# Poor performing feeder upgrade program (NMF)

Regulatory Business Case (RBC) 2024-29

PowerWater

# Contents

# 1 Summary

**This business case has been prepared to support the 2024-29 Regulatory Proposal. The business case demonstrates that Power and Water has undertaken appropriate analysis of the need for the expenditure and identified credible options that will resolve the need and ensure that Power and Water continues to meet the National Electricity Objectives and maintain the quality, reliability, and security of supply of standard control services and maintain the safety of the distribution system.**

**The proposed investment identified in this business case will undergo further assessment and scrutiny through Power and Water's normal governance processes prior to implementation and delivery.**

**This business case assesses the reliability performance of the poor performing feeders and other identified network issues to identify if there are any drivers for investment.**

## 1.1 Business need

The Northern Territory National Electricity Rules (NT NER) and Electricity Industry Performance Code published by the Utilities Commission (UC) set out requirements to maintain network reliability within defined targets and to report on the five worst performing feeders per feeder category and the actions being taken to manage those feeders.

Analysis shows that the performance of the poor performing feeders is volatile from year to year but that investment through the current NMF program is effective at managing the performance. In the absence of the NMF program, we forecast that the feeder performance would deteriorate and it is highly likely that both Rural Short and Rural Long feeders would not comply with the required limits.

During the engagement process for the 2024-29 regulatory period, our customers have clearly stated that they value reliability and that they expect Power and Water to provide appropriately levels of service.

In order to remain compliant with our regulations and meet our customers expectations, Power and Water must ensure that they appropriately manage the poor performing feeders.

## 1.2 Options analysis

The options considered to resolve this need are shown in Table 1.

*Table 1 Summary of credible options*

| Option No. | Option name | Description | Recommended |
|---|---|---|---|
| **1** | Do nothing | Discontinue the program | No |
| **2** | Maintain current network performance | Continue with the current approach to the managing poor performing feeders | Yes |
| **3** | Improve network performance | Increase investment on poor performing feeders to improve network performance | No |

As part of a holistic assessment, we considered non-network solutions, capex/opex trade-offs and retirement or derating, but found that none of these options addressed the underlying network issues.

A cost benefit analysis was completed for each of the options where the risk reduction, compared to Option 1, was used as the benefit achieved by the option.

## 1.3 Recommendation

The options analysis identifies Option 2 – Maintain current performance at an estimated cost of $4.3 million (real 2021/22) to be most prudent and cost effective to meet the identified needs.

The recommended option:

- Is aligned to our strategy and asset objectives.
- Continues the existing NMF program at a volume of activity and expenditure based on historical levels.
- Is aligned to customer expectations for maintaining the reliability and safety of the network.
- Is deliverable.

Option 2 was found to be effective at managing the performance by analysis of the historical performance and expenditure. We found that approximately 50% of the reliability benefits achieved on the poor performing feeders is directly attributable to the NMF program. Analysis of the risk reduction also found that the program has a positive NPV and BCR, as shown in Table 2.

Absent a change in regulatory obligations or customer preference to improve network performance, Option 3 was not considered to be prudent and was not financially assessed.

Table 2 shows a summary of the expenditure requirements for the 2024-29 regulatory period.

*Table 2 Annual capital and operational expenditure ($'000, real 2021/22)*

| Item | FY25 | FY26 | FY27 | FY28 | FY29 | Total |
|---|---|---|---|---|---|---|
| **Capex** | 850 | 850 | 850 | 850 | 850 | 4,250 |
| **Opex** | - | - | - | - | - | - |
| **Total** | 850 | 850 | 850 | 850 | 850 | 4,250 |

# 2 Identified need

This section provides the background and context to this business case, identifies the issues that are posing increasing risks of obsolescence and non-compliant protection relays to Power and Water and its customers, describes the current mitigation program and its delivery status, highlights the consequence of asset failure, and provides a risk assessment of the inherent risk if no investment is undertaken.

## 2.1 Background

Power and Water has identified that some feeders provide a lower level of reliability that is not obvious from overall network performance reporting. These feeders are termed poor performing feeders and due to their location and few connected customers, it is not typically economic to undertake the works required to improve the service to customers. To enable Power and Water to improve performance to these customers, investment on these feeders is subject to specific regulatory requirements to ensure that the customers supplied by those feeders are provided an appropriate level of service.

This business case assesses the reliability performance of the poor performing feeders and other identified network issues to identify if there are any drivers for investment. This will ensure Power and Water can continue to:

- Maintain network reliability, as required by the NT NER capital expenditure objectives (NT NER, clause 6.5.7)
- Meet or outperform the minimum reliability performance targets set by the UC in the Electricity Industry Performance Code (the Code).
- Comply with the Code regarding addressing poor performing feeders.

Projects where there is a demonstrable economic or market benefit for reliability improvements are reviewed separately to this business case.

## 2.2 Compliance obligations

Power and Water must comply with the regulatory requirements set out in the following two key documents.

### 2.2.1 NT Electricity Industry Performance Code[1]

The code sets out two key requirements that dictate the required network performance and additional reporting requirements. These are:

- Clause 3 Target Standard for Network Entities, together with Schedule 3, sets out the requirements to comply with the SAIDI and SAIFI targets set by the utilities commission for each feeder category. The targets for the current regulatory period (2019-24) are shown in Table 3. We note that Power and Water has submitted proposed targets for the 2024-29 regulatory period, however the UCNT has not yet advised Power and Water if the proposed revised targets have been accepted or if

[1] Northern Territory of Australia, Electricity Industry Performance Code (Standards of Service and Guaranteed Service Levels), 25 Oct 2017

there will be any other changes to the targets. Accordingly, no changes to the targets have been incorporated into this business case.

- Schedule S.3.5 sets out the requirements to report on the five worst performing feeders, based on SAIDI, for each feeder category. This includes identifying the feeder and the actions intended to be taken to address the performance.

*Table 3 NT SAIDI targets for 2019-24 regulatory period*

| Feeder category | SAIDI (minutes) | SAIFI (interruptions) | SAIDI Future |
|---|---|---|---|
| **CBD** | 4.00 | 0.1 | 4 |
| **Urban** | 140 | 2.0 | 125 |
| **Rural short** | 190 | 3.0 | 166 |
| **Rural long** | 1500 | 19.0 | 1425 |

### 2.2.2 Northern Territory National Electricity Rules (NT NER)

Clause 6.5.7(a)(3) of the NT NER requires that, unless there is a regulatory obligation such as the minimum standard set by the Utilities Commission NT (UC NT), Power and Water must maintain the reliability of standard control services and the distribution system.

## 2.3 Network performance

### 2.3.1 Overall reliability performance

The overall network performance has generally been improving since 2014/15. Figure 1 shows the total NT SAIDI performance of the network for the past 10 years. We also show the contribution to SAIDI from events relating to asset failure, flora, fauna and weather. These events often contribute the greatest to the poor performing feeders. The have a strong correlation with the total SAIDI.

While the UC does not set a service target, we have derived an equivalent 'service target' for SAIDI based on the feeder category targets. We also show this compared to historical performance.

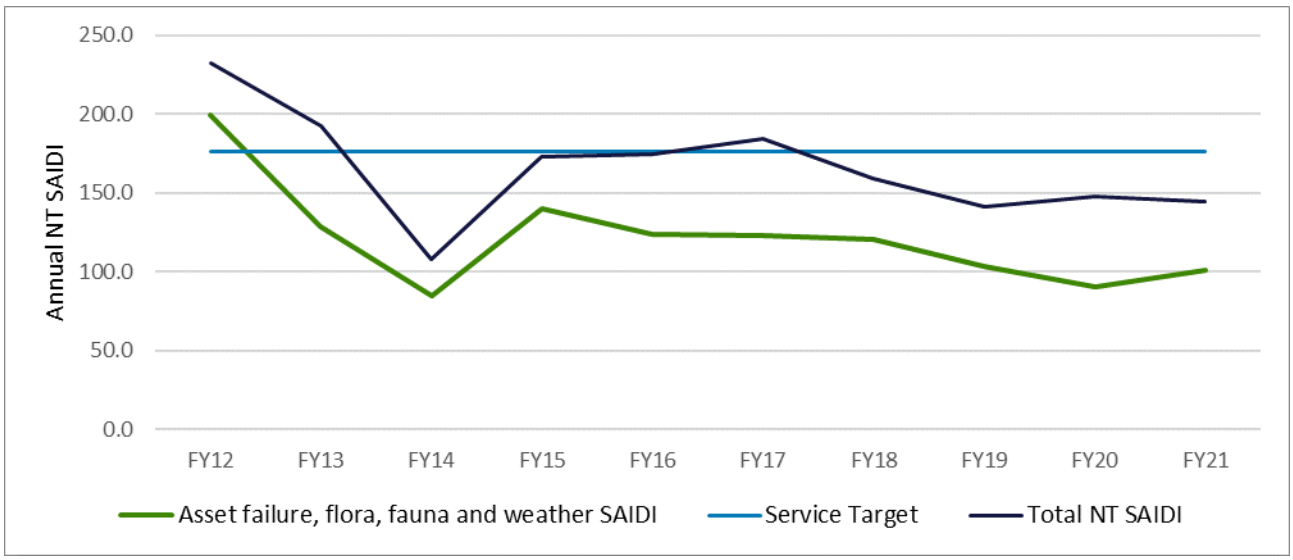


*Figure 1 NT SAIDI performance trend*

Overall, Power and Water is achieving the service target, however, at a feeder category level we can see that:

- The target is being exceeded by the Rural Long feeder category. We note that there are only three feeders on Power and Water's network in this category so the annual performance can be volatile.
- The Rural Short feeder category is volatile and has been just below the target for the past five years. If the Service Target is amended by the UC to reflect the average of the past five years, then there is a reasonable probability that the target will be exceeded during the next regulatory period as the performance has been oscillating above and below the average of the past five years.
- There is an increasing trend for the Rural Short feeder category. If the Service Target is amended by the UC to reflect the average of the past five years, then it is likely that the target will be exceeded if the current trend continues.

The performance of the individual feeder categories are described in greater detail in 4.6Appendix C.

Given historical performance against the Service Targets, Power and Water must take action to address the declining performance in order to comply with the Code.

### 2.3.2 Assessment of poor performing feeders

As set out in section 2.2, the Code requires Power and Water to report on the worst performing feeders and the actions being taken to rectify the performance.

Each year Power and Water reports the poor performing feeders in the Annual RIN to the AER and the five worst performing feeders from each category to the UC, noting there are only three Rural Long feeders. A summary of the historical poor performing feeders is provided in 4.6Appendix C.

The feeders that are considered 'poor performing' change from year to year and the degree of how poorly they are performing can also change significantly.

We demonstrate the impact of poor performing feeders in Table 4 in terms of the number of outages, Energy Not Supplied (ENS) and economic cost for the period from 2018/19 to 2021/22. The economic cost

to customers is based on the AER's published Value of Customer Reliability, assuming the typical network composition of 70% residential customers and 30% commercial. We further present three scenarios:

- Best case, the sum of the best performance of each feeder in any year.
- Expected case, the actual performance of each feeder in each year.
- Worst case, the sum of the worst performance of each feeder in any year.

*Table 4 impact of poor performing feeders for period 2018/19 to 2021/22*

| Scenario | Number of outages | Energy Not Served (MWh) | Economic cost ($'000, real 2021/22) |
|---|---|---|---|
| **Best case** | 476 | 6.84 | 171 |
| **Expected case** | 684 | 55.29 | 1,382 |
| **Worst case** | 929 | 154.20 | 3,855 |

The expected case aligns with the average performance that can be expected with the continuation of the NMF program at the current level of expenditure. The worst case aligns with the performance if the NMF program is discontinued. The difference between the Worst Case and Expected Case demonstrates the benefit achieved by the NMF program.

## 2.4 Historical and current management programs

### 2.4.1 Historical expenditure

Figure 2 shows the historical expenditure to address specific reliability improvements and the worst performing feeders from 2012/13 through to 2021/22. We also show the estimated capex included in the capex allowance for this project for the 2019-24 regulatory period, at approximately $1.4 million per year (nominal).

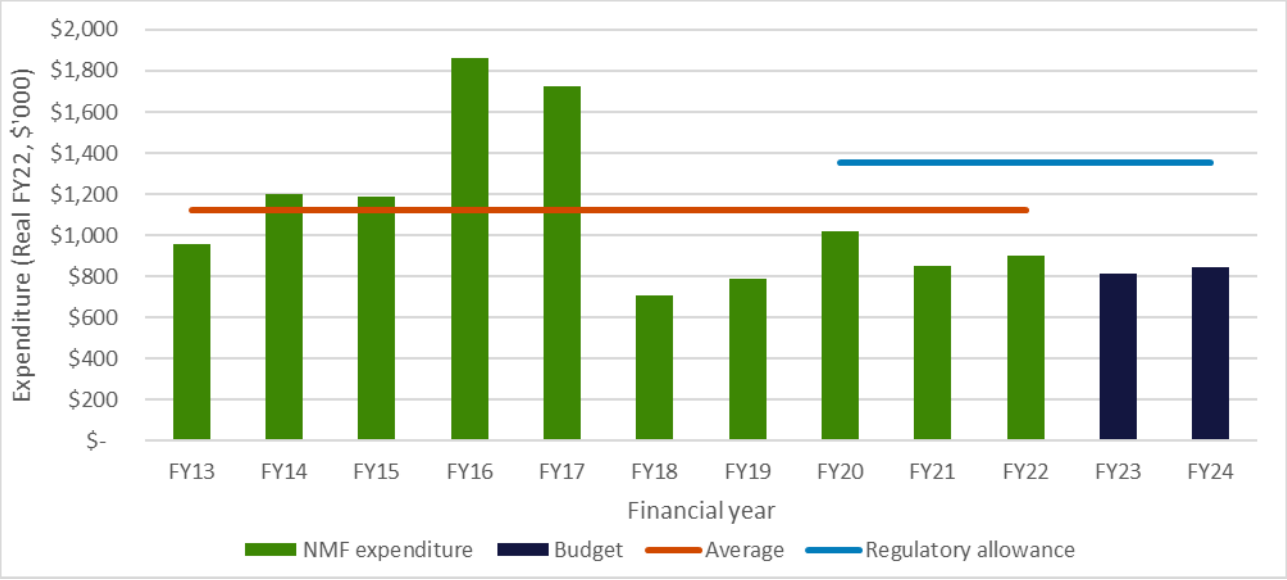


*Figure 2 Historical annual expenditure*

The actual incurred expenditure has averaged at $1.1 million per year (real 2021-22) since 2012/13 with a notable reduction in 2017/18 which was likely a result of Cyclone Marcus forcing a re-allocation of works in that year.

The lower actual expenditure for the current regulatory period has been a result of improved performance resulting in a reduced need to spend on improving reliability or meeting the compliance obligations of the UC. We have taken account of the improved network performance and lower historical expenditure in the options analysis.

### 2.4.2 Assessment of the reliability improvement from the NMF program

We undertook a simplified analysis of the performance of the NMF program. We found that overall, the NMF program is targeting feeders that contribute approximately 55% of interruptions as measured by the percentage of energy not served.

Compared to the worst case scenario presented in Table 4 above, the expected case (assuming continuation of the NMF program) represents an annual saving of approximately $2.4 million in economic cost to customers. Whilst this is a simplified analysis, and it is likely that other projects may also contribute to this saving, we consider that the NMF program has a BCR of greater than one based only on energy not supplied. The reliability improvement achieved by the NMF program also has a benefit to public safety and reduction of equipment damage due to a lower number of failures and corresponding outages.

On review of the total capital expenditure incurred on the assets included in the poor performing feeder program over the same assessment period, we estimate that the NMF program contributes approximately 50%. We can therefore attribute 50% of the reliability improvement benefits gained by investing in these feeders as directly related to the NMF program. Refer to Appendix B for the assumptions applied.

### 2.4.3 Components of the NMF program

Analysis of corrective actions shows that there is a wide range of responses taken to address the poor performance of feeders. The action taken is dependent upon the cause of the high SAIDI and is generally unique to each feeder. However, some general approaches include:

- Installation of automatic reclosers to enable transient faults to clear and then restore supply, typically within a minute.
- Installation of remote controllable gas switches to enable sectionalising of the feeders so the fault is isolated and as many customers can have power restored as quickly as possible.
- Localised undergrounding or installing covered conductors.
- Installation of animal protection.
- Replacing or upgrading other distribution assets (including conductor and distribution transformers) that are not performing to the required standard.

## 2.5 Consequence areas

The consequence areas for calculation of the risk associated with non-compliances are aligned with the Risk Quantification Procedure value dimensions of compliance and service delivery.

## 2.6 Risk assessment

The risk model has been completed for the counter factual scenario where no investment is undertaken. The risk cost attributable to the NMF program has been derived by apportioning 50% of the risk cost and 50% of the outages (which will impact the safety risk cost) to this program.

We have assumed a static forecast to represent that the performance of any individual feeder will vary from year to year, but overall will remain at a constant level. However, without investment, the level of risk will be higher than if investment is undertaken.

The result is shown in Figure 3 below.

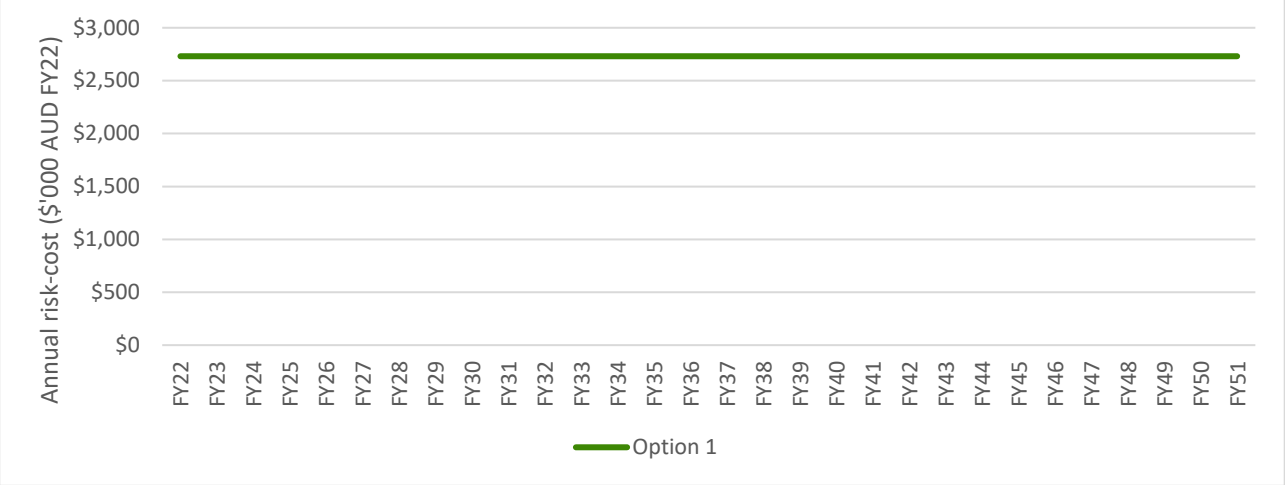


*Figure 3 Forecast risk cost of no investment*

## 2.7 Summary

Power and Water has identified that poor performing feeders are an issue on the network that must be addressed:

- the NT NER require that Power and Water maintains network reliability
- the NT Electricity Industry Performance Code sets performance targets per feeder category. Power and Water currently is not meeting the target for the Rural Long feeder category and the Rural Short feeder category has an increasing trend.
- the Utilities Commission of the Norther Territory is required to undertake a review of the targets and feeder performance and in the past has set new targets based on the past five years performance. If this occurs, the Rural Short feeder category will not be compliant

Due to the Code requirements, Power and Water must continue to address the poorly performing feeders to ensure that all customers are provided appropriate levels of reliability. Our approach to assessing the expected network performance and the requirements for any remedial actions are discussed in the following sections.

# 3 Options analysis

This section describes the various options that were analysed to address the increasing risk to identify the recommended option. The options are analysed based on ability to address the identified needs, prudency and efficiency, commercial and technical feasibility, deliverability, benefits and an optimal balance between long term asset risk and short-term asset performance.

## 3.1 Comparison of credible options

Credible options are identified as options that address the identified need, are technically feasible and can be implemented within the required timeframe. The following options have been identified:

- Option 1 – Do nothing. This option does not specifically target the poor performing feeders and continue to maintain network reliability overall, and by feeder category, based on normal asset management practices.
- Option 2 – Maintain network performance. This option proposes to continue the current program that focuses on improving the performance of the poorest performing feeders on the basis that the targets set out by the Code do not change.
- Option 3 – Improve network performance (new targets established). This option proposes to improve average performance, by extending the current program. This would align with more stringent reliability targets being established by the UC, and which has not yet occurred.

The issues they address in the identified need is depicted in the table below. A detailed discussion of each option is provided below.

*Table 5 Summary of options analysis outcomes*

| Assessment metrics | Option 1 | Option 2 | Option 3 |
|---|---|---|---|
| **NPV ($'000, real FY22)** | - | 9,681 | N/A |
| **BCR** | - | 1.46 | N/A |
| **Capex ($'000, real FY22)** | - | 4,250 | N/A |
| **Meets customer expectations** | ● | ● | ● |
| **Aligns with Asset Objectives** | ● | ● | ● |
| **Technical Viability** | ● | ● | ● |
| **Deliverability** | ● | ● | ● |
| **Preferred** | ✗ | ✓ | ✗ |

● Fully addressed the issue ◕ Adequately addressed the issue ◑ Partially addressed the issue ● Did not address the issue

Note:

- The NPV and BCR have been calculated based on a 30 year analysis period
- The capex is stated based on the requirements for the RP2429 period.

### 3.1.1 Option 1 – Do nothing

Option 1 proposes to not specifically target the poor performing feeders and continue to maintain network reliability overall, and by feeder category, based on normal asset management practices.

While this option may provide the least cost approach to managing total network reliability, it has the following issues:

- Outcomes from engagement through the Peoples Panels found that the customers were very aligned on ensure appropriate reliability for all the community and supported Power and Water making appropriate investments to achieve that outcome. This option would not be aligned to the expectations of our customers.
- Power and Water must report the top five poor performing feeders by feeder category and the actions being taken to address the poor performance. Publicly reporting that nothing is being done to manage the customers receiving the poorest service will impact on Power and Water reputation and is highly unlikely to be acceptable by our key stakeholder, the NT Government.
- Without specifically addressing the poor performing feeders, it will be difficult for Power and Water to maintain compliance with the targets set by the Commission, particularly for the Rural Long and Rural Short feeders. Hence, while it is not an economic investment, this option would not enable Power and Water to remain compliant with the regulations.

The risk quantification procedure was applied to calculate the value of risk incurred by this option. Analysis of the historical data was used to apportion the risk cost between the NMF program and all other programs to reflect the impact of the NMF program as best we can based on the data available and the complexity of the interactions between the different programs. The overall risk is shown in Figure 4 and is assumed to be flat (constant) over time to allow for the annual volatility in the performance of each feeder.

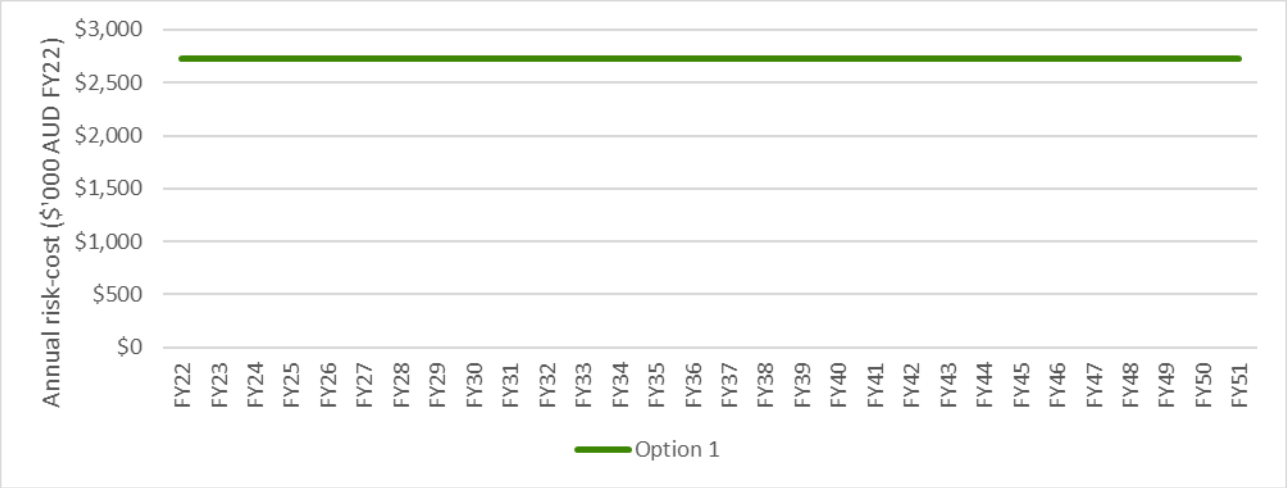


*Figure 4 Risk cost of option 1 with no investment*

Since this Option will not enable Power and Water to remain compliant with regulatory obligations and will result in significant negative impacts on its reputation and that of its main stakeholder, this option is not recommended.

### 3.1.2 Option 2 – Maintain network performance

Option 2 proposes to continue the current NMF program at a similar level of expenditure to improve the performance of the poorest performing feeders. This assumes that the service targets set by the Code do not change.

We have developed a forecast based on historical expenditure and performance data. We consider this is a reasonable forecasting approach based on a wide range of actions taken in the past and the need for specific solutions for each nominated feeder according to the driver of the poor performance.

The benefits of this option include:

- Outcomes from engagement through the Peoples Panel found that the customers were very aligned on ensure appropriate reliability for all the community and supported Power and Water making appropriate investments to achieve that outcome. This option supports the expectations of our customers.
- Power and Water must report the top five poor performing feeders by feeder category and the actions being taken to address the poor performance. This option will enable Power and Water to report actions to address poor performing feeders and therefore maintain their reputation.
- Specifically addressing the poor performing feeders will enable Power and Water to maintain compliance with the targets set by the Commission, particularly for the Rural Long and Rural Short feeders. Hence, while it is not an economic investment, this option is required in order to remain compliant with the regulations.

Since the expenditure required is based on a case by case assessment of the cause of the poor performance, we are not able to undertake a bottom up build to determine a forecast, hence we applied a portfolio approach based on historical expenditure. Due to the program to replace cockatoo conductor

(under program NMP5), we excluded the historical expenditure that was attributed to the cockatoo conductor feeders in the Manton, Batchelor and Lake Bennett areas from the analysis.

We attempted a multivariate regression based on the expenditure and network performance to derive a relationship between expenditure and performance, however, with limited data we were unable to achieve a sufficiently high R2 coefficient to demonstrate a relationship.

As a result, we have adopted a n average of the historical expenditure data. We applied trending and averaging across 5 year and 10 year periods and found the results to be consistent at $0.85 million per annum.

Based on maintaining the historical level of expenditure, we have assessed the risk cost to be the average of the historical performance. This is shown in Figure 5.

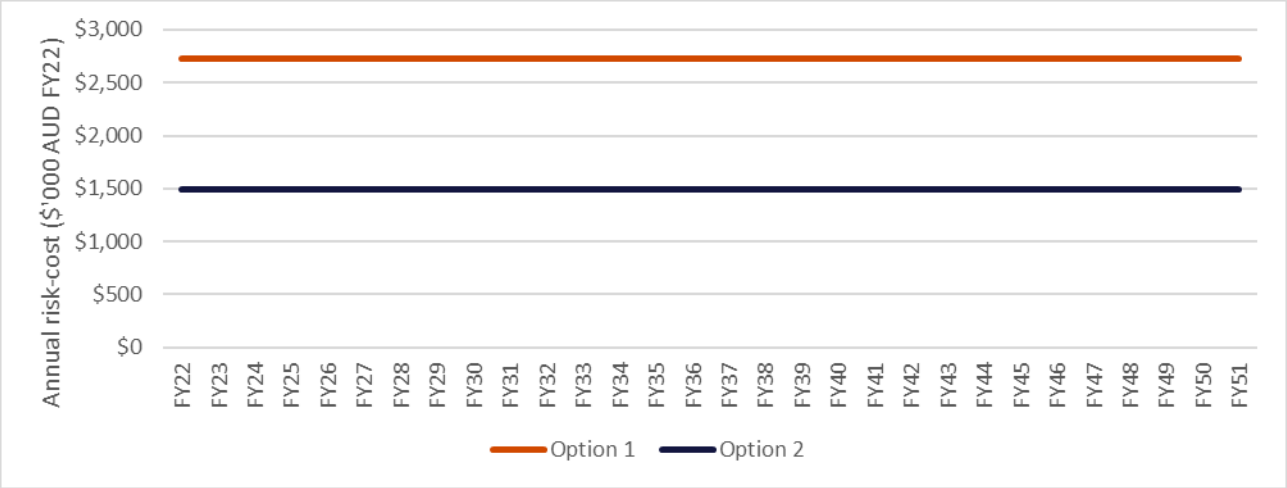


*Figure 5 Risk cost of Option 2 based on maintaining historical practice*

The reduction in risk of Option 2 compared to Option 1 is used as the benefit in an economic analysis to assess Option 2. We found that Option 2 has an NPV of $9.7 million (real 2021/22) and BCR of 1.46 over the 30 year assessment period.

This option enables Power and Water to meet their compliance requirements and meet customer expectations. This option is recommended.

### 3.1.3 Option 3 – Improve network performance

Option 3 proposes to increase the scope of the NMF program to improve the network performance beyond the performance of the poorest performing feeders. This assumes that the service targets set by the Code become more stringent.

If new targets are established, then it is likely that more expenditure will be required to manage the poor performing feeders as a core component of improving overall network performance. However, network performance is a function of many aspects of network and asset management and there are other projects in the portfolio that, while targeting type and condition/safety issues will also result in an improvement to network reliability performance.

Hence, without a specific target set by the Commission, we are not able to assess the cost that would be required as part of the NMF program to contribute towards the improvement. Nor is it considered prudent

to nominate a new target that does not reflect the requirements of our regulations or customer preferences. Accordingly this options has not been assessed further.

Should the Commission set new and more stringent targets, we will re-assess the need to alter the NMF program and do detailed analysis into what any additional expenditure may entail, with due consideration of the expected contribution to total network performance from the full portfolio of works. This option is not recommended.

## 3.2 Non-credible options

Our analysis also identified a number of options found to be non-credible. These options are described below and were not taken through to detail analysis for the reasons provided.

### 3.2.1 Underground all feeders – is not economically feasible

The cost of undergrounding the network in rural areas is not economically feasible. based on experience with the Northern Suburbs Cable replacement the cost for the cable will be approximately $650k per kilometre. If all associated assets such as switches and distribution transformers are also converted to ground-based assets, then the cost is significantly higher.

### 3.2.2 Non-Network alternatives – does not address the need

Due to the type and function of these assets, there are no non-network alternatives or solutions that can be implemented without having a distribution network to some extent. It is unlikely that all customers would accept becoming fully standalone and reliant on a solar PV and battery system.

### 3.2.3 Capex/Opex Substitution – does not address the need

Since the driver of this investment is a combination of asset deterioration across a fleet of assets as well as external impacts and response times for restoring power, it is not possible to substitute capex for opex. Only capital expenditure to invest in assets or components that will prevent outages occurring or facility rapid restoration of power will address the underlying issues.

# 4 Recommendation

The recommended option is Option 2 – Maintain current performance at an estimated cost of $4.3 million (real 2021/22) as the most prudent and cost effective to meet the identified needs.

The proposed program is consistent with the National Electricity Rules Capital Expenditure Objectives as the expenditure is required to maintain the quality, reliability, and security of supply of standard control services and maintain the safety of the distribution system.

## 4.1 Strategic alignment

The "Power and Water Corporation Strategic Direction" is to meet the changing needs of the business, our customers and is aligned with the market and future economic conditions of the Northern Territory projected out to 2030.

This proposal aligns with Asset Management System Policies, Strategies and Plans that contributes to the D2021/260606 "Power and Water Strategic Direction" as indicated in the table below.

*Table 6 Alignment with corporate strategic focus areas*

| | Strategic direction focus area | Strategic direction priority |
|---|---|---|
| **1** | Customer and the community at the centre | Improve Public Health and Safety |
| **2** | Always Safe | Cost Prudency |

## 4.2 Dependent projects

There are no known projects or other network issues that are dependent on the resolution of this network issue.

## 4.3 Deliverability

This program has been delivered with the same annual average expenditure across four years as is being proposed for the next regulatory period. Therefore, this program is considered to be deliverable.

## 4.4 Customer considerations

As required by the AER's Better Resets Handbook, in developing this program Power and Water has taken into consideration feedback from its customers.

Feedback received through customer consultation undertaken at the time of writing this business case, has demonstrated strong support amongst the community for appropriate expenditure to enable long term maintenance of the network to ensure continued reliability, maintainability and safety of supply.

## 4.5 Expenditure profile

Table 8 show a summary of the expenditure requirements for 2024-29 regulatory period.

*Table 7 Annual capital and operational expenditure ($'000, real FY22)*

| Item | FY25 | FY26 | FY27 | FY28 | FY29 | Total |
|---|---|---|---|---|---|---|
| **Capex** | 850 | 850 | 850 | 850 | 850 | 4,250 |
| **Opex** | - | - | - | - | - | - |
| **Total** | **850** | **850** | **850** | **850** | **850** | **4,250** |

## 4.6 High-level scope

The scope of the program is determined on a case by case according to the drivers identified on each individual feeder. The types of work that have been implemented in the past, and are therefore likely to be applied for the future program include:

- Installation of automatic reclosers to enable transient faults to clear and then restore supply, typically within a minute.
- Installation of remote controllable gas switches to enable sectionalising of the feeders so the fault is isolated and as many customers can have power restored as quickly as possible.
- Localised undergrounding or installing covered conductors.
- Installation of animal protection.
- Replacing or upgrading other distribution assets (including conductor and distribution transformers) that are not performing to the required standard.

# Appendix A. Cost estimation

The forecast for the program was not based on a bottom up build, hence unit rates were not used.

# Appendix B. Key assumptions

## B.1 Assessment of the reliability improvement from the NMF program

As a part of our simplified assessment of the NMF program, we did not consider:

- Time based deteriorated in performance (increase in energy not supplied) in the absence of the NMF program.
- The cost of GSLs, compliance or safety to Power and Water (reduction of which would increase the benefit of NMF).
- We only considered the VCR for residential and commercial customers (based on a typical 70/30 ratio) and did not consider industrial or agricultural customers. Industrial and agricultural customers have a higher VCR so would increase benefits to NMF.
- Did not consider any benefits to other aspects such as general uplift in capacity or benefits to export services.
- We did not assess if any other works that were not strictly required for managing poor performing feeders had been included in the scope.
- We did not account for any benefits obtained from other projects undertaken on those feeders.

## B.2 Risk assessment assumptions

The approach to modelling risk used the risk quantification procedure and risk template with the following assumptions:

- A custom profile was developed based on historical data.
- The number of outages that have occurred on the poor performing feeders during the past four years was used as the driver for safety risk calculation, and the energy at risk was used for the Service delivery calculation.
    - The worst case (Option 1) was based on the sum of the worst annual performance of each feeder.
    - The expected case (Option 2) was based on the average of the annual performance of each feeders.
- The historical performance was apportioned to the NMF program based on the capital expenditure spent through the NMF program as a proportion of the total capital expenditure spent on the poor performing feeders. The apportionment was calculated to be 50%.
- Therefore, 50% of the difference in performance between the worst case and the best case was allocated as a benefit achieved by the NMF program.
- In the risk model, the number of outages was entered as one with the annual average energy not served entered as the historical data. This approach was taken so that the compliance risk cost was not overstated in the expected case.

# Appendix C. Performance by feeder category

## C.1 Feeder category performance

The following charts show the historical feeder performance by category, split into total SAIDI and the SAIDI component attributed to asset failure, vegetation, animals and weather. These are compared to the Service Target set for that category.

The charts show that Power and Water is currently complying with the target in each category with the exception of Rural Long Urban.

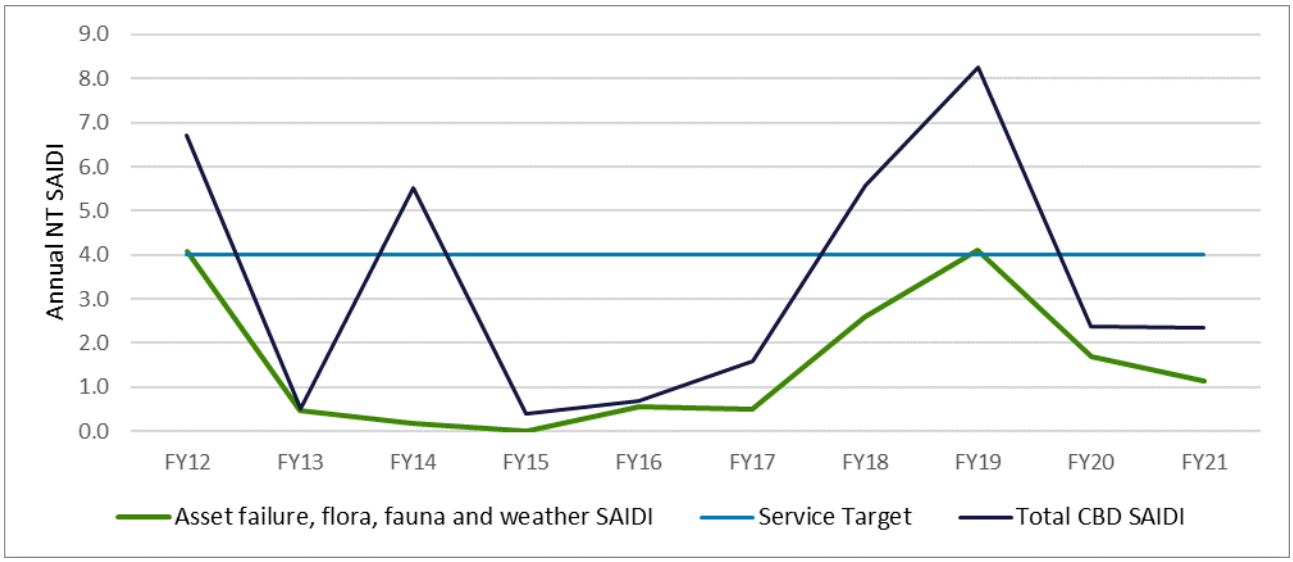


*Figure 6 CBD performance compared to Service Target*

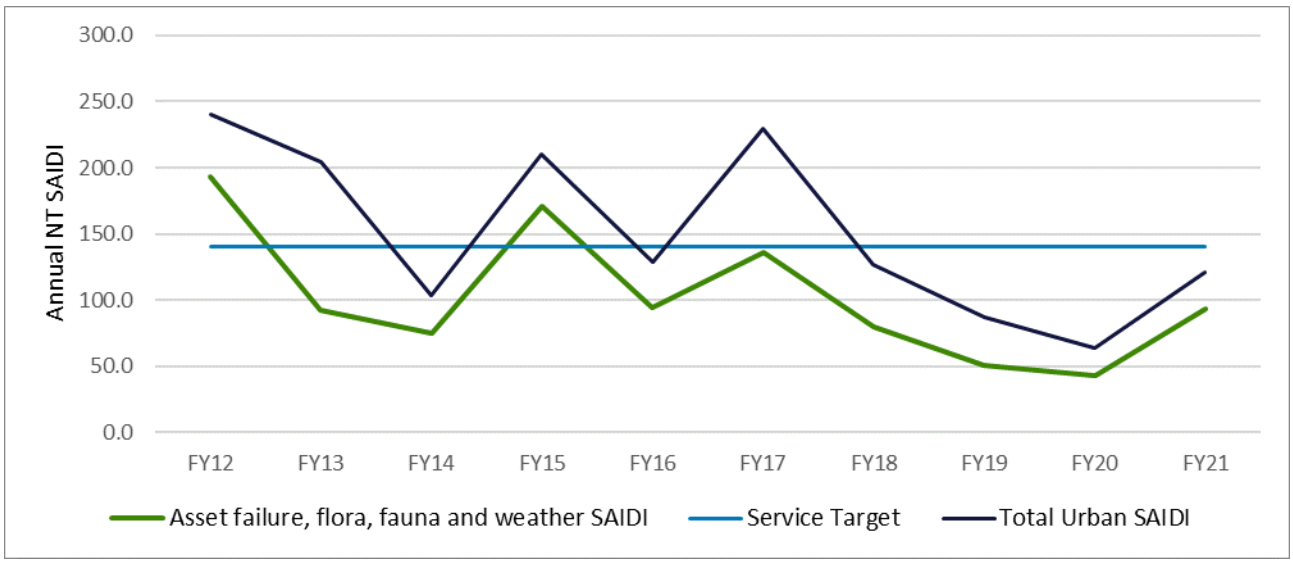


*Figure 7 Urban performance compared to Service Target*

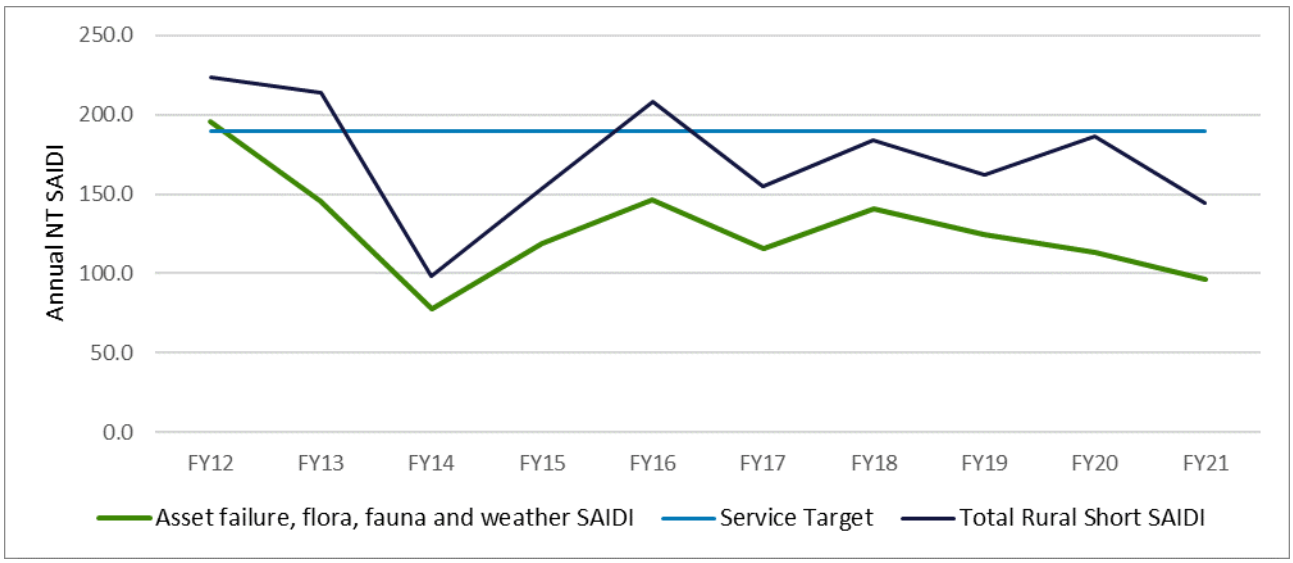


*Figure 8 Rural Short Urban performance compared to Service Target*

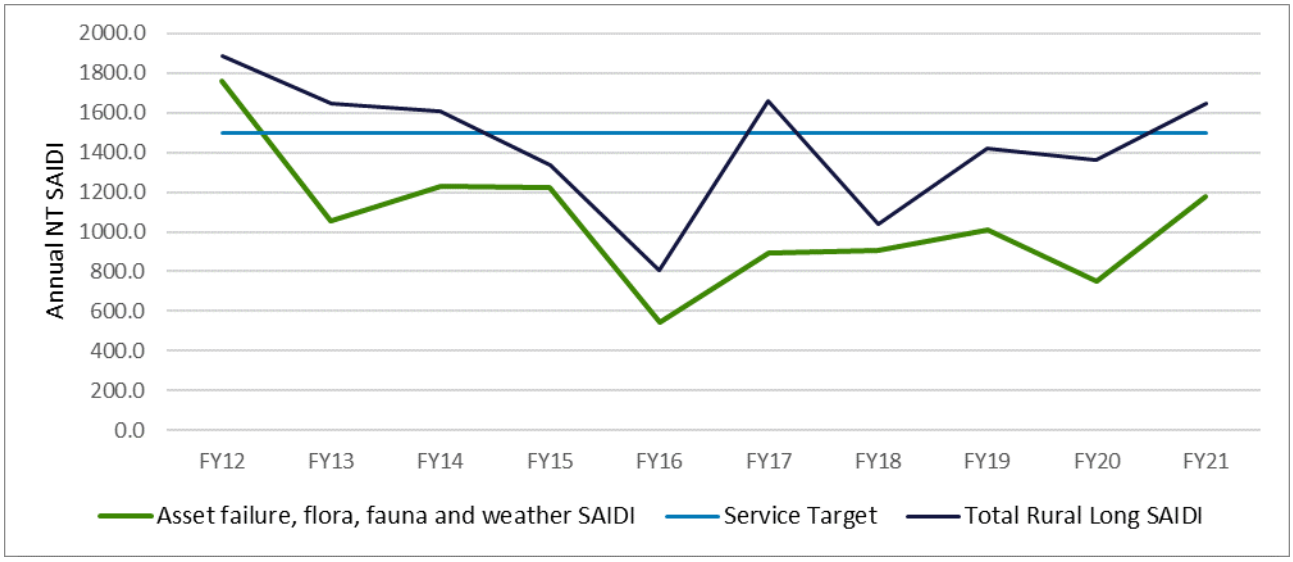


*Figure 9 Rural Long Urban performance compared to Service Target*

## C.2 Top poor performing feeders

The following tables show the five worst performing feeders per feeder category from 2018/19 to 2021/22 and the SAIDI incurred in that year. Blank cells indicate that the feeder was not reported as one of the top five worst performing in that year. The tables demonstrate that the poor performing feeders vary significantly from year to year.

*Table 8 Annual SAIDI for the worst performing CBD Feeders*

| Feeder | FY19 | FY20 | FY21 | FY22 |
|---|---|---|---|---|
| **11AK01 HARRY CHAN** | 2.0 | | | |
| **11AK03 AUSTIN LANE** | | 1.4 | | |

| | | | | |
|---|---|---|---|---|
| **11DA04 WEST BENNETT** | | | 0.3 | 0.7 |
| **11DA14 STATE SQUARE** | | 137.7 | | |
| **11FB04 SEARCY** | | | 2.4 | |
| **11ML09 DALY** | 0.1 | 0.7 | | |
| **11MS02 SMITH** | | 22.1 | 0.7 | 0.6 |
| **11MS04 PEEL** | 62.7 | | 50.5 | |
| **11MS10 SHADFORTH** | 115.7 | | | |
| **11WB03 BENNETT** | 63.1 | | | |
| **11WS09 LINDSAY 2** | | 6.4 | | |
| **11WS11 MANTON ST** | | | | 0.6 |

*Table 9 Annual SAIDI for the worst performing Urban feeders*

| Feeder | FY19 | FY20 | FY21 | FY22 |
|---|---|---|---|---|
| **11BE03 TDZ** | | | 559.0 | |
| **11BE04 MCMILLANS** | | | 1,211.6 | |
| **11CA08 NTHLAKES** | | 199.4 | | |
| **11CA12 MARRARA** | | 302.1 | | |
| **11DA27 STUART PARK** | 246.4 | | | |
| **11PA08 YARRAWONGA** | | | | 410.4 |
| **11RG02 GOLF** | 374.3 | | 688.1 | |
| **11WH02 BLESSER CREEK** | | | | 305.4 |
| **11WN11 BISHOP** | 237.9 | | | |
| **11WN13 GOYDER** | | | | 371.2 |
| **11WN22 LUDMILLA** | | | | 302.5 |

| | | | | |
|---|---|---|---|---|
| **11WN24 PARAP** | | | 309.4 | |
| **22KA22 KATHERINE** | 300.6 | 472.3 | 254.1 | 429.4 |
| **22SY13 MCMINNS PUMPS** | 238.0 | | | |
| **22WD102 WICKHAM** | | 221.4 | | |
| **22WD103 BLAYDIN POINT** | | 533.9 | | |

*Table 10 Annual SAIDI for the worst performing Rural Short feeders*

| Feeder | FY19 | FY20 | FY21 | FY22 |
|---|---|---|---|---|
| **22BR102 BOREFIELDS** | | | 6,293.9 | |
| **22HD402 LAMBELLS** | | | | 945.0 |
| **22HD403 MIDDLE POINT** | | | 716.2 | 863.9 |
| **22KA03 FLORINA** | 730.3 | | 697.2 | 1,289.4 |
| **22KA18 GORGE** | 943.9 | | 773.4 | |
| **22KA19 TINDAL 1** | | 72,460.9 | | |
| **22MT01 DARWIN RIVER DAM 1** | | 991.9 | | |
| **22MT07 ACACIA** | | | | 919.1 |
| **22SY03 VIRGINIA** | 893.4 | 1,184.2 | | |
| **22SY11 HERBERT** | | | | 809.9 |
| **22TC09 WARREGO** | 1,965.5 | | 2,306.6 | |
| **66 MR-SY** | | 16,881.9 | | |
| **66PC301 COSMO HOWLEY** | 689.1 | 2,669.1 | | |

*Table 11 Annual SAIDI for the worst performing Rural Long feeders*

| Feeder | FY19 | FY20 | FY21 | FY22 |
|---|---|---|---|---|
| **22KA10 MATARANKA 1** | 295.6 | 1,389.3 | 595.1 | 1,457.4 |

| | | | | |
|---|---|---|---|---|
| **22KA18 GORGE** | | | | 664.4 |
| **22SY04 DUNDEE** | 1,957.9 | 1,730.2 | 1,980.9 | 586.8 |
| **22TC01 ALI CURUNG** | 1,334.6 | 237.4 | 1,881.9 | 1,031.2 |

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