB CTA	3
	H038-C07-541--5412CTB	20052565	1 TRANSFORMER 275kV CB CTB	3
	H038-C07-541--5412CTC	20052566	1 TRANSFORMER 275kV CB CTC	3
	H038-C07-507--5072CTA		7 COUPLER 275kV CB CT A	Note 1
	H038-C07-507--5072CTB		7 COUPLER 275kV CB CT B	Note 1
	H038-C07-507--5072CTC		7 COUPLER 275kV CB CT C	Note 1
	H038-C07-8842-88422CTA	20052558	8842 BELMONT 275kV CB CT A	3
	H038-C07-8842-88422CTB	20052559	8842 BELMONT 275kV CB CT B	3
	H038-C07-8842-88422CTC	20052560	8842 BELMONT 275kV CB CT C	3
H062 Abermain (12 CTs)	H062-C01-501--5012CTA	20058804	1 COUPLER 275kV CT A	3
	H062-C01-501--5012CTB	20058805	1 COUPLER 275kV CT B	3
	H062-C01-501--5012CTC	20058806	1 COUPLER 275kV CT C	3

Site	Functional location	Equipment	Func. Loc. Desc.	Priority
	H062-C01-8823-88232CTA	20058807	8823 MT ENGLAND 275kV CT A	3
	H062-C01-8823-88232CTB	20058808	8823 MT ENGLAND 275kV CT B	3
	H062-C01-8823-88232CTC	20058809	8823 MT ENGLAND 275kV CT C	3
	H062-C02-544--5442CTA	20058813	4 TRANSFORMER 275KV CURRENT TRANSF A	3
	H062-C02-544--5442CTB	20058814	4 TRANSFORMER 275KV CURRENT TRANSF B	3
	H062-C02-544--5442CTC	20058815	4 TRANSFORMER 275KV CURRENT TRANSF C	3
	H062-C02-8844-88442CTA	20058801	8844 BLACKSTONE 275kV CT A	3
	H062-C02-8844-88442CTB	20058802	8844 BLACKSTONE 275kV CT B	3
	H062-C02-8844-88442CTC	20058803	8844 BLACKSTONE 275kV CT C	3
H063 Teebar Creek (21 CTs)	H063-C02-502--5022CTA	20053823	2 COUPLER 275kV CB CT A	3
	H063-C02-502--5022CTB	20053824	2 COUPLER 275kV CB CT B	3
	H063-C02-502--5022CTC	20053825	2 COUPLER 275kV CB CT C	3
	H063-C02-541--5412CTA	20053826	1 TRANSFORMER 275kV BKR CT A	3
	H063-C02-541--5412CTB	20053827	1 TRANSFORMER 275kV BKR CT B	3
	H063-C02-541--5412CTC	20053828	1 TRANSFORMER 275kV BKR CT C	3
	H063-C02-819--8192CTA	20053820	819 GIN GIN 275kV CB CT A	3
	H063-C02-819--8192CTB	20053821	819 GIN GIN 275kV CB CT B	3
	H063-C02-819--8192CTC	20053822	819 GIN GIN 275kV CB CT C	3
	H063-C03-503--5032CTA	20053829	3 COUPLER 275kV CB CT A	3
	H063-C03-503--5032CTB	20053830	3 COUPLER 275kV CB CT B	3
	H063-C03-503--5032CTC	20053831	3 COUPLER 275kV CB CT C	3
	H063-C03-542--5422CTA	20053832	2 TRANSFORMER 275kV BKR CT A	3
	H063-C03-542--5422CTB	20056450	2 TRANSFORMER 275kV BKR CT B	3
	H063-C03-542--5422CTC	20053834	2 TRANSFORMER 275kV BKR CT C	3
	H063-C05-505--5052CTA	20053838	5 COUPLER 275kV CB CT A	3
	H063-C05-505--5052CTB	20053839	5 COUPLER 275kV CB CT B	3
	H063-C05-505--5052CTC	20053840	5 COUPLER 275kV CB CT C	3
	H063-C05-8850-88502CTA	20053835	8850 WOOLOOGA 275kV CB CT A	3
	H063-C05-8850-88502CTB	20053836	8850 WOOLOOGA 275kV CB CT B	3
	H063-C05-8850-88502CTC	20053837	8850 WOOLOOGA 275kV CB CT C	3
S003 Greenbank (21 CTs)	S003-C13-5013-50132CTA	20057969	13 COUPLER 275kV CTA	3
	S003-C13-5013-50132CTB	20057970	13 COUPLER 275kV CTB	3
	S003-C13-5013-50132CTC	20057971	13 COUPLER 275kV CTC	3

Site	Functional location	Equipment	Func. Loc. Desc.	Priority
	S003-C13-8848-88482CTA	20057966	8848 MIDDLE RIDGE 275kV CT A	3
	S003-C13-8848-88482CTB	20057967	8848 MIDDLE RIDGE 275kV CT B	3
	S003-C13-8848-88482CTC	20057968	8848 MIDDLE RIDGE 275kV CT C	3
	S003-C14-5014-50142CTA	20057975	14 COUPLER 275kV CTA	3
	S003-C14-5014-50142CTB	20057972	14 COUPLER 275kV CTB	3
	S003-C14-5014-50142CTC	20057976	14 COUPLER 275kV CTC	3
	S003-C14-5811-58112CTA	20058075	11 SVC 275kV CURRENT TRANSFORMER A	3
	S003-C14-5811-58112CTB	20058076	11 SVC 275kV CURRENT TRANSFORMER B	3
	S003-C14-5811-58112CTC	20058077	11 SVC 275kV CURRENT TRANSFORMER C	3
	S003-C14-8849-88492CTA	20057977	8849 MIDDLE RIDGE 275kV CT A	3
	S003-C14-8849-88492CTB	20057973	8849 MIDDLE RIDGE 275kV CT B	3
	S003-C14-8849-88492CTC	20056145	8849 MIDDLE RIDGE 275kV CT C	3
	S003-C15-585--585CTA	20054187	5 CAPACITOR 275kV CURRENT TRANSFORMER A	3
	S003-C15-585--585CTB	20054188	5 CAPACITOR 275kV CURRENT TRANSFORMER B	3
	S003-C15-585--585CTC	20054189	5 CAPACITOR 275kV CURRENT TRANSFORMER C	3
	S003-C15-586--586CTA	20054190	6 CAPACITOR 275kV CURRENT TRANSFORMER A	3
	S003-C15-586--586CTB	20054191	6 CAPACITOR 275kV CURRENT TRANSFORMER B	3
	S003-C15-586--586CTC	20054192	6 CAPACITOR 275kV CURRENT TRANSFORMER C	3

Note 1: These CTs are already replaced under Engineering Task Requests/Work orders. The cost associated with this work shall be transferred to this project.

CP.03107 Replace 275kV CTs

Metro

Project Management Plan

Version History

Version	Date	Section(s)	Summary of amendment
1.0	August 2025	N/A	Initial issue

Table of Contents

1. Executive Summary

Powerlink has 520 275kV current transformers (CTs) of a particular make and model (current transformer subset) installed within the network. There has been a concerning trend with this variant of CT, where one of the failure modes is considered a catastrophic failure' which results in an expulsion of oil, fire and sand, up to a radius of 20 meters.

There have been six of these catastrophic failure modes in Powerlink's network and as such the safety risk associated with people attending these sites with the current transformer subset installed is elevated. There is also a safety risk associated with people performing work at or near bay marshalling kiosks, as these also experienced arcing patterns during this failure mode.

Restricted access zones (RAZ) of 30 meters have been established around these CTs to manage safety risks. However, this now poses significant challenges for the delivery of maintenance tasks and several regulated and non-regulated projects that require access to these substations. Additionally, it presents a considerable risk to operational stability and network reliability.

Due to the high failure rate becoming progressively difficult to manage with the escalating safety risk and increasing probability of unplanned outages, it is recommended that all the current transformer subset be replaced across the network.

Due to the large number of CTs planned for replacement, the works have been separated into individual projects/stages based on region and priority to replace a total of 514 CTs. The program of CT replacement projects is as follows:

- CP.03104 - Replace 275kV CTs – Northern (54 CTs)
- CP.03105 - Replace 275kV CTs – Central (42 CTs)
- CP.03106 - Replace 275kV CTs – Surat (236 CTs)
- CP.03107 - Replace 275kV CTs – Metro (182 CTs)

The objective of project **CP.03107** is to replace the 275kV CTs in the **Metro** region by June 2029; however, this timeline is no longer feasible. The revised projected completion date is December 2029.

Replacement of Priority 1 CTs (identified in Attachment 1) commenced in June August 2024, initially under an Engineering Task Request (ETR) process and then under capital works via early release of funds. 12 CTs have been replaced to date under this project (see table below for details) resulting in actual costs of $2,408,865 (as of 12th August 2025).

CP.03107	CTs replaced	CTs in service	Total
H002 – South Pine	0	5	5
H003 – Belmont	6	12	18
H004 – Mudgeeraba	0	4	4
H005 – Woolooga	0	36	36
H009 – Palmwoods	0	6	6
H012 – Mt England	0	29	29
H014 – Middle Ridge	0	18	18

H038 – Goodna	6	6	12
H062 – Abermain	0	12	12
H063 – Teebar Creek	0	21	21
S003 – Greenbank	0	21	21

This is a class 3 estimate, and the project will use a two-stage approval process.

	Date
Project Proposal and Project Estimate - date submitted	29/08/2025
Full Approval Project Approval Advice (PAA) - date received	5/06/2026

1.1 Overview of Estimated Costs

The following table summarises the average cost of a CT replacement.

Total Cost excluding Risk & Contingency	Baseline CT Number	Base Cost	Escalated Cost
Total Project Estimated Cost		$41,112,021	$43,162,576
Average replacement cost per CT	**182**	$225,890	$237,157

Table above shows the average costs of CT replacement.

2. Project Definition

2.1 Project Scope

Briefly, the project consists of replacing 182 275kV current transformers at eleven substations in the metro region with suitable alternative current transformers.

The substations included in the scope of this project are:

- H003 Belmont (18CTs)
- H002 South Pine (5 CTs)
- H004 Mudgeeraba (4 CTs)
- H005 Woolooga (36CTs)
- H009 Palmwoods (6 CTs)
- H012 Mt England (29 CTs)
- H014 Middle Ridge (18 CTs)
- H038 Goodna (12 CTs)
- H062 Abermain (12 CTs)
- H063 Teebar Creek (21 CTs)
- S003 Greenbank.(21 CTs)

Design, procure, install, test and commission replacement of the 275kV CTs as listed in Attachment 1 for the eleven Powerlink substations.

- Design, manufacture and installation of structures utilising existing current transformer foundations.
- Removal of existing CTs.
- Installation, testing and commissioning of replacement to Powerlink standard.
- Modification of secondary systems, including cabling and monitoring system.
- Recovery and disposal of redundant current transformer units in accordance with Powerlink standard practice.

2.2 Exclusions

The following items are excluded from the Proposal Estimate:

- New marshalling kiosks and foundations are excluded.
- 8 Core CTs are excluded from the pricing as they cannot be procured, but this issue has been resolved using 7C CTs and modified designs.
- Extreme weather conditions are excluded.
- Installation of containers are not required going forward.
- FAM travel and accommodation costs are now included as overhead, not as direct project costs, and are therefore excluded from the project estimate.
- Rescheduling of planned works due to any future network constraints.
- Additional engineering controls (other than approved shielding barriers) that may be required for access has been excluded.

2.3 Assumptions

The following key assumptions were made for this Proposal Estimate:

- The new CTs will be replaced on the existing foundations with either new structures or adaptor plates.
- All CTs will be replaced under outage & outages are available to perform the works.
- Secondary Systems work is minimal including some replacement of CT Links and cabling within the existing marshalling kiosks.
- All Construction and Commissioning work is by Field Delivery or Energy Queensland and a dedicated work crew will be allocated to undertake the works.

- The project schedule and timeline are structured around the availability of a single field crew for the entire duration of the program.
- All resources required to deliver this project are available.
- The procurement cost includes the cost of the new CTs as per the current contract price for a 7 core CT, sufficient SF6 gas (per 52kg bottle) for the new CTs, new structures and allowance for new CT links and cable.
- There are no substation sites presenting operational difficulties that will require shielding plans to be put in place between several diameters
- No further containers are required to be installed under this project.

2.4 Project Interaction

Interactions with other projects and Engineering Task Request (ETRs) as follow:

Project Number and Description	Planned Commissioning Date	Comment
CP.02986 - CVT Replacement - South Phase 3 - Project Scope Report	Dec 2029	• 12 CVT to be replaced at H002 South Pine • 9 CVT to be replaced at H003 Belmont • 6 CVT to be replaced at H005 Woolooga • 6 CVT to be replaced at H012 Mt England • 7 CVT to be replaced at H014 Middle Ridge • 6 CVT to be replaced at H038 Goodna • 6 CVT to be replaced at H062 Abermain • 10 CVT to be replaced at H063 Teebar creek • 11 CVT to be replaced at S003 Greenbank
CP.02984 - CVT Replacement - South Phase 1 - Project Scope Report	Dec 2028	• 58 CVT to be replaced at H002 South Pine • 18 CVT to be replaced at H003 Belmont
CP.03105 - Replace 275kV CTs	June 2029	• CT Replacement works (Central)
CP.03106 - Replace 275kV CTs	Dec 2029	• CT Replacement works (Surat)
CP.03107 - Replace 275kV CTs	Dec 2029	• CT Replacement works (Metro)
CP.02036 - Belmont Substation 11kV Cable Replacement	Sep 2026	• Interaction on site between crews
CP.02932 Lower Wonga Light source Solar Farm Connection	Nov 2027	• Customer connection dependent on the clearing of IMB300 CTs
CP.02887 - H009 Palmwoods Replace Tx2 ABB IMBP145kV CT/CB442	June 2026	• Interaction on site between crews

CP.02726 - Mt England 275kV Secondary Systems Replacement	Dec 2027	• Project halted due to RAZ

2.5 Project Risk

Project risks identified during the proposal phase for the remaining scope of works is as follows:

No	Category	Risk Description	Impact	Consequence (L/M/H)	Likelihood	Cost ($)
1	People / Human	MSP Labour constraints	Moderate	M	Possible	$930,174
2	Natural Events	Abnormal Weather Events	Moderate	M	Possible	$1,163,690
3	Design	Design Constraints	Moderate	M	Possible	$463,141
4	Delivery	Outage Constraints	Moderate	M	Possible	$649,954
5	Delivery	Requirement of Live Subs	Moderate	M	Possible	$365,065
6	Delivery	Generation charges for outage support	Moderate	M	Possible	$1,257,097
Total Risk						**$4,829,121**

2.6 Lessons Learned

- Implementing effective programming and scheduling is crucial for the success of these CT replacement projects. The projects are coordinated as a program of works, with an interactive schedule that must accommodate varying priorities across different sites. Given the interdependency of the various sites, the system priorities may shift, necessitating flexibility and adaptability in the execution of tasks.
- Observations from the ETR indicate that efficiency has increased in several areas, such as preparation, material delivery, coordination of maintenance crews, and development of work plans. Additionally, the timely ordering of materials are necessary to prevent delays in site works.
- Incorporation of feedback from site into modified designs.
- Development of RAZ Entry work plans are crucial to the safe delivery of the program of works.
- The requirement of shielding and barriers to enable site works to proceed is required at several sites.

3. Project Financials

3.1 Project Estimate

3.1.1 Estimate Summary

Refer to Section 13 for further details. The estimated total shown below is inclusive of actual costs incurred to date. Stage 1 approvals have been granted to cover planned works until full approval is received in June 2026.

		Sub Total $	Total $
Estimate Class	3		
Estimate accuracy (+% / - %)	15% to 25%		
Base Estimate		$41,112,021	
[redacted]		[redacted]	
[redacted]			[redacted]
[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	
[redacted]			[redacted]
[redacted]			[redacted]

3.1.2 Asset Write-Off Table

Functional Location	Description	Asset	Sub-number	Book val.	Write-off %	Write-off Value	Currency
H002-C01-507-	275KV 7 COUPLER BAY	130455	0	74,892.29	10%	$ 7,489.23	AUD
H002-C01-809-	809 FEEDER BAY	114164	0	840,238.03	15%	$ 126,035.70	AUD
H003-C02-502-	275kV 2 COUPLER BAY	109282	0	749,012.15	15%	$ 112,351.82	AUD
H003-C02-817-	817 BLACKWALL FEEDER BAY	109283	0	909,432.38	15%	$ 136,414.86	AUD
H003-C06-506-	275kV 6 COUPLER BAY	113154	0	983,299.31	15%	$ 147,494.90	AUD
H003-C06-829-	829 LOGANLEA FEEDER BAY	113156	0	1,364,050.35	15%	$ 204,607.55	AUD
H003-C06-8837	8837 MURARRIE FEEDER BAY	113155	0	1,469,734.66	15%	$ 220,460.20	AUD
H003-C07-546-	275kV 6 TRANSF BAY	109284	0	1,933,735.95	15%	$ 290,060.39	AUD
H004-C03-836-	836 FEEDER BAY	104471	0	302,138.20	5%	$ 15,106.91	AUD
H004-C51-584-	275KV 4 CAPACITOR BAY	108580	0	725,853.39	15%	$ 108,878.01	AUD
H005-C01-501-	275kV 1 COUPLER BAY	118040	0	1,024,219.78	15%	$ 153,632.97	AUD
H005-C01-813-	815 FEEDER BAY	118041	0	1,384,276.65	15%	$ 207,641.50	AUD
H005-C02-502-	275kV 2 COUPLER BAY	118042	0	1,024,219.78	15%	$ 153,632.97	AUD
H005-C02-807-	807 FEEDER BAY	118043	0	1,635,150.94	15%	$ 245,272.64	AUD
H005-C02-814-	816 FEEDER BAY	118044	0	1,384,276.66	15%	$ 207,641.50	AUD
H005-C03-503-	275kV 3 COUPLER BAY	118045	0	1,024,219.78	15%	$ 153,632.97	AUD
H005-C03-810-	810 FEEDER BAY	118046	0	1,674,148.79	15%	$ 251,122.32	AUD
H005-C03-8850	8850 FEEDER BAY	118047	0	1,461,575.90	15%	$ 219,236.39	AUD
H005-C04-504-	275kV 4 COUPLER BAY	118048	0	1,426,211.06	15%	$ 213,931.66	AUD
H005-C04-545-	275kV 5 TRANSFORMER BAY	118049	0	3,178,854.25	15%	$ 476,828.14	AUD
H005-C05-505-	275kV 5 COUPLER BAY	118051	0	1,426,211.06	15%	$ 213,931.66	AUD
H005-C07-584-	275KV 4 STATIC COMPENSATOR BAY	108619	0	1,468,319.08	15%	$ 220,247.86	AUD
H009-C01-583-	275kV 3 CAPACITOR BAY	110336	0	694,119.70	15%	$ 104,117.96	AUD
H009-C02-810-	810 FEEDER BAY	130117	0	469,170.61	15%	$ 70,375.59	AUD
H012-C01-581-	275KV 1 CAPACITOR BAY	109914	0	720,360.90	15%	$ 108,054.14	AUD
H012-C01-582-	275KV 2 CAPACITOR BAY	117500	0	1,274,581.35	15%	$ 191,187.20	AUD
H012-C02-823-	823 FEEDER BAY	104847	0	59,928.76	15%	$ 8,989.31	AUD
H012-C03-824-	824 FEEDER BAY	104849	0	59,928.75	15%	$ 8,989.31	AUD
H012-C04-837-	837 BLANK FEEDER BAY	104852	0	80,547.54	5%	$ 4,027.38	AUD

H012-C04-8823	8823 BLANK FEEDER BAY	104851	0	81,020.13	5%	$ 4,051.01	AUD
H012-C05-505-	275KV 5 COUPLER BAY	104853	0	30,610.05	15%	$ 4,591.51	AUD
H012-C05-802-	802 FEEDER BAY	104854	0	173,159.08	15%	$ 25,973.86	AUD
H012-C05-8812	8812 FEEDER BAY	104855	0	45,114.35	15%	$ 6,767.15	AUD
H012-C06-506-	275KV 6 COUPLER BAY	104859	0	30,571.80	15%	$ 4,585.77	AUD
H012-C06-825-	825 FEEDER BAY	104860	0	41,300.37	15%	$ 6,195.06	AUD
H014-C03-8848	275KV SPARE 3 BAY	111237	0	256,308.49	0%	$ -	AUD
H014-C03-8848	275kV 8848 FEEDER BAY	115679	0	1,588,178.90	15%	$ 238,226.84	AUD
H014-C04-504-	275kV 4 COUPLER BAY	115680	0	709,506.31	15%	$ 106,425.95	AUD
H014-C04-545-	275kV 5 TRANSFORMER BAY	115681	0	1,096,990.58	15%	$ 164,548.59	AUD
H014-C04-8849	275kV 8849 FEEDER BAY	115682	0	1,622,902.61	15%	$ 243,435.39	AUD
H014-M03-3CAP	330kV 3 CAPACITOR 120MVAR	120517	0	466,573.65	15%	$ 69,986.05	AUD
H014-M04-4CAP	330kV 4 CAPACITOR 120MVAR	120518	0	466,573.65	15%	$ 69,986.05	AUD
H038-C04-8819	8826 SWANBANK E GOODNA 275KV FEEDER BA	113343	0	1,000,959.84	15%	$ 150,143.98	AUD
H038-C07-507-	275kV 7 COUPLER BAY	113348	0	707,357.57	15%	$ 106,103.64	AUD
H038-C07-541-	275kV 1 TRANSFORMER BAY	113349	0	1,303,114.85	15%	$ 195,467.23	AUD
H038-C07-8842	275kV 8842 FEEDER BAY	113350	0	1,000,959.84	15%	$ 150,143.98	AUD
H062-C01-501-	275kV 1 COUPLER BAY	116315	0	900,793.08	15%	$ 135,118.96	AUD
H062-C01-8823	8823 MT ENGLAND 275kV FEEDER BAY	116317	0	1,195,316.38	15%	$ 179,297.46	AUD
H062-C02-544-	275KV 4 TRANSFORMER BAY	116319	0	1,547,592.47	15%	$ 232,138.87	AUD
H062-C02-8844	8844 GREENBANK 275kV FEEDER BAY	116320	0	1,188,315.31	15%	$ 178,247.30	AUD
H063-C02-502-	275kV 3 COUPLER BAY	115089	0	879,965.49	15%	$ 131,994.82	AUD
H063-C02-541-	275kV 1 TRANSFORMER BAY	115090	0	1,711,272.20	15%	$ 256,690.83	AUD
H063-C02-819-	826 GIN GIN 275kV FEEDER BAY	115091	0	1,458,061.33	15%	$ 218,709.20	AUD
H063-C03-503-	275kV 4 COUPLER BAY	115092	0	879,965.49	15%	$ 131,994.82	AUD
H063-C03-542-	275kV 2 TRANSFORMER BAY	115093	0	1,711,272.20	15%	$ 256,690.83	AUD
H063-C05-505-	275kV 5 COUPLER BAY	115097	0	879,965.49	15%	$ 131,994.82	AUD
H063-C05-8850	8850 WOOLOOGA 275kV FEEDER BAY	115099	0	1,452,819.05	15%	$ 217,922.86	AUD
S003-C13-5013	275kV 13 COUPLER BAY	115690	0	1,175,435.70	15%	$ 176,315.36	AUD
S003-C13-8848	275kV 8848 FEEDER BAY	115692	0	1,597,285.92	15%	$ 239,592.89	AUD
S003-C14-5014	275kV 14 COUPLER BAY	115693	0	1,175,435.70	15%	$ 176,315.36	AUD
S003-C14-5811	275kV 11 STATIC COMPENSATOR BAY	115694	0	1,477,524.31	15%	$ 221,628.65	AUD
S003-C14-8849	275kV 8849 FEEDER BAY	115695	0	1,597,285.98	15%	$ 239,592.90	AUD
S003-C15-585-	275kV 5 CAPACITOR BAY	115050	0	879,167.90	15%	$ 131,875.19	AUD
S003-C15-586-	275kV 6 CAPACITOR BAY	115051	0	879,167.91	15%	$ 131,875.19	AUD
					Total	$9,516,021.33	AUD

3.2 Approved Released Budget

The approved release budget to execute the project is as follows:

	Total $	Control Management
Project Estimate	$43,162,576	Project Manager & Sponsor
Project Allowance	$8,157,182	Project Sponsor
Project Release Budget	$51,319,758	Project Sponsor

3.3 Planned Costs (Forecasted Cash Flow)

Description	SP1 - Replacement of 12 X 275kV CTS: Actual Cost: 2 Southern Sites		SP2 - Replacement of 170 X 275kV CTs to 11 SouthernSites		TOTAL CP.03107 ESTIMATE	
Financial Year	Unescalated Cost $	Escalated Cost $	Unescalated Cost $	Escalated Cost $	Unescalated Cost $	Escalated Cost $
To June 2026	2,376,668	2,376,668	9,160,710	9,160,710	11,537,378	11,537,378
To June 2027			9,596,000	9,912,668	9,596,000	9,912,668
To June 2028			9,596,000	10,210,048	9,596,000	10,210,048
To June 2029			7,175,549	7,871,389	7,175,549	7,871,389
To June 2030			3,094,879	3,500,246	3,094,879	3,500,246
To June 2031			112,217	130,849	112,217	130,849
Total	**2,376,668**	**2,376,668**	**38,735,353**	**40,785,908**	**41,112,021**	**43,162,576**

4. Project Planning Strategy

4.1 Milestones

The following milestones are required by the project team to deliver the project:

Milestones	Planned Dates
Class 3 Estimate Submitted	29/08/2025
NBD Review Completion	20/11/2025
RIT – Process Complete	04/06/2026
Project Approval (issue of PAN)	05/06/2026
Project Commissioning Date	30/06/2029

4.2 Project Staging

The high-level project staging are as follows:

Stage	Activity/Stage Description	High Level Timing
All	Design and Procurement	Jun 2025 to April 2029
1	H012 Mt England	Aug 2025 to Aug 2025
2	H003 Belmont	Oct 2025 to Nov 2025
3	H009 Palmwoods	Jan 2026 to March 2026
4	S003 Greenbank	Jan 2026 to Aug 2026
5	H002 South Pine	Feb 2026 to Feb 20206
6	H004 Mudgeeraba	Feb 2026 to March 2026
7	H005 Woolooga	April 2026 to March 2026
8	H012 Mt England	June 2026 to June 2026
9	H038 Goodna	April 2026 to April 2026
10	H062 Abermain	Nov 2026 to Dec 20263
11	H012 Mt England	Feb 2027 to June 2027
12	H014 Middle Ridge	July 2027 to Aug 2028

13	H063 Teebar Creek	Oct 2028 to April 2029

4.3 Project Schedule

Please see Project Server for proposed project schedule:

4.4 Network Impacts and Outage Planning

Accessing the Network for the staging and commissioning of the project works is required to be planned to reduce an impact to the network for the Project commissioning. This is to enable less effect to other Network operational requirements.

An outage plan is being developed by the Project Team as part of the project proposal on the likelihood of the outages required for this project.

4.5 Project Delivery Strategy

Strategy to deliver the project as follows:

Description	***Responsibility***							
	Main Site				***Remote End(s)***			
	Powerlink	***Contractor***	***MSP – O&SD***	***MSP - Ergon***	***Powerlink***	***Contractor***	***MSP – O&SD***	***MSP***
Primary Design Systems (PSD):								
Civil and Structural	☒	☐	☐	☐	☐	☐	☐	☐
Electrical	☒	☐	☐	☐	☐	☐	☐	☐
Secondary Systems Design (SSD):								
Automation (Circuitry and Systems Configurations)	☒	☐	☐	☐	☐	☐	☐	☐
Telecommunication System Design (TSD):								
Construction:								
Construction (support structures, plant and equipment installation and demolition Works)	☐	☐	☐	☐	☐	☐	☐	☐
Secondary Systems Installation (loose panel's installation, panel modification, IED replacement, etc.)	☐	☐	☒	☐	☐	☐	☐	☐
Testing and Commissioning:								
Factory Acceptance Test	☐	☐	☒	☐	☐	☐	☐	☐
Site Acceptance Test (partial)	☐	☐	☒	☐	☐	☐	☐	☐
System Cut Over and Commissioning	☐	☐	☒	☐	☐	☐	☐	☐

4.6 Procurement Strategy

The procurement strategy for services and selected items are listed below. All other services and items shall be procured in accordance with Powerlink's Procurement Standard.

Description	Procurement Method
Services:	
MSP – OSD	RFQ
MSP – Ergon	RFQ – Service Level Agreement
Primary Plant and Equipment:	
HV Plant and Equipment	Period Contractors
Structures	Standing Offer arrangement with preferred/preapproved suppliers
Hardware and fittings	Standing Offer arrangement with preferred/preapproved suppliers

5. References

The following documents are applicable to this Project Management Plan.

Document name and hyperlink		Version	Date
Project Scope Report		**V 1.0**	**Nov 24**

6. Attachment 1

6.1 List of CTs to be replaced under CP.03107

Site	Functional location	Equipment	Func. Loc. Desc.	Priority
H003 Belmont (18 CTs)	H003-C06-8837-88372CTA	20061327	8837 MURARRIE 275kV CT A	1
	H003-C06-8837-88372CTB	20061328	8837 MURARRIE 275kV CT B	1
	H003-C06-8837-88372CTC	20061329	8837 MURARRIE 275kV CT C	1
	H003-C02-502--5022CTA	20042979	2 COUPLER 275KV CB CT A	3
	H003-C02-502--5022CTB	20042980	2 COUPLER 275KV CB CT B	3
	H003-C02-502--5022CTC	20042981	2 COUPLER 275KV CB CT C	3
	H003-C02-817--8172CTA	20042982	817 BLACKWALL 275KV CB CT A	3
	H003-C02-817--8172CTB	20042983	817 BLACKWALL 275KV CB CT B	3
	H003-C02-817--8172CTC	20042984	817 BLACKWALL 275KV CB CT C	3
	H003-C06-506--5062CTA	20049719	6 COUPLER 275KV BKR/CT A	3
	H003-C06-506--5062CTB	20049720	6 COUPLER 275KV BKR/CT B	3
	H003-C06-506--5062CTC	20049721	6 COUPLER 275KV BKR/CT C	3
	H003-C06-829--8292CTA	20050027	829 LOGANLEA 275KV CB CT A	3
	H003-C06-829--8292CTB	20050028	829 LOGANLEA 275KV CB CT B	3
	H003-C06-829--8292CTC	20050029	829 LOGANLEA 275KV CB CT C	3
	H003-C07-546--5462CTA	20042987	6 TRANSFORMER 275kV BKR/CT A	3
	H003-C07-546--5462CTB	20042986	6 TRANSFORMER 275kV BKR/CT B	3
	H003-C07-546--5462CTC	20042985	6 TRANSFORMER 275kV BKR/CT C	3
H002 Southpine (5 CTs)	H002-C01-507--5072CTB	20056674	7 COUPLER 275kV CB CT B	3
	H002-C01-507--5072CTC	20050031	7 COUPLER 275kV CB CT C	3
	H002-C01-809--8092CTA	20063598	809 ROCKLEA 275KV CB CT A	3

Site	Functional location	Equipment	Func. Loc. Desc.	Priority
	H002-C01-809--8092CTB	20063597	809 ROCKLEA 275KV CB CT B	3
	H002-C01-809--8092CTC	20063611	809 ROCKLEA 275KV CB CT C	3
H004 Mudgeeraba (4CTs)	H004-C03-836--836CTB	20071496	836 GREENBANK 275KV CURRENT TRANSF B	3
	H004-C51-584--5842CTA	20041903	4 CAPACITOR 275KV CT A	3
	H004-C51-584--5842CTB	20041904	4 CAPACITOR 275KV CT B	3
	H004-C51-584--5842CTC	20041905	4 CAPACITOR 275KV CT C	3
H005 Woolooga (36 CTs)	H005-C01-501--501CTA	20055423	1 COUPLER 275kV CURRENT TRANSFORMER A	3
	H005-C01-501--501CTB	20055424	1 COUPLER 275kV CURRENT TRANSFORMER B	3
	H005-C01-501--501CTC	20055425	1 COUPLER 275kV CURRENT TRANSFORMER C	3
	H005-C01-813--8132CTA	20055438	F813/2 CALLIOPE RIVER 275kV CT A	3
	H005-C01-813--8132CTB	20055439	F813/2 CALLIOPE RIVER 275kV CT B	3
	H005-C01-813--8132CTC	20055440	F813/2 CALLIOPE RIVER 275kV CT C	3
	H005-C02-502--502CTA	20055432	2 COUPLER 275kV CURRENT TRANSFORMER A	3
	H005-C02-502--502CTB	20055433	2 COUPLER 275kV CURRENT TRANSFORMER B	3
	H005-C02-502--502CTC	20055434	2 COUPLER 275kV CURRENT TRANSFORMER C	3
	H005-C02-807--807CTA	20055426	807 SOUTH PINE 275kV CT A	3
	H005-C02-807--807CTB	20055427	807 SOUTH PINE 275kV CT B	3
	H005-C02-807--807CTC	20055428	807 SOUTH PINE 275kV CT C	3
	H005-C02-814--8142CTA	20055441	814 CALLIOPE RIVER TEE GIN GIN 275kV CTA	3
	H005-C02-814--8142CTB	20055442	814 CALLIOPE RIVER TEE GIN GIN 275kV CTB	3

Site	Functional location	Equipment	Func. Loc. Desc.	Priority
	H005-C02-814--8142CTC	20055443	814 CALLIOPE RIVER TEE GIN GIN 275kV CTC	3
	H005-C03-503--503CTA	20055435	3 COUPLER 275kV CURRENT TRANSFORMER A	3
	H005-C03-503--503CTB	20055436	3 COUPLER 275kV CURRENT TRANSFORMER B	3
	H005-C03-503--503CTC	20055437	3 COUPLER 275kV CURRENT TRANSFORMER C	3
	H005-C03-810--810CTA	20055414	810 PALMWOODS 275kV CT A	3
	H005-C03-810--810CTB	20055415	810 PALMWOODS 275kV CT B	3
	H005-C03-810--810CTC	20055416	810 PALMWOODS 275kV CT C	3
	H005-C03-8850-88502CTA	20055444	8850 TEEBAR CREEK 275kV CT A	3
	H005-C03-8850-88502CTB	20055445	8850 TEEBAR CREEK 275kV CT B	3
	H005-C03-8850-88502CTC	20055446	8850 TEEBAR CREEK 275kV CT C	3
	H005-C04-504--504CTA	20055417	4 COUPLER 275kV CURRENT TRANSFORMER A	3
	H005-C04-504--504CTB	20055418	4 COUPLER 275kV CURRENT TRANSFORMER B	3
	H005-C04-504--504CTC	20055419	4 COUPLER 275kV CURRENT TRANSFORMER C	3
	H005-C04-545--545CTA	20055420	5 TRANSFORMER 275kV CIRCUIT BREAKER CT A	3
	H005-C04-545--545CTB	20055421	5 TRANSFORMER 275kV CIRCUIT BREAKER CT B	3
	H005-C04-545--545CTC	20055422	5 TRANSFORMER 275kV CIRCUIT BREAKER CT C	3
	H005-C05-505--505CTA	20055429	5 COUPLER 275kV CURRENT TRANSFORMER A	3

Site	Functional location	Equipment	Func. Loc. Desc.	Priority
	H005-C05-505--505CTB	20055430	5 COUPLER 275kV CURRENT TRANSFORMER B	3
	H005-C05-505--505CTC	20055431	5 COUPLER 275kV CURRENT TRANSFORMER C	3
	H005-C07-584--584CTA	20055168	4 STATIC COMPENSATOR 275KV CTA	3
	H005-C07-584--584CTB	20055169	4 STATIC COMPENSATOR 275KV CTB	3
	H005-C07-584--584CTC	20055170	4 STATIC COMPENSATOR 275KV CTC	3
H009 Palmwoods (6 CTs)	H009-C01-583--5832CTA	20044981	3 CAPACITOR 275KV CT A	3
	H009-C01-583--5832CTB	20044982	3 CAPACITOR 275KV CT B	3
	H009-C01-583--5832CTC	20044984	3 CAPACITOR 275KV CT C	3
	H009-C02-810--8102CTA	20071494	810 WOOLOOGA 275KV CT A	3
	H009-C02-810--8102CTB	20071491	810 WOOLOOGA 275KV CT B	3
	H009-C02-810--8102CTC	20063614	810 WOOLOOGA 275KV CT C	3
H012 Mt England (29 CTs)	H012-C01-581--5812CTA	20044377	1 CAPACITOR 275KV CT A	3
	H012-C01-581--5812CTB	20044378	1 CAPACITOR 275KV CT B	3
	H012-C01-581--5812CTC	20044379	1 CAPACITOR 275KV CT C	3
	H012-C01-582--5822CTA	20058505	2 CAPACITOR 275kV CT A	3
	H012-C01-582--5822CTB	20058506	2 CAPACITOR 275kV CT B	3
	H012-C01-582--5822CTC	20058507	2 CAPACITOR 275kV CT C	3
	H012-C02-823--8232CTA	20039365	CT 823 WIVENHOE PS UNIT 1 275KV BKR/CT A	3
	H012-C02-823--8232CTB	20039363	CT 823 WIVENHOE PS UNIT 1 275KV BKR/CT B	3
	H012-C02-823--8232CTC	20039362	CT 823 WIVENHOE PS UNIT 1 275KV BKR/CT C	3
	H012-C03-824--8242CTA	20039364	CT 824 WIVENHOE PS UNIT 2 275KV BKR/CT A	3

Site	Functional location	Equipment	Func. Loc. Desc.	Priority
	H012-C03-824--8242CTB	20039361	CT 824 WIVENHOE PS UNIT 2 275KV BKR/CT B	3
	H012-C03-824--8242CTC	20039360	CT 824 WIVENHOE PS UNIT 2 275KV BKR/CT C	3
	H012-C04-837--8372CTB	20049728	837 TARONG 275kV CB CURRENT TRANS B	3
	H012-C04-8823-8823CTB	20050030	8823 ABERMAIN 275KV CURRENT TRANSF B	3
	H012-C05-505--5052CTA	20053007	5 COUPLER 275KV BKR/CT A	3
	H012-C05-505--5052CTB	20063599	CT 5 COUPLER 275KV BKR/CT B	3
	H012-C05-505--5052CTC	20063600	CT 5 COUPLER 275KV BKR/CT C	3
	H012-C05-802--8022CTA	20063609	802 BLACKWALL 275KV BKR/CT A	3
	H012-C05-802--8022CTB	20053006	802 BLACKWALL 275KV BKR/CT B	3
	H012-C05-802--8022CTC	20063610	802 BLACKWALL 275KV BKR/CT C	3
	H012-C05-8812-88122CTA	20063606	8812 TARONG 275kV BKR/CT A	3
	H012-C05-8812-88122CTB	20063607	8812 TARONG 275kV BKR/CT B	3
	H012-C05-8812-88122CTC	20063608	8812 TARONG 275kV BKR/CT C	3
	H012-C06-506--5062CTA	20063591	CT 6 COUPLER 275KV BKR/CT A	3
	H012-C06-506--5062CTB	20063592	CT 6 COUPLER 275KV BKR/CT B	3
	H012-C06-506--5062CTC	20063593	CT 6 COUPLER 275KV BKR/CT C	3
	H012-C06-825--8252CTA	20063603	CT 825 SOUTH PINE 275KV BKR/CT A	3
	H012-C06-825--8252CTB	20063604	CT 825 SOUTH PINE 275KV BKR/CT B	3
	H012-C06-825--8252CTC	20063605	CT 825 SOUTH PINE 275KV BKR/CT C	3
H014 Middle Ridge	H014-C03-8848-88482CTA	20056134	8848 GREENBANK 275kV CT A	3

Site	Functional location	Equipment	Func. Loc. Desc.	Priority
(18 CTs)	H014-C03-8848-88482CTB	20056135	8848 GREENBANK 275kV CT B	3
	H014-C03-8848-88482CTC	20056136	8848 GREENBANK 275kV CT C	3
	H014-C04-504--5042CTA	20056140	4 COUPLER 275kV CB CT A	3
	H014-C04-504--5042CTB	20056141	4 COUPLER 275kV CB CT B	3
	H014-C04-504--5042CTC	20056142	4 COUPLER 275kV CB CT C	3
	H014-C04-545--5452CTA	20056143	5 TRANSFORMER 275KV BKR/CT A	3
	H014-C04-545--5452CTB	20056144	5 TRANSFORMER 275KV BKR/CT B	3
	H014-C04-545--5452CTC	20057974	5 TRANSFORMER 275KV BKR/CT C	3
	H014-C04-8849-88492CTA	20056137	8849 GREENBANK 275kV CT A	3
	H014-C04-8849-88492CTB	20056138	8849 GREENBANK 275kV CT B	3
	H014-C04-8849-88492CTC	20056139	8849 GREENBANK 275kV CT C	3
	H014-M03-3CAP-3CAPCTA	20070272	3 CAPACITOR 330kV BALANCE CT A	3
	H014-M03-3CAP-3CAPCTB	20070273	3 CAPACITOR 330kV BALANCE CT B	3
	H014-M03-3CAP-3CAPCTC	20070274	3 CAPACITOR 330kV BALANCE CT C	3
	H014-M04-4CAP-4CAPCTA	20070275	4 CAPACITOR 330kV BALANCE CT A	3
	H014-M04-4CAP-4CAPCTB	20070276	4 CAPACITOR 330kV BALANCE CT B	3
	H014-M04-4CAP-4CAPCTC	20070277	4 CAPACITOR 330kV BALANCE CT C	3
H038 Goodna	H038-C04-8819-8819CTA	20052552	8819 BLACKWALL 275KV CURRENT TRANSF A	Note 1

Site	Functional location	Equipment	Func. Loc. Desc.	Priority
(9 CTs)	H038-C04-8819-8819CTB	20052553	8819 BLACKWALL 275KV CURRENT TRANSF B	Note 1
	H038-C04-8819-8819CTC	20052554	8819 BLACKWALL 275KV CURRENT TRANSF C	Note 1
	H038-C07-541--5412CTA	20052564	1 TRANSFORMER 275kV CB CTA	3
	H038-C07-541--5412CTB	20052565	1 TRANSFORMER 275kV CB CTB	3
	H038-C07-541--5412CTC	20052566	1 TRANSFORMER 275kV CB CTC	3
	H038-C07-507--5072CTA		7 COUPLER 275kV CB CT A	Note 1
	H038-C07-507--5072CTB		7 COUPLER 275kV CB CT B	Note 1
	H038-C07-507--5072CTC		7 COUPLER 275kV CB CT C	Note 1
	H038-C07-8842-88422CTA	20052558	8842 BELMONT 275kV CB CT A	3
	H038-C07-8842-88422CTB	20052559	8842 BELMONT 275kV CB CT B	3
	H038-C07-8842-88422CTC	20052560	8842 BELMONT 275kV CB CT C	3
H062 Abermain (12 CTs)	H062-C01-501--5012CTA	20058804	1 COUPLER 275kV CT A	3
	H062-C01-501--5012CTB	20058805	1 COUPLER 275kV CT B	3
	H062-C01-501--5012CTC	20058806	1 COUPLER 275kV CT C	3
	H062-C01-8823-88232CTA	20058807	8823 MT ENGLAND 275kV CT A	3
	H062-C01-8823-88232CTB	20058808	8823 MT ENGLAND 275kV CT B	3
	H062-C01-8823-88232CTC	20058809	8823 MT ENGLAND 275kV CT C	3
	H062-C02-544--5442CTA	20058813	4 TRANSFORMER 275KV CURRENT TRANSF A	3
	H062-C02-544--5442CTB	20058814	4 TRANSFORMER 275KV CURRENT TRANSF B	3

Site	Functional location	Equipment	Func. Loc. Desc.	Priority
	H062-C02-544--5442CTC	20058815	4 TRANSFORMER 275KV CURRENT TRANSF C	3
	H062-C02-8844-88442CTA	20058801	8844 BLACKSTONE 275kV CT A	3
	H062-C02-8844-88442CTB	20058802	8844 BLACKSTONE 275kV CT B	3
	H062-C02-8844-88442CTC	20058803	8844 BLACKSTONE 275kV CT C	3
H063 Teebar Creek (21 CTs)	H063-C02-502--5022CTA	20053823	2 COUPLER 275kV CB CT A	3
	H063-C02-502--5022CTB	20053824	2 COUPLER 275kV CB CT B	3
	H063-C02-502--5022CTC	20053825	2 COUPLER 275kV CB CT C	3
	H063-C02-541--5412CTA	20053826	1 TRANSFORMER 275kV BKR CT A	3
	H063-C02-541--5412CTB	20053827	1 TRANSFORMER 275kV BKR CT B	3
	H063-C02-541--5412CTC	20053828	1 TRANSFORMER 275kV BKR CT C	3
	H063-C02-819--8192CTA	20053820	819 GIN GIN 275kV CB CT A	3
	H063-C02-819--8192CTB	20053821	819 GIN GIN 275kV CB CT B	3
	H063-C02-819--8192CTC	20053822	819 GIN GIN 275kV CB CT C	3
	H063-C03-503--5032CTA	20053829	3 COUPLER 275kV CB CT A	3
	H063-C03-503--5032CTB	20053830	3 COUPLER 275kV CB CT B	3
	H063-C03-503--5032CTC	20053831	3 COUPLER 275kV CB CT C	3
	H063-C03-542--5422CTA	20053832	2 TRANSFORMER 275kV BKR CT A	3
	H063-C03-542--5422CTB	20056450	2 TRANSFORMER 275kV BKR CT B	3
	H063-C03-542--5422CTC	20053834	2 TRANSFORMER 275kV BKR CT C	3
	H063-C05-505--5052CTA	20053838	5 COUPLER 275kV CB CT A	3
	H063-C05-505--5052CTB	20053839	5 COUPLER 275kV CB CT B	3
	H063-C05-505--5052CTC	20053840	5 COUPLER 275kV CB CT C	3

Site	Functional location	Equipment	Func. Loc. Desc.	Priority
	H063-C05-8850-88502CTA	20053835	8850 WOOLOOGA 275kV CB CT A	3
	H063-C05-8850-88502CTB	20053836	8850 WOOLOOGA 275kV CB CT B	3
	H063-C05-8850-88502CTC	20053837	8850 WOOLOOGA 275kV CB CT C	3
S003 Greenbank (21 CTs)	S003-C13-5013-50132CTA	20057969	13 COUPLER 275kV CTA	3
	S003-C13-5013-50132CTB	20057970	13 COUPLER 275kV CTB	3
	S003-C13-5013-50132CTC	20057971	13 COUPLER 275kV CTC	3
	S003-C13-8848-88482CTA	20057966	8848 MIDDLE RIDGE 275kV CT A	3
	S003-C13-8848-88482CTB	20057967	8848 MIDDLE RIDGE 275kV CT B	3
	S003-C13-8848-88482CTC	20057968	8848 MIDDLE RIDGE 275kV CT C	3
	S003-C14-5014-50142CTA	20057975	14 COUPLER 275kV CTA	3
	S003-C14-5014-50142CTB	20057972	14 COUPLER 275kV CTB	3
	S003-C14-5014-50142CTC	20057976	14 COUPLER 275kV CTC	3
	S003-C14-5811-58112CTA	20058075	11 SVC 275kV CURRENT TRANSFORMER A	3
	S003-C14-5811-58112CTB	20058076	11 SVC 275kV CURRENT TRANSFORMER B	3
	S003-C14-5811-58112CTC	20058077	11 SVC 275kV CURRENT TRANSFORMER C	3
	S003-C14-8849-88492CTA	20057977	8849 MIDDLE RIDGE 275kV CT A	3

Site	Functional location	Equipment	Func. Loc. Desc.	Priority
	S003-C14-8849-88492CTB	20057973	8849 MIDDLE RIDGE 275kV CT B	3
	S003-C14-8849-88492CTC	20056145	8849 MIDDLE RIDGE 275kV CT C	3
	S003-C15-585--585CTA	20054187	5 CAPACITOR 275kV CURRENT TRANSFORMER A	3
	S003-C15-585--585CTB	20054188	5 CAPACITOR 275kV CURRENT TRANSFORMER B	3
	S003-C15-585--585CTC	20054189	5 CAPACITOR 275kV CURRENT TRANSFORMER C	3
	S003-C15-586--586CTA	20054190	6 CAPACITOR 275kV CURRENT TRANSFORMER A	3
	S003-C15-586--586CTB	20054191	6 CAPACITOR 275kV CURRENT TRANSFORMER B	3
	S003-C15-586--586CTC	20054192	6 CAPACITOR 275kV CURRENT TRANSFORMER C	3