Addressing increasing risk of 11kV switchgear at Botany Zone Substation

NOTICE ON SCREENING FOR SAPS AND NON-NETWORK OPTIONS



04 November 2026

Ausgrid

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Addressing increasing risk of 11kV switchgear at Botany Zone Substation

Notice on screening for SAPS and non-network options – 04 November 2026

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1 Introduction

This Options Screening Notice has been prepared in accordance with the application of the Regulatory Investment Test for Distribution (RIT-D) process under clause 5.17.4(d) of the NER, and in line with the Final Project Assessment Report (FPAR) publication to options for ensuring reliable electricity supply to the Eastern Suburbs network area going forward.

The Botany 33/11kV Zone Substation (ZS) is located in the Eastern Suburbs network area. This substation was first commissioned in 1931, with some of the original assets still in service. It currently supplies nearly 8,850 customers in the area, with a summer forecast load of 26MVA. It is supplied from Bunnerong North Sub-Transmission Substation (STS) and comprises four 19 MVA 33/11kV tail-ended transformers, one section of 11kV compound-insulated switchgear in a double busbar arrangement (Group 1) and three sections of 11kV gas-insulated single-bus switchgear.

The compound-insulated switchgear at Botany ZS is becoming less reliable and is approaching the end of its useful life, giving rise to an increasing risk of customer outages. If no action is taken, the condition of the remaining 11kV compound-insulated switchgear is expected to deteriorate further, resulting in an increasing risk of prolonged customer outages.

Ausgrid is therefore undertaking a RIT-D to assess options for addressing risk with the ageing 11kV compound-insulated switchgear at Botany ZS, to ensure we continue to satisfy our reliability and performance standards.

No exemptions listed in the NER clause 5.17.3(a) apply and therefore Ausgrid is required to apply the RIT-D to this project. This notice has been prepared under cl. 5.17.4(d) of the NER and summarises Ausgrid's determination that no SAPS and non-network option forms all or a significant part of any potential credible option for this RIT-D. It sets out the reasons for Ausgrid's determination, including the methodologies and assumptions used. A full discussion of asset conditions and the identified need can be found in the Final Project Assessment Report (FPAR) for addressing increasing risk of 11kV switchgear at Botany Zone Substation

2 Description of the identified need

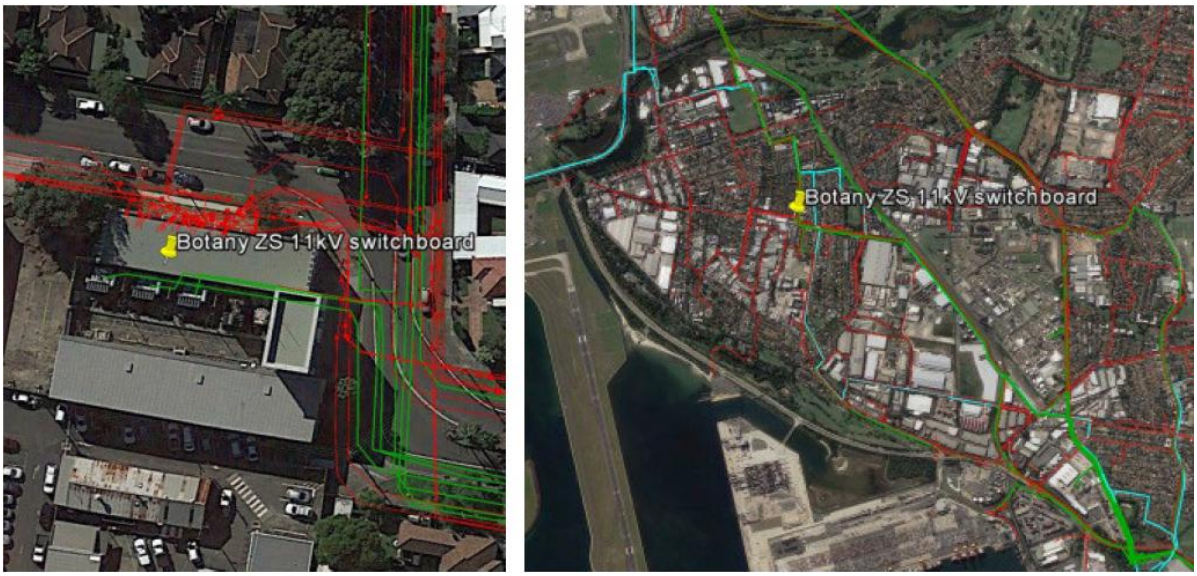
2.1 Overview of the relevant network area

The Botany ZS is a 33/11kV ZS that was commissioned in 1931 and is currently supplied by Bunnerong North STS via four paper-insulated feeders (346, 349, 350 and 353). It supplies approximately 8,800 residential, commercial and industrial customers and is equipped with:

- four 19 MVA 33/11kV tail-ended transformers; and
- four sections of switchgear, comprising:
  - three sections of 11kV gas-insulated switchgear (commissioned in 2020); and
  - one section of 11kV compound-insulated switchgear.

Botany ZS is summer peaking with a forecast load of 26MVA, which is below the substation's rating capacity of 31.2MVA. In the event of a total zone substation outage, 73 per cent of the load can be transferred away by switching to adjacent zone substations via the 11kV network after a time delay. A geographical overview of this area is shown in Figure 2.1 below.

Figure 2.1 - Geographical overview of the area serviced by Botany ZS



The 11kV compound-insulated switchgear at Botany ZS was commissioned in 1951 and is now approximately 75 years of age. This switchgear is approaching the end of its useful life and, as a result, has an increasing risk of failure.

11kV compound-insulated switchgear is also becoming obsolete in modern electricity distribution networks, and Ausgrid has therefore developed and implemented a strategy to phase out this equipment across the network. As of the date of this report, only twelve substations across Ausgrid's network (including Botany ZS) still have 11kV compound-insulated switchgear in-service, with all remaining units planned for replacement or retirement within the next 10 years.

Botany ZS has been subject to a staged retirement of its 11kV compound-insulated switchgear. To date, three of the four sections of the 11kV compound-insulated switchgear have been replaced with modern gas-insulated switchgear (commissioned in 2020). This RIT-D addresses the remaining section of compound-insulated switchgear.

In addition, the secondary systems associated with the remaining 11kV compound-insulated switchgear have exceeded their typical useful life. In particular, the secondary systems collectively ensure the 11kV switchgear operates safely, reliably, and can be controlled and monitored from the control room.

Without action, the condition of the remaining 11kV compound-insulated switchgear and associated secondary systems is expected to continue to deteriorate, resulting in an increasing risk of prolonged customer outages.

2.2 Summary of the 'identified need'

Ausgrid is obliged to comply with reliability and performance standards as part of its distribution license granted by the Minister for Industry, Resources and Energy under the *Electricity Supply Act 1995 (NSW)*. Under the license, reliability and performance standards are expressed in two measures:

- SAIDI[1] – which means the average derived from the sum of the durations of each sustained customer interruption (measured in minutes), divided by the total number of customers (averaged over the financial year); and
- SAIFI[2] – which means the average derived from the total number of sustained customer interruptions divided by the total number of customers (averaged over the financial year).

These capture two key sources of supply disruptions to electricity customers, i.e., how long their electricity supply is off for as well as how often their electricity supply is off. Customers experience better electricity service the lower these measures are. Reliability standards applied to distribution networks typically set maximums in relation to each of these two measures.

The main concern this RIT-D is seeking to address relates to increasing customer supply risks derived from the condition of the remaining 11kV compound-insulated switchgear at Botany ZS. If action is not taken, the analysis shows that the unserved energy modelled will put these performance standards at risk.

Overall, by addressing the reliability concerns associated with the ageing switchgear, the preferred investment will deliver positive net market benefits for consumers. These benefits arise from a reduction in expected unserved energy (EUE), as well as through lower replacement costs for associated secondary systems that need replacing otherwise and avoided safety risk costs and avoided maintenance and repair costs.

2.3 Key assumptions underpinning the identified need

This section summarises the key assumptions underpinning the identified need for this RIT-D. Appendix D of FPAR provides further details on the assumptions and methodologies applied to estimate costs and market benefits as part of this RIT-D.

2.3.1 Probability of assets failing increase with age

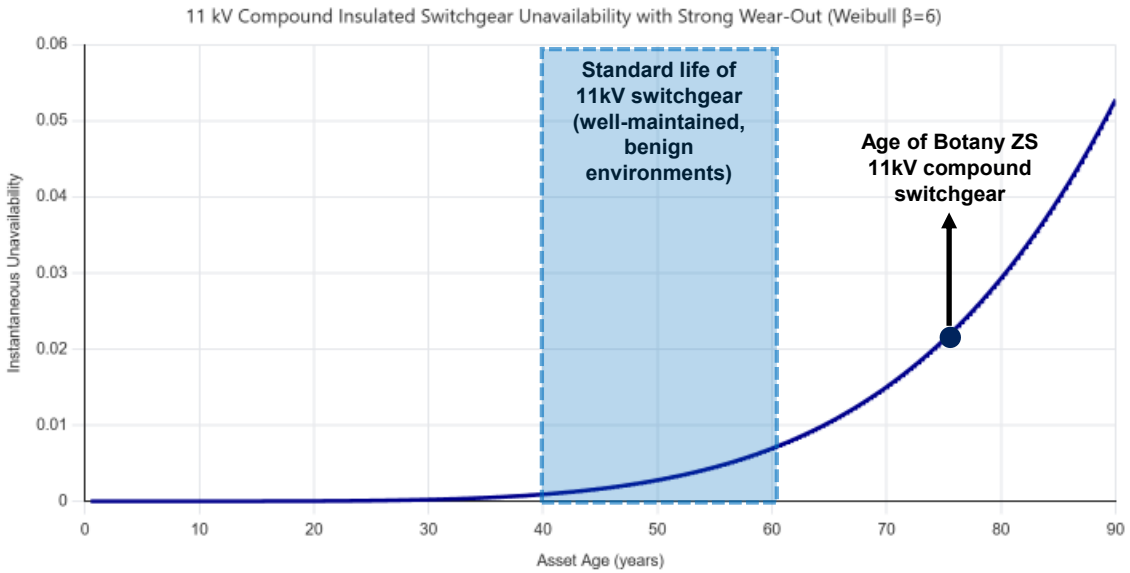
Ausgrid has adopted well-accepted models for each major class of network asset to estimate the probability of failure. In general, the probability of failure increases with asset age. This applies to both the 11kV compound-insulated switchgear and the associated secondary systems at Botany ZS, which we discuss below.

Figure 2.2 below illustrates unavailability plotted for 11kV compound-insulated switchgear, considering failure rate parameters that represent strong wear-out behaviour (i.e., ageing driven failures). It demonstrates robust performance in the early years of operation (very low unavailability), with an accelerated failure rate as the asset ages. As the 11kV compound-insulated switchgear at Botany ZS has been in service for 75 years, it has an increasing probability of failure.

[1] System Average Interruption Duration Index.

[2] System Average Interruption Frequency Index.

Figure 2.2 – Unavailability of 11kV compound-insulated switchgear at Botany ZS



The secondary systems associated with the remaining 11kV switchgear at Botany ZS have an average service life greater than 50 years. As such, they have exceeded their useful life (i.e., typically 15-25 years for electronic protection relays and 30-50 years for electromechanical relays) and subject to an increasing probability of failure. Replacement of relevant equipment is required within the next 5 years.

Ausgrid has assumed that these replacement works would be commissioned in 2029/30 under the base case. This is a conservative assumption, considering that replacement work can be undertaken immediately and any time earlier than 2029/30 would increase the present value of cost savings associated with replacing secondary systems under this need.

2.3.2 Supply restoration takes time but load tranfers are possible

The level of expected cost associated with any involuntary load shedding is dependent on underlying assumptions relating to supply restoration times. Ausgrid considers that the time required for restoration after a typical 11kV compound-insulated switchgear failure of the type in the Botany ZS can vary between 8.5 and 17 days depending on the type of failure, with some complex failure cases requiring up to 25 days. Detailed restoration assumptions are set out in Appendix D of FPAR.

As part of restoring supply after an outage, Botany ZS has load transfer capabilities that can mitigate the severity of involuntary load shedding. Botany ZS has 11 kV interconnections with Green Square, Maroubra, Mascot, Matraville and Port Botany zone substations. In the event of a total loss of supply, approximately 73 per cent of the load can be recovered by switching to adjacent zone substations via the 11kV network after a time delay (i.e., by closing and opening normally open points on the network).

These load transfers can help mitigate any consequent unserved energy to customers following failures of assets at the Botany ZS. Ausgrid has factored the ability to transfer load into its assessment of forecast unserved energy. In addition, mobile generation sets can also be used to restore loads. Whilst load to many customers can be restored through switching operations in the 11 kV network combined with the use of mobile generation sets, the full incident recovery process can take several weeks (which may result in unserved energy over this period).

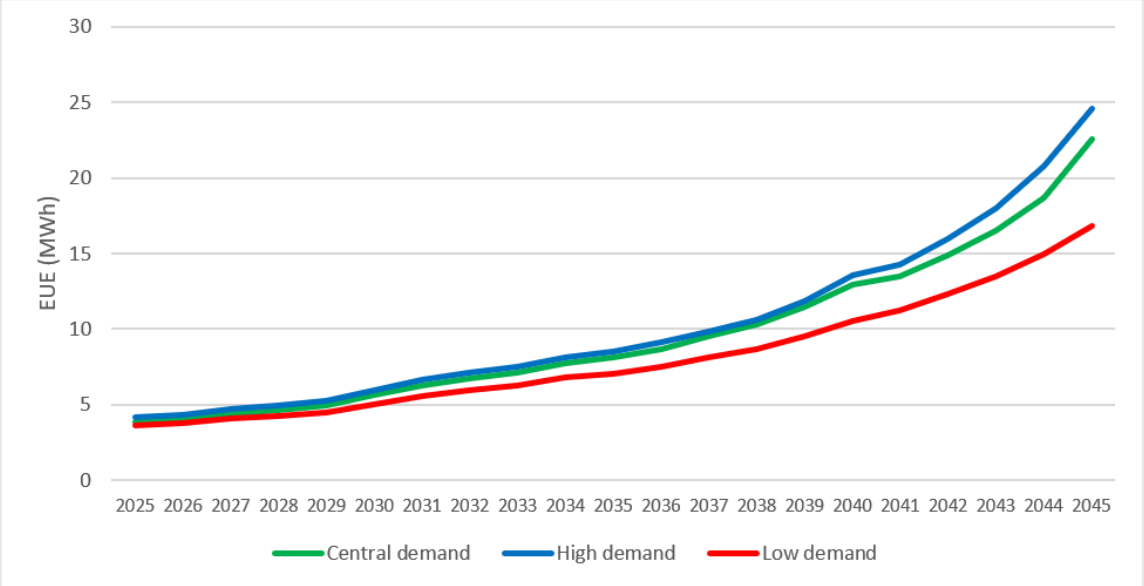
2.3.3 Three different load forecasts have been assumed

We have investigated how assuming different load forecasts going forward changes the EUE (and therefore net market benefits arising from avoided involuntary load shedding) under the proposed options.

In particular, we have investigated three future load forecasts for the area in question – namely a central forecast that represents expected load growth using our 50 per cent probability of exceedance ('POE50') forecasts, as well as a low forecast using the POE90 forecasts and a high forecast using the POE10 forecasts.

Figure 2.3 below shows the modelled levels of EUE, under each of the three underlying demand forecasts investigated, over the next twenty years. For clarity, this figure illustrates the MWh of EUE assumed under each load forecast if no credible option is commissioned (i.e. under the 'do nothing' base case for that load forecast). Appendix D of FPAR provides additional detail on the assumed load duration curve and how the probability of failure is modelled.

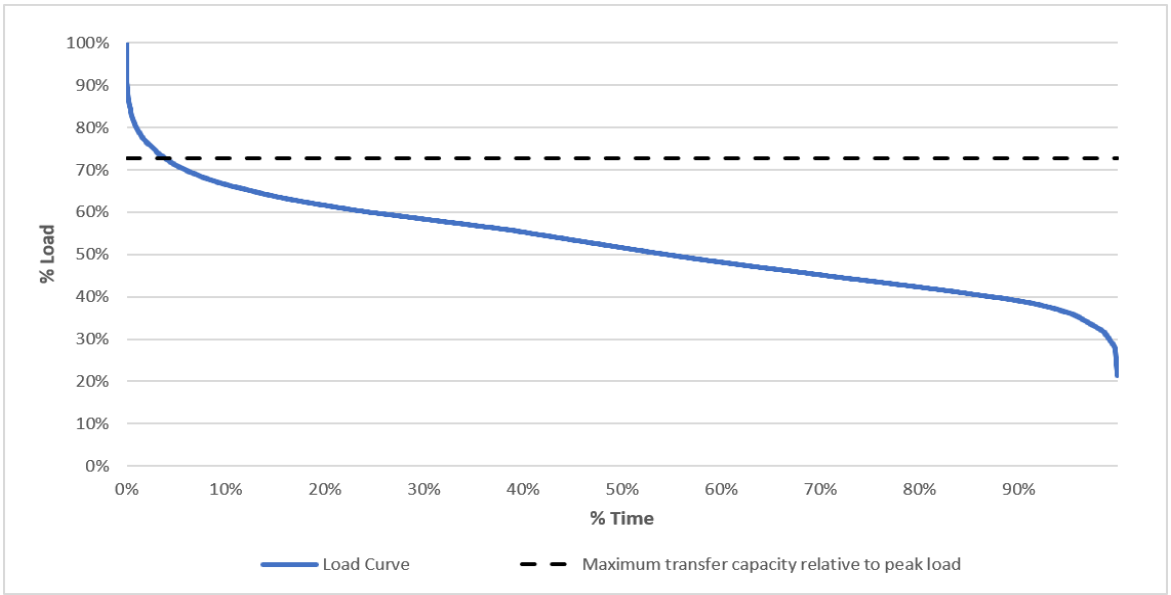
Figure 2.3 - Forecast EUE under each of the three demand forecasts



2.3.4 Characteric load duration curve

The load duration curve used in the analysis is present in Figure 2.4 below. It is assumed that the load types supplied will not change substantially into the future and therefore the load duration curve will maintain its characteristic shape.

Figure 2.4 - Load duration curve

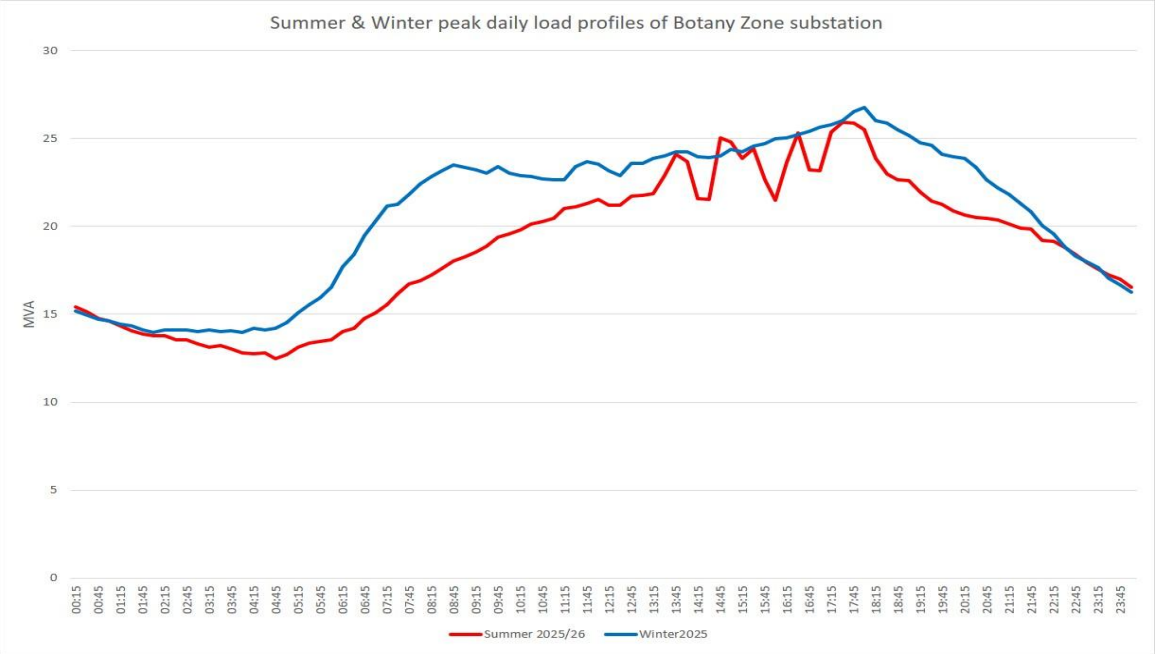


2.3.5 Pattern of use

The Botany 33/11kV Zone Substation is located in the Eastern Suburbs area which supplies about 8,850 customers. Based on the financial year (2025/26), there are 85.6% residential customers using 28.8% of energy, 14.4% non-

residential customers using 71.2% of energy. The peak time occurred in late afternoon in summer. Figure 2.5 below shows the approximate peak day profiles of Botany Zone Substation 33/11kV.

Figure 2.5 - Peak daily load profiles of Botany Zone Substation 33/11kV



2.3.6 Customer characteristics

Botany Zone Substation serves a mixture of residential and non-residential customers. A breakdown of the customer characteristic for the 2025/26 period is shown in Table 2.1 as follows.

Table 2.1 - customer characteristics of Botany Zone Substation 33/11kV

Item	Residential	Small Non-Residential	Large Non-Residential	Total
Number of Customers	7,586	1,207	65	8,858
% of Customers	85.6%	13.6%	0.8%	
Annual Consumption (MWh)	34,946	28,029	58,402	121,378
% of Annual Consumption	28.8%	23.1%	48.1%	
Number of Solar Customers	999	91	9	1,099
% of Customers with Solar	13.2%	7.5%	13.8%	12.4%
Number of Smart Metering	5,265	767	685	6,097
% of Customers with Smart Metering	69.4%	63.5%	100%	68.8%
Average Annual Consumption (MWh)	4.6	23.2	898.5	13.7

3 Two credible options have been assessed

This section provides details of the two credible network options that Ausgrid has identified as part of its network planning activities. Each option has been developed following an assessment of the various potential choices for addressing the ageing 11kV compound-insulated switchgear at Botany ZS and ensuring reliable supply to the Eastern Suburbs area. All costs and benefits presented in the FPAR are in 2025/26 dollars, unless otherwise stated.

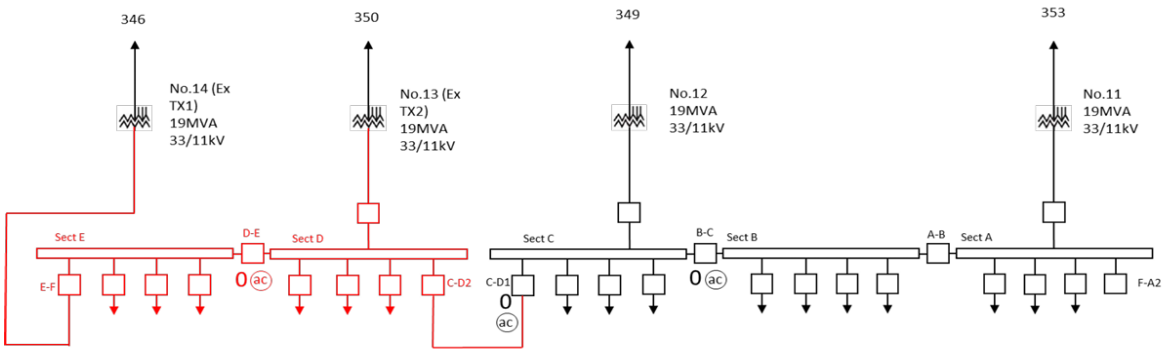
3.1 Option 1 – Replace 11kV compound-insulated switchgear in-situ

Option 1 involves replacing the existing 11kV compound-insulated switchgear with modern equivalent technology, installed within the existing switchroom at Botany ZS. The scope of works for Option 1 includes:

- installation of new 11kV switchgear, comprising two sections of single bus switchgear and 11 switchgear panels;
- connection of new switchgear with existing 11kV switchgroups and transfer of loads to the new switchboard;
- secondary systems upgrades; and
- decommissioning and removal of redundant 11kV switchgear and associated equipment from site.

The figure below illustrates Botany ZS proposed arrangement on a single-line diagram, showing the new switchgear in red.

Figure 3.1 – Proposed switchgear arrangement under Option 1



The estimated capital cost of Option 1 is $9.5million, which includes decommissioning costs of $0.2million and $0.4million in materials cost associated with the secondary systems replacement. As we discuss in section 4.4.2 in FPAR, the cost of secondary systems upgrades under Option 1 reflects a saving relative to the base case and has therefore been captured as a market benefit arising from differences in the timing of unrelated expenditure, rather than a cost item, to avoid double counting. Table 3.1 below shows the breakdown of the estimated construction capital costs across key cost categories for this option.

Table 3.1 – Breakdown of Option 1's expected construction capital cost, $m (2025/26)

	Labour	Materials	Contracted Services	Indirect cost	Total
Option 1 - Replace 11kV compound-insulated switchgear in-situ	**3.3**	**1.9**	**1.9**	**2.3**	**9.5**

Table 3.2 below shows the breakdown of estimated construction capital costs by component and over time for this option.

Table 3.2 – Breakdown of expected capital cost over time for Option 1, $m (2025/26)

Component	2025/26	2026/27	2027/28	2028/29	Total*
New 11kV switchgear	**0.8**	**1.0**	**5.5**	**0.9**	**8.3**
Load transfer to new switchgear	-	-	-	**0.6**	**0.6**
Decommissioning cost	-	-	-	**0.2**	**0.2**
Secondary systems upgrade	-	-	-	**0.4**	**0.4**
Total	**0.8**	**1.0**	**5.5**	**2.1**	**9.5**

* Totals may differ due to rounding.

We note that the first year of capital costs above includes expenditure to-date on design costs, which has also been included in the first year of costs for Option 2 (discussed below). These costs do not affect the identification of the preferred option under the RIT-D. They are included for continuity with Ausgrid's wider regulatory cost recovery process.

Overall, Option 1 is expected to take three years to complete, with commissioning of all switchgear-related work by 2029/30. Once fully commissioned, it will require approximately $6,400/year in planned routine maintenance costs.

3.2 Option 2 – Transfer load to Port Botany ZS and retire ageing 11kV switchgear

Option 2 involves retiring the existing 11kV compound-insulated switchgear at Botany ZS and transferring the associated 11kV load to the neighbouring Port Botany ZS, while retaining the existing gas-insulated switchgear in service. The scope of works includes:

- installation of new ductline and associated 11kV cables to transfer loads from Botany ZS to Port Botany ZS; and
- decommissioning and removal of redundant 11kV switchgear and associated equipment from site.

By facilitating the retirement of the existing 11kV compound-insulated switchgear, Option 2 also allows for the retirement of the associated secondary systems. It follows that the cost of upgrading secondary systems is completely avoided under Option 2. As we discuss in section 4.4.2 of FPAR the avoidance of secondary systems upgrades under Option 2 reflects a saving relative to the base case and has therefore been captured as a market benefit arising from differences in the timing of unrelated expenditure rather than a cost item.

The estimated capital cost of Option 2 is $13.0 million, which includes an estimated decommissioning cost of $0.2 million. Table 3.3 below shows the breakdown of the estimated construction capital costs across key cost categories for this option.

Table 3.3 – Breakdown of Option 2's expected construction capital cost, $m (2025/26)

	Labour	Materials	Contracted Services	Indirect cost	Total
Option 2 – retirement of 11kV compound-insulated switchgear	**1.3**	**0.1**	**10.9**	**0.7**	**13.0**

Table 3.4 below shows the breakdown of the estimated capital costs by component and over time for this option.

Table 3.4 – Breakdown of expected capital cost over time for Option 2, $m (2025/26)

Component	2025/26	2026/27	2027/28	2028/29	Total
Load transfer to Port Botany ZS	**0.8**	**0.8**	**4.0**	**7.2**	**12.8**
Decommissioning cost	**-**	**-**	**-**	**0.2**	**0.2**
Total	**0.8**	**0.8**	**4.0**	**7.4**	**13.0**

The relatively higher capital cost of Option 2, compared to Option 1, reflects the additional complexity involved in transferring load between Botany ZS and Port Botany ZS. The feeder route required for this transfer predominantly traverses busy roads carrying significant heavy vehicle movements associated with the surrounding port and industrial precinct, which increases the cost and disruption associated with the necessary civil works.

Undertaking load transfers in a live, heavily trafficked environment also gives rise to a greater potential for unforeseen circumstances and, consequently, cost overruns. Accordingly, Ausgrid considers the cost estimate for Option 2 to carry relatively greater uncertainty than that of Option 1, which we discuss further in section 4.3 in FPAR.

Overall, Option 2 is expected to take three years to complete, with commissioning of all work by 2029/30. Once fully commissioned, it will require approximately $1,300/year in planned routine maintenance costs, as the cable maintenance requirements are minimal and associated maintenance costs of connecting switchgear can be bundled into existing maintenance works at Port Botany ZS.

3.3 Social licence considerations

Ausgrid expects the impact to the community will be minimal for Option 1 (the preferred option). The works under Option 1 would be undertaken within the existing substation site and would have very limited effect on neighbouring properties.

Conversely, the proposed load transfers under Option 2 would require work outside of the existing site to install new cables between Botany ZS and Port Botany ZS. These works are likely to have temporary construction impacts, including traffic management, footpath closure and construction noise for nearby residents and road users. While Ausgrid would manage impacts through its standard construction practices, the overall impact would be much greater than under Option 1.

The local community, Bayside Council and surrounding neighbours have been notified of the project and will continue to be updated as it progresses. There are no material social licence costs for Option 1 (the preferred option) in this RIT-D. Whilst Option 2 would likely involve some social licence costs, it is not considered proportionate to estimate and include them as doing so would only further make Option 1 preferred.

3.4 Options considered but not progressed

Ausgrid also considered several other options that have not been progressed because they were found to be technically or economically infeasible. Table 3.5 below summarises Ausgrid's consideration and position on each of these options.

Table 3.5: Options considered but not progressed

Description	Reason why option was not progressed
Commissioning a new greenfield ZS	The construction of a new ZS would cost orders of magnitude more than the credible options assessed, without providing a commensurate increase in expected market benefits, and is therefore considered to not be economically feasible under the RIT-D.
Replacement of switchgear in a new switchroom	The existing switchroom provides sufficient physical space to accommodate in-situ replacement of the 11kV compound-insulated switchgear. Given that the existing switchroom does not yet exhibit condition issues that would justify its replacement, this option would involve a materially higher cost without a commensurate increase in benefits. This option is therefore not considered economically feasible.
Using non-network solutions either in combination with, or in-place of, a network option.	Ausgrid has considered how non-network solutions other than the CPN trial (i.e., demand management) could potentially defer the timing of the preferred network solution and whether the EUE could be cost effectively reduced. An assessment of the potential for non-network options has shown that these alternatives would not be cost effective due to the magnitude of the load reduction required. This result is driven primarily by the significant amount of EUE that the identified network options allow to be avoided, compared to the base case, and the likely cost of non-network solutions. In addition, these solutions would not resolve the escalating safety risk costs and reactive maintenance costs associated with continued use of the switchgear. This is detailed further in the separate Options Screening Notice released in accordance with clause 5.17.4(d) of the NER.

Description	Reason why option was not progressed
Community power network (CPN)	Ausgrid is progressing implementation of the CPN project in the Botany area. The project will provide a coordinated operation of rooftop solar and network batteries, to assist in supporting evening peak load reductions, improve capacity and utilisation of the local network. Ausgrid has assessed the impact of the CPN on the loads and required reliability from the 11kV compound-insulated switchgear at Botany ZS. Whilst the CPN is forecast to enable the Botany area to be self-sufficient for up to 30% of its load, it still relies on a constant connection with the grid. Therefore, the CPN project is not expected to be sufficient to allow for the retirement of the existing 11kV compound-insulated switchgear. It follows that the replacement of the switchgear, which is driven by asset condition and cost efficiency considerations (i.e., avoiding escalating safety risk costs and reactive maintenance costs), would still be required. Further, based on the timing, a CPN could not be implemented within a sufficient timeframe to address the identified need. In particular, the Botany CPN project is not expected to conclude until after the optimal timing of the preferred option (i.e., 2029/30), with the results remaining uncertain for a period of time thereafter. For these reasons, a CPN has not been considered as a credible option. Notwithstanding, Ausgrid considers the CPN project at Botany to be a valuable initiative, capable to create opportunities for apartment dwellers and small shops with limited or no ability to install rooftop solar and/or batteries to share in local renewable generation.
Transferring and/or connecting customers to SAPS	Ausgrid has considered the feasibility of SAPS, informed by its trial of SAPS with selected customers living in fringe-of-grid areas of Ausgrid's network. Based on Ausgrid's trial, the cost of SAPS would limit the number of customers available to reduce demand given the deferral funds available and consequently, the reduction in demand would not be sufficient to defer or postpone the network solution. In addition, these solutions would not resolve the escalating reactive maintenance costs associated with continued use of the ageing switchgear. This is detailed further in the separate Options Screening Notice released in accordance with clause 5.17.4(d) of the NER.

3.5 Preferred option at this stage

Ausgrid considers that Option 1 is the preferred option that satisfies the RIT-D. It involves replacing the remaining section of 11kV compound-insulated switchgear at Botany ZS with modern equivalent technology within the existing switchroom.

Option 1 is the top ranked option across a range of general sensitivity tests investigated (covering assumed network costs, VCR values and discount rates).

The scope of works for Option 1 includes:

- installation of 11kV switchgear using modern equivalent technology, comprising two sections of single bus switchgear and 11 switchgear panels;
- connection of new switchgear with existing 11kV switchgroups and transfer of loads from the existing 11kV compound-insulated switchgear to the new switchboard;
- secondary systems upgrades; and
- decommissioning and removal of redundant 11kV compound-insulated switchboards, control panels and transformers from the site.

The estimated capital cost of this option is approximately $9.5 million, comprising:

- $8.3 million for installing the new 11kV switchgear;
- $0.6 million for the load transfer to the new 11kV switchgear;
- $0.4 million for the replacement of secondary systems; and
- $0.2 million for the decommissioning of the old 11kV feeder cables.

Planned routine network operating costs under this option are expected to be around $6,400/year once commissioned, which is approximately 46% lower than the current annual routine maintenance costs for the 11kV compound-insulated switchgear at Botany ZS.

Overall, Option 1 is the lowest cost of the two credible options assessed in the FPAR and delivers the greatest net benefits.

Ausgrid expects that the necessary construction would commence as soon as practicable after this RIT-D and end in 2028/29, with commissioning occurring at the beginning of 2029/30.

Ausgrid considers that the FPAR, and the accompanying detailed analysis, identify Option 1 as the preferred option and that this satisfies the RIT-D. Ausgrid is the proponent for Option 1.

Impact to the community is anticipated to be minimal as the works will be undertaken within the existing substation site.

Refer to the FPAR Project Assessment Report for further details about the options assessment.

4 Assessment of SAPS and non-network solutions

4.1 Required demand management characteristics

To be considered a feasible option, any demand management solution must be technically feasible, commercially feasible, and able to be implemented in sufficient time by 2028/29 for deferral of the network investment.

4.2 Available demand management funds

To identify the available funds for a possible demand management solution, Net Present Value (NPV) analysis was carried out where the net NPV for the network option is compared against the net NPV benefit of deferral scenarios of the preferred network option.

Table 4.1 shows the available funds for a deferral of the network investment for 1, 2 and 3 years.

Table 4.1 - Required demand reduction and available funds at Botany Zone load area

Required peak demand reduction	Available demand management funds ($)		
	1 Yr deferral	2 Yr deferral	3 Yr deferral
5MVA*	$347k	$648k	$902k

*To be viable, DM solutions must materially reduce demand at times other than at peak due to the replacement driver. Note that the 5MVA of DM reduction does not change the optimal replacement timing of the project. This figure has been selected to reflect the available funds for a possible demand management solution for a large DM reduction. Even at this point, it is not possible for DM solutions to offer more cost-effective solutions.

Available funds have been calculated accordingly.

- For a 1-year deferral, a 5MVA demand reduction in 2028/29 results in total available demand management funds of $347k, which is equivalent to $69kVA/year,
- For 2-year deferral, a 5MVA demand reduction in 2028/29 and 2029/30 results in total available demand management funds of $648k, which is equivalent to $65/kVA/year, and
- For 3-year deferral, a 5MVA of demand reduction in 2028/29, 2029/30, and 2030/31 results in total available demand management funds of $902k, which is equivalent to $60/kVA/year.

4.3 Options considered

Ausgrid has considered Stand Alone Power Systems (SAPS) and other demand management solutions to determine their commercial and technical feasibility to assist with the identified need for Botany Zone load area. Each of the solutions considered is summarised below.

4.3.1 Stand Alone Power Systems (SAPS)

SAPS self-generate, store and supply electricity to connected customers that are physically disconnected to the wider electricity grid. Typical SAPS are made up of solar panels, a battery storage system and a back-up diesel generator.

Ausgrid is currently trialing SAPS with selected customers living in fringe-of-grid areas of Ausgrid's network[3]. The program aims to explore how SAPS can provide an alternative electricity supply solution that improves reliability and safety of our service to remote and rural customers, as well as being sustainable and cost-effective.

[3] https://www.ausgrid.com.au/In-your-community/Stand-Alone-Power-Systems

Ausgrid's experience with proposals from SAPS providers during the trial has provided insights on the cost of SAPS. On average it would cost $50k-100k or more to supply a typical residential customer (based on their annual energy usage) using a SAPS. Assuming a mid-point SAPS cost of $75k each, the amount of load that Ausgrid would be able to supply via SAPS using all the available funds would be about one residential customer. This is not sufficient to reduce, defer or postpone the proposed preferred network solution.

4.3.2 Community Power Network (CPN)

Ausgrid has considered the impact of the Community Power Network (CPN) that is currently being developed for the Botany / Mascot area. The project will provide a coordinated operation of rooftop solar and network batteries, to assist in supporting evening peak load reductions, improve capacity and utilisation of the local network. However, it would not remove the need to replace the switchgear, noting also that it is not expected to conclude until after the optimal timing of the preferred option. Notwithstanding, Ausgrid considers the CPN as an initiative able to create opportunities for apartment dwellers and small shops with limited or no ability to install rooftop solar and/or batteries to share in local renewable generation.

4.3.3 Other demand management options

There is no demand management solution mix that could meet the required demand reductions with the funds that are available. The costs of all demand management solutions considered exceed the $/kVA available for this project.

5 Conclusion

Based on the demand management options considered in Section 4, it is not considered possible that sufficient demand management measures could be feasibly implemented to achieve the required demand reduction to make project deferral technically and economically viable. Consequently, an Options Screening Report has not been prepared in accordance with rule 5.17.4(c) of the National Electricity Rules.