Regulatory Investment Test for Distribution (RIT-D)

Addressing Reliability Requirements in the Toogoolawah Network Area

Final Project Assessment Report

20 December 2022

energex
Part of Energy Queensland

EXECUTIVE SUMMARY

About Energex

Energex Limited (Energex) is a subsidiary of Energy Queensland Limited and manages the electricity distribution network in the growing region of South East Queensland which includes the major urban areas of Brisbane, Gold Coast, Sunshine Coast, Logan, Ipswich, Redlands and Moreton Bay. Our electricity distribution area runs from the NSW border north to Gympie and west to the base of the Great Dividing Range.

Our electricity network consists of approximately 54,200 kilometres of powerlines and 680,000 power poles, along with associated infrastructure such as major substations and power transformers.

Today, we provide distribution services to more than 1.4 million domestic and business connections, delivering electricity to a population base of around 3.4 million people.

Identified Need

Toogoolawah Zone Substation (SSTGW) is supplied from Lockrose Bulk Supply Substation (SST78) via a 33kV ring network, which also supplies Coominya Zone Substation (SSCMY), Esk Zone Substation (SSESK), Murrumba Zone Substation (SSMRB) and Somerset Dam Zone Substation (SSSDM). SSTGW provides electricity supply to approximately 1,900 predominately domestic customers in the surrounding suburbs.

SSTGW has four (4) 33/11kV transformers with three (3) of those units on hot-standby. It also consists of 33kV and 11kV outdoor switchgear and a control room.

The purpose of the project is to remove the existing problematic 33kV duo-roll goose neck and 33 and 11kV braided vertical drop isolators as it is not possible to replace them in-situ. This is because the 11kV bus does not meet the required clearance and will require extensive staging of temporary works and generation along with staff exposure to working adjacent to energised outdoor bus. Expulsive drop out fuses which are spark emitting type, will also be removed and the 33kV and 11kV outdoor switchgear will be replaced with indoor switchgear.

In addition, the three (3) aged hot-standby 33/11kV transformers TR1, TR2 and TR3 will also be removed as they have been in operation well beyond recommended retirement years and have poor diagnostic readings and are exhibiting oil leaks. Bunding for these transformers are also not compliant with current standard with potential environmental impacts associated with site proximity to the water course which feeds into the Wivenhoe Dam catchment. These transformers are being replaced with a single (second) transformer.

The ongoing operation of these assets beyond 2027 presents a significant risk to safety, environment and customer reliability.

Approach

The National Electricity Rules (NER) require that, subject to certain exclusion criteria, network business investments for meeting service standards for a distribution business are subject to a Regulatory Investment Test for Distribution (RIT-D). Energex has determined that network investment is essential in this case for it to continue to provide electricity to the consumers in the Toogoolawah supply area in a reliable, safe and cost-effective manner. Accordingly, this investment is subject to a RIT-D.

Energex published a Notice of No Non-Network Options Report for the above-described network constraint on 10 November 2022.

Two feasible options have been investigated are as follows:

- **Option 1:** Remove problematic plant items, replace the 33kV and 11kV outdoor switchgear with indoor switchgear and replace 3 x 1.5MVA 33/11kV aged transformers with 1 x 5/8MVA unit
- **Option 1:** Remove problematic plant items, replace the 33kV and 11kV outdoor switchgear with indoor switchgear and recover 3 x 1.5MVA 33/11kV aged transformers and install a mobile kiosk

This Final Project Assessment Report (FPAR), where Energex provides both technical and economic information about possible solutions, has been prepared in accordance with the requirements of clause 5.17.4(o) of the NER.

Energex's preferred solution to address the identified need is Option 1 – Remove problematic plant items, replace the 33kV and 11kV outdoor switchgear with indoor switchgear and replace 3 x 1.5MVA 33/11kV aged transformers with 1 x 5/8MVA unit.

CONTENTS

1. INTRODUCTION

This Final Project Assessment Report has been prepared by Energex in accordance with the requirements of clause 5.17.4(o) of the NER.

This report represents the final stage of the consultation process in relation to the application of the RIT-D on potential credible options to address the identified need for the Toogoolawah network area.

In preparing this RIT-D, Energex is required to consider reasonable future scenarios. With respect to major customer loads and generation, Energex has, in good faith, included as much detail as possible while maintaining necessary customer confidentiality. Potential large future connections that Energex is aware of are in different stages of progress and are subject to change (including outcomes where none or all proceed). These and other customer activity can occur over the consultation period and may change the timing and/or scope of any proposed solutions.

1.1. Response to the DPAR

Energex published a Notice of No Non-Network Options for the identified need in the Toogoolawah network area on the10th November 2022.

1.2. Structure of the Report

This report:

- Provides background information on the network capability limitations of the distribution network supplying the Toogoolawah area.
- Identifies the need which Energex is seeking to address, together with the assumptions used in identifying and quantifying that need.
- Describes the credible options that are considered in this RIT-D assessment.
- Quantifies costs and classes of material market benefits for each of the credible options.
- Describes the methods used in quantifying each class of market benefit.
- Provides details of classes of market benefits that are not considered material to this RIT-D assessment and provides explanations as to why these classes of market benefits are not considered material.
- Provides the results of Net Present Value (NPV) analysis of each credible option and accompanying explanatory statements regarding the results.
- Identifies the proposed preferred option, including detailed characteristics, estimated commissioning date, indicative costs, and noting that it satisfies the RIT-D.
- Provides contact details for queries on this RIT-D.

1.3. Dispute Resolution Process

In accordance with the provisions set out in clause 5.17.5(a) of the NER, Registered Participants or Interested Parties may, within 30 days after the publication of this report, dispute the conclusions made by Energex in this report with the Australian Energy Regulator. Accordingly, Registered Participants and Interested Parties who wish to dispute the conclusions outlined in this report based on a manifest error in the calculations or application of the RIT-D must do so within 30 days of the publication date of this report. Any parties raising a dispute are also required to notify Energex. Dispute notifications should be sent to demandmanagement@energex.com.au

If no formal dispute is raised, Energex will proceed with the preferred option to remove problematic plant items, replace the 33kV and 11kV outdoor switchgear with indoor switchgear and replace 3 x 1.5MVA 33/11kV aged transformers with 1 x 5/8MVA unit at Toogoolawah 33/11kV Substation.

1.4. Contact Details

For further information and inquiries please contact:

E: demandmanagement@energex.com.au
P: 13 74 66

2. BACKGROUND

2.1. Geographic Region

SSTGW provides electricity supply to predominately domestic customers in the Colinton, Harlin, Linville, Monsildale, Moore and Toogoolawah areas in the Somerset Region. The geographical location of Energex's sub-transmission network and substations in the area is shown.

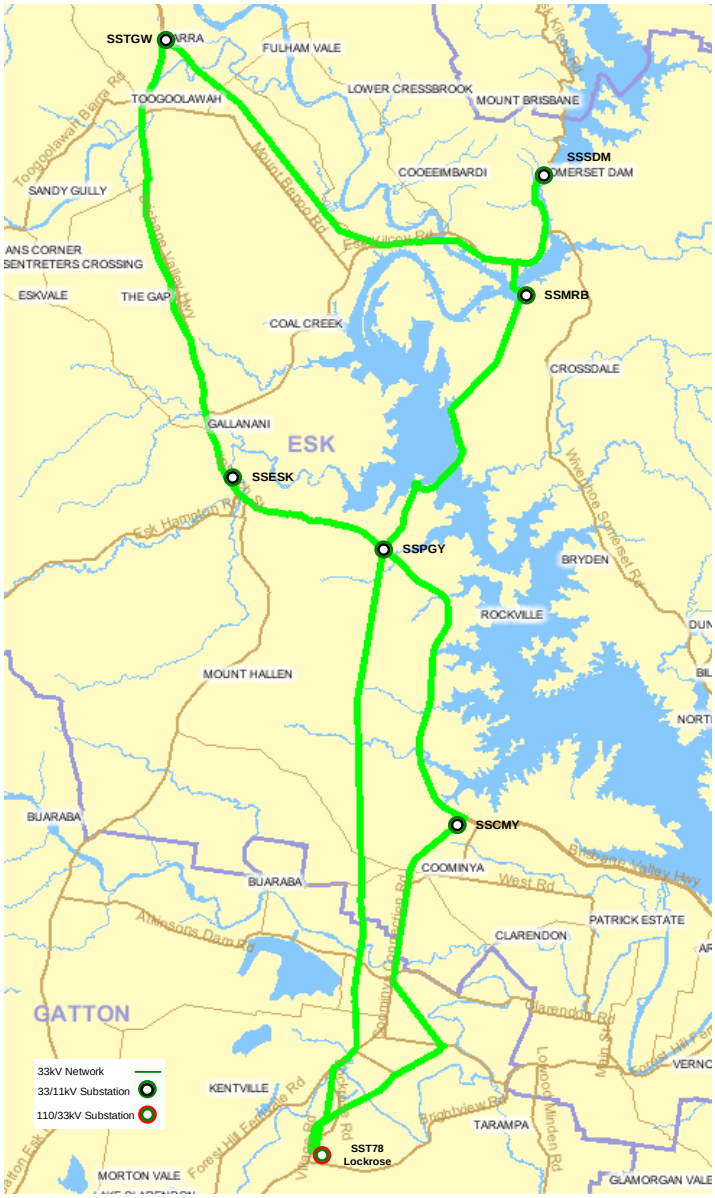


Figure 1: Existing 33kV network arrangement (geographic view)

2.2. Existing Supply System

SSTGW is supplied from SST78 (Lockrose) via 33kV feeders F3840 (to Esk Zone Substation SSESK) and F380 (to Murrumba Zone Substation SSMRB and Somerset Dam Zone Substation SSSDM). The substation has an outdoor 33kV and 11kV switchgear, a control room, and one (1) 8MVA and three (3) 1.5MVA 33/11kV transformers. The 11kV bus has five (5) active feeders which supplies a total of approximately 1,900 residential, industrial, commercial, and rural customers, with a peak of 5.7MVA based on recent summer periods.

The three (3) 1.5MVA transformers have been operating as hot standby well past the recommended retirement year and are therefore deemed to be unreliable to supply load.

A schematic view of the existing sub-transmission network arrangement is shown in Figure 2 and the general arrangement of Toogoolawah Substation is illustrated in Figure 3.

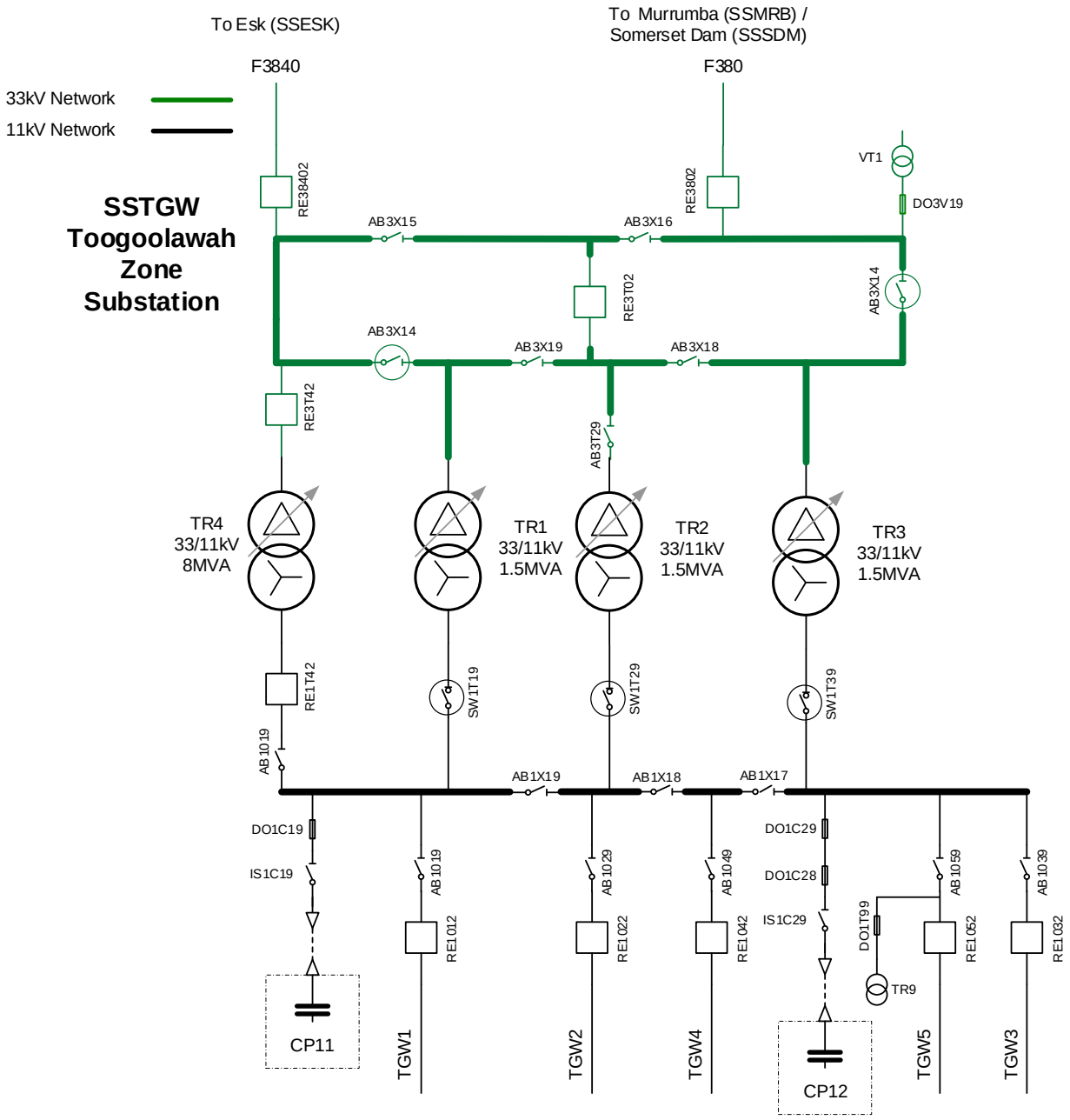


Figure 2: Existing network arrangement (schematic view)

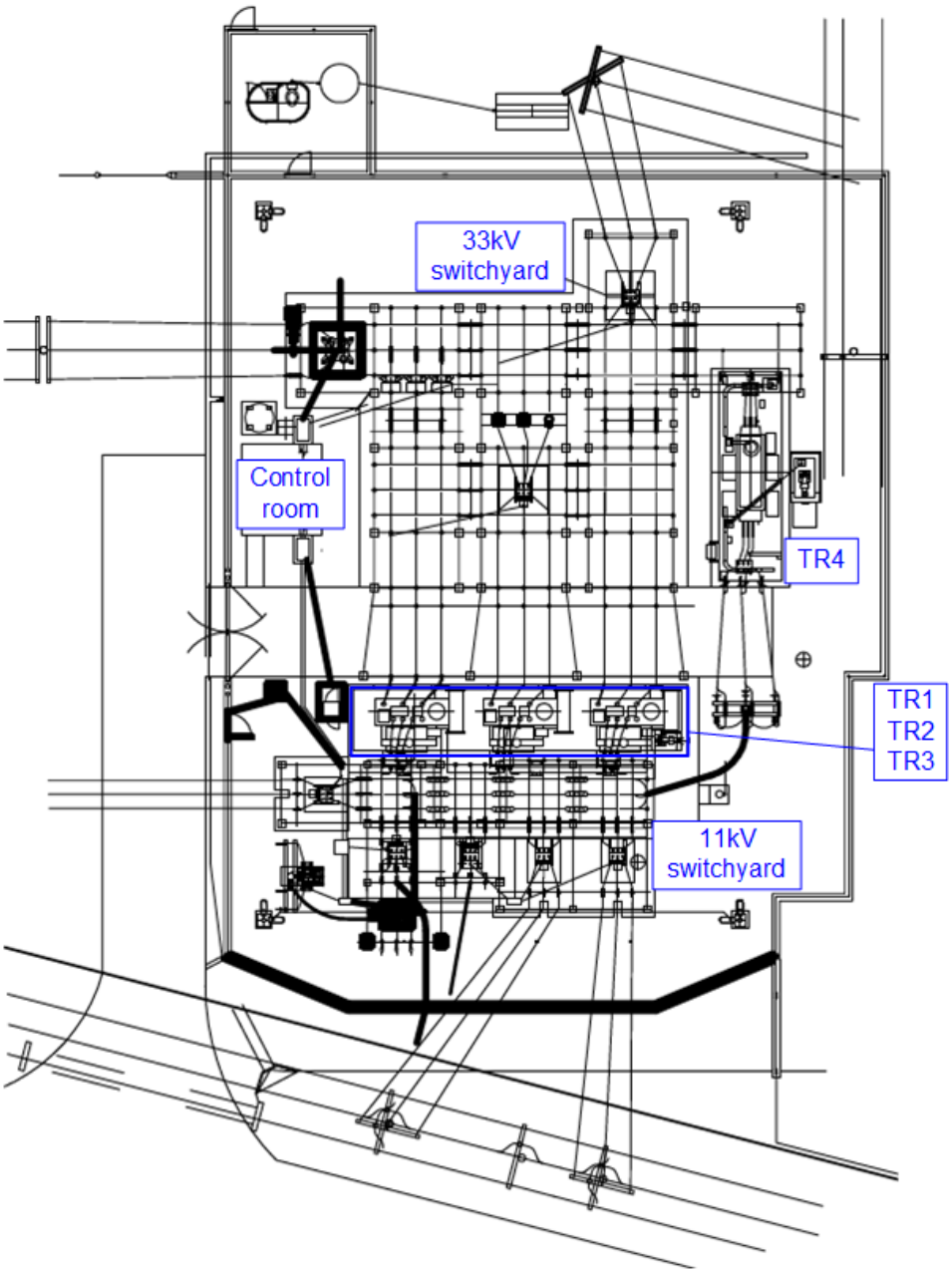


Figure 3: Toogoolawah Substation (general arrangement)

2.3. Load Profiles / Forecasts

The load at SSTGW comprises of predominantly residential customers and is summer peaking.

2.3.1. Full Annual Load Profile

The full annual load profile for Toogoolawah 33/11kV zone substation for 2021/22 financial year is shown in Figure 4. The peak occurs through the summer period. There are no capacity limitations at SSTGW as for the loss of TR4, the 3 x transformers (TR1, TR2, & TR3) on hot standby can supply the load at SSTGW. However, given the condition of TR1, TR2 and TR3 there is significant risk of these transformers failing as soon as they are required to take load, putting the entire substation load at risk.

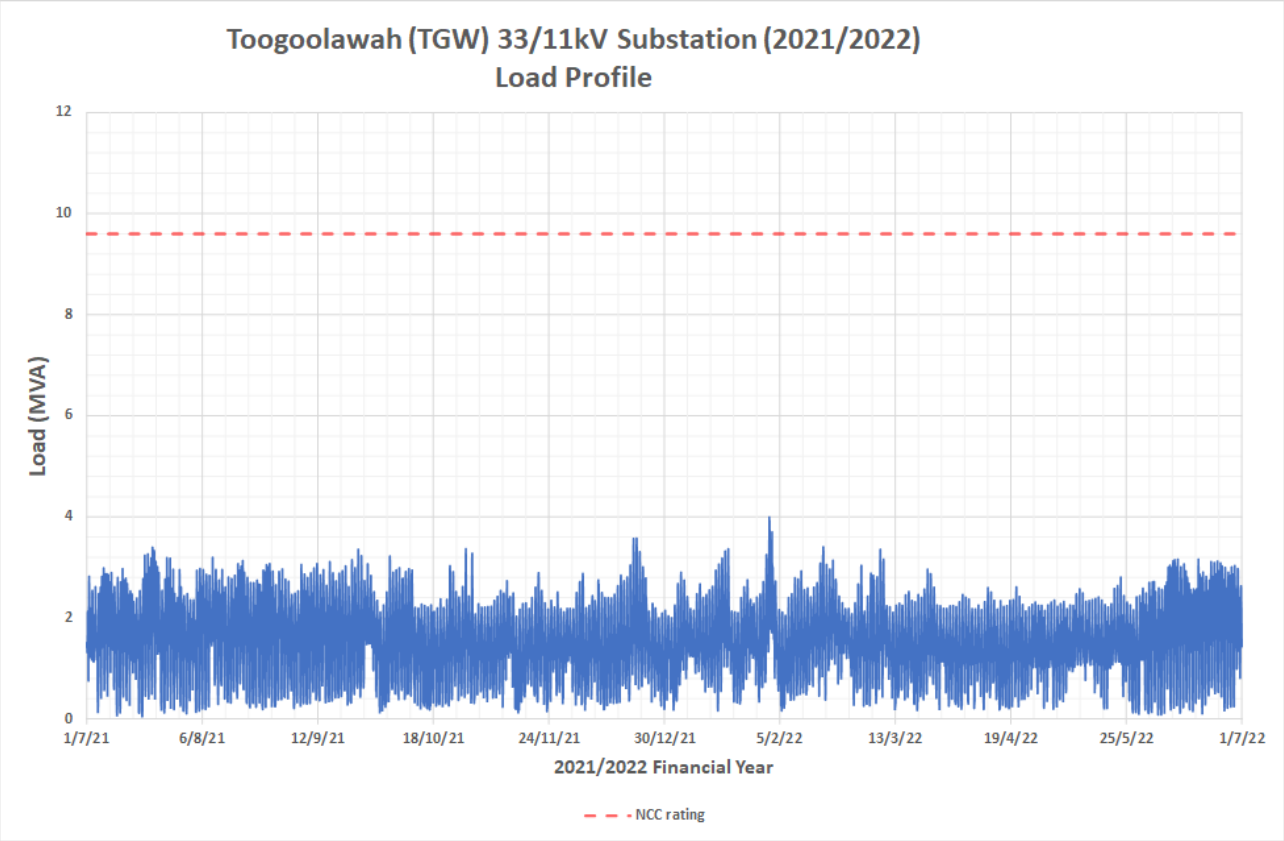


Figure 4: SSTGW actual annual load profile

2.3.2. Load Duration Curve

The load duration curve for SSTGW over the 2021/22 is shown in Figure 5**Error! Reference source not found.**. The load does not exceed the NCC capacity of 9.6MVA.

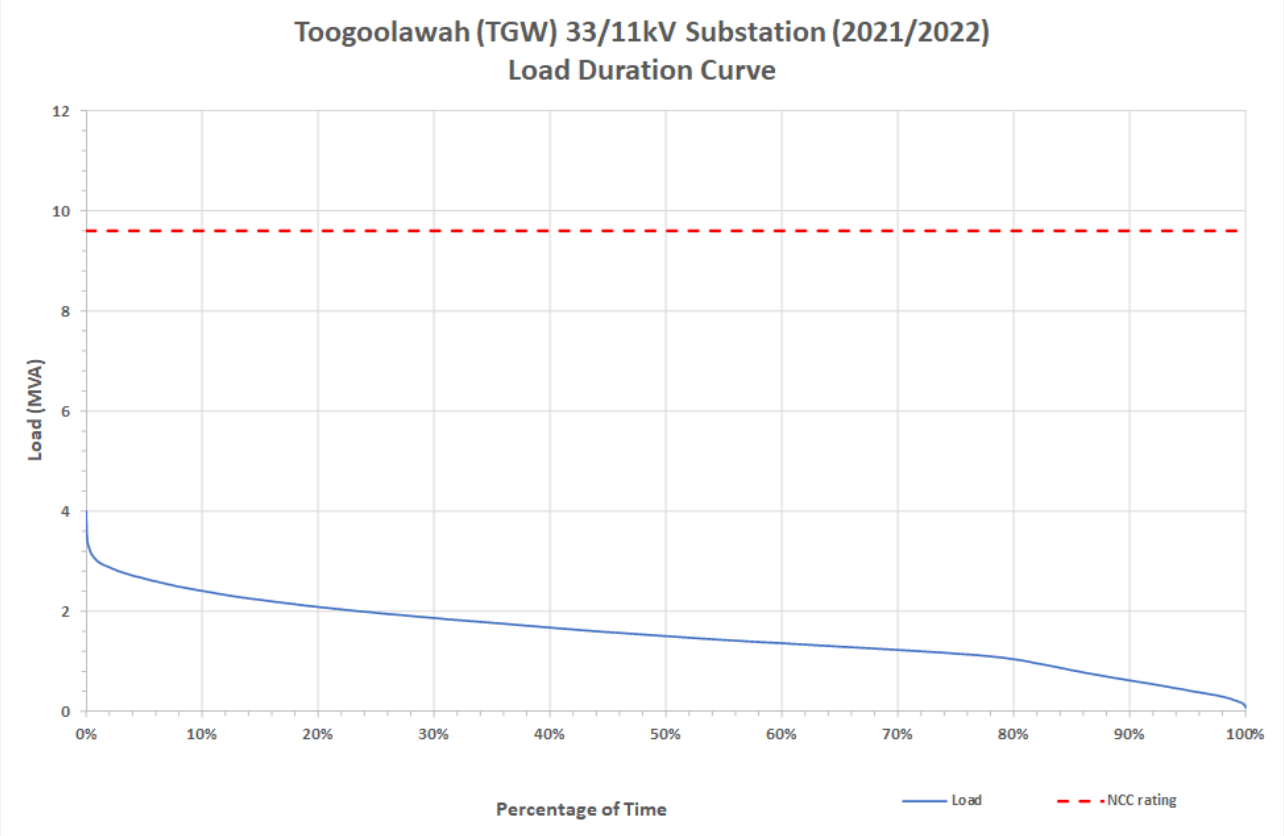


Figure 5: Substation load duration curve for SSTGW

2.3.3. Average Peak Weekday Load Profile (Summer)

The daily load profile for the average and peak weekday during summer is illustrated below in Figure 6**Error! Reference source not found.**. The summer peak loads for SSTGW are historically experienced in the late afternoon and evening.

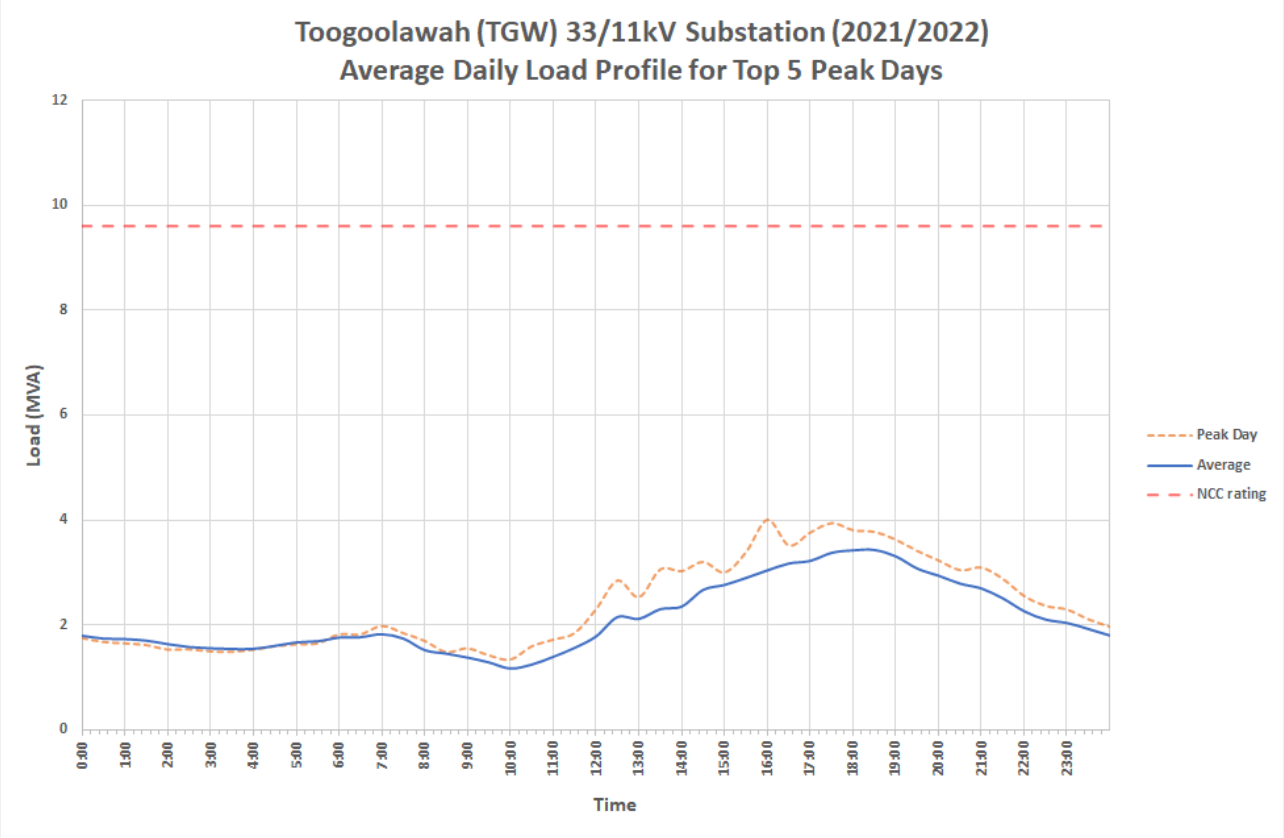


Figure 6: Average Daily and Maximum Load Profiles (Summer)

2.3.4. Base Case Load Forecast

The 10 PoE and 50 PoE load forecasts for the base case load growth scenario are illustrated Figure 7. The historical peak load for the past six years has also been included in the graph. It can be seen that peak loads were between 5 to 6MVA for previous years prior to the recent summer peak of 4MVA.

The 10% POE forecast load growth in the base case scenario does not exceed the NCC rating of 9.6MVA. It can also be noted that flat growth in the peak load is forecast over the next 10 years under the base case scenario.

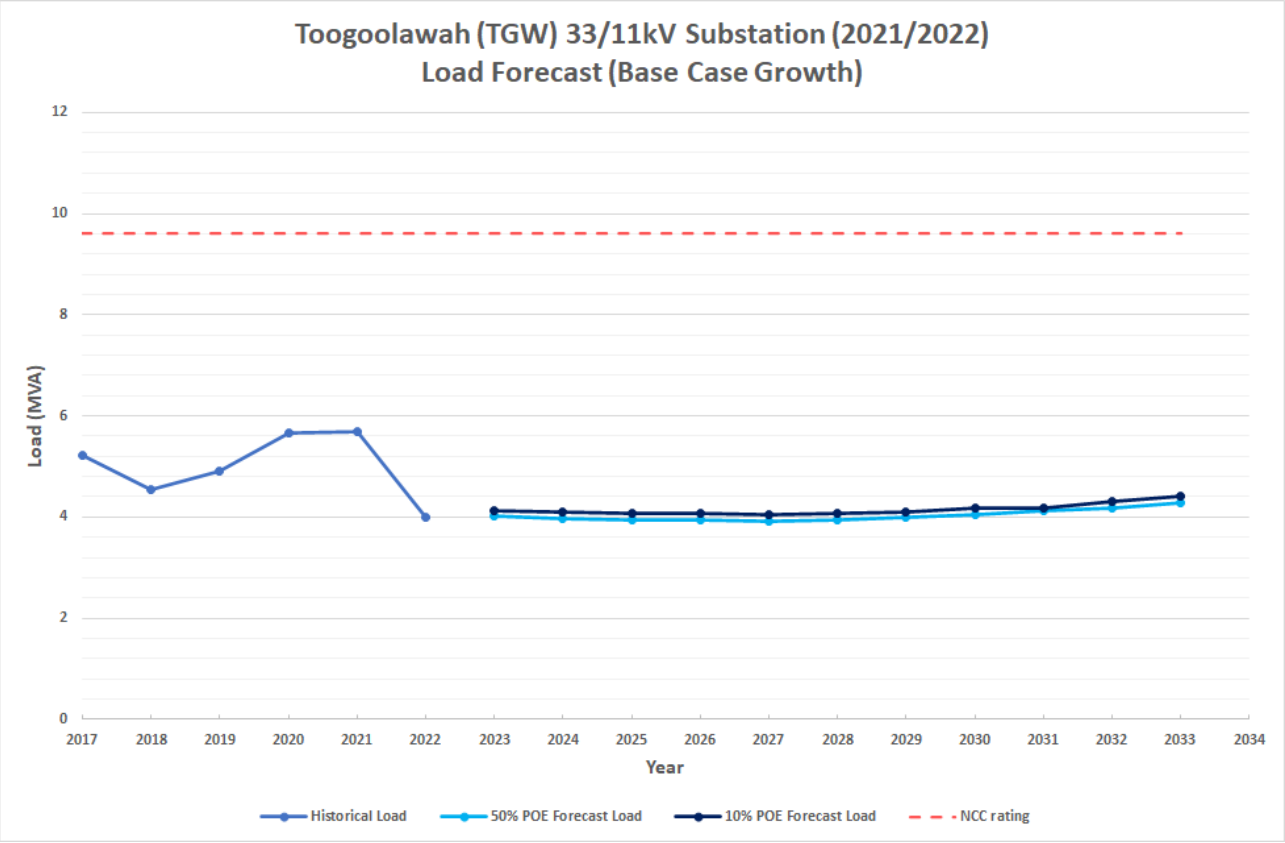


Figure 7: Network Base case load forecast

2.3.5. High Growth Load Forecast

The 10 PoE and 50 PoE load forecasts for the high load growth scenario are illustrated in Figure 8. With the high growth scenario, the peak load is forecast to increase over the next 10 years.

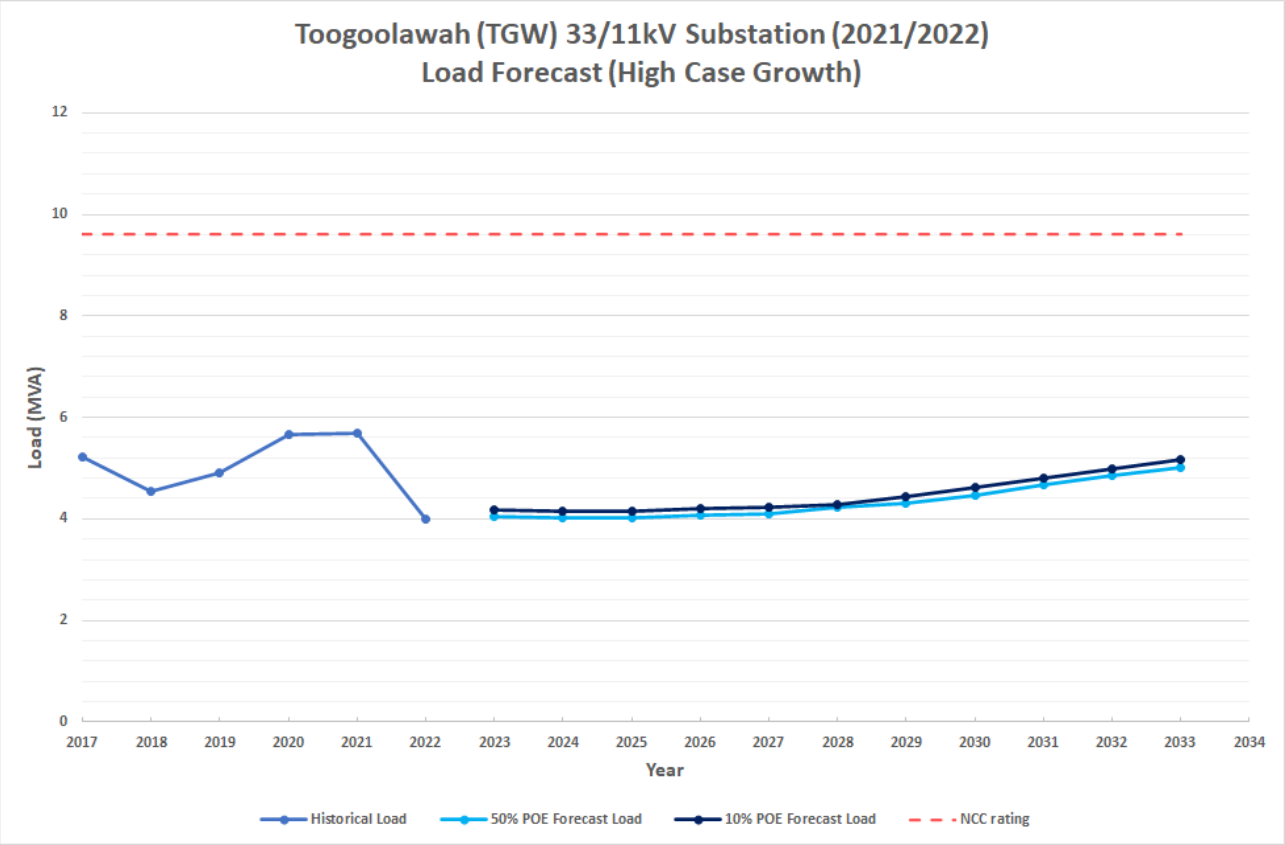


Figure 8: Network High Growth Load Forecast

2.3.6. Low Growth Load Forecast

The 10 PoE and 50 PoE load forecasts for the low load growth scenario are illustrated in Figure 9. With the low growth scenario, the peak load is forecast to remain relatively steady over the next 10 years.

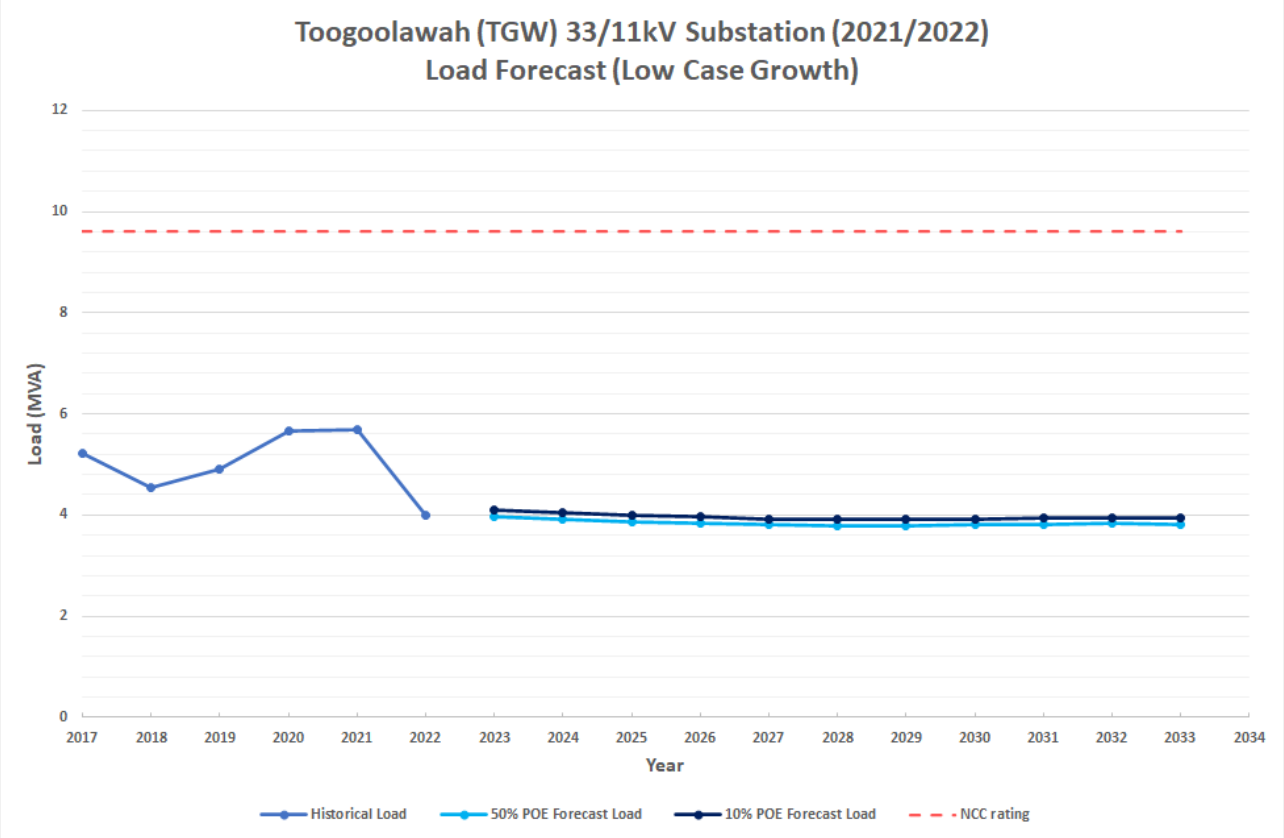


Figure 9: Network Low Growth Load Forecast

3. IDENTIFIED NEED

3.1. Description of the Identified Need

3.1.1. Poor Condition Assets

A recent condition assessment and substation works have highlighted a number of critical assets are at the end of their serviceable life, are in poor condition or are targeted for removal. The condition of these assets presents considerable safety and customer reliability risk. These assets include:

- Three (3) 33/11kV transformers
- Six (6) 33kV Isolators
- Three (3) 11kV Isolators
- Four (4) sets of expulsive drop out fuses
- One (1) 33kV VT set (single phase)
- One (1) set of LV Surge Arrestors

The deterioration of these primary and secondary system assets poses safety risks to staff working within the switchyard. It also poses a safety risk to the general public, through the increased likelihood of protection relay mal-operation. Without remediation, Energex views that the safety risk to the public and its staff to not be reduced to So Far As Is Reasonably Practicable.

Additionally, the problematic isolators and the poor condition of the assets significantly increases the likelihood of outages, resulting in a reduction in the level of reliability experienced by the customers supplied from Toogoolawah Substation.

A recent condition assessment has highlighted that a number of critical assets are problematic or at end of life and are in poor condition. The condition of these assets presents a considerable safety, environmental and reliability risk.

3.1.2. Reliability

Currently, the aged assets present a risk to the reliability of supply at Toogoolawah. Figure 10 shows that the value of customer reliability by replacing the assets is $59,057 after the first five years for Option 1 and is $58,262 after the first five years for Option 2. The scenarios that have been considered are:

- TR1/TR2/TR3 are assumed to not be capable of carrying load. As have potential environmental impacts, given these transformers are now well past their recommended retirement years and their close proximity to the water course, with any contamination eventually finding its way into the Wivenhoe dam the transformers should be removed.
- TR4 5/8 MVA 33/11kV transformer failure – a failure of this transformer results in loss of supply of all load at SSTGW; however, it was assumed that 0.25MVA load could be supplied by transfers within 3 hours, with full restoration within 12 hours.
- 11kV isolator/ recloser failure - a failure of any of these items of plant results in loss of 11kV bus and all load at SSTGW; however, it was assumed that 0.25MVA load could be supplied by transfers within 3 hours, with full restoration within 4 hours.
- 33kV isolator/ recloser failure – a failure of any of these items of plant would result in a loss of 33kV bus and all load at SSTGW; however, it was assumed that 0.25MVA load could be supplied by transfers within 3 hours, with full restoration within 4 hours.
- 33kV or 11kV pipework outdoor bus – a failure of any of these items of plant would result in an outage to all load; however, it was assumed that 0.25MVA load could be supplied by transfers within 3 hours, with full restoration within 6 hours.

3.2. Quantification of the Identified Need

3.2.1. Poor Condition Assets

A recent condition assessment has highlighted that a number of critical assets are problematic or at end of life and are in poor condition. The condition of these assets presents a considerable safety, environmental and reliability risk.

Condition data indicates a number of problematic and end of life plant items:

- Power transformers T1, T2 & T3 are aged with poor DGA and oil leaks (moderate leaks on TR1 & TR2). These transformers have been energised from HV side since 2005 with no connected load.
- 33kV Duo-roll goose neck and 33 & 11kV braided vertical drop isolators. Field experience has revealed common issues with these units:
    - Fixed fingers tend to loosen causing high resistance and heating leading to contact annealing and loss of tension resulting in failure
    - Force of vertical operation causes hairline cracks in insulators resulting in a breakdown of the porcelain
    - Corrosion of braids.

- Expulsive drop out fuses are to be replaced to remove the hazard of expelled material.
- Epoxy resin LV surge arresters on TR9 is of a shattering type.
- Aged 33kV VT set (single phase), with one phase (tank) leaking oil

The deterioration of these primary and secondary system assets poses safety risks to staff working within the switchyard. It also poses a safety risk to the general public, through the increased likelihood of protection relay mal-operation and failure of the isolators. Additionally, the problematic isolators and the poor condition of these assets significantly increases the likelihood of outages, resulting in a reduction in the level of reliability experienced by the customers supplied from Toogoolawah Substation.

Where Energex identifies an imminent asset safety risk, immediate temporary measures are put in place to ensure safety of staff and public until permanent remediation can be performed.

3.2.2. Risk Quantification Benefit Summary

Risk quantification analysis has been completed for option 1 which includes the VCR and cost of emergency replacement (ERC). Figure 10 shows the benefits of Option 1 and Option 2 in comparison to the counter-factual, which in this case is continuing the use of the existing isolators. The benefit of this option 1 is $151,508 by 2032 and increases to $504,084 by 2062. The benefit of this option 2 is $146,162 by 2032 and increases to $470,233.55 by 2062.

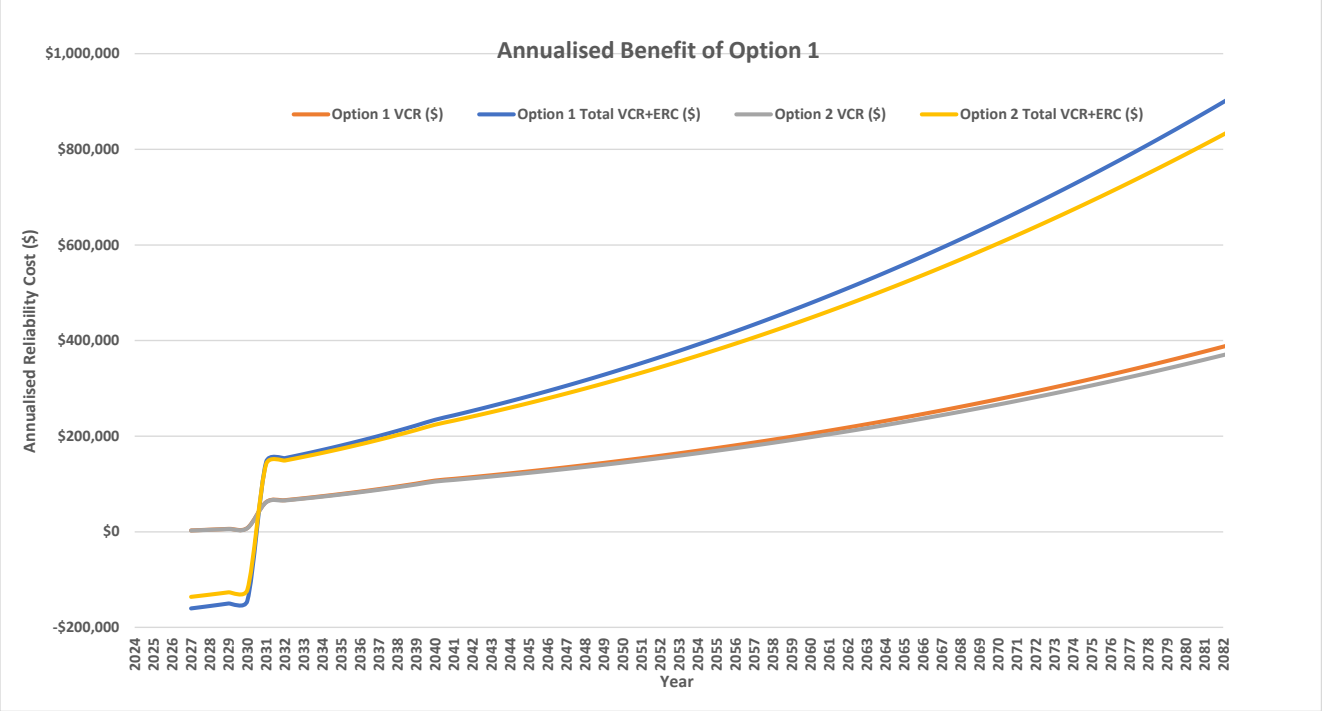


Figure 10: Annualised Benefits of Option 1 compared with Counter-factual

3.3. Assumptions in Relation to Identified Need

Below is a summary of key assumptions that have been made when the identified need has been analysed and quantified.

It is recognised that the below assumptions may prove to have various levels of correctness, and they merely represent a 'best endeavours' approach to predict the future identified need.

3.3.1. Forecast Maximum Demand

It has been assumed that forecast peak demand at Toogoolawah Substation will be consistent with the base case forecast outlined in Section 2.3.4.

Factors that have been taken into account when the load forecast has been developed include the following:

- load history;
- known future developments (new major customers, network augmentation, etc.);
- temperature corrected start values (historical peak demands); and
- forecast growth rates for organic growth.

3.3.2. Future Load Profile

Characteristic average day load profiles shown in Section **Error! Reference source not found.** a re unlikely to change significantly from year to year and the shape of the load profile is assumed to remain virtually the same with increasing maximum demand.

4. CREDIBLE OPTIONS ASSESSED

4.1. Assessment of Network Solutions

Energex has identified two (2) credible network options that will address the identified need. The option of replacement of the problematic and end of life assets in-situ was considered but rejected, because of the following:

- Clearance between the 11kV feeder bays is inadequate, thus, to replace the isolators most of the bus would have to be out of service. Therefore, replacement in-situ would require extensive temporary works and significant generation as there are limited load transfers available.
- In-situ replacement of disconnectors does not address existing low terminations.
- Uncertainty regarding remaining life of the galvanised steel "pipework" structures given its age and condition.
- Current contract isolators are not compatible with existing “pipework” structures.
- Sub-standard protection schemes for the outdoor bus and transformers, with inadequate space on the outdoor bus to install required CTs to deploy current standard protection schemes.
- Safety risk exposure to staff working adjacent energised outdoor bus for considerable period due to complex staging plan required to replace assets in-situ.
- Increased network risk due to longer outages required for staging.

4.1.1. Option 1: Remove problematic plant items, replace the 33kV and 11kV outdoor switchgear with indoor switchgear and replace 3 x 1.5MVA 33/11kV aged transformers with 1 x 5/8MVA unit

This option involves the following works:

- Replace outdoor bus with new 33kV switchgear (2 x 3-way RMU switchgear) & 11kV switchgear (2 x 5-way RMU switchgear) and control building
- Recover 3 x 1.5 MVA 33/11 kV transformers
- Install 1 x 5 MVA 33/11 kV transformer
- Remove problematic and aged 11kV and 33kV outdoor isolators
- Replace 4 sets of Expulsive drop out fuses (EDO) which are spark emitting type with HRC sparkless fuses
- Epoxy resin LV surge arresters on TR9 are to be replaced with non-shattering arresters
- Install NEXs on TR4 & new transformer
- Install new panels for 2 x 33kV feeder protection
- Install new panels for 2 x 33/11kV transformer protection

- Install new battery bank and charger, AC & DC boards

A schematic diagram of the proposed network arrangement for Option 1 is shown in Figure **11**.

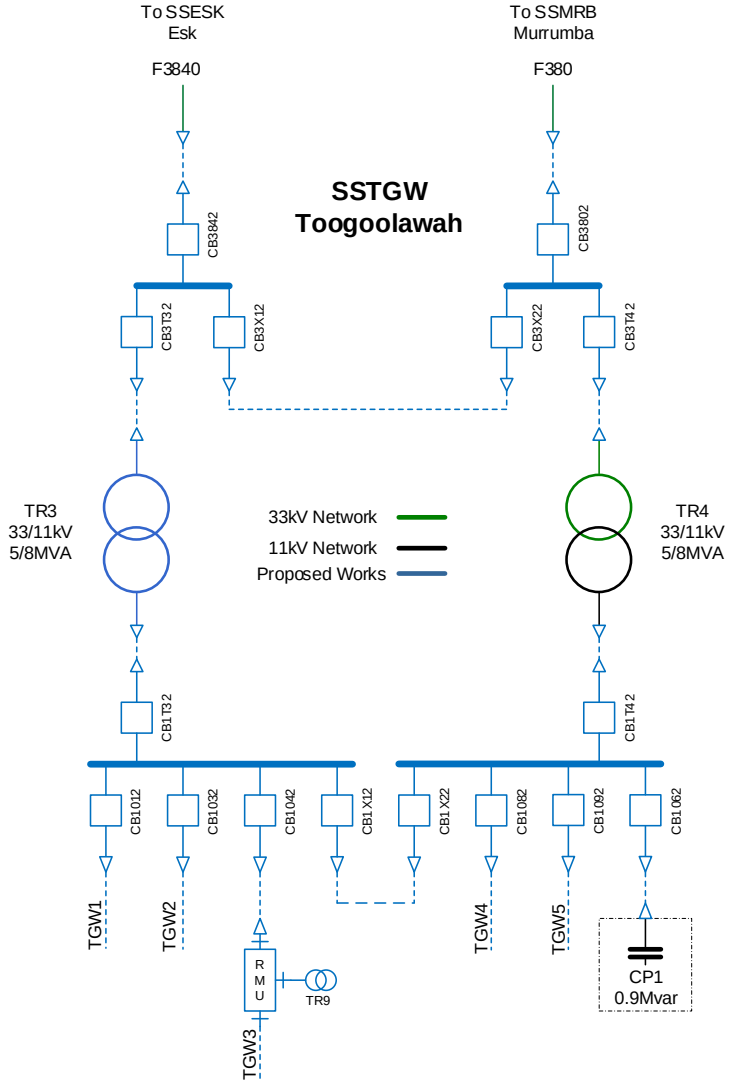


Figure 11: Option 1 proposed network arrangement (schematic view)

4.1.2. Option 2: Remove problematic plant items, replace the 33kV and 11kV outdoor switchgear with indoor switchgear and recover 3 x 1.5MVA 33/11kV aged transformers and install a mobile kiosk

This option involves the following works:

- Same as option 1 except that the 3 x 1.5MVA 33/11kV aged transformers would be replaced with a mobile kiosk connection

A schematic diagram of the proposed network arrangement for Option 1 is shown in Figure 12.

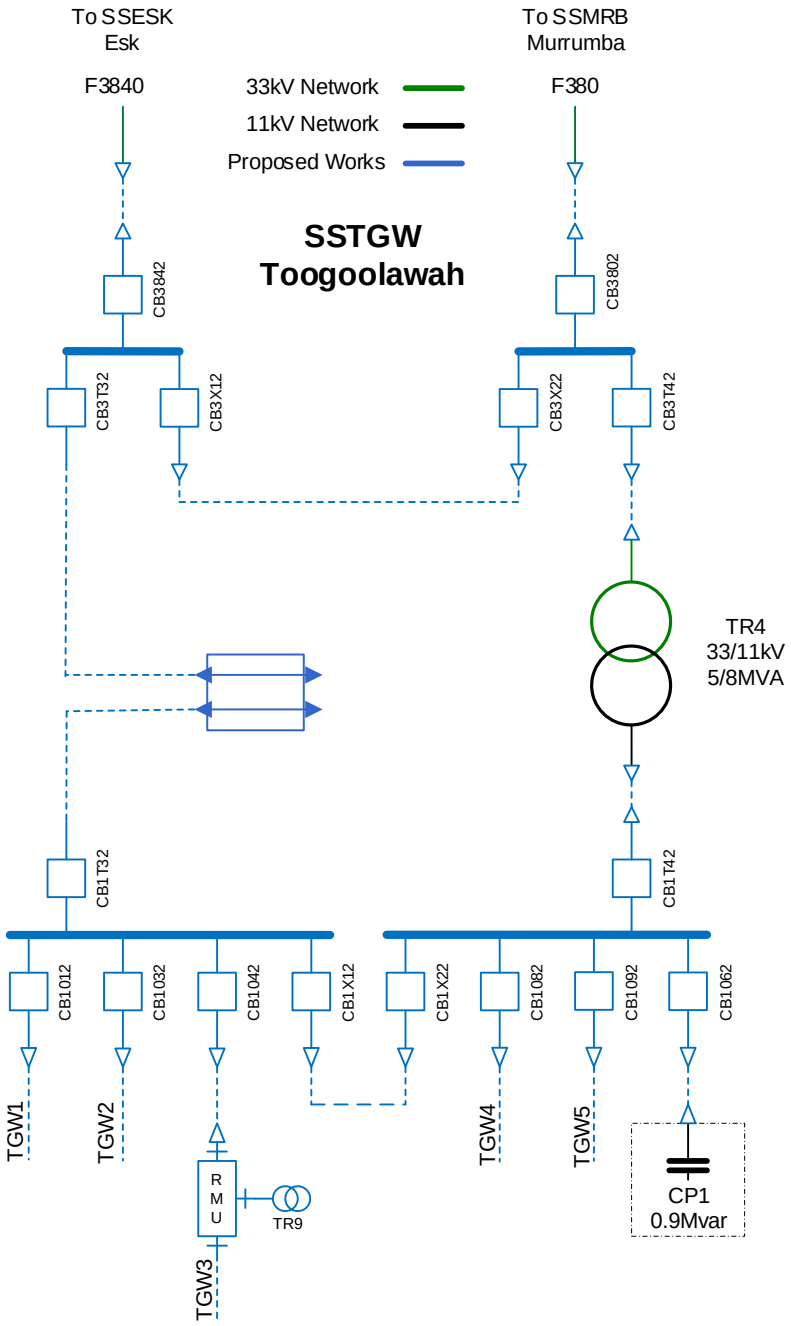


Figure 12: Option 2 proposed network arrangement (schematic view)

4.2. Assessment of Non-Network Solutions

A Notice of no non-network options was published as Energex did not identify any credible non-network solutions.

4.2.1. Demand Management (Demand Reduction)

A non-network investigation Energex normally undertakes is to assess the potential of Demand and Energy Management (DEM). However, for this project to be deferred, the 11kV load would need to be reduced to be zero (0) MVA, therefore demand reduction is not applicable.

4.2.2. Non-Network Solution Summary

Energex has not identified any viable non-network solutions internally that will provide a complete or a hybrid (combined network and non-network) solution to provide the magnitude of network support required in the Toogoolawah area to address the identified need.

4.3. Preferred Network Option

Energex's preferred internal network option is Option 1: Remove problematic plant items, replace the 33kV and 11kV outdoor switchgear with indoor switchgear and replace 3 x 1.5MVA 33/11kV aged transformers with 1 x 5/8MVA unit.

Upon completion of these works, the asset safety and reliability risks at SSTGW Substation will be addressed. The preferred option will provide the greatest reliability benefit for customers, whilst also reducing expenditure on obsolete, non-compliant and high maintenance assets, while ensuring more efficient use of design and construction resources.

The estimated capital cost of this option inclusive of interest, risk, contingencies and overheads is $9.208 million. Annual operating and maintenance costs are anticipated to be the same as the existing network as a result of this option. The estimated project delivery timeframe has design commencing in February 2023 and construction completed by May 2027.

5. MARKET BENEFIT ASSESSMENT METHODOLOGY

The purpose of the RIT-D is to identify the option that maximises the present value of net market benefits to all those who produce, consume and transport electricity in the National Electricity Market (NEM).

In order to measure the increase in net market benefit, Energex has analysed the classes of market benefits required to be considered by the RIT-D.

5.1. Classes of Market Benefits Considered and Quantified

Value of Customer Reliability, or involuntary load shedding and avoidance of future emergency replacement of assets have been considered and quantified in this analysis. All Market benefits considered have been listed in section **Error! Reference source not found.** for completeness.

5.1.1. Changes in Involuntary Load Shedding

Involuntary load shedding is where a customer's load is interrupted from the network without their agreement or prior warning. As discussed in Section **Error! Reference source not found.** a n umber of scenarios exist where an in-service failure of a circuit breaker results in a network outage.

5.2. Classes of Market Benefits not Expected to be Material

The following classes of market benefits are not considered to be material for this RIT-D, and have not been included in this RIT-D assessment:

- Changes in voluntary load curtailment
- Changes in costs to other parties
- Changes in timing of expenditure
- Changes in load transfer capability
- Changes in network losses
- Option value

5.2.1. Changes in Voluntary Load Curtailment

Because none of the credible options include any voluntary load curtailment, and because there are no customers on voluntary load curtailment agreements in the Toogoolawah area at present, any market benefits associated with changes in voluntary load curtailment have not been considered.

5.2.2. Changes in Costs to Other Parties

Energex does not anticipate that any of the credible options included in this RIT-D assessment will affect costs incurred by other parties.

5.2.3. Changes in Timing of Expenditure

None of the credible options included in this RIT-D assessment is expected to affect the timing of other distribution investments for unrelated identified needs.

5.2.4. Changes in Load Transfer Capability

None of the credible options included in this RIT-D assessment are expected to have an impact on the load transfer capability between the zone substations in the Toogoolawah area.

5.2.5. Changes in Network Losses

Energex does not anticipate that any of the credible options included in the RIT-D assessment will lead to any significant change in network losses.

5.2.6. Option Value

The AER's view is that option value is likely to arise where there is uncertainty regarding future outcomes, the information that is available in the future is likely to change, and the credible options considered by the RIT-D proponent are sufficiently flexible to respond to that change[1].

Energex does not consider that the identified need for the options included in this RIT-D would be affected by uncertain factors about which there may be more clarity in future.

6. DETAILED ECONOMIC ASSESSMENT

6.1. Methodology

The RIT-D requires Energex to identify the credible option that maximises the present value of net economic benefit to all who produce, consume and transport electricity in the NEM.

Accordingly, a base case Net Present Value (NPV) comparison of the alternative development options has been undertaken.

6.2. Key Variables and Assumptions

The economic assessment contains anticipated costs of providing, operating and maintaining the options as well as expected costs of compliance and administration associated with each option.

The present value comparison summary includes all costs directly associated with constructing and providing the option. This includes the cost of land and easements currently owned or to be acquired for network augmentation.

[1] AER "Regulatory Investment Test for Distribution Application Guidelines", Section A6.
Available at: http://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/regulatory-investment-test-for-distribution-rit-d-and-application-guidelines

Interest on borrowings is not included as a cost in the comparison of options as it represents a cost of project financing, and as such is accounted for in present value calculations through the discounting of the project cash flows at the regulated weighted average cost of capital. The interest on borrowings is included in the Total Project Cost for which approval is being sought as it represents a legitimate cost of network augmentation.

6.3. Net Present Value (NPV) Results

An overview of the initial capital cost and the base case NPV results are provided in Table 1.

Option	Option Name	Rank	Initial Capital Cost	Net Economic Benefit ($ real)	PV of Capex ($ real)	PV of Opex ($ real)	PV of Benefits ($ real)
1	Remove problematic plant items, replace the 33kV and 11kV outdoor switchgear with indoor switchgear and replace 3 x 1.5MVA 33/11kV aged transformers with 1 x 5/8MVA unit	1	$9,208,187	$1,086,000	-$9,208,000	$0	$10,294,000
2	Remove problematic plant items, replace the 33kV and 11kV outdoor switchgear with indoor switchgear and recover 3 x 1.5MVA 33/11kV aged transformers and install a mobile kiosk	1	$8,208,187	$995,000	-$8,208,000	-$488,000	$9,691,000

Table 1: Base case NPV ranking table

Note: There is no material benefit in OPEX between the current network and Option 1.

7. CONCLUSION

The FPAR represents the final stage of the consultation process in relation to the application of the RIT-D.

Energex intends to take steps to progress the proposed preferred option to ensure any statutory non-compliance is addressed and undertake appropriately justified network reliability improvements, as necessary.

7.1. Preferred Option

Energex's preferred internal network option is Option 1: Remove problematic plant items, replace the 33kV and 11kV outdoor switchgear with indoor switchgear and replace 3 x 1.5MVA 33/11kV aged transformers with 1 x 5/8MVA unit.

Upon completion of these works, the asset safety and reliability risks at SSTGW will be addressed. The preferred option will provide the greatest reliability benefit for customers, whilst also reducing expenditure on obsolete, non-compliant and high maintenance assets, while ensuring more efficient use of design and construction resources.

The estimated capital cost of this option inclusive of interest, risk, contingencies and overheads is $9.208 million. Annual operating and maintenance costs are anticipated to be the same as the existing network as a result of this option. The estimated project delivery timeframe has design commencing in February 2023 and construction completed by May 2027.

7.2. Satisfaction of RIT-D

The proposed preferred option satisfies the RIT-D.

This statement is made on the basis of the detailed analysis set out in this report. The proposed preferred option is the credible option that has the highest net economic benefit under the most likely reasonable scenarios.

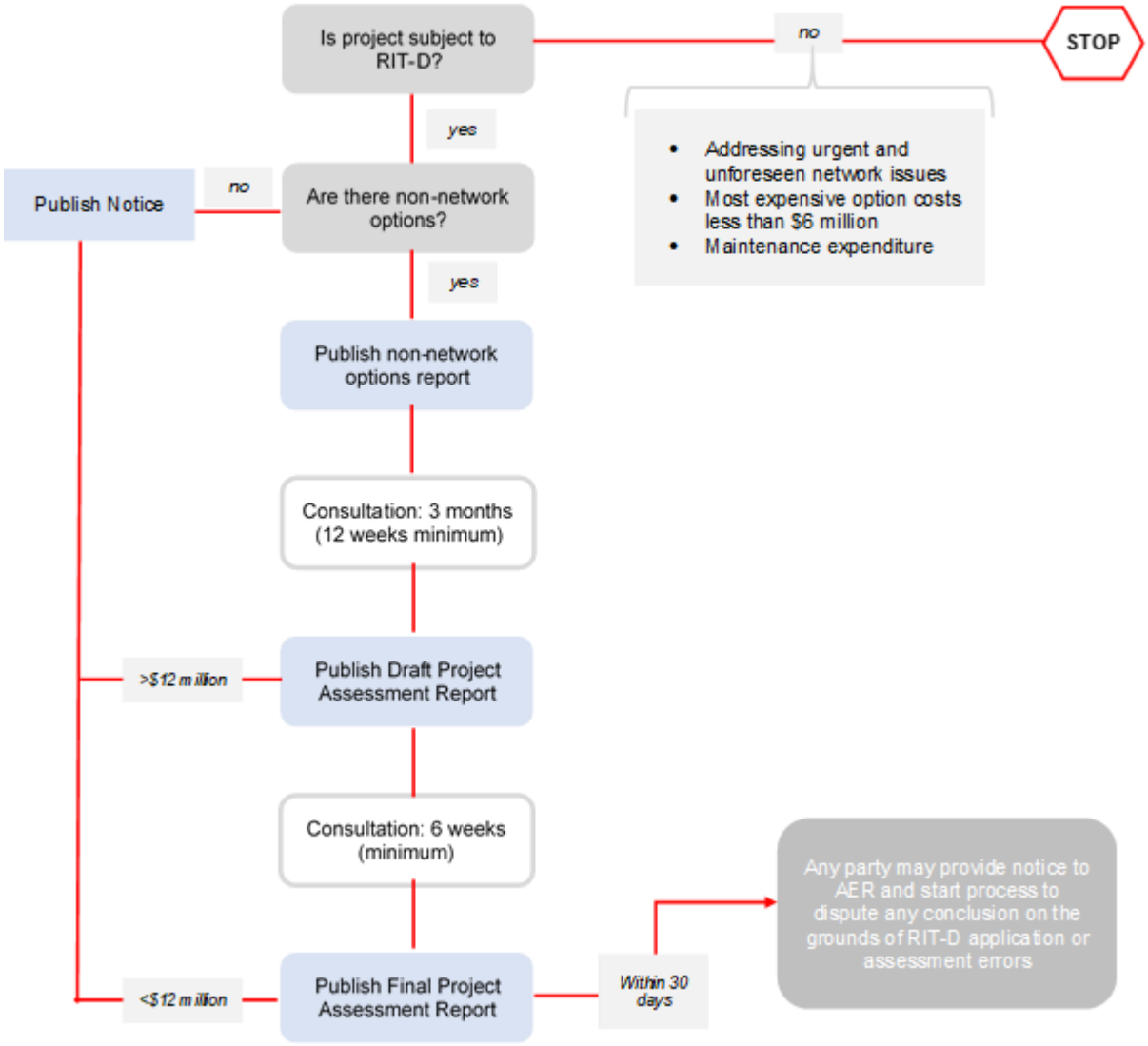
8. COMPLIANCE STATEMENT

This Final Project Assessment Report complies with the requirements of NER section 5.17.4(j) as demonstrated below:

Requirement	Report Section
(1) a description of the identified need for investment;	3
(2) the assumptions used in identifying the identified need (including, in the case of proposed reliability corrective action, why the RIT-D proponent considers reliability corrective action is necessary;	3.3
(3) a description of each credible option assessed	4
(4) where a *Distribution Network Service Provider* has quantified market benefits in accordance with clause 5.17.1(d), a quantification of each applicable market benefit of each credible option	5
(5) a quantification of each applicable cost for each credible option, including a breakdown of operating and capital expenditure	4
(6) a detailed description of the methodologies used in quantifying each class of costs or market benefit	5
(7) where relevant, the reasons why the RIT-D proponent has determined that a class or classes of market benefits or costs do not apply to a credible option	5.2
(8) the results of a NPV analysis of each credible option and accompanying explanatory statements regarding the results	6.3
(9) the identification of the proposed preferred option	6.4
(10) for the proposed preferred option, the RIT-D proponent must provide: (i) details of the technical characteristics;	7.1&7.2

(ii) the estimated construction timetable and commissioning date (where relevant); (ii) the indicative capital and operating costs (where relevant); (iv) a statement and accompanying analysis that the proposed preferred option satisfied the RIT-D; and (v) if the proposed preferred option is for reliability corrective action and that option has a proponent, the name of the proponent	
(11) contact details for a suitably qualified staff member of the RIT-D proponent to whom queries on the final report may be directed.	1.4

APPENDIX A – THE RIT-D PROCESS



Source: AEMC, *Rule determination: National Electricity Amendment (Replacement expenditure planning arrangements) Rule 2017*, July 2017, p. 64.