AusNet

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

Planning Report: Newport Power Station GIS Replacement Project

Date: September 2026

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1. Executive summary

Newport Power Station is a natural gas power station consisting of a single generator with a capacity of up to 510 MW. Owned and operated by Energy Australia (EA), it supports demand within the Western Metropolitan 220 kV ring and provides ancillary services, including voltage support and system strength.

AusNet Services owns the 220 kV connection station with gas insulated switchgear (GIS) located inside the power station building. The asset ownership interface is at the 220kV terminals of the generator and auxiliary transformers. The power station and connection station are located on the west bank of the Yarra River, south-west of Melbourne in the suburb Newport.

Newport connection station (NPSD) includes 220 kV connections to Fisherman's Bend Terminal Station (FBTS) and Brooklyn Terminal Station (BLTS) and is part of the Western Metropolitan 220 kV ring emanating from Keilor 500/220 kV Terminal Station (KTS). The 220 kV GIS, installed in 1979, is nearing end of life with increasing failures, technical obsolescence and no manufacturer support beyond generic advice. The aging GIS presents significant reliability, safety and environmental risks exhibiting in SF6 leaks, worn circuit breaker mechanisms and flange corrosion.

The role of Newport Power Station will become more significant given the planned closure of Yallourn Power Station in 2028 and it is considered that the site will remain an important part of the transmission network in the foreseeable future. VicGrid has advised that Newport Power Station remains an important asset for the secure and reliable operation of Victoria's electricity system. In addition to providing up to 510 MW of dispatchable generation during periods of peak demand, Newport delivers essential network support services, including voltage support and system strength, which help maintain system security in western metropolitan Melbourne. VicGrid's planning assessments continue to rely on Newport operating during periods of maximum demand to assist in managing loading on key transmission assets and deferring the emergence of network constraints. Forecast demand growth across western and northern Melbourne is expected to further increase the importance of Newport's contribution over coming years. VicGrid notes that the loss of Newport would reduce operational flexibility, increase the risk of supply constraints and could accelerate the need for major network augmentation projects. Consequently, maintaining a reliable connection to Newport is considered important for supporting ongoing reliability, system security and the efficient development of the Victorian transmission network.

An economic assessment concluded that investment is needed at NPSD to maintain a reliable connection service to this important power station given the role that it plays to support forecast growing demand in the Western Metropolitan 220 kV network. Newport Power Station is also sometimes needed for voltage management and system strength, and it is thus important to maintain a reliable connection service for the power station.

Of the options assessed, Option 1 (New 220 kV GIS connection station) 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, a sensitivity scenario has been assessed in which project benefits were limited to the first 20 years rather than being recognised over the normal 45-year asset life. Further sensitivity analysis indicates that adopting a 20-year asset life, rather than the assumed 45-year service life, shifts the economically efficient investment year only marginally. This relatively small change provides strong evidence that the timing of the project 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.

The asset replacement project plans to build a new indoor GIS generator connection station near the current location of the 220 kV cable heads. The project delivery lead time is estimated to be 5 years and AusNet proposes to start the project by 2028 and complete the project by 2032 with the forecast expenditure falling in the 2027 to 2032 Transmission Revenue Reset (TRR) period.

2. Background

NPSD is owned and operated by AusNet Services and is located on the west bank of the Yarra River, south-west of the Melbourne suburb Newport. NPSD includes the following transmission line and transformer connections:

- One 220 kV line to FBTS
- One 220 kV line to BLTS
- One 600 MVA 220/24 kV generator transformer
- Two 25/33 MVA 220/6.6/6.6 kV auxiliary transformers

NPSD connection station connects Newport Power Station to the Western Metropolitan 220 kV ring. Newport Power Station is a strategically important electricity generation and network support asset within Victoria's transmission system. The station provides up to 510 MW of synchronous generation within the Western Metropolitan load pocket and plays an important role in maintaining system security through the provision of voltage support, system strength and peak demand support services. Its location within the Melbourne load centre enables it to support growing electricity demand and reduce reliance on more distant generation sources and transmission corridors. Advice provided by AEMO indicates that Newport, together with Laverton North Power Station, remains important for meeting Victorian maximum demand and managing emerging network constraints. The loss or prolonged unavailability of Newport would increase risks to consumers, reduce operational flexibility, and may accelerate the need for major network augmentations. Accordingly, maintaining a reliable transmission connection to Newport Power Station is important to the continued secure and reliable operation of the Victorian electricity system.

Figure 1: Victorian transmission system and Newport Power Station

Asset Condition

AusNet Services conducted a condition assessment of the 220 kV GIS at NPSD, where the components were evaluated across a range of criteria including: physical condition, spares availability, estimated rate of deterioration, and manufacturer support. The assessment revealed that the GIS is in poor condition due to increasing equipment failures, with the asset approaching the end of its operational life, along with a lack of manufacturer support and late stage switching burdens.

The GIS equipment is technically obsolete, with only generic technical support for maintenance and repair available. The spare parts can only be sourced from decommissioned units, making maintenance more challenging and increasing operational risk. Restoring connection service to Newport Power Station after a major GIS failure will therefore take considerable time. No alternative maintenance strategies have been identified that would reduce the failure rates or address the lack of manufacturer support as this GIS is obsolete (first generation GIS) and with limited spares to support it.

The GIS present challenges due to duty-related deterioration and the obsolescence of the equipment, posing significant reliability, safety and environmental risks. The aging of the GIS has resulted in several issues including:

- internal and external SF6 leaks,
- worn CB mechanisms,
- Ferro resonance,
- flange corrosion,

all of which result in a high probability of failure that is likely to increase if remedial action is not taken.

Since 2020, sections of the GIS have undergone major repairs and refurbishment, leaving limited scope for further life extension. Proactive refurbishment of the entire GIS system is constrained by limited spare parts availability and restricted gas segregation within the pipework. Legacy GIS designs, such as that installed at NPSD, typically incorporate a limited number of gas compartments. Consequently, a failure within a single compartment can require the simultaneous isolation of bus and line bays, resulting in extensive outages and reduced security to facilitate repairs. This reduces operational flexibility, increases the impact of failures, and can significantly prolong restoration following a major event. In contrast, modern GIS designs utilise a greater number of segregated gas compartments, limiting the extent of equipment affected by a compartment failure and reducing outage requirements during both maintenance and fault recovery.

Further information can be found in the NPSD GIS Replacement Asset Condition Report.

Table 1 shows the forecast failure rates for the 220 kV GIS circuit breakers (CBs) at NPSD.

220kV GIS CB Failure Rates	2026	2027	2028	2029	2030	2031	2032
BLTS 220KV L CB	0.042087	0.045000	0.048100	0.051300	0.054600	0.058021	0.061555
FBTS 220KV L CB	0.072851	0.076800	0.081000	0.085200	0.089500	0.093995	0.098569
GEN TR 1 BUS CB	0.024527	0.026700	0.029000	0.031400	0.033900	0.036513	0.039243
GEN TR 2 BUS CB	0.020490	0.022500	0.024500	0.026700	0.029000	0.031388	0.033895
220KV TIE BUS 1 BUS CB	0.068970	0.072900	0.076800	0.081000	0.085200	0.089536	0.093995
220KV TIE BUS NO 2 BUS	0.024527	0.026700	0.029000	0.031400	0.033900	0.036513	0.039243

Table 1: 220kV GIS CB forecast failure rates

3. Identified need

The poor condition of the 220 kV GIS has increased the likelihood of asset failure. Without remedial action, other than routine maintenance, the 220 kV GIS is expected to deteriorate further and more rapidly. This will increase the market impact risk (generation constraints that results in increased wholesale market cost and involuntary load shedding) due to prolonged outages of the transmission lines and transformers switched at NPSD. In addition, there is also increased safety, environmental, collateral damage, and emergency replacement risks due to the poor condition of the 220 kV GIS.

The 'identified need' this project intends to address is to maintain reliable transmission network services at NPSD and to mitigate risks from 220 kV switchgear failures.

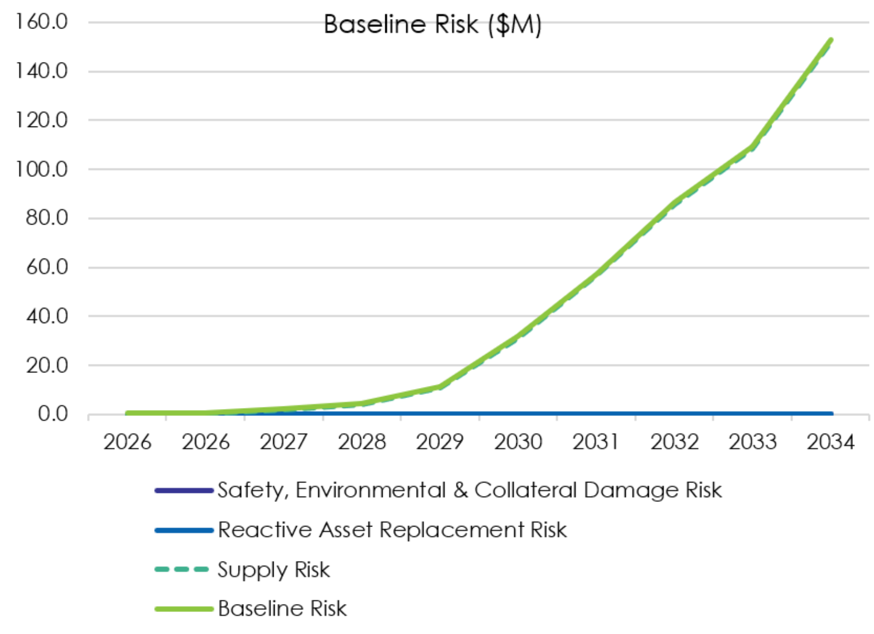

Figure 2: Baseline risk

3.1. Key inputs and assumptions

The identified need is underpinned by several assumptions, including the risk of asset failure (determined by the condition of the assets), the likelihood of the relevant consequences, and several assumptions adopted from the latest AEMO Inputs Assumptions and Scenarios Report (IASR). These assumptions are outlined below.

Market impact (wholesale market and involuntary load shedding) risk costs

Network studies are used to assess the market impact of a failure of the GIS at NPSD. These studies are based on the latest network models, demand forecasts from the VicGrid 2026 Connection Point Forecast, operational procedures and anticipated transmission developments adopted by VicGrid and AEMO. Involuntary load shedding is valued at the latest Value of Customer Reliability (VCR)[1].

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[2] requires AusNet Services to design, construct, operate, maintain, and decommission its network to minimise 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[3] to estimate the benefits of reducing the risk of death;
- a value of lost time injury[4;] and
- a disproportionality factor[5].

AusNet Services notes this approach, including the use of a disproportionality factor, is consistent with the practice notes[6] provided by the AER.

Financial risk costs

As there is a lasting need for the services that NPSD provides, the failure rate-weighted cost of replacing failed assets (or undertaking reactive maintenance or repairs) is included in the assessment.[7]

Environmental risk costs

Changes in greenhouse gas emissions have been assessed based on variations in the historic leakage of Sulphur Hexafluoride (SF_6), an insulation gas. A Global Warming Potential (GWP) factor of 23,500 —relative to carbon dioxide (CO_2)—has been applied to quantify the equivalent CO_2 emissions (CO_2-e). These emissions have been monetised using the Value of Emissions Reduction (VER), in accordance with guidance published by the AER[8].

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: New 220 kV GIS connection station

Option 1 includes a new indoor GIS connection station that is configured to allow for the connection of the two 220 kV lines (BLTS and FBTS), the generator transformer and two auxiliary transformers. Newport Power Station was originally planned for two generators of which only one was installed. It is proposed to reconfigure the connection station as shown in Figure 3 to reduce the number of circuit breakers needed to switch the two lines and three transformers.

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1 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).
2 Victorian State Government, Victorian Legislation and Parliamentary Documents, "Electricity Safe Act 1998"
3 Department of the Prime Minister and Cabinet, Australian Government, "Best Practice Regulation Guidance Note: Value of statistical life"
4 Safe Work Australia, "The Cost of Work-related Injury and Illness for Australian Employers, Workers and the Community: 2012-13"
5 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.
6 Australian Energy Regulator, "Industry practice application note for asset replacement planning"
7 The assets are assumed to have survived and their condition-based age increases throughout the analysis period.
8 Australian Energy Regulator, "Valuing Emissions Reductions Final Guidance – May 2024"

The estimated capital cost of this option is $152.9 million in 2026 dollars ($2025 dollars adjusted with CPI excluding management reserve) and the change in operating, and maintenance cost is negligible. The estimated project delivery time is 5 years.

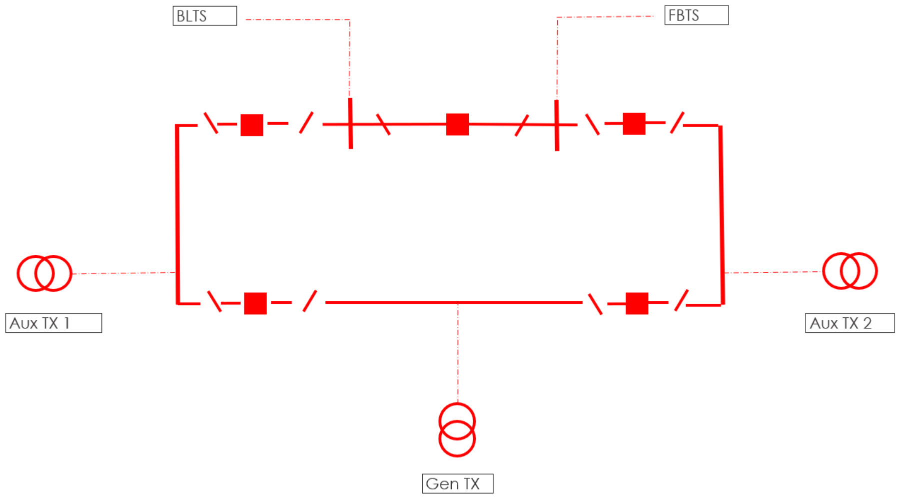

Figure 3: Proposed GIS switching at NPSD

4.2. Option 2: Deferred replacement

Option 2 is the same as Option 1 except deferring the project by four years. It is assumed that cost escalation will be at the same rate as inflation.

4.3. Material inter-regional network impact

The proposed asset replacements at NPSD 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 the AER Industry Practice Application Note – Asset Replacement Planning methodology, AusNet Services undertook a cost-benefit analysis to evaluate and rank the net economic benefits of the credible options over a 45-year period, which is the expected asset life.

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 than 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 scenario where the project benefits are set to 20 rather than 45 years to determine whether the investment would still deliver NPV benefits and be economic at the proposed investment date. This removes uncertainty in forecasts beyond Year 20.

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 Table 2 below. This analysis involves variation of assumptions around the most likely values as per the IASR, AEMO's connection point forecast, 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 provided 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 2: 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.

5.3. Other classes of benefits

Although not formally classified as classes of market benefits under the NER, AusNet Services anticipates material reduction in: safety risks from potential explosive failure of deteriorated assets, 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 one of the options described in Section 4. These additional benefits were included in the project justification.

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.

9 Discount rates as recommended in the AEMO Inputs, Assumptions and Scenarios Report (IASR)

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. 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.

Presented in Figure 4, the total risk cost reduction or project benefits outweighs the investment cost for all options for all of the sensitivities where input variables are varied one at a time. The first graph in Figure 4 compares NPV costs with the Business as Usual (BAU) or counterfactual option included, whereas the second graph compares the NPV benefits of the two investment options considered.

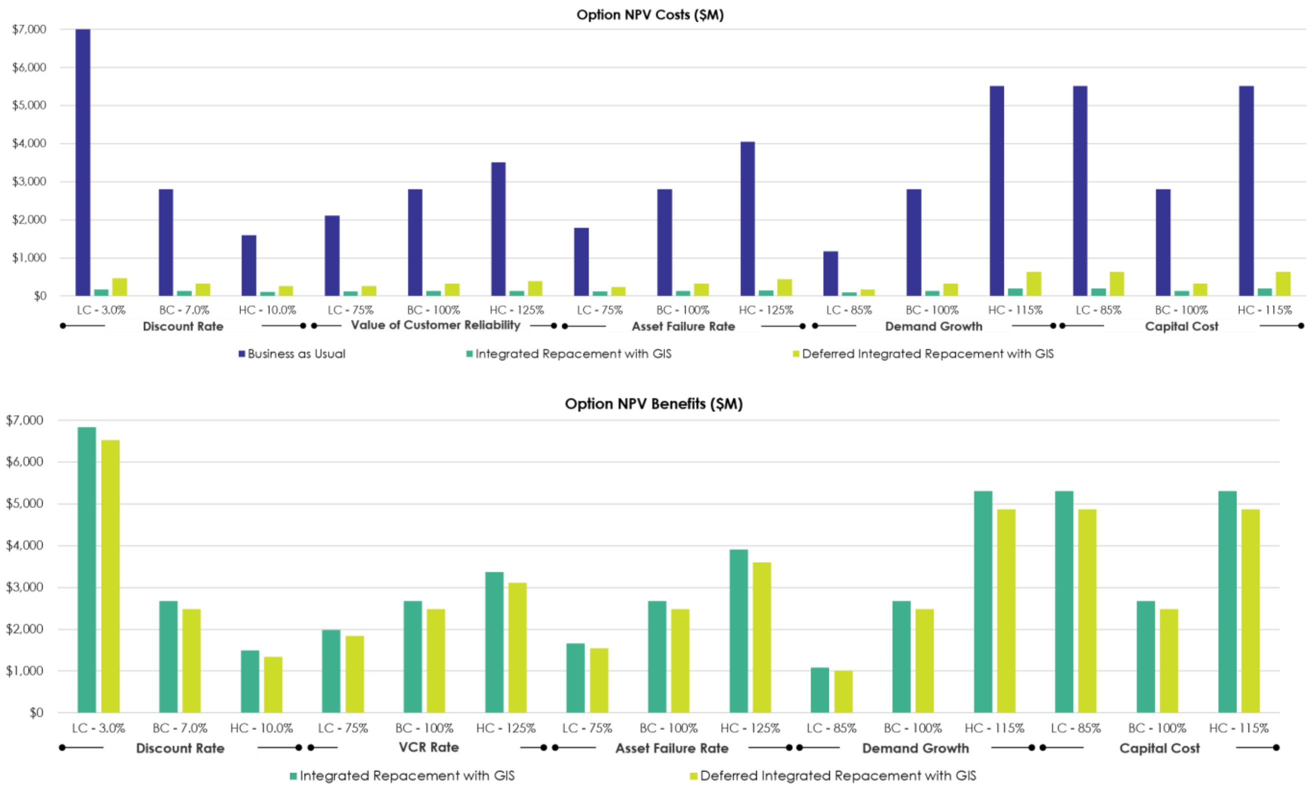

Figure 4: Scenario and sensitivity study

6.1. Preferred Option

Option 1 (New 220 kV GIS connection station) has the highest net economic benefit for all of the scenarios and sensitivities considered and is therefore the preferred option.

It requires approximately $152.9 million ($2025 adjusted with CPI) of capital investment with no material change to operating and maintenance costs. The scope of work entails a new indoor GIS connection station that is configured to allow for the connection of the two 220 kV lines (BLTS and FBTS), the generator transformer and two auxiliary transformers.

6.2. Optimal timing of the preferred option

This section describes the optimal investment timing of the preferred option for different input assumptions. Figure 5 shows that the optimal timing of the preferred option (Option 1) is 2030 and that investment is needed within the 2027 to 2032 regulatory control period. It is worth noting that the demand growth sensitivity indicates the economic timing is delayed by less than two years, to 2032, under a scenario with demand forecasts 15% lower than expected. This remains aligned with the current project delivery timing of 2032.

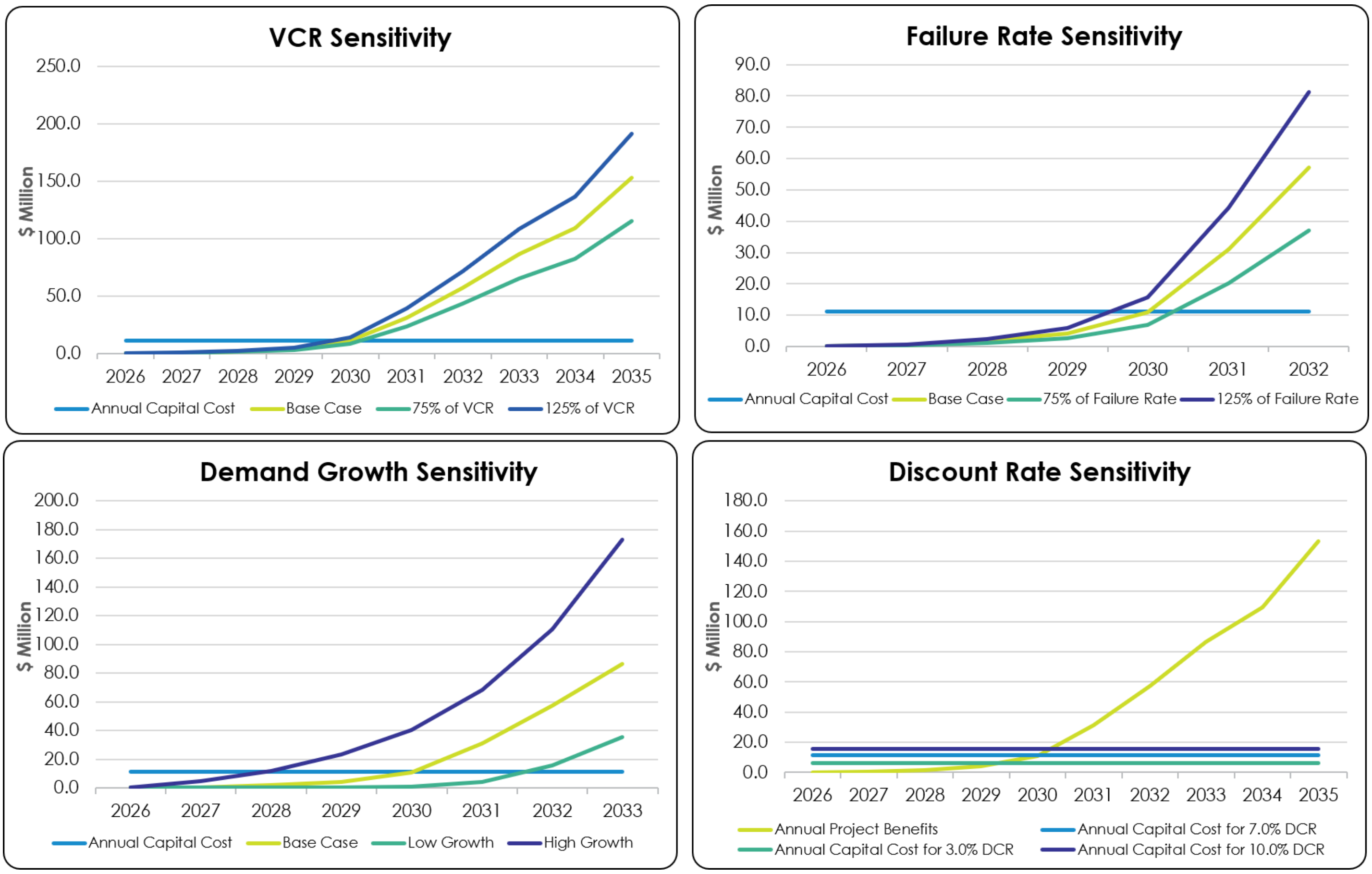

Figure 5 - Optimal investment timing sensitivity study

Figure 6 shows that the investment remains economic for a 15% increase in investment cost but only slightly later than with the capital cost central scenario assumption.

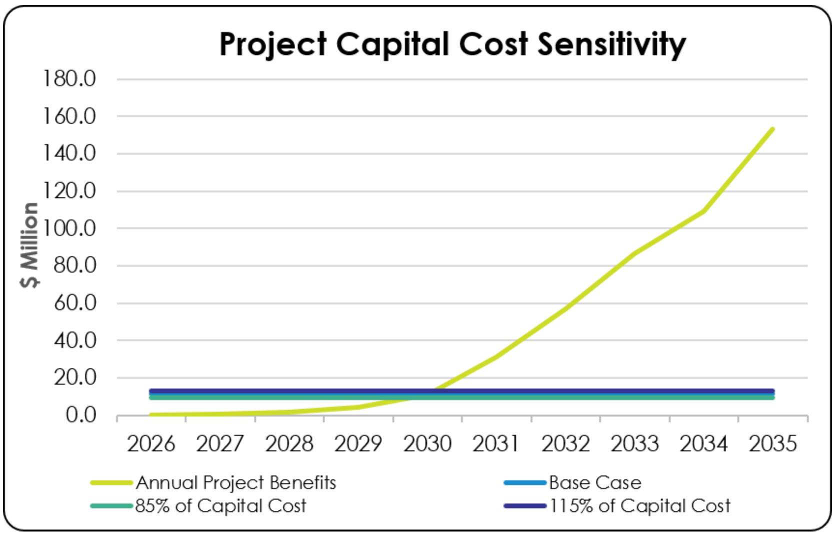

Figure 6 - Optimal investment timing sensitivity study – Capex

The investment decision was also tested using a shorter 20-year assessment period to remove future market and modelling uncertainty and asset service-life uncertainty. Figures 7 and 8 present the outcome of the test which includes the following:

- The investment remains economic when restricting project benefits to 20 years rather than the normal 45 years of expected asset service-life
- The investment remains economic when assessed for an asset service-life of 20 years

- The economic timing remains largely the same irrespective of using an analysis period of 20 or 45 years
- Investment is urgently needed given the significant rise in forecast asset failure market impact cost

Figure 7 shows project NPV cost under the 45-year and 20-year assessment periods where the NPV cost is calculated for each year the investment year is varied between 2026 and 2036 to find the investment year with the lowest NPV cost. The NPV costs for these two analysis periods are very similar because the project reduces the asset failure risk to very low levels, i.e. very low residual asset failure risk. The discounted residual asset failure risk cost for a 45-year or 20-year analysis period thus does not make a meaningful change to the NPV project cost as presented in Figure 7.

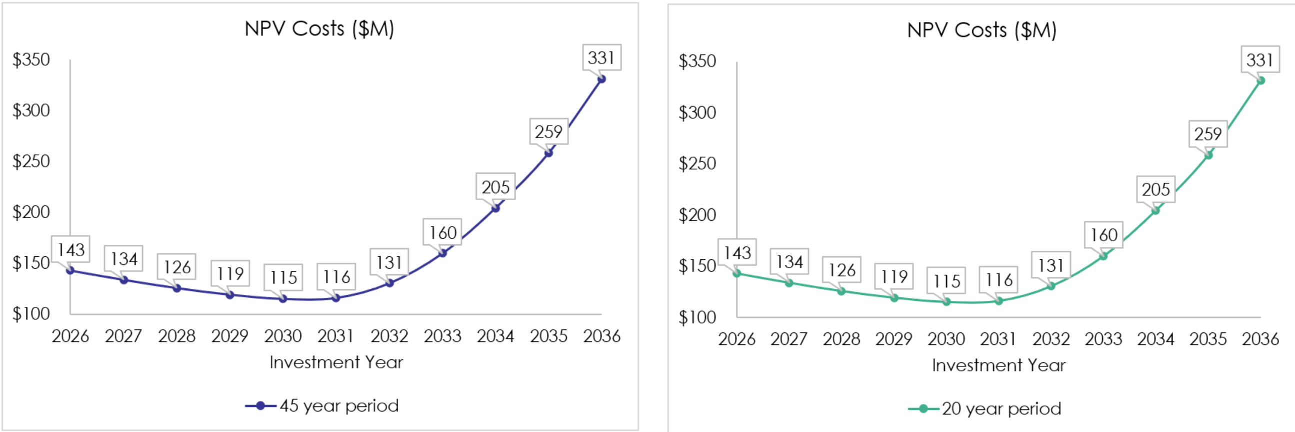

Figure 7 – Project NPV cost for different investment years under 45-year (left) and 20-year (right) analysis periods (Future market and modelling uncertainty sensitivity test)

Figure 8 compares the annual project benefits with the annualised project costs, where investment cost is represented as an annuity over both a 20-year and 45-year asset life to test the prudency of the investment for a shorter asset service life. Annual project benefits exceed annualised project cost in 2030 when the annuity is calculated based on a service life of 20 rather than 45 years, largely due to the steep rise in forecast asset failure risk.

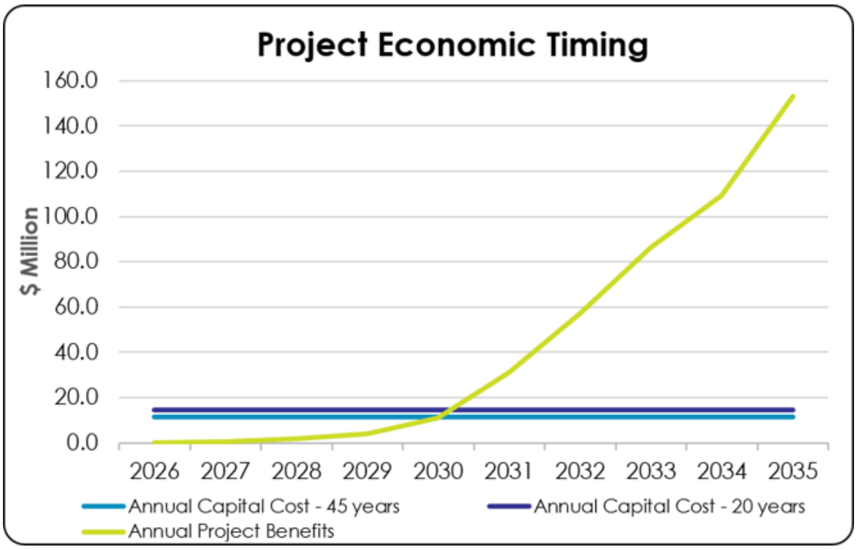

Figure 8 - Optimal investment timing sensitivity study – Asset Life

The results demonstrate that the economic timing outcome is largely insensitive to the assumed asset life. Adopting a conservative 20-year asset life, rather than the base case assumption of 45 years, alters the economically efficient investment year by no more than one year. **This relatively small change provides strong evidence that the timing of the project 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, under both asset life assumptions, the project delivers positive net economic benefits and remains economically justified within the 2027-32 regulatory control period. The analysis therefore confirms the robustness of the proposed investment timing and demonstrates that the investment case remains valid even under significantly more conservative assumptions regarding asset life and the period over which benefits are accrued.

7. Conclusion

Of the options assessed, Option 1 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.

Option 1 involves building a new connection station to maintain a reliable connection service to Newport Power Station.

The estimated capital cost of this option is $152.9 million (2025 real cost excluding management reserve adjusted with CPI) with no material change in operating and maintenance cost. The project is economic by 2030, and AusNet Services is targeting a commissioning date of 2032 with all cost falling within the 2027 to 2032 regulatory control period.

8. Appendix 1: Cost Estimate

	PROJECT EXPENDITURE FORECASTS	2025	2026	2027	2028	2029	2030	TOTAL
1	DESIGN & STUDIES + Permit +land	$0	$346,940	$3,122,460	$0	$0	$0	$3,469,400
2	INTERNAL LABOUR	$116,537	$233,074	$2,826,020	$2,826,020	$2,826,020	$2,826,020	$11,653,690
3	MATERIALS(AusNet Free Issue)	$0	$0	$497,465	$8,125,261	$8,125,261	$8,125,261	$24,873,249
4	PLANT & EQUIPMENT	$0	$0	$19,617	$320,417	$320,417	$320,417	$980,870
5	CONTRACTS (Including Insurance)	$0	$0	$1,869,043	$30,527,694	$30,527,694	$30,527,694	$93,452,126
6	**PROJECT DIRECT EXPENDITURE P(50)**	**$116,537**	**$580,014**	**$8,334,605**	**$41,799,393**	**$41,799,393**	**$41,799,393**	**$134,429,334**
7	MANAGEMENT RESERVE [P(90)-P(50)]							$8,634,295
8	PROJECT DIRECT EXPENDITURE (SAP)	$116,537	$580,014	$8,334,605	$41,799,393	$41,799,393	$41,799,393	$143,063,629
9	OVERHEADS			$134,967	$2,024,506	$2,361,923	$2,226,956	$6,748,353
10	FINANCE CHARGES (IDC)			$122,600	$1,838,993	$2,145,492	$2,022,893	$6,129,978
11	**TOTAL EXPENDITURE FOR APPROVAL (Including P(90) Risk)**	**$116,537**	**$580,014**	**$8,592,171**	**$45,662,892**	**$46,306,809**	**$46,049,242**	**$155,941,960**

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