

ZSS Minor Capital Asset Program (NMA)

Regulatory Business Case (RBC)

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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 addresses the identified condition issues or compliance requirements of minor assets located at Zone Substations.

1.1 Business need

Zone Substations (ZSS) assets are the connection point between the transmission and distribution networks. They play a key role in receiving power from bulk supply substations and transforming it to a lower voltage for distribution along powerlines to distribution substations.

There are 26 ZSS across the Northern Territory, with four scheduled for decommission / replacement by 2029. Within zone substations there is a broad range of assets. There are several major projects or programs of work that address major asset replacement or augmentation. However, there is a need to undertake asset refurbishment, replacement or other capital works for minor assets, that are also located at zone substations, based on identified condition issues or compliance requirements. The issues are identified through regular periodic inspection and maintenance tasks carried out at ZSS. This is similar to the distribution replacement program (NMFCR) but focused on zone substation minor assets.

This minor asset program has been operating since before 2017. The composition of the program (the assets addressed each year) varies from year to year based on the issues identified, but has included buildings, civil and grounds, HV circuit breakers and switchboards, instrument transformers, outdoor disconnectors and busbars, components of power transformers, and substation auxiliary plant. The scope of this program excludes works that are included in the major assets projects and programs.

Power and Water has shown over the current regulatory period that they are actively managing condition, compliance and risk issues for customers associated with ZSS minor capital assets. There is a well-established and detailed regular maintenance strategy associated with ZSS assets, consistent with their key ubiquitous network role for continuity and quality of consumer power supply.

The need to continue to manage the minor zone substation assets is forecast to remain in the next regulatory control period.

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	Reactive replacement – Run to failure	Replacement at failure of ZSS minor assets	No. Reactive replacement is imprudent for critical assets and could have a high cost of risk. Run to failure does not manage increased risk to worker safety, reliability and security of supply. Not an accepted industry approach.
2	Business as usual - Condition-based replacement and refurbishment	Replacement or refurbishment of poor condition, high risk and non-compliant ZSS minor assets	Yes. Prudent and efficient approach, especially for critical assets like circuit breakers and power transformers

As part of a holistic assessment, non-network solutions, capex/opex trade-offs and retirement or derating options were also considered, 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 recommended option is Option 2 - Condition and compliance-based replacement of ZSS minor assets. This includes the asset types of buildings, civil and grounds, HV circuit breakers and switchboards, instrument transformers, outdoor disconnectors and busbars, power transformers, and substation auxiliary plant identified by the Power and Water ZSS maintenance strategy since condition, compliance and risk.

The scope of this program excludes major assets to be included in other projects and programs. The forecast has been calculated based on the actual expenditure incurred on the existing ZSS minor assets (NMA Baseline) replacement and refurbishment program.

The historical expenditure was analysed to exclude projects that are part of alternative projects or programs, exclude one-off non-recurrent expenditure and then trended forward. Due to the planned decommissioning of four zone substations in the next regulatory period, including two of the oldest, a proportionate decrease in each of the years where assets will be decommissioned to reflect the reduced volumes of deteriorated assets was applied. The preferred option is a continuation of the minor program for ZSS minor capital asset replacement in the current regulatory period.

There is a clearly identified business need, appropriate scope of works including the need for replacement and refurbishment, consideration of credible options and costing in accordance with the ongoing need.

Table 2 shows a summary of the expenditure requirements for the 2024-29 regulatory period for the preferred option of condition-based replacement and refurbishment.

Table 2 Annual capital and operational expenditure (\$'000, real FY22)

Item	FY25	FY26	FY27	FY28	FY29	Total
Capex	850	770	910	710	710	3,950
Opex	-	-	-	-	-	-
Total	850	770	910	710	710	3,950

2. Identified need

Power and Water has a total of 26 ZSS across the Northern Territory. ZSS assets meet the definition of the connection point between the transmission and distribution networks, as defined by the NT NER. They play a key role in receiving power from bulk supply substations and transforming it to a lower voltage for distribution along powerlines to distribution substations. The majority of ZSS in the NT operate at 66/11kV or 66/22kV, with the exceptions being Batchelor, Katherine and Manton at 132/22kV.

2.1 Background

Replacing network assets with deteriorating condition that leads to service levels below required thresholds is the primary driver of Power and Water capital expenditure over the next decade. Power and Water has targeted projects and programs that replace assets in poor condition before they fail, based on an assessment of the reliability, safety and environmental risks based on inspection results.

There is a well-established and detailed regular maintenance strategy for the asset classes associated with ZSS. This includes monthly visual, three-monthly detailed and annual thermographic partial discharge survey for the ZSS asset class. It also includes regular functional diagnostic, intrusive and fault maintenance inspections for HV circuit breakers, switchboards and power transformers. This comprehensive and regular monitoring and maintenance strategy allows condition, compliance and risk issues associated with ZSS minor assets to be accurately assessed in a timely manner.

2.2 Historical and current programs

A summary of the historical and budgeted recurrent repex under this program is shown in Figure 1 below. There is clearly a wide variety of works involving different asset types in this program. There is also substantial variation in total and recurrent expenditure between years. In some years NMA Baseline costs for works on buildings, amenities, civil and grounds and asset failure replacement were dominant. However, in 2018-19 NMA Baseline costs were dominated by power transformers.

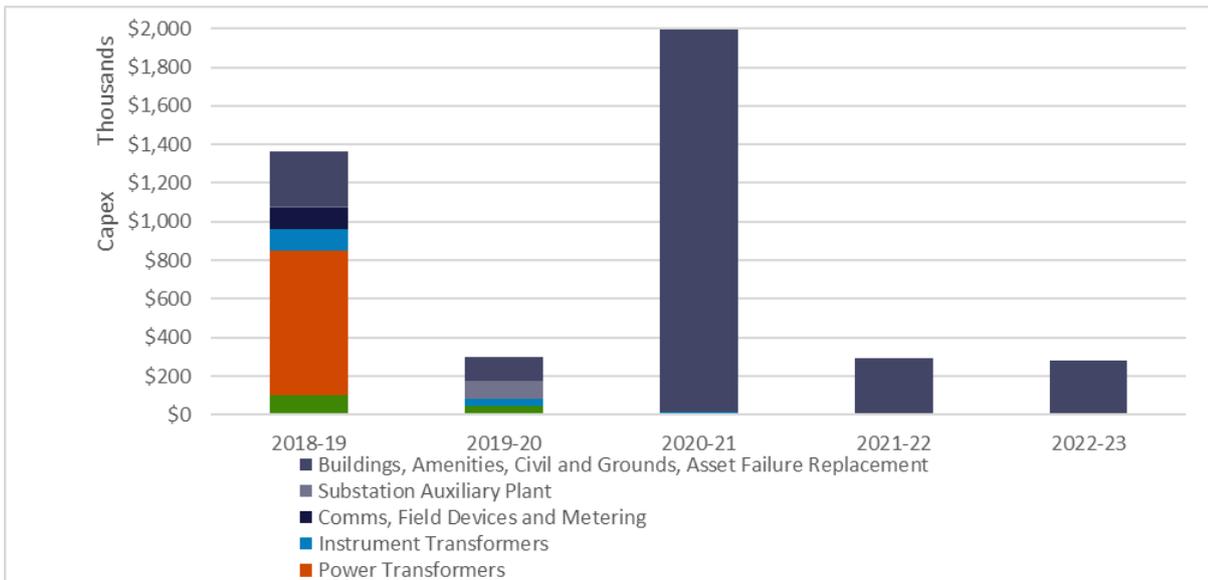


Figure 1 Actual and estimated ZSS minor capital asset replacement program (NMA Baseline recurrent) based on combined RIN categories

A summary of historical and estimated one-off non-recurrent repex under the NMA program is shown in Figure 2 below. Again, there is a wide variety of works involving different asset types in this program. There is also substantial variation in total and works type recurrent expenditure between years (nil expenditure in 2020-21). In some years NMA one-off costs for circuit breakers, underground cabling and local network wiring assets were dominant. However, in 2022-23 (budgeted) NMA one-off costs are budgeted to be entirely due to installation of isolator platforms.

The NMA program excludes major assets works that are included in other projects and programs such as the Sadadeen 22kV switchboard, Channel Island 132kV GIS circuit breakers, and other dedicated minor programs such as for ZSS fire protection equipment, protection relays and DC systems.

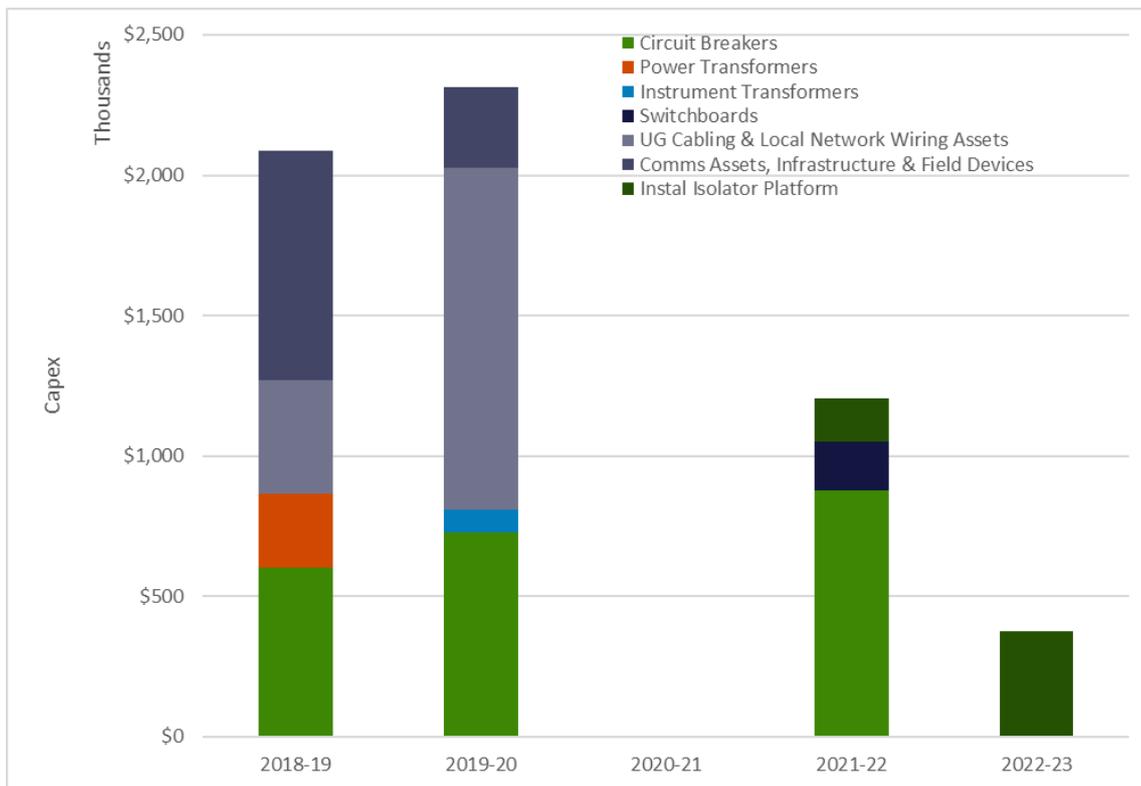


Figure 2 Actual and estimated ZSS minor capital asset replacement program (NMA one-off non-recurrent) based on combined RIN categories

2.3 Risk assessment

The inherent risk profile associated with a reactive replacement – run to failure approach is shown in Figure 3 below. This provides evidence of the growing scale of the problem over time, if no action is taken. The rising risk-cost is dominated by health and safety, specifically possible severe consequences for workers when an asset reaches end-of-life (EOL). The probability of disruptive outage at EOL is held at 1%, because of the wide mix of ZSS minor assets. Many of the assets replaced are components or related assets that may not result in the same likelihood of loss of supply, with some of the works being performed for compliance reasons.

The NMA program will address safety, compliance with the Network Technical Code and the Network Planning Criteria objective of providing safe, secure, reliable, high quality power supply at minimal cost. Addressing ZSS minor capital asset condition, risk and compliance across the NT will help ensure continued maintenance of system security and achievement of Power and Water’ system security obligations.

This results in direct financial (including reactive replacement) costs and service delivery costs being relatively small. The asset type inherent risk is held to be moderate, again reflecting the mixture of assets involved. The average annual risk cost over 2024-29 regulatory period if no action is taken is about \$2.69m, however, the annual risk-cost is increasing non-linearly such that the rate of change is increasing over time.

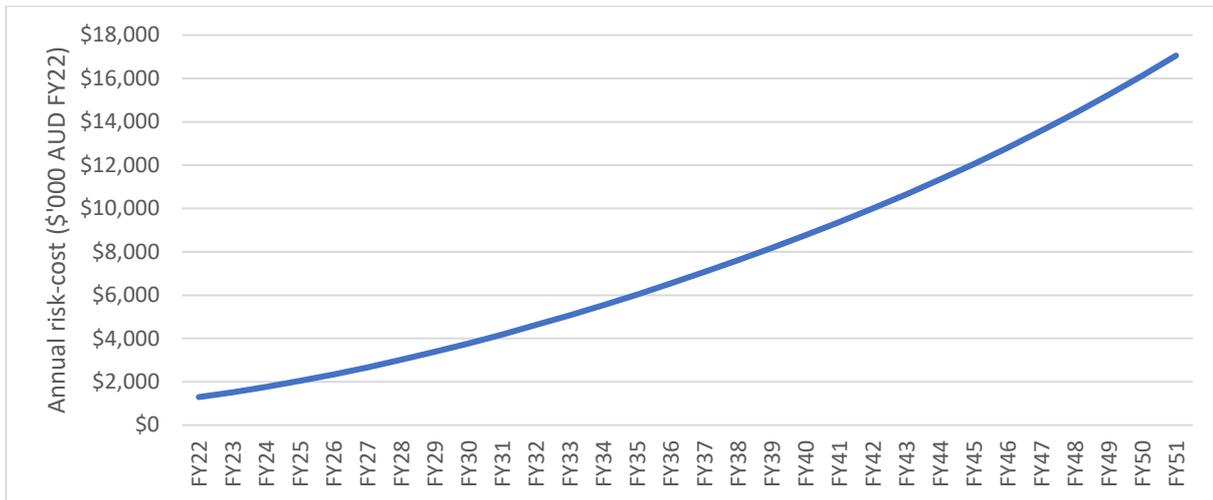


Figure 3 Forecast inherent risk profile with reactive replacement – run to failure

2.4 Summary

Power and Water has a total of 26 ZSS across the Northern Territory that each play a critical role in delivery electricity to customers.

Power and Water has historically had a ZSS minor capital asset replacement program (NMA). This program has been in place since 2016 and continues to be in place for the current regulatory period. This program involves miscellaneous condition and compliance-based replacement of minor ZSS assets and minor refurbishment or part replacement of major assets.

A forecasting approach based on historical trend is considered reasonable for this program. To revert to a run to failure approach can be demonstrated to increase the level of risk, and consequence cost dominated by health and safety risk. Moreover, this would place the transmission network and broader power system of risk to security and reliability to customers.

The NMA program is currently in place to address safety, compliance with the Network Technical Code and the Network Planning Criteria objective of providing safe, secure, reliable, high quality power supply at minimal cost. Addressing ZSS minor capital asset condition, risk and compliance across the NT will help ensure continued maintenance of system security and achievement of Power and Water’s system security obligations.

3. Options analysis

This section describes the various options that were analysed to address the increasing risk associated with ZSS minor asset condition and compliance to identify the recommended option. The options are analysed based on ability to address the identified needs, prudence 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: Run to failure.
- Option 2: Condition based replacement.

A comparison of the two identified credible options and the issues they address in the identified need is depicted in Table 3.

These options are described and assessed in detail in the sections below.

Table 3 Summary of options analysis outcomes relative to the base case (Option 1)

Assessment metrics	Option 1	Option 2
NPV (\$'000, real FY22)	-	28,580
BCR for extended Capex program	-	2.60
Capex (\$'000, real FY22)	-	3,950
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 are calculated based on the Capex program continuing across the 30 year analysis period to match the modelled risk profile.
- The capex is shown in Table 3 for the 2024-29 regulatory period only.

3.1.1 Option 1 – Reactive replacement – Run to failure

A run to failure option would defer replacement and refurbishment capex (and potentially some maintenance opex) as long as possible to get the greatest use of ZSS minor assets. However, it does not address the increasing risk associated with ageing ZSS minor assets, (shown in Figure 3 above), particularly circuit breakers and transformers. The NMA Baseline historical expenditure in Figure 1 shows that a total of about \$851 thousand was spent on power transformers and circuit breakers in 2018-19 (in other years there was nil spend associated with these asset types). This represents about 62 per cent of total NMA Baseline actual spend in that year. It demonstrates that there could on occasion be substantial costs for transformers and circuit breakers associated with the ZSS minor assets program for the next regulatory period. Avoidance of such costs through a run to failure option will lead to increased risk to worker safety, reliability and security of supply.

This is not an accepted industry approach to asset management of critical ZSS assets and is not advocated by Power and Water as a responsible approach to network risk management. The total proactive replacement capex associated with Option 1 is zero, in line with a do nothing approach. However, eventual failure of larger numbers of these assets due to the do nothing approach will result in additional costs for potential worker injury, loss of supply and reactive replacement, which are quantitatively taken into consideration by the risk analysis input to the option financial model. In the first instance it is assumed that there are no changes to the present ZSS equipment detailed regular maintenance strategy for ZSS and associated opex (described in the 2020-21 TDAPR).

The option 1 NPV is a cost of about \$166.5 million (real 2021/22). This NPV cost is large because it reflects increasing health and safety, service delivery and direct financial (reactive replacement and repair) risk costs over time for a do nothing option, modelled out to FY51.

Option 1 is not preferred over Option 2 because of the large unabated risk costs, as the ageing assets fail and must be reactively replaced.

3.1.2 Option 2 – Business as usual – Condition-based replacement and refurbishment

The condition-based replacement of ZSS minor assets and minor refurbishment, or part replacement, of major assets is directed at maintaining system safety, compliance and reliability in a prudent and cost-effective manner. This assessment considers asset health and criticality.

Over the 2024-29 regulatory period, Power and Water has identified that a similar level of asset replacement for minor capital asset works at zone substations will be necessary across the NT network. This is expected to cover a similar scope of works to the historical replacement program. The scope cannot be accurately determined as the replacement and refurbishment requirements are identified through the periodic inspection process, condition assessment methods and addressed according to the standard defect rectification timeframes.

The forecast need in the next regulatory period is based on the average of historical (2018-19 to 2021-22) and budgeted (2022-23) volumes and expenditure. Our analysis of the historical actual expenditure identified a number of non-recurrent types of work and a number of projects which have now been separated out into their own program (i.e. fire protection). The one-off projects and asset classes have

been removed or moved to a targeted program (removed from the base line data used for forecasting). The forecast has then been further reduced in accordance with the decommission / replacement of four ZSS during the next regulatory period. This reduces the volume of works required in the short term, and hence the forecast capex was reduced in line with the expected decommissioning schedule. This reflects a prudent approach as the exact scope of works is not yet known as the replacement and refurbishment requirements are identified through the periodic inspection process and addressed according to the standard defect rectification timeframes. This is a similar approach as applied to the volumetric NMFCR program for distribution assets.

As a result, this option is estimated to cost \$3.77 million (real 2021/22) over the 2024-29 regulatory period, compared to a total of \$3.72 million estimated for the current regulatory period when calculated on the same basis (ie, excluding non-recurrent projects). The option 2 NPV is a cost of about \$123.69 million (real 2021/22) when modelled to FY51.

Table 4 shows a summary of the forecast capex for Option 2 over the 2024-29 regulatory period by asset category, along with a comparison to the actual and estimated capex for the current regulatory period. The split of capex for the current and next regulatory period has been based on the NMA baseline historical and estimated capex for the period FY19 to FY23.

Table 4 Comparison of capex for ZSS minor capital asset replacement program across regulatory periods (\$'000, real FY22)

Works type	Actual and estimated capex (2019-24) ^{Note 1}	Forecast capex for Option 2 (2024-29)
Circuit Breakers	126	134
Power Transformers	661	702
Instrument Transformers	138	148
Comms, Field Devices and Metering	101	108
Substation Auxiliary Plant & UG Cabling	86	92
Buildings, Amenities ¹ , Civil and Grounds, Asset Failure Replacement	2,611	2766
TOTAL	3,723	3,950

Note 1: The works type is based on combined RIN categories and excludes non-recurrent work.

A comparison of historical actual expenditure associated with NMA Baseline and one-off costs and anticipated yearly expenditure under Option 2 is shown in Figure 4 ZSS minor assets actual, estimate and forecast capex by year, 2018-19 to 2028-29 below.

¹ This line item includes \$240 thousand for workers toilets/amenities at two ZSS for the 2024-29 regulatory period

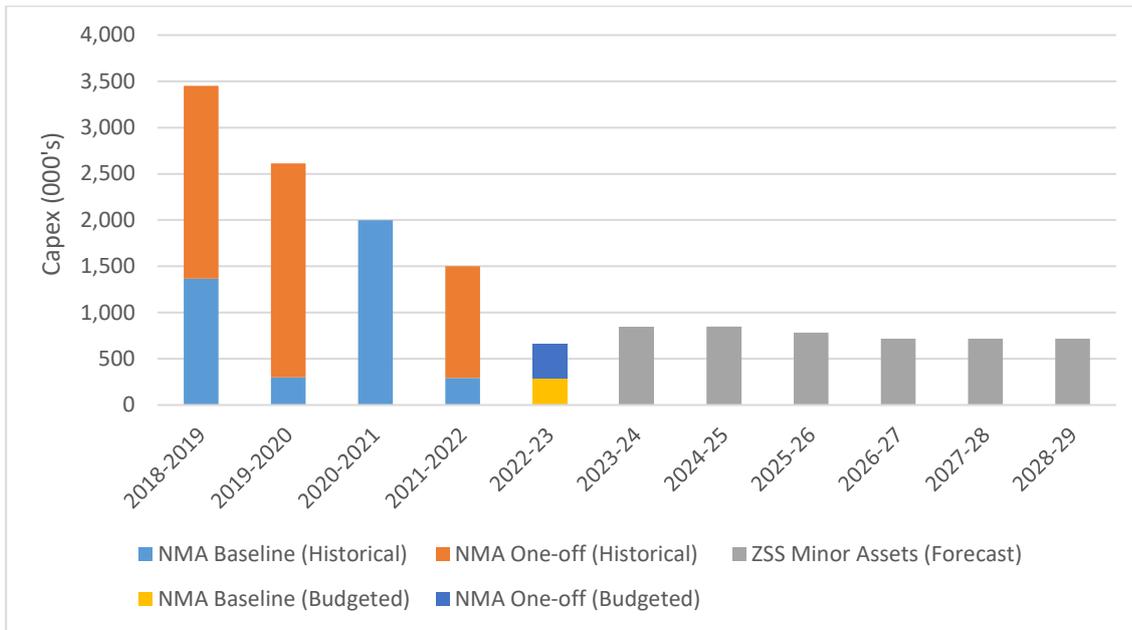


Figure 4 ZSS minor assets actual, estimate and forecast capex by year, 2018-19 to 2028-29

There is clear annual variation in both NMA Baseline and one-off historical costs. The combined total capex of NMA Baseline and NMA one-off shows a steady decline from \$3.45 million in 2018/19 to \$0.66 million in 2022/23.

The capex for FY24 and FY25 are forecast to be equal to the average of the historical and estimated annual NMA Baseline expenditure for the period 2018/19 to 2022/23. This excludes the one-off costs as described earlier. The decommissioning/ replacement of four ZSS by FY27 has also been removed, and which reduces the number of aged and deteriorated assets. This results in a slightly decreasing forecast capex for the 2024-29 regulatory period, commencing in FY25.

The forecast capex is approximately \$0.85 million pa for FY24 and FY25, decreasing to approximately \$0.72 million pa for FY26 to FY29.

Figure 5 shows the annual risk-cost from FY22 to FY51 for Option 1 and Option 2. The reduction observed in Option 2 that is achieved through condition-based replacement and refurbishment is the benefit achieved by the forecast capex and included in the financial model.

Option 2 has an increasing annualised risk-cost from \$1.2 million in FY22 to \$10.0 million in FY51. The rate of increase is substantially lower than Option 1 run to failure option which increases from \$1.3 million in FY22 to \$17.1 million in FY51. The average annual risk cost over the 2024-29 regulatory period for Option 2 is about \$2.07 million (\$0.6 million or 23 per cent lower than Option 1).

The annual risk-cost for Option 2 continues to increase non-linearly, but at a substantially lower rate than for Option 1. Hence ongoing condition-based replacement and refurbishment targeted is effective in limiting the increase in risk-cost associated with ageing ZSS minor assets.

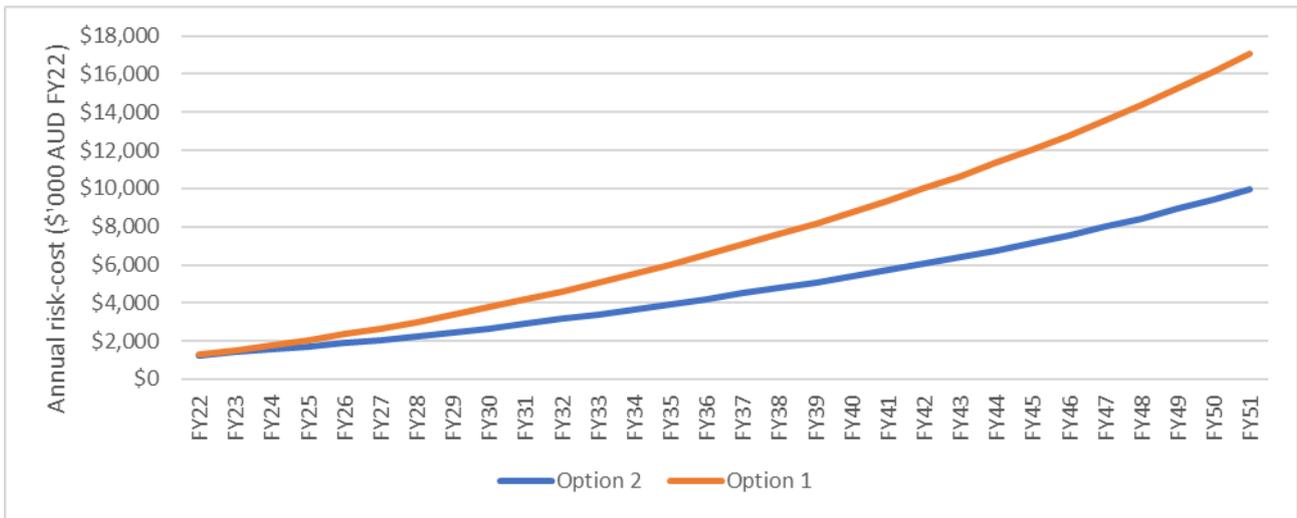


Figure 5 Forecast risk profile with condition-based replacement and refurbishment (Option 2) and reactive replacement - run to failure (Option 1)

While the level of risk is increasing, in the short term it is considered acceptable and by not overspending, Power and Water will enable further assessment to be undertaken to ensure that risk is appropriately managed across the network and will allow for real options based on alternative solutions that may be available in the future. This approach aims to avoid sunk costs associated with a more rapid replacement program which could result in stranded assets.

Option 2 risk and financial (for the purposes of estimation of NPV and BCR relative to the base case) models include ongoing repex at the amount forecast for FY29.

The proposed program will address the identified need by progressively replacing the worst condition, highest risk and most non-compliant ZSS minor assets, in accordance with experience gained using the same condition- and compliance-based approach in the current regulatory period to successfully deal with these issues.

The approach is considered technically feasible in the current regulatory period. It makes use of the well-established, detailed and regular ZSS assets maintenance strategy. The anticipated type and scope of projects in the ZSS minor assets program during the next regulatory period is expected to be similar to the historical works in the NMA Baseline program for FY19 to FY23. The scope of the works is also roughly similar in terms of the forecast number of projects, compared to the ZSS minor capital asset replacement program in the current regulatory period (an estimated increase of 11 projects or 22% on the total of 51 NMA Baseline projects in the current regulatory period). The proposed program is spread evenly across the next regulatory period and will not represent a deliverability issue for Power and Water.

Relative to the Option 1 base case, Option 2 has a NPV of \$28.58 million over the assessment period with a BCR of about 2.6. Option 2 is preferred as the program (over the assessment period) reasonably mitigates a substantial amount of the rising risk associated with ZSS minor assets with condition-based risk prioritisation.

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 Retire or de-rate assets to extend life – does not address the need

Total retirement of the ZSS minor assets is not a credible option as the ZSS minor assets are required for safe and reliable distribution of the electricity network. De-rating ZSS minor assets such as circuit breakers and transformers will not be practically possible due to constant load growth in the Power Water network. Instrument transformers, communications, field devices and metering, and substation auxiliary plant are all essential to ZSS operation and cannot reasonably be retired or de-rated.

3.2.2 Non-Network alternatives – does not address the need

Due to the type and function of some of the ZSS minor assets, there are no non-network alternatives or solutions that can be implemented in place of direct asset replacement and refurbishment with like for like (modern equivalent) assets. When a circuit breaker or power transformer is identified for replacement or refurbishment, Power and Water undertakes an assessment of whether the size or type can be changed to reduce cost or to meet future demand most efficiently. Batteries can be used in ZSS as an emergency power supply for critical loads but cannot address the requirement for reliable ZSS operation.

3.2.3 Capex/Opex Substitution – does not address the need

The driver of this investment is significant deterioration across a fleet of assets of different type caused by a variety of age-related condition and compliance issues, leading to risks of asset failure. It is not feasible to substitute capital expenditure with operational expenditure to resolve the risk. Only capital expenditure to replace and refurbish ZSS minor assets and components of major assets will resolve the underlying issues.

4. Recommendation

The recommended option is Option 2 – Business as Usual (Condition-based replacement and refurbishment) at an estimated capex of \$3.95 million (real 2021/22) to be 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.

The program will address safety, compliance with the Network Technical Code and the Network Planning Criteria objective of providing safe, secure, reliable, high quality power supply at minimal cost.

Replacement of ageing, non-compliant and degraded circuit breakers and transformer components, and auxiliary plant, buildings, amenities and other related minor assets will ensure continued maintenance of system security and achievement of Power and Water’ system security obligations.

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 5 Summary of strategic direction 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 Prudence

The primary concerns with ZSS minor assets are managing condition, compliance and risk issues that could cause loss of supply and worker injury. Condition-based replacement and refurbishment mitigates these issues.

4.2 Dependent projects

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

The scope of this project has been adjusted for the replacement or retirement of zone substations at Berrimah (replaced by Trevor Hormon), Sadadeen 22kV switchboard, Cox Peninsula and Humpty Doo. These are some of the oldest zone substations on the network, so their removal is forecast to reduce the scale of capital expenditure required for the NMA program.

4.3 Deliverability

This is a standard program of works that has been implemented historically and it is forecast to continue at volumes consistent with historical practice. No material delivery risks have been identified.

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. This includes ZSS as key assets in the distribution of supply.

4.5 Expenditure profile

Table 6 shows a summary of the expenditure requirements associated with the preferred option (Option 3) for the 2024-29 regulatory period.

Table 6 Annual capital and operational expenditure for option 2 as preferred option (\$'000, real FY22)

Item	FY25	FY26	FY27	FY28	FY29	Total
Capex	850	770	910	710	710	3,950
Opex	-	-	-	-	-	-
Total	850	770	910	710	710	3,950

4.6 High-level scope

A breakdown of the scope of the works in the preferred option by project numbers and project works type is shown in Table 7 High level scope of Option 2 (preferred) works in the 2024-29 regulatory period below.

Table 7 High level scope of Option 2 (preferred) works in the 2024-29 regulatory period

Works type	Anticipated number of projects
Circuit Breakers	7
Power Transformers	4
Instrument Transformers	9
Comms, Field Devices and Metering	8
Substation Auxiliary Plant	6
Buildings, Amenities ² , Civil and Grounds, Asset Failure Replacement	28
TOTAL	62

² This line item includes \$240K for workers toilets/amenities at two ZSS for the RY25-29 period

Appendix A. Cost estimation

The forecast expenditure for this program represents a total budget for the program and is not based on the unit cost of any specific asset or group of assets.

Power and Water relied on the historical record for the existing ZSS minor assets (NMA Baseline) replacement and refurbishment program. Historical expenditure was analysed to exclude ZSS-related costs that were part of alternative projects and programs and also to exclude one-off expenditure.

The resulting yearly costs, classified according to RIN category, were then trended forward, taking replacement and decommissioning of some ZSS over the next regulatory period into account. This allowed projections to be made for numbers of projects and related capex over the next regulatory period.

Appendix B. Forecasting assumptions

A key assumption applied in developing the forecast expenditure is that the filtered historical and budgeted NMA baseline record from 2018-19 to 2022-23 (budgeted) can reasonably be used to estimate projected capex, split into asset types and numbers of projects for the 2024-29 regulatory period.

It is assumed reasonable for option 2 that

- the risk model be based on the 2024-29 regulatory period estimated planned asset replacement profile continuing across a 30-year analysis period.
- the overall ZSS minor asset type risk is assumed to be moderate, with a normal distribution survival curve (45 year mean asset life and 6.7 year standard deviation of asset life).
- the reactive replacement cost is the average project cost for RP2429. The probability of disruptive outage at asset end-of-life is assumed to be 1 per cent because of the mix of assets and components involved in the program.
- the financial model NPV and BCR estimates be based on the planned capex program and split into asset types for RP2429 continuing across a 30-year analysis period.

The forecast expenditure and volumes have been trended forward without any changes for age as other programs are likely to also have an impact on the overall risk. The applications of our assumptions in this way is likely to be more conservative.

The NMA program excludes major assets works that are included in other projects and programs such as the Sadadeen 22kV switchboard, Channel Island 132kV GIS circuit breakers, and other dedicated minor programs such as for ZSS fire protection equipment, protection relays and DC systems.

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