Transmission Revenue Reset 2027 to 2032 (TRR 2027-32)

Planning Report: Thomastown Terminal Station 66 kV Circuit Breaker Replacement Project

Date: September 2026

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1. Executive summary

Thomastown Terminal Station (TTS) is an important terminal station that forms part of the 220kV transmission network in Metropolitan Melbourne. TTS is located in the north of greater Melbourne. It operates at 220/66 kV and supplies approximately 177,477[1] Jemena Electricity Networks and AusNet Electricity Services (distribution) customers in the Thomastown, Coburg, Preston, Watsonia, North Heidelberg, Lalor, Coolaroo and Broadmeadows areas. There are several assets at TTS that are in poor condition including eleven 66kV circuit breakers, a 220kV circuit breaker, the associated disconnectors, and 6 voltage transformers. The risk of a failure of this switchgear has been forecasted to increase over time. The project also includes demolition of the old control room building which is in poor condition.

The 66 kV switchgear currently limits the fault level at TTS to 23.4kA[2] and during high fault level operating conditions one of the five 220/66 kV transformer must be removed from service. This introduces a supply risk to customers supplied from TTS 66 kV, which will be removed once the circuit breakers have been replaced.

The project delivery lead time is estimated to be four years, and AusNet approved the business case in December 2025. The project is now in the delivery phase with an expected completion date of December 2028. The $43.0 million investment is economic by 2026 and has been prioritised to address safety and supply risk given the condition and age of the assets. This represents a prudent asset management decision, reinforced by the identification of a major defect in the No. 1 220 kV Capacitor Bank circuit breaker in June 2026. The capacitor bank has been removed from service pending investigation. As like-for-like spares are not available, the use of a strategic spare for emergency replacement would require a minimum of 4 months due to requirement of redesign, additional materials and construction.

The economic assessment concluded that investment is needed at TTS to maintain a reliable transmission service to this important terminal station given the role that it plays to support demand in northern metropolitan Melbourne.

Of the options assessed, Option 1 - Replace CBs and switchgear - maximises net economic value and is therefore the preferred option. The outcome is robust to variations in key input assumptions, including future market impact costs and forecast uncertainty, and remains the preferred option across the sensitivity scenarios considered. To test forecast uncertainty, the investment has been assessed by adopting a 20-year asset life, rather than the assumed 45-year service life. It shifts the economically efficient investment year but remains economic inside the 2027 to 2032 regulatory control period. This assessment provides strong evidence that the timing of the project during the 2027 to 2032 regulatory control period is not dependent on the inclusion of long-dated benefits and is primarily driven by benefits that arise within the near- to medium-term planning horizon. Importantly, the project continues to deliver positive net economic benefits and remains economically justified within the 2027-32 regulatory control period.

2. Background

TTS is located in the north of greater Melbourne. It supplies approximately 177,477[1] Jemena Electricity Networks and AusNet Electricity Services customers in the Thomastown, Coburg, Preston, Watsonia, North Heidelberg, Lalor, Coolaroo and Broadmeadows areas. TTS also has connections to Keilor (KTS), South Morang (SMTS), Templestowe (TSTS) and Brunswick (BTS) 220kV terminal stations.

[1] As per 2023 Transmission Connection Planning Report
[2] As per 2024 AEMO Annual Fault Level Report

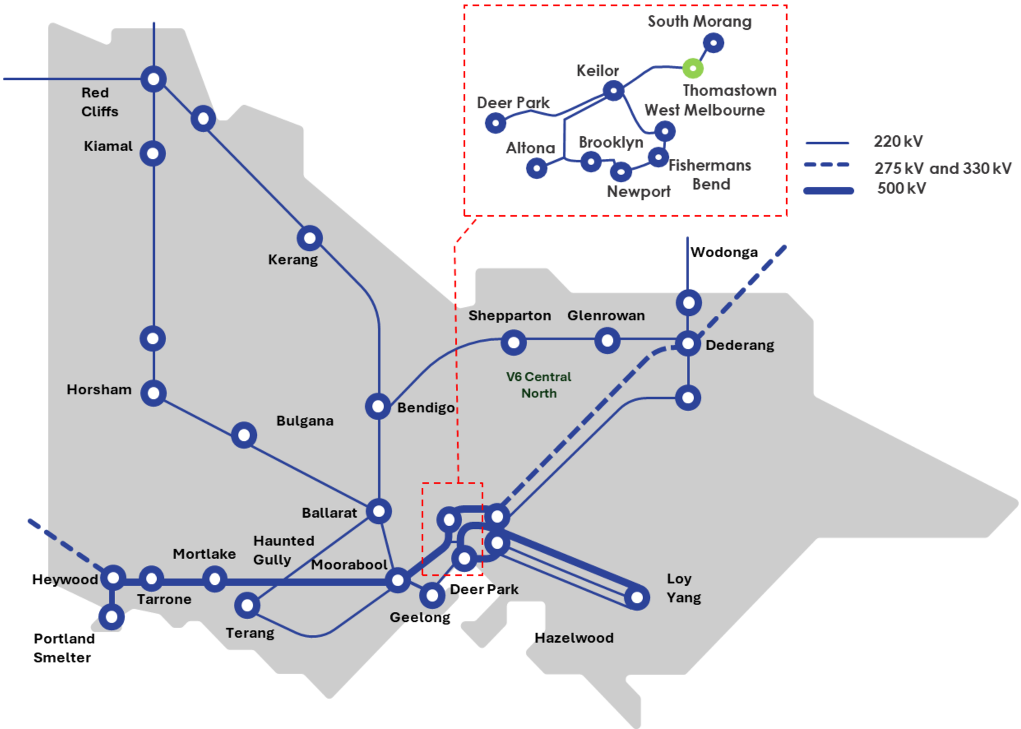


Figure 1: Victorian main transmission system

Asset Health

The following assets have been identified to be in poor condition at TTS.

Table 1: Poor condition assets at TTS

Asset Class	FLOC Description	Age as of 2026	Voltage (kV)
Circuit Breakers	TT 2 66kV FDR CB	59	66
	CN 66kV FDR CB	58	66
	WT 66kV FDR CB	59	66
	PTN 66kV FDR CB	59	66
	BMS 66kV FDR CB	58	66
	1-4 66kV B/T CB	58	66
	B4 TR 66kV CB	58	66
	TT 1 66kV FDR CB	59	66
	2-3 66kVkV B/T CB	58	66
	NH/NEI 66kV FDR CB	37	66
	EP 66kV FDR CB	37	66
	1 220kV CAP BK CB	35	220
Voltage Transformers	1 66kV BUS CVT R/PH	57	66
	1 66kV BUS CVT W/PH	57	66
	1 66kV BUS CVT B/PH	57	66
	B4 TR 66kV VT	59	66
	4 66kV BUS VT	59	66
Disconnectors	1 EXTN-4 66kV B/T CB 1 BUS EXTN/S ISOL	60	66
	1-1 EXTN 66kV B/T ISOL	47	66
	1-4 66kV B/T CB 4 B/S ISOL	60	66
	1-4 66kV B/T CB SYNCH VT FUSED ISOL	60	66

	2-3 66kV B/T CB 2 B/S ISOL	60	66
	2-3 66kV B/T CB 3 B/S ISOL	60	66
	B1 TR 66kV CB ISOL	39	66
	B4 TR 66kV CB ISOL	60	66
	BMS 66kV FDR CB B/S ISOL	60	66
	BMS 66kV FDR CB FDR/S ISOL	60	66
	CN 66kV FDR CB B/S ISOL	60	66
	CN 66kV FDR CB FDR/S ISOL	60	66
	EPN 66kV FDR CB B/S ISOL	60	66
	PTN 66kV FDR CB FDR/S ISOL	60	66
	SUB PTN FDR CB BUS SIDE	60	66
	TT 1 66kV FDR CB B/S ISOL	60	66
	TT 1 66kV FDR CB FDR/S ISOL	60	66
	TT 2 66kV FDR CB B/S ISOL	60	66
	TT 2 66kV FDR CB FDR/S ISOL	60	66
	WT 66kV FDR CB B/S ISOL	60	66
	WT 66kV FDR CB FDR/S ISOL	60	66
	NH/NEI 66kV FDR CB B/S ISOL	39	66
	NH/NEI 66kV FDR CB FDR/S ISOL	39	66
	EP 66kV FDR CB B/S ISOL	39	66
	EP 66kV FDR CB FDR/S ISOL	39	66

Replacement is being proposed as an economical solution to manage the risk of a failure of these assets. Table 2 shows the forecast failure rates.

Table 2: Asset forecast failure rates

Asset	2026	2027	2028	2029	2030	2031	2032
Circuit Breakers							
TT 2 66kV FDR CB	0.133	0.144	0.155	0.168	0.181	0.196	0.213
CN 66kV FDR CB	0.129	0.140	0.151	0.163	0.176	0.190	0.206
WT 66kV FDR CB	0.192	0.210	0.230	0.252	0.276	0.302	0.330
PTN 66kV FDR CB	0.145	0.156	0.168	0.180	0.194	0.210	0.226
BMS 66kV FDR CB	0.179	0.196	0.214	0.234	0.255	0.279	0.305
1-4 66kV B/T CB	0.202	0.222	0.244	0.267	0.293	0.322	0.352
B4 TR 66kV CB	0.149	0.164	0.180	0.198	0.218	0.239	0.263
TT 1 66kV FDR CB	0.149	0.161	0.174	0.187	0.202	0.219	0.237
2-3 66kV B/T CB	0.141	0.152	0.163	0.175	0.189	0.203	0.219
NH/NEI 66kV FDR CB	0.059	0.062	0.066	0.070	0.074	0.078	0.082
EP 66kV FDR CB	0.031	0.034	0.036	0.039	0.042	0.045	0.048
1 220kV CAP BK CB[3]	0.080	0.084	0.089	0.093	0.098	0.102	0.107
Voltage Transformers							
1 66kV BUS CVT R/PH	0.113	0.115	0.117	0.119	0.121	0.123	0.126
1 66kV BUS CVT W/PH	0.113	0.115	0.117	0.119	0.121	0.123	0.126
1 66kV BUS CVT B/PH	0.113	0.115	0.117	0.119	0.121	0.123	0.126
B4 TR 66kV VT	0.164	0.167	0.169	0.172	0.174	0.177	0.180

[3] The No. 1 220 kV Capacitor Bank circuit breaker was identified as having a major defect in June 2026 and was subsequently taken out of service.

4 66kV BUS VT	0.093	0.095	0.097	0.099	0.101	0.103	0.105
Disconnectors							
1 EXTN-4 66kV B/T CB 1 BUS EXTN/S ISOL	0.006	0.007	0.007	0.007	0.008	0.008	0.008
1-1 EXTN 66kV B/T ISOL	0.004	0.004	0.004	0.005	0.005	0.005	0.005
1-4 66kV B/T CB 4 B/S ISOL	0.006	0.007	0.007	0.007	0.008	0.008	0.008
1-4 66kV B/T CB SYNCH VT FUSED ISOL	0.004	0.004	0.004	0.004	0.004	0.005	0.005
2-3 66kV B/T CB 2 B/S ISOL	0.006	0.007	0.007	0.007	0.008	0.008	0.008
2-3 66kV B/T CB 3 B/S ISOL	0.006	0.007	0.007	0.007	0.008	0.008	0.008
B1 TR 66kV CB ISOL	0.211	0.223	0.235	0.247	0.260	0.272	0.285
B4 TR 66kV CB ISOL	0.006	0.007	0.007	0.007	0.008	0.008	0.008
BMS 66kV FDR CB B/S ISOL	0.006	0.007	0.007	0.007	0.008	0.008	0.008
BMS 66kV FDR CB FDR/S ISOL	0.006	0.007	0.007	0.007	0.008	0.008	0.008
CN 66kV FDR CB B/S ISOL	0.006	0.007	0.007	0.007	0.008	0.008	0.008
CN 66kV FDR CB FDR/S ISOL	0.006	0.007	0.007	0.007	0.008	0.008	0.008
EPN 66kV FDR CB B/S ISOL	0.006	0.007	0.007	0.007	0.008	0.008	0.008
PTN 66kV FDR CB FDR/S ISOL	0.207	0.215	0.223	0.230	0.238	0.246	0.254
SUB PTN FDR CB BUS SIDE	0.047	0.050	0.052	0.055	0.058	0.061	0.063
TT 1 66kV FDR CB B/S ISOL	0.006	0.007	0.007	0.007	0.008	0.008	0.008
TT 1 66kV FDR CB FDR/S ISOL	0.006	0.007	0.007	0.007	0.008	0.008	0.008
TT 2 66kV FDR CB B/S ISOL	0.006	0.007	0.007	0.007	0.008	0.008	0.008
TT 2 66kV FDR CB FDR/S ISOL	0.006	0.007	0.007	0.007	0.008	0.008	0.008
WT 66kV FDR CB B/S ISOL	0.006	0.007	0.007	0.007	0.008	0.008	0.008
WT 66kV FDR CB FDR/S ISOL	0.051	0.053	0.055	0.058	0.060	0.062	0.064
NH/NEI 66kV FDR CB B/S ISOL	0.007	0.007	0.007	0.008	0.008	0.009	0.009
NH/NEI 66kV FDR CB FDR/S ISOL	0.007	0.007	0.007	0.008	0.008	0.009	0.009
EP 66kV FDR CB B/S ISOL	0.007	0.007	0.007	0.008	0.008	0.009	0.009
EP 66kV FDR CB FDR/S ISOL	0.007	0.007	0.007	0.008	0.008	0.009	0.009

As per Table 1 above, all assets proposed for replacement have been in service for 35 to 60 years, reaching the end of their technical lifespans and showing significant insulation and mechanical degradation. These assets are either housed in porcelain or use porcelain insulators, which pose a significant health and safety risk to people and nearby assets. While essential for electrical insulation, porcelain components are inherently brittle and can shatter violently in the event of mechanical stress or internal faults. These assets are now considered technically obsolete, with no OEM support available. As a result, spare parts can only be sourced from decommissioned units, which significantly complicates maintenance and increases operational risk, therefore refurbishment is not considered as a viable option.

Failure of these 66kV CBs can cause 66kV feeder outages impacting customer supplies as shown in Figure 2 and Figure 3. Declining health of these CBs can also lead to catastrophic failure of the circuit breaker bushings which poses a significant safety risk. Replacement of 66kV CBs will remove the short circuit fault level constraints at TTS.

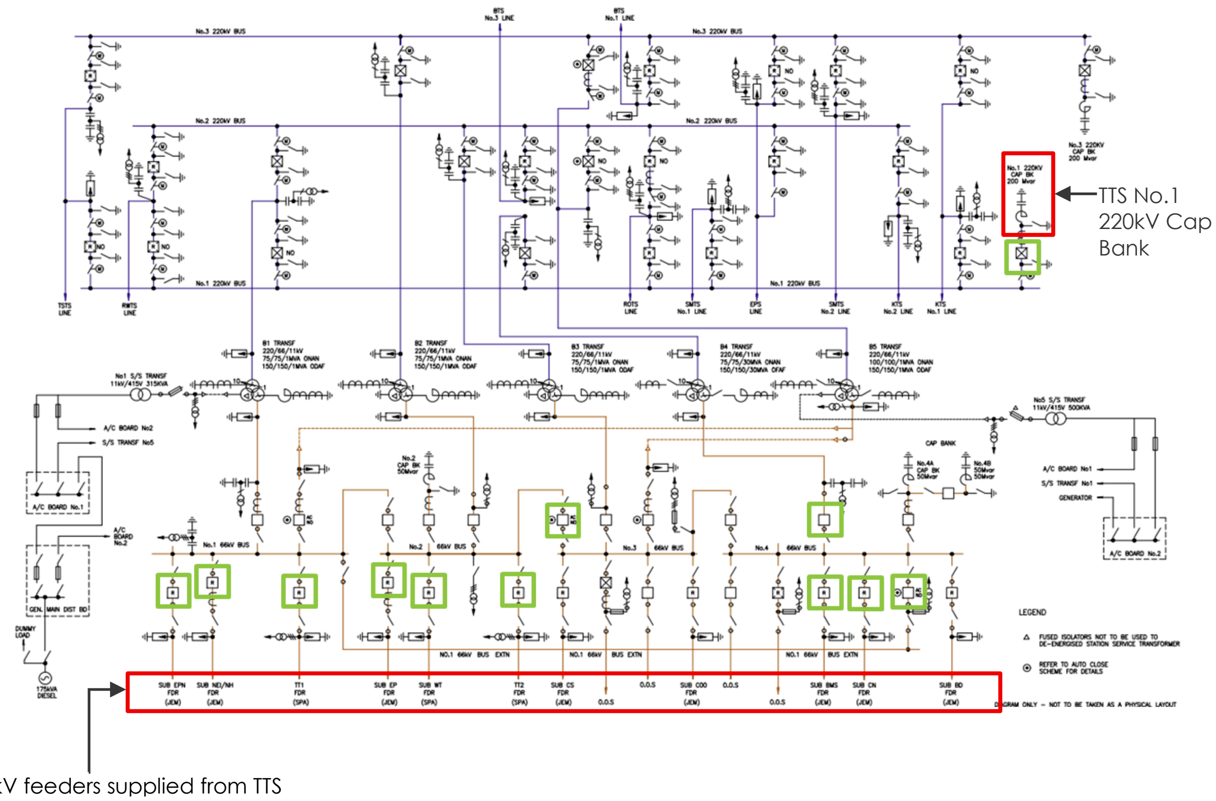
The No. 1 220 kV Capacitor Bank circuit breaker was identified as having a major defect in June 2026 and was subsequently taken out of service. This circuit breaker remains out of service pending investigation and assessment of corrective actions. An outage of this capacitor bank may result in increased wholesale market costs due to reduced voltage control capability.

AusNet's asset management approach is not based on a run-to-failure strategy. Instead, AusNet adopts a proactive maintenance and replacement philosophy, intervening before failure occurs where asset condition indicates an elevated risk. AusNet has reviewed and revised the failure rates for voltage transformer assets, by applying a Weighted Average Health Score methodology as described in AMS 01-09. This results in lower failure rates and more closely align to historical experience.

However, AusNet does not agree with EMCA's assertion that the failure rates for circuit breakers assumed in its modelling are higher than warranted by the condition of the assets sought to be replaced.

Recorded failures alone do not fully reflect the underlying risk profile of the asset population, as condition-based interventions prevent a proportion of potential failures from occurring. Notably, AusNet has recently undertaken offline testing and taken preventative replacement of three bushings at TTS due to signs of accelerated degradation before catastrophic failure could occur, with the replacements completed in 2025. This proactive replacement was undertaken in response to the failure of an asset of the same type at Brooklyn Terminal Station in 2023, prompting the risk associated with this asset to be reassessed to be higher. AusNet therefore considers that the Probability of Failure assumptions adopted in the initial submission remain representative of the underlying condition and risk profile of the TTS circuit breaker fleet.

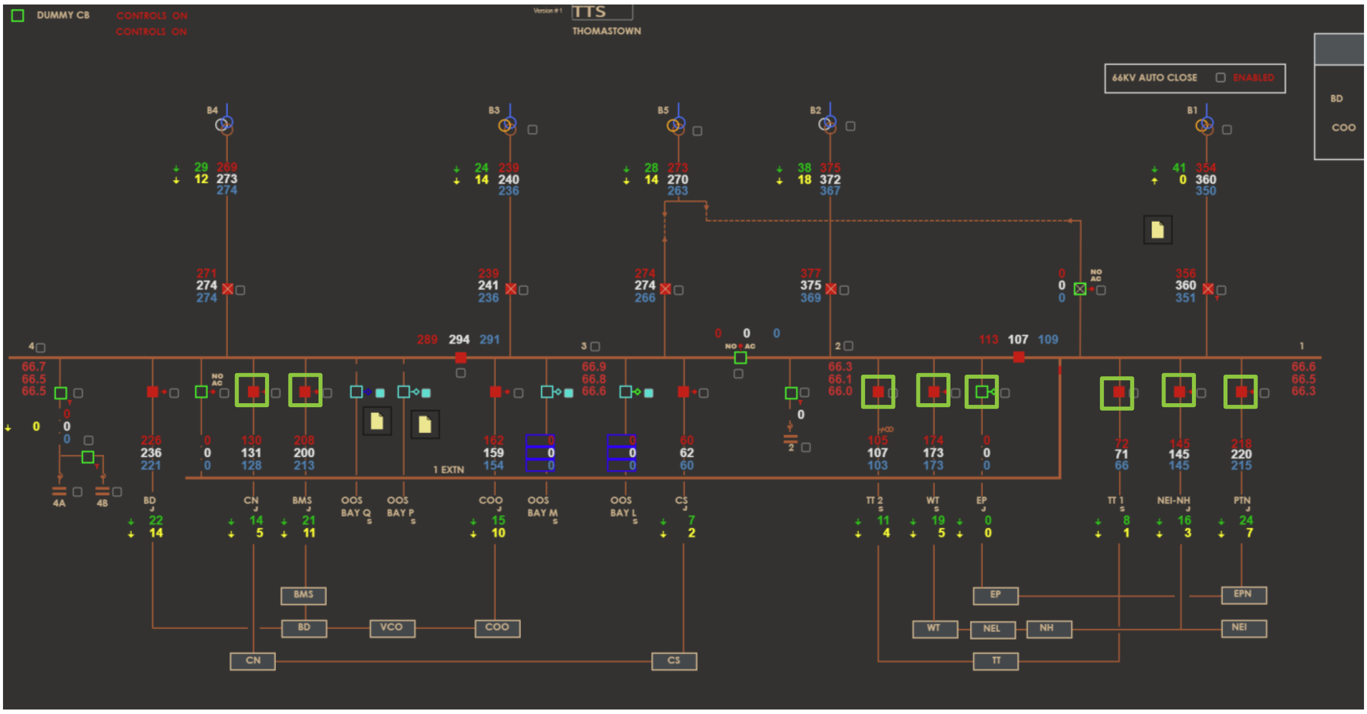
AusNet has submitted an updated Asset Condition Report for the TTS Circuit Breaker Replacement project as part of the Revised Proposal, to provide further detail in relation to these changes.



Legend:

Poor condition CBs at TTS

Figure 2: TTS Single Line Diagram



Legend:

Poor condition 66kV CBs at TTS related to 66kV feeder loops

Figure 3: TTS 66kV Feeder Loops

3. Identified need

TTS is part of the main transmission network, which provides major transmission services in Victoria. AusNet Services expects that these transmission services will continue to be required given the transmission network developments that are foreshadowed in AEMO's Integrated System Plan (ISP), Victorian Annual Planning Report (VAPR) and VicGrid's Victorian Transmission Plan (VTP).

The poor condition of some of the assets at the terminal station has increased the likelihood of asset failures. Such failures would result in prolonged outages. Without remedial action, other than ongoing maintenance practice (business-as-usual), affected assets are expected to deteriorate further and more rapidly. Further increases in the probability of asset failure will result in a higher likelihood of an impact on transmission network users, heightened safety risks due to potential explosive failure, environmental risks, collateral damage risks, and the risk of increased costs resulting from emergency asset replacements and reactive repairs.

There is also a known issue at TTS with increased short circuit fault levels. The 66 kV switchgear limits the fault level at TTS to 23.4kA. This is posing an operational risk and a special operating procedure is in place to remove one of the five 220/66 kV transformers from service during high fault level conditions. This poses a security risk to customers supplied from TTS as their supply is then compromised to four rather than all five 220/66 kV transformers. Timely completion of the proposed 66 kV circuit breaker replacement will remove this operational constraint. It is thus proposed to complete the replacement of 66kV circuit breakers within the 2027-2032 regulatory control period.

Therefore, the 'identified need' this project intends to address is to maintain reliable transmission network services at TTS and to mitigate risks from asset failures.

AusNet calculated the present value of the baseline risk to be approximately $57.3 million over the forty-five-year period from 2026. The key risks are shown in Figure 4 with the key components being the supply risk that will impact network users because of involuntary load shedding, and reactive asset replacement risk from increased cost when responding to an asset failure.

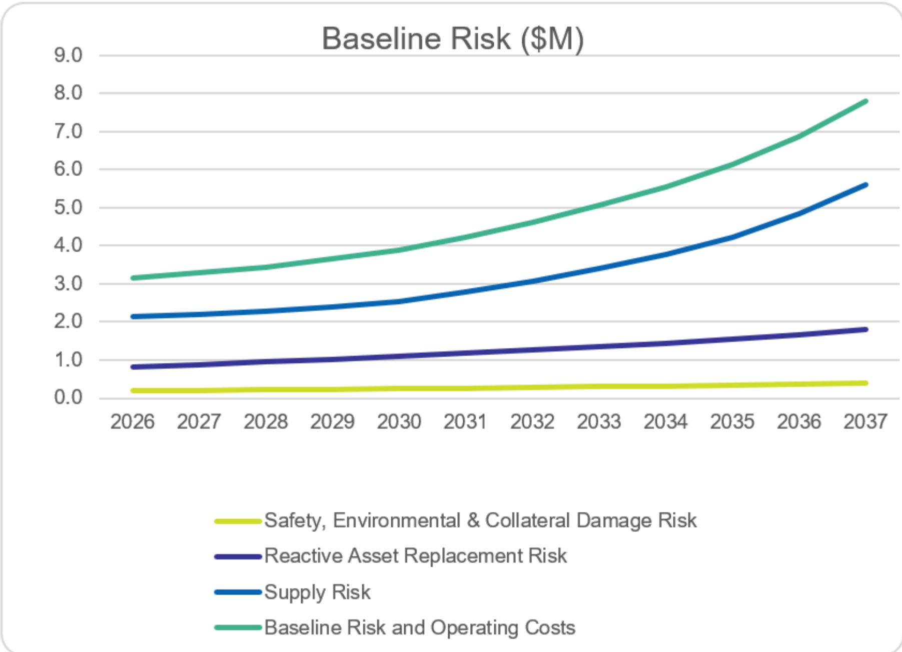


Figure 4: Baseline risk at TTS

Asset replacement investment will allow AusNet to maintain reliable transmission network services at TTS and mitigate safety and environmental risks as required by the NER and Electricity Safety Act 1998[1].

3.1. Key inputs and assumptions

Aside from the failure rates (determined by the condition of the assets) and the likelihood of relevant consequences, AusNet Services also adopted the following assumptions to quantify the risks associated with asset failure.

Market impact and supply risk costs

AusNet calculated the market impact costs, which consist of increased generation costs and expected unserved energy resulting from an asset failure based on the Victoria statewide Value of Customer Reliability (VCR), latest Connection Point Forecast and assumptions used in the latest Inputs Assumptions and Scenarios Report (IASR).[4]

The asset life is assumed to be 45 years and cash flows are modelled explicitly over the first 12 years, with a residual value included to represent the remaining service potential beyond the modelling period. To avoid overstating future benefits, market impact costs are assumed to remain constant from Year 12 onwards rather than increasing over time. The residual value is therefore based on a uniform annual series equal to the Year 12 market impact cost and reflects the discounted value of the remaining benefits over the balance of the asset life. All options are brought to the same residual position at the end of Year 12 to ensure an equitable comparison and to avoid bias associated with differing remaining asset lives. This approach ensures that the economic evaluation reflects the full service life of the asset while adopting conservative assumptions regarding long-term benefits.

Sensitivity analysis was undertaken for multiple scenarios in Section 6.2, including a demand growth sensitivity that assumes demand forecasts are 15% lower than expected.

Safety risk costs

The Electricity Safety Act 1998[5] requires AusNet Services to design, construct, operate, maintain, and decommission its network to minimize hazards and risks to the safety of any person as far as reasonably practicable or until the costs become disproportionate to the benefits from managing those risks. By implementing this principle for assessing safety risks from explosive asset failures, AusNet Services uses:

- a value of statistical life[6] to estimate the benefits of reducing the risk of death;
- a value of lost time injury[7;] and
- a disproportionality factor[8].

AusNet Services notes this approach, including the use of a disproportionality factor, is consistent with the practice notes[9] provided by the AER.

Financial risk costs

As there is a lasting need for the services that TTS provides, the failure rate-weighted cost of replacing failed assets (or undertaking reactive maintenance or repairs) is included in the assessment.[10]

Environmental risk costs

Environmental risks from plant that could impact the environment when it fails and where cleanup cost could be in the order of $30,000 per event.

4. Options assessed

AusNet Services considered both network and non-network options to address the identified need but did not find any suitable non-network solution or received a proposal for a non-network solution. The two network options are presented below.

4.1. Option 1: Replace CBs and switchgear

Option 1 involves selective replacement of poor condition circuit breakers and switchgear by January 2030 in a single integrated project. The estimated capital cost of this option is $43.0 million which is the latest business case costs in 2025 real cost adjusted with CPI. The change in operating and maintenance cost is negligible for this option.

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4 In dollar terms, the Value of Customer Reliability (VCR) represents a customer's willingness to pay for the reliable supply of electricity. The values produced are used as a proxy, and can be applied for use in revenue regulation, planning, and operational purposes in the National Electricity Market (NEM).
5 Victorian State Government, Victorian Legislation and Parliamentary Documents, "Electricity Safe Act 1998"
6 Department of the Prime Minister and Cabinet, Australian Government, "Best Practice Regulation Guidance Note: Value of statistical life"
7 Safe Work Australia, "The Cost of Work-related Injury and Illness for Australian Employers, Workers and the Community: 2012-13"
8 Health and Safety Executive's submission to the1987 Sizewell B Inquiry suggesting that a factor of up to 3 (i.e. costs three times larger than benefits) would apply for risks to workers; for low risks to members of the public a factor of 2, for high risks a factor of 10. The Sizewell B Inquiry was public inquiry conducted between January 1983 and March 1985 into a proposal to construct a nuclear power station in the UK.
9 Australian Energy Regulator, "Industry practice application note for asset replacement planning"
10 The assets are assumed to have survived and their condition-based age increases throughout the analysis period.

4.2. Option 2: Deferred replacement

Option 2 involves deferring the replacement of the poor condition circuit breakers and switchgear by 5 years to 2035, which is within the next regulatory control period. The capital cost of this option is the same as Option 1 but this option will require an additional $7.5 million investment for fault level mitigation works by 2028. The fault level mitigation works are required to address the current fault level constraint and provides for the installation of up to two fault limiting reactors.

There is increased probability of asset failure and consequent asset failure risks for this option.

4.3. Material inter-regional network impact

The proposed asset replacements at TTS will not change the transmission network configuration and none of the network options considered are likely to have a material inter-regional network impact. A 'material inter- regional network impact' is defined in the NER as:

"A material impact on another Transmission Network Service Provider's network, which may include (without limitation): (a) the imposition of power transfer constraints within another Transmission Network Service Provider's network; or (b) an adverse impact on the quality of supply in another Transmission Network Service Provider's network."

5. Assessment approach

Consistent with the RIT-T requirements and AER Industry Practice Application Note for Asset Replacement Planning, AusNet Services undertook a cost-benefit analysis to evaluate and rank the credible options over a 45-year period.

All options considered have been assessed against a business-as-usual case (counter factual) where no proactive capital investment to reduce the increasing baseline risks is made.

Optimal timing of an investment option is the year when the annual benefits from implementing the option become greater than the annualised investment cost. This method delivers the same result as assessing which investment year delivers the highest net present value benefit or lowest NPV cost when the investment year is tested for each of the years in the analysis period.

AusNet also considered a sensitivity case that limits both the asset life and analysis period to 20 years rather than 45 years. This sensitivity reduces the influence of assumptions and forecast uncertainty associated with benefits occurring beyond Year 20 and provides a more conservative assessment of project economics. The analysis tests whether the proposed investment continues to deliver positive NPV benefits and remains economically justified during the 2027–2032 regulatory control period. In this sensitivity, project costs are annualised using a 20-year annuity and compared with annual project benefits to determine the economic timing of the investment.

AusNet has submitted updated economic modelling for this project using a 7% discount rate, consistent with the approach applied across other major station projects and the AER RIT-T guideline.

In addition, the economic model has been updated to reflect the failure of a 220 kV capacitor bank circuit breaker at Thomastown in June 2026. As this failure has already occurred, the failure rate and mean time to repair assumptions have been revised to reflect the actual asset condition and circumstances. Specifically, a failure rate of 1.0 has been assigned to the failed circuit breaker, recognising that the asset is already out of service.

The mean time to repair has been assumed to be four months. A like-for-like replacement circuit breaker is not available due to the specialised switching duty associated with capacitor bank applications. Restoration using a strategic spare would require approximately four to six months to accommodate design modifications, procurement of supplementary materials, installation and commissioning activities. Procuring and commissioning a new capacitor bank circuit breaker would require approximately twelve months. Accordingly, a four-month repair duration has been adopted as a reasonable and conservative assumption for the economic assessment.

5.1. Proposed scenarios and input assumptions

The robustness of the investment decision is tested using the range of input assumptions and scenarios described in the table below. This analysis involves variation of assumptions around the most likely values as per the IASR, VicGrid's 2026 Connection Point Forecast, AER latest VCR rates, and AusNet Service's best estimate of project cost and forecast asset failure rates.

Parameter	Lower Bound	Most likely (central) assumption or scenario	Upper Bound
VCR	75% of central assumption	Published VCR	125% of central assumption
Asset failure rate	75% of central assumption	Assessed failure rate	125% of central assumption
Demand Growth	85% of central assumption	Connection Point Forecast included with VicGrid 2026 VAPR	115% of central assumption
Discount rate[9]	WACC rate of a network business (3.0%)	Latest commercial discount rate from IASR (7%)	Upper Bound (10%)
Project Capital Cost	85% of estimated cost	Estimated cost	115% of estimated cost
Analysis Period and benefit stream	20 Years	45 Years	45 Years

Table 3 - Summary of input assumptions for range of scenarios

5.2. Material classes of market benefits

NER clause 5.16.1(c)(4) formally sets out the classes of market benefits that must be considered in a RIT-T. AusNet Services estimates that the classes of market benefits that are likely to be material include changes in involuntary load shedding, and changes in fuel consumption arising through different patterns of generation dispatch.

5.3. Other classes of benefits

Although not formally classified as classes of market benefits under the NER, AusNet Services expects material reduction in: safety risks from potential asset failure of deteriorated assets, environmental risks, collateral damage risks to adjacent plant, and the risk of increased costs resulting from the need for emergency asset replacements and reactive repairs by implementing any of the options.

5.4. Classes of market benefits that are not material

AusNet Services estimates that the following classes of market benefits are unlikely to be material for any of the options considered:

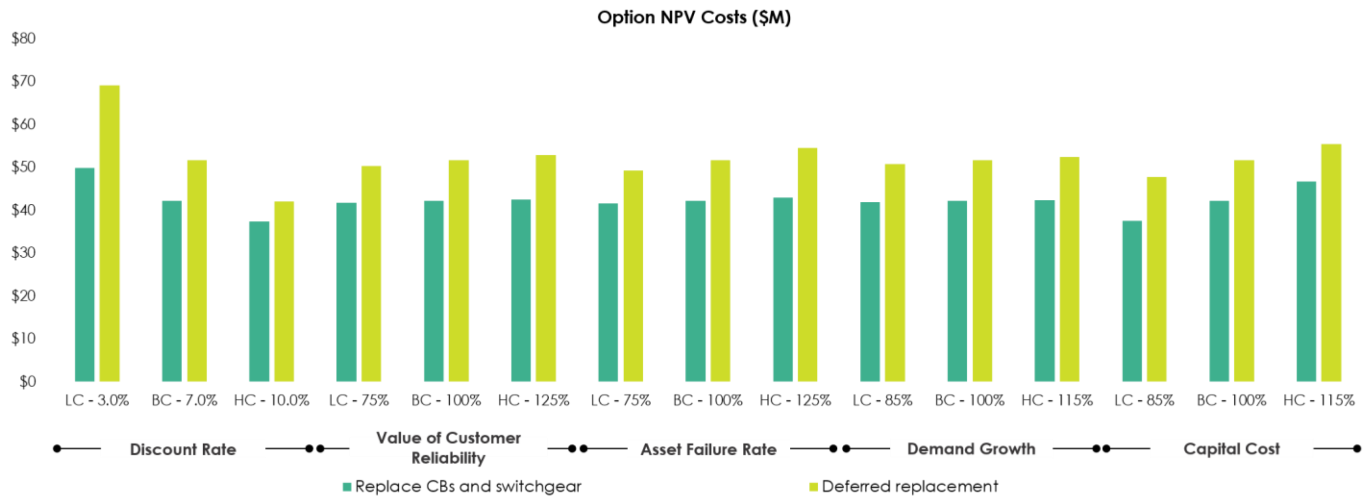
- Changes in costs for parties, other than the RIT-T proponent – there is no other known investment, either generation or transmission, that will be affected by any option considered.
- Competition benefits – there is no competing generation affected by the limitations and risks being addressed by the options considered.
- Option value – as the need for and timing of the investment options are driven by asset deterioration; there is no need to incorporate flexibility in response to uncertainty around any other factor.

6. Options assessment

This section presents the results of the economic cost benefit analysis that has been conducted to determine the preferred option and its economic timing.

All options are brought to the same residual position at the end of Year 12 to ensure an equitable comparison and to avoid bias associated with differing remaining asset lives. This approach ensures that the economic evaluation reflects the full service life of the asset while adopting conservative assumptions regarding long-term benefits. All the options considered will deliver a reduction in market impact risk (including supply risk), safety risk, environmental risk, collateral risk and risk cost of emergency replacement in the event of asset failure.

The first graph in Figure 5 compares NPV costs whereas the second graph compares the NPV benefits of the two investment options considered. Presented in Figure 5, the present value (PV) cost of Option 1 (Replace CBs and switchgear) is lower than Option 2 (Deferred replacement) for all of the sensitivities where input variables are varied one at a time.



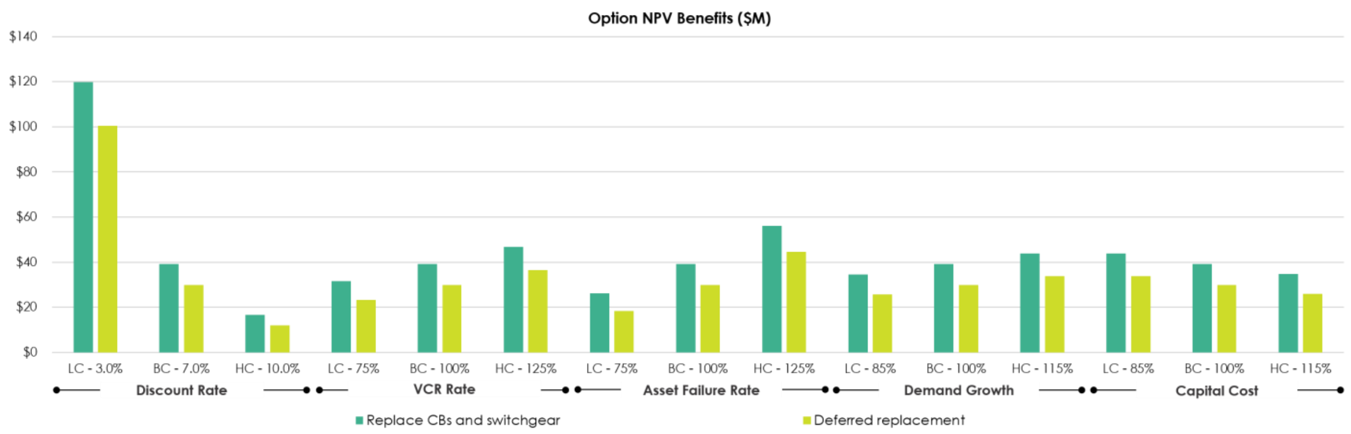


Figure 5 – Option selection, scenario and sensitivity study

6.1. Preferred Option

Option 1 (Replace CBs and switchgear) has the lowest PV cost (and highest NPV benefits) for all of the sensitivity studies considered and is therefore the preferred option.

6.2. Optimal timing of the preferred option

This section describes the optimal investment timing of the preferred option for different assumptions of key variables. Figure 6 shows that the optimal timing of the preferred option (Option 1) is 2026 and that investment is needed within the 2027 to 2032 regulatory control period to manage safety and supply risks. It is worth noting that the demand growth sensitivity indicates that the economic timing is 2027 under a scenario where demand forecasts are 15% lower than expected. This is earlier than the current project delivery timing of December 2028.

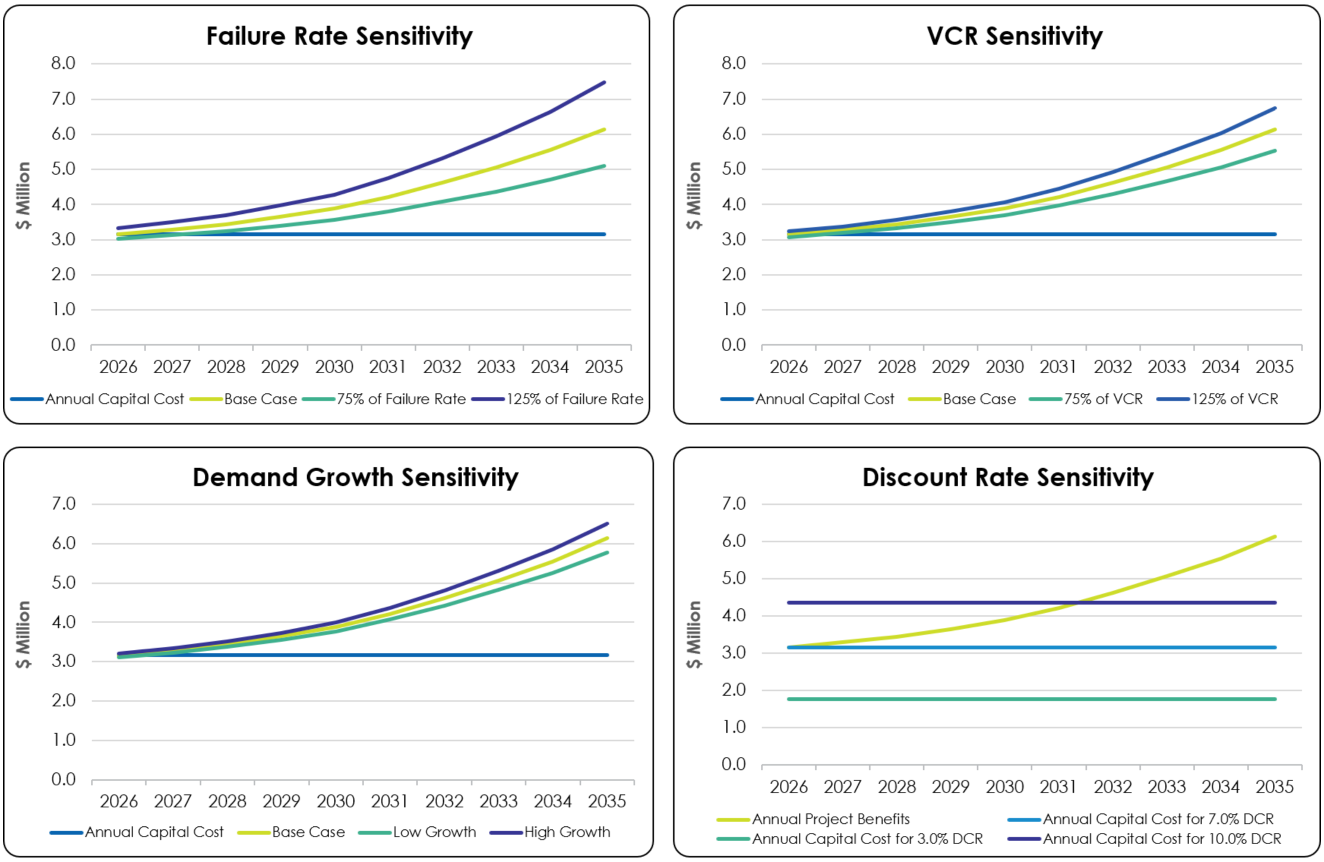


Figure 6 - Optimal investment timing sensitivity study

Figure 7 shows that the investment economic timing is approximately three years later for a 15% increase in investment cost.

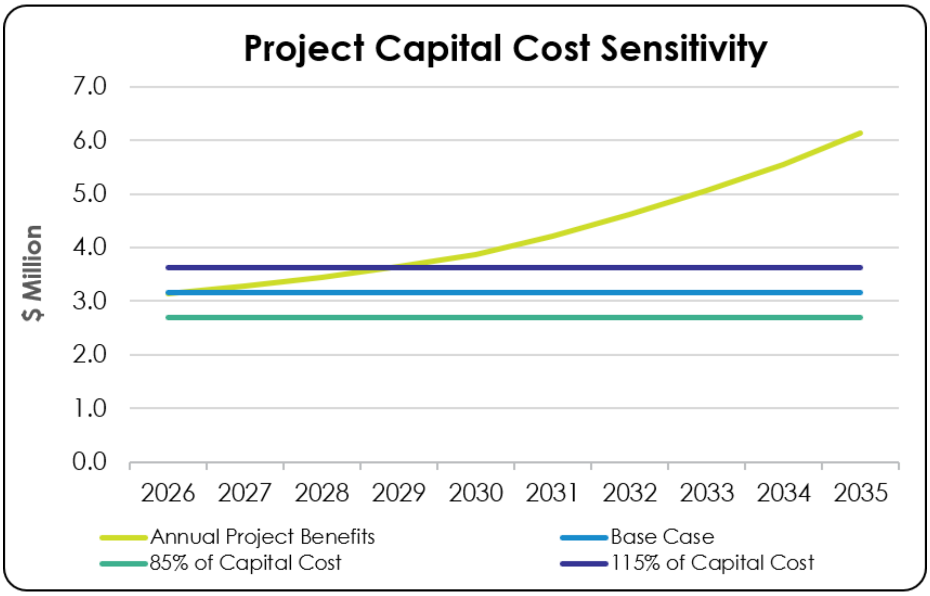


Figure 7 - Optimal investment timing sensitivity study – Capex

A sensitivity study shows that the economic timing changes from 2026 to 2030/2031 when the investment is assessed over only 20 years and all benefits are discarded after year 20. This is shown in figure 8 which determines the year by when project annual benefits exceed project annualised cost. The project annualised investment cost for this sensitivity is based on an annuity over 20 years (instead of the expected 45-year asset life) and a real discount rate of 7%.

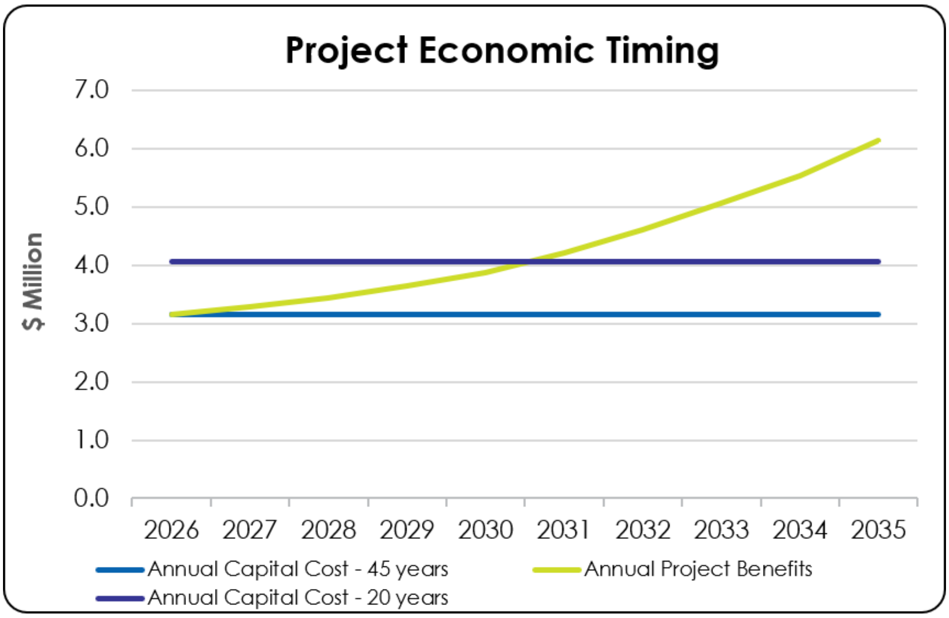


Figure 8- Optimal investment timing sensitivity study – Asset Life

7. Conclusion

Amongst the options considered, Option 1 is the most economical option for maintaining reliable transmission network services at TTS and managing safety, environmental, collateral and emergency replacement risks. The outcome is robust to variations in key input assumptions, including future market impact costs and forecast uncertainty, and remains the preferred option across the sensitivity scenarios considered.

The preferred option involves the replacement of poor condition circuit breakers and switchgear at TTS and AusNet is proceeding with this project following approval of the business case in December 2025 to manage safety and supply risks.

The estimated capital cost of this option is $43.0 million (2025 real cost excluding management reserve adjusted with CPI) with no material change in operating and maintenance cost. The project is economic by 2026, and AusNet is targeting a commissioning date of December 2028 with 75% of the project capital cost falling within the 2027 to 2032 regulatory control period. Implementing Option 1 will avoid additional fault level mitigation works.

8. Appendix 1: Cost Estimate

Option 1 cost estimate (in calendar years) in $2025

PROJECT COST SUMMARY	**UNCERTAINTY ADJUSTED ESTIMATE**
Project Number:	**TD-0003597**
Project Title:	**TTS CB Replacement**
Estimate Type:	**Planning P75 Estimate**
Revision:	**Rev 1**
Issued Date:	**1/10/2025**

	PROJECT EXPENDITURE FORECASTS	2025	2026	2027	2028	TOTAL
1	DESIGN & STUDIES/ASSESSMENTS	$ -	$ 2,084,594.04	$ 568,525.65	$ -	$ 2,653,119.69
2	INTERNAL LABOUR	$ 41,278.06	$ 343,983.81	$ 1,155,785.60	$ 1,210,823.01	$ 2,751,870.48
3	MATERIALS (AusNet Free Issue Materials)	$ -	$ 3,734,053.61	$ 2,489,369.07	$ -	$ 6,223,422.68
4	PLANT & EQUIPMENT	$ -	$ -	$ 244,298.93	$ 271,443.26	$ 515,742.19
5	CONTRACTS (incl insurance and incentives)	$ -	$ -	$ 12,010,008.27	$ 13,344,453.63	$ 25,354,461.90
6	**PROJECT DIRECT EXPENDITURE P(50)**	**$ 41,278.06**	**$ 6,162,631.46**	**$ 16,467,987.53**	**$ 14,826,719.90**	**$ 37,498,616.95**
7	OVERHEADS	$ 2,072.16	$ 309,364.10	$ 826,692.97	$ 744,301.34	$ 1,882,430.57
8	FINANCE CHARGES (IDC)	$ -	$ 119,983.68	$ 715,056.52	$ 1,216,645.87	$ 2,051,686.08
9	**PROJECT DIRECT EXPENDITURE (SAP)**	**$ 43,350.22**	**$ 6,591,979.24**	**$ 18,009,737.02**	**$ 16,787,667.12**	**$ 41,432,733.60**
10	MANAGEMENT RESERVE [P(90)-P(50)]					$ 1,857,106.35
11	**TOTAL EXPENDITURE FOR APPROVAL (Including P(90))**	**$ 43,350.22**	**$ 6,591,979.24**	**$ 18,009,737.02**	**$ 16,787,667.12**	**$ 43,289,839.95**

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