Protective Security

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 addresses the risks to the public, the network and specific assets associated with the physical security of our zone substation assets.

1.1 Business need

Providing a safe and secure network is a core obligation of the NT National Electricity Rules (NT NER) and Network Technical Code and Planning Criteria. While safety and security of the network involves electrical safety, physical security and cyber security, this business case only considers physical security.

Power and Water must address the physical security of its assets to ensure the safety of people and compliance with the regulatory obligations.

The following typical protective physical security measures are typically deployed at zone substations and to distribution enclosures in more limited circumstances:

- Fencing. Chain mesh with barbed wire at rural sites. In Urban areas modern fences employ an anti-climb design with razor wire as an additional deterrent.
- Cameras / CCTV to visually monitor zone substations or access points (currently three sites only).
- SCADA alarms to notify of entry.
- Access control (locks, keys,) to prevent unauthorised access.

This assessment is based on the continued number of network incidents related to physical security of our assets and this business case considers investment required to mitigate the risk to the network and specific assets. Producing reliable access history for critical sites is also challenging as there is a reliance on manual sign in systems.

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	This option proposes to retain the current security methods and assets.	No

2	Improve security	This option proposes to improve security of zone substations in response to an increase in unauthorised access incidents.	Yes

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 options analysis identifies Option 2 – Improve security at an estimated cost of $1.8 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.

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

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

Item	FY25	FY26	FY27	FY28	FY29	Total
Capex	350	350	350	350	350	1,750
Opex	-	-	-	-	-	-
Total	**350**	**350**	**350**	**350**	**350**	**1,750**

Further investigation is currently being undertaken to improve the scoping and cost estimate for the program.

2. Identified need

This section provides the background and context to this business case, identifies the issues that are posing increasing risks of overhead services wires 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 Asset profile

Providing a safe and secure network is a core obligation of the NT NER. This involves electrical safety, physical security and cyber security.

Physical safety and security of our filed crew and the public is a primary consideration of Power and Water. Ensuring the physical security of our assets enables Power and Water to:

- Ensure the safety of the public by making sure they are not able to access live equipment purposefully or accidentally.
- Ensure the security of the electricity system and prevent disruption of supply.
- Prevent theft and vandalism that can disrupt supply or reduce the economic life of an asset.
- Comply with the relevant regulatory obligations.

2.2 Historical and current mitigation programs

2.2.1 Historical expenditure

Power and Water has historically invested in protective security covering assets such as:

- Replacing deteriorated fencing with modern equivalent anti climb fence.
- Installing security systems including CCTV and alarms at several sites in Darwin and Alice Springs.

The investments required are periodic as it is subject to the condition of fencing and any specific drivers such as unauthorised access or compliance requirements.

In the five years between 2016/17 and 2020/21 (inclusive) Power and Water invested $1.8 million (real 2021/22) in protective security assets. **Error! Reference source not found.** shows the expenditure profile from 2013/14 through to 2020/21 (inclusive).

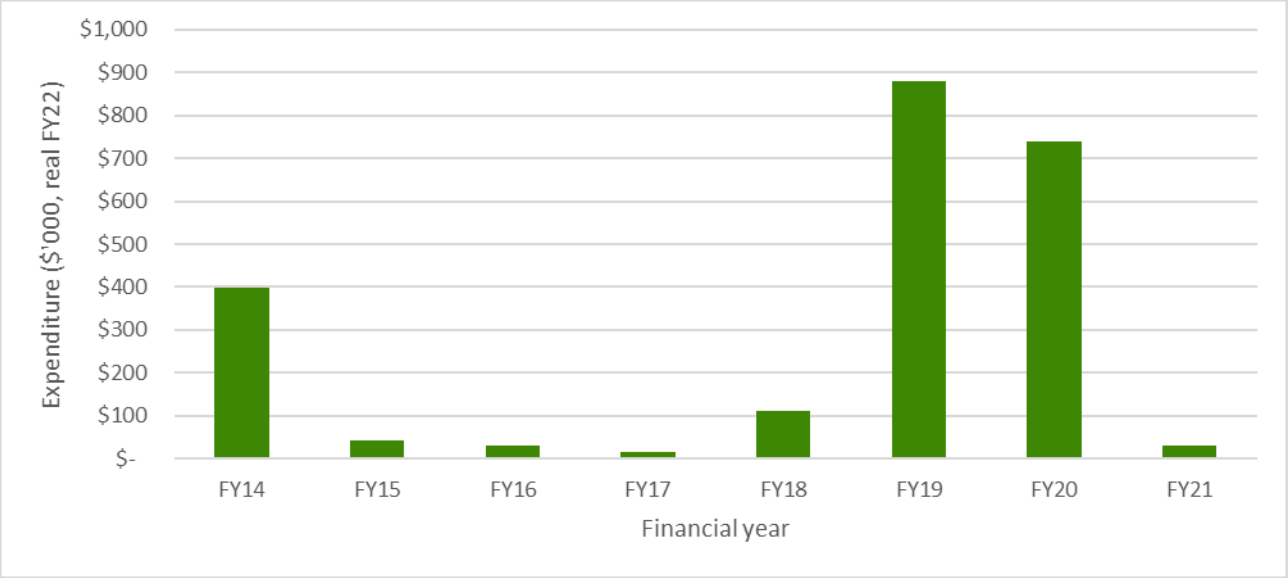

Figure 1 Historical expenditure on protective security

The expenditure profile is lumpy with large expenditure items evident in 2018/19 and 2019/20. This was primarily due to fencing upgrades at Strangways and Palmerston Zone substations in those years after multiple incidents of unauthorised access and theft. As shown in the above figure, the average fencing cost was approximately $800 thousand (real 2021/22). Fencing upgrades can be expensive due to the need to install sufficient earthing to ensure step and touch potentials are within limits.

2.2.2 Existing protective measures

The following typical protective physical security measures are typically deployed at zone substations and to distribution enclosures in more limited circumstances:

- Fencing - Chain mesh with barbed wire at rural sites. In Urban areas modern fences employ an anti-climb design with razor wire as an additional deterrent.
- Cameras / CCTV to visually monitor zone substations or access points (currently three sites only).
- SCADA alarms to notify of entry.
- Access control (locks, keys,) to prevent unauthorised access.

Power and Water has recently purchased mobile camera trailers to be deployed at facilities where break-ins occur or at projects sites where attractive materials may be stored such as cable and steel. However, these are generally a reactive treatment and do not provide additional access control.

2.3 Review of incidents

Producing reliable access history for critical sites is also challenging as there is a reliance on manual sign in systems. The historical data shows a slight increase in zone substation incidents during 2022, but anecdotal evidence suggests an increasing number of network incidents related to physical security of our assets when also considering distribution assets.

2.3.1 Continued unauthorised access incidents

For distribution assets it is predominately vandalism where deteriorated assets facilitate members of the public to remove covers or open doors, exposing live components. In some circumstances relatively new assets have also been damaged to gain access. For Zone substations it is generally driven by the theft of copper and other materials that can be sold and occurs in more remote locations where fences are in deteriorated condition and/or were constructed to standards that are now superseded.

Figure 2 shows the historical number of incidents that involved unauthorised access, theft or vandalism at zone substations. In 2017 and 2018, approximately 35% of the events were at Palmerston zone substation. In 2018 a new fence was installed and there were no more incidents. This demonstrates the effectiveness of the modern types of fences.

Excluding the incidents at Palmerston, the annual average number of incidents dropped in 2020 and 2021 which may reflect the impact of COVID, and has increased in 2022. The severity of the incidents has increased in 2022 with three incidents of theft from zone substations and yards which were areas with controlled access.

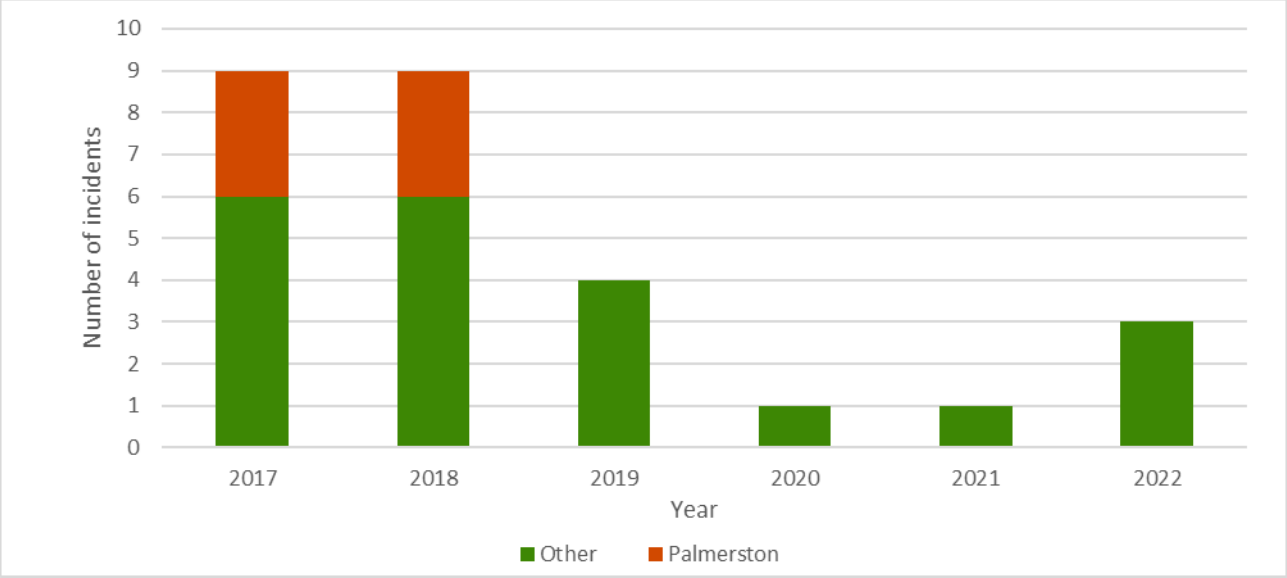

Figure 2 Number of unauthorised access, theft or vandalism at zone substations

A description of the three incidents that have occurred in 2022 is provided in Table 3. This is indicative of the type of unauthorised access incidents that are currently occurring, and presents an unacceptable level of risk to operators, the security of the electricity network and to the public.

Table 3 List of recent unauthorised access incidents for 2022.

Date of incident	Description of incident
Jan 2022	Mary River unauthorised access and draining transformer of oil
Mar 2022	Manton ZSS vandalism, cut locks and theft of walkway mesh
Mar 2022	Copper theft from Mindil Beach cable termination yard

2.4 Compliance

The Network Licence, enforced by the Electricity Reform Act 2000, requires Power and Water to remain compliant with legislative requirements, including Power Networks Technical Code and Planning Criteria (Technical Code) and the Northern Territory National Electricity Rules (NT NER).

The NT NER and Technical Code both require that Power and Water ensure the network is safe for both staff and the public.

Failure to maintain compliance can result in financial penalties.

2.5 Consequence areas

There are three key consequence areas affected by unauthorised access to zone substations:

- Unauthorised access by the public into a zone substation places the individual in danger of severe injury or fatality. Zone substations are hazardous environments with high voltage assets that pose a risk to people if touched, or through step and touch potentials if the person is present at the time of a fault.
- A number of the unauthorised access incidents have resulted in theft of assets, particularly copper, and damage/vandalism. These result in a direct financial cost to Power and Water to rectify the damage and/or to replace the stolen assets.
- Theft of assets or damage to assets can affect network reliability if those assets are either not available for repair works or if they fail to operate correctly due to the damage.

2.6 Risk assessment

Power and Water has developed the Risk Quantification Procedure to enable consistent quantification of risk from their assets into dollar terms. However, the risk quantification procedure has not been applied to zone substation protective security.

As safety is a strategic direction focus area and priority, unauthorised access is a high risk and needs to be addressed.

2.7 Summary

An increasing rate of unauthorized access incidents are occurring on the network at both zone substation and distribution asset level. To ensure the safety of the public, and security of our electricity network, action is required to improve the protective security of our assets.

This is a newly observed issue and therefore the process of investigation is continuing to determine the full extent of the issues and the solutions that are appropriate for each individual location.

Cyber security requirements are currently excluded from this business case and are assessed separately.

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 proposes to accept the current level of risk, based on the current protective security measures in place.
- Option 2 – Upgrade security: This option proposed improving security of high risk zone substations in response to a recent increase in unauthorised access which resulted in theft and damage to assets.

A comparison of the two identified credible options and the issues they address in the identified need is depicted in Table 5 below.

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

Table 4 Summary of options analysis outcomes

Assessment metrics	Option 1	Option 2
NPV ($'000, real FY22)	N/A	N/A
BCR	N/A	N/A
Capex ($'000, real FY22)	N/A	1,750
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

3.1.1 Option 1 – Do nothing

Option 1 proposes to accept the current level of risk.

This option does not propose undertaking any works to address the increasing number of unauthorised access incidents and therefore does not comply with the regulatory obligations to ensure the safety of people and security of the electricity network.

This option is not recommended.

3.1.2 Option 2 – Upgrade security

Option 2 proposes to upgrade the protective security assets at the highest risk zone substations including replacing locks, or otherwise improving access control, at distribution enclosures. The estimated cost is $1.8 million (real, FY2021/22) across the 2024-29 regulatory period.

The estimated cost is based on historical expenditure, and includes new fences at two zone substations plus additional access security (improved locks or access control) and security cameras / CCTV where required.

This option is 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 Capex/Opex Substitution – does not address the need

An alternative to improving security through capital works would be to ensure security through an operational response. This would require deploying security personnel to each of the zone substations. Sufficient security staff would be required to provide continuous surveillance. Assuming one staff member full time at each zone substation, with 23 zone substations and the standard staff hourly rate, this option would cost in excess of $20 million per year. This is significantly more than implementing protective security solutions through capital investment.

3.2.2 Refurbishment – does not address the need

Typical approaches to improve protective security have been to replace the fence with a modern anti climb fence, install CCTV and remote alarms. A fence cannot be refurbished to be anti climb, it must be replaced and the CCTV and alarms are new assets that do not currently exist at the remote zone substations, hence, refurbishment is not a valid option.

4. Recommendation

The recommended option is Option 2 – upgrade security at an estimated cost of $1.8 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.

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.

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 Corporation Strategic Direction" as indicated in Table 6 below.

Table 5 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

This business case considered the need for new physical security at the Tindal Zone Substation and Batchelor Zone Substation; however, there are major projects planned for these locations which include physical security of those zone substations within their scope. Hence, these two sites have been excluded from this regulatory business case.

4.3 Deliverability

Power and Water has the experience and track record completing the proposed scope of works associated with the preferred option during the previous regulatory period. Resourcing requirements for the preferred option are considered to be business as usual.

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.

4.5 Expenditure profile

Table 6 show a summary of the expenditure requirements for the 2024-29 regulatory period and financial evaluation metrics, respectively.

Table 6 Annual capital and operational expenditure ($'000, real FY22)

Item	FY25	FY26	FY27	FY28	FY29	Total
Capex	350	350	350	350	350	1,750
Opex	-	-	-	-	-	-
Total	**350**	**350**	**350**	**350**	**350**	**1,750**

4.6 High-level scope

The scope for this project is to upgrade fences at two zone substations plus additional access security (improved locks or access control) and security cameras / CCTV where required. The work will be prioritised against the highest risk sites.

Appendix A. Cost estimation

The forecast cost of this program is based on an analysis of historical programs and an assumption that two fence replacements will be required during the next regulatory control period. The forecast also includes and allowance for improved access control and CCTV.

Historical expenditure indicates the cost of replacing a zone substation fence is approximately $800 thousand.

Further investigation is being undertaken to improve the scoping and cost estimate for the program but is not expected to be completed in time for inclusion in the regulatory proposal.

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