

Communications hut refurbishment

Regulatory Business Case (RBC) 2024-29

Contents

1. Summary	2
1.1 Business need	2
1.2 Options analysis	2
1.3 Recommendation	3
2. Identified need	4
2.1 Asset profile	4
2.2 Asset condition issues	4
2.3 Current management program	5
2.4 Risk assessment	5
2.5 Summary	6
3. Options analysis	7
3.1 Comparison of credible options	7
3.2 Non-credible options	8
4. Recommendation	10
4.1 Strategic alignment	10
4.2 Dependent projects	10
4.3 Deliverability	10
4.4 Customer considerations	10
4.5 Expenditure profile	10
4.6 High-level scope	11
Appendix A. Cost estimation	12

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 expenditure 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 condition risks of existing communication huts on the network.

1.1 Business need

Communications huts contain critical communications assets for multiples systems including the digital mobile radio service for field crew communications and microwave links for transmitting network information. These must be sufficiently secure and sealed to prevent water, animal/insect ingress and optimal operating temperature.

There are 28 communications huts/shelters on the network. Eight of the communications huts have been identified as being in deteriorated condition and requiring remediation between 2024/25 and 2028/29. The issues include:

- Roof seals and water proofing is degrading. This will lead to water ingress if not addressed.
- Corrosion of metal surfaces and structural steel.
- Deterioration of paint which makes corrosion more extensive and severe.
- Inadequate power supply that is currently sourced via a co-located Telstra hut. The service has been found to be unreliable and not providing the stability of supply required for the critical communications devices.

This business case assesses options to address these issues and ensure adequate access to Power and Waters asset is provided.

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	Do not address the deteriorating condition of the communications huts	No
2	Repair the communications huts	Undertake remedial works to ensure the communications huts are fit for purpose	Yes

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 recommended option is Option 2 – Repair the communications huts at an estimated cost of \$0.4 million (real 20921/22) during the 2024-29 regulatory period to be most prudent and cost effective to meet the identified needs.

Table 2 shows a summary of the expenditure requirements.

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

Item	FY25	FY26	FY27	FY28	FY29	Total
Capex	-	-	-	188	188	375
Opex	-	-	-	-	-	-
Total	-	-	-	188	188	375

2. Identified need

This section provides the background and context to this business case, identifies the issues that are posing increasing risks 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

Power and Water owns transmission and distribution assets in three areas of the Northern Territory: the Darwin Katherine System, Alice Springs and Tennant Creek. While a large portion of the network is located in and around Darwin and the township areas of Katherine and Alice Springs, a significant number of assets – particularly communications huts – are located in remote locations that are affected by the severe weather experienced by the Northern Territory.

Communications huts contain critical communications assets for multiples systems including the digital mobile radio service for field crew communications and microwave links for transmitting network information. These must be sufficiently secure and sealed to prevent water and animal/insect ingress.

In addition, for modern electronic equipment it is increasingly important to maintain temperatures within specified ranges and to remove humidity.

In remote areas where SCADA is required but cannot be located within a zone substation, it can be housed in dedicated stand-alone communication sites. Several different types of shelters exist:

- Steel clad foam sandwich prefab of various sizes (passively cooled)
- Steel clad foam sandwich prefab of various sizes (not passively cooled)
- Concrete block construction
- Shipping containers for battery rooms
- These types of enclosures are affected by the environment and weather which cause deterioration. The deterioration can result in water ingress and also allow insects and animals to enter.

There are 28 communications huts/shelters on the network.

2.2 Asset condition issues

Eight communications huts have been identified as being in deteriorated condition and requiring remediation. The identified issues include:

- Roof seals and water proofing is degrading. This will lead to water ingress if not addressed.
- Corrosion of metal surfaces and structural steel.
- Deterioration of paint which makes corrosion more extensive and severe.
- Inadequate power supply that is currently sourced via a co-located Telstra hut. The service has been found to be unreliable and not providing the security of supply required for the communications devices.

These eight sites are primarily located in remote areas of the network.

This business case assesses options to address these issues and ensure adequate access to Power and Waters asset is provided.

2.3 Current management program

This program has historically been managed through a program designed to capture minor condition-based works. Figure 1 shows the historical expenditure has been inconsistent as it is based on the need as identified by inspections. From 2015-16 to 2017-18, Power and Water spent \$220,000 (real FY22) on refurbishment of the communications huts.

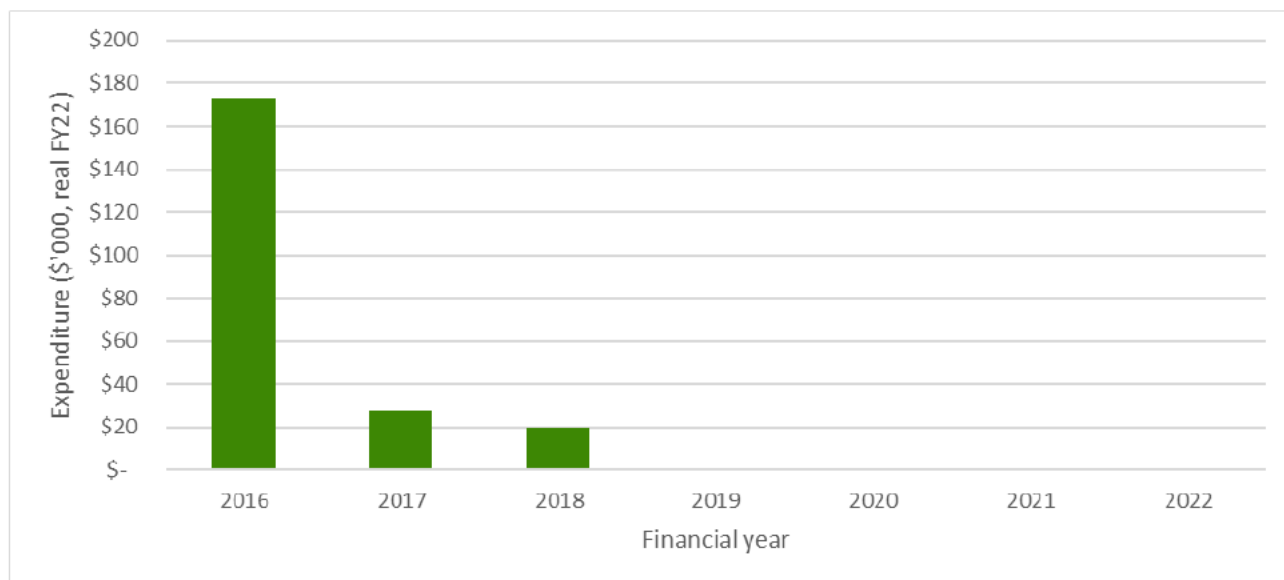


Figure 1 Historical expenditure on communications hut remediation

2.4 Risk assessment

Power and Water has developed the Risk Quantification Procedure to enable consistent quantification of risk from their assets into dollar terms. The procedure is applicable to most assets where there is a direct link between an asset failure and the impact of that failure on the defined consequence categories.

However, since we currently do not have adequate data to undertake a quantitative analysis on the impact of communications huts, a qualitative assessment of the risk has been undertaken using the relevant key consequence areas set out in the Risk Quantification Procedure.

The communications huts support communications devices to operate correctly and ensure there is a reliable communications network and therefore a reliable and safe electricity network. If these huts are unable to provide the require protection from fauna and the environmental conditions, then the network is likely to be impacted by:

- **Service delivery:** Power and Water's ability to maintain visibility of its assets restore power following an outage. This will prolong the duration of outages and therefore impact our ability to provide adequate service levels to our customers in line with the performance targets set by the Utilities Commission.
- **Health and Safety:** Power and Water's ability to undertake switching to isolate faults and ensure the network remains in a safe state. Inadequate communications are likely to impact the DRCC's visibility of the network. This could result in dangerous situations of power is restored to sections of the network that are in an unsafe condition.

- **Compliance and cyber security:** The DWDM assets are not supported by vendors and therefore updates and patches to the firmware to address new risks are not provided. This is likely to impact Power and Water's ability to comply with the SOCI Act and expose vulnerabilities that

The key risks described above result in a Medium risk rating with a target risk rating of Low. The qualitative risk assessment of the inherent risk and targeted risk is shown in Figure 1 using the matrix approach set out in the Enterprise Risk Management Standard.

	Insignificant	Minor	Moderate	Major	Severe
Almost certain	Medium	High	Very High	Extreme	Extreme
Likely	Low	Medium	High	Very High	Extreme
Possible	Low	Low	Medium	High	Very High
Unlikely	Low	Low	Medium	High	High
Rare	Low	Low	Low	Medium	Medium

Figure 2 Qualitative risk assessment

Overall, we consider the failure of these assets to have a medium consequence on the safety and reliability of the network. We expect the likelihood of the consequence materialising is increasing due to the ongoing deterioration of the assets with continued exposure to the environmental conditions.

2.5 Summary

Power and Water owns transmission and distribution assets across the Northern Territory. A significant number of assets – particularly communications huts – are located in remote locations that are affected by the severe weather experienced by the Northern Territory.

Communications huts contain critical communications assets for multiples systems that require protection from the harsh environment, including fauna, high temperatures, humidity and storms.

Several different types of shelters exist, with different issues emerging at the different sites. Some of the identified issues include deterioration of roof seals and water proofing, corrosion of metal surfaces and structural steel, deterioration of paint and inadequate power supply.

Historically this program has been managed as required based on hut condition so the expenditure is not consistent year to year. From 2015-16 to 2017-18, Power and Water spent \$220,000 (real 2021-22). Eight communications huts have been identified as being in deteriorated condition and requiring remediation.

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, 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 – Do nothing. This option will not address the communications hut condition.
- Option 2 – Repair the communications hut.

Table 3 provides a high-level comparison of the two identified credible options. A detailed discussion of each option is provided in the following sections.

Table 3 Summary of options analysis outcomes

Assessment metrics	Option 1	Option 2
NPC (\$'000, real FY22) ¹	0	315
BCR	N/A	N/A
Capex (\$'000, real FY22)	N/A	400
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 1: Since benefits were not calculated, this is showing the net present cost of the projects.

3.1.1 Option 1 – Do nothing

This option proposes to not undertake any works to improve the communications huts or to transfer the power supply from Telstra switchboard to a Power and Water supply.

Accepting the continued degradation of these assets due to the ongoing exposure to fauna and the environmental conditions is likely to result in failure of the communications equipment house within and therefore impact the safety and reliability of the communications network.

This option does not align with the asset objectives or customer expectations for Power and Water' management of the network to ensure reliability. Hence, this option is not recommended.

3.1.2 Option 2 – Repair the communications huts

This option proposes to refurbish communications huts and undertake the follow types of work:

- Regalvanising metal surfaces and structural steel.
- Repaint the hut to prevent further corrosion.
- Replace the roof seals and ensure the hut is waterproof.
- Migration of the power supply from the Telstra switchboard to Power and Water owned assets.

The estimated cost is \$0.4 million (real 2021/22) to repair eight communication huts. The breakdown of the cost estimate is provided in Appendix A.

The scope and cost of the works has been determined based on past similar projects and the most recent assessments of each site that were undertaken by an external contractor. Adjustments were made to escalate into 2021/22 dollars, include the additional work to transfer the power supply and include cost for internal staff to undertake planning and documentation.

The eight communications huts that will be addressed during the 2024-29 regulatory period were identified based on inspection reports. The estimated costs are shown in Table 4.

The works will be completed during 2027/28 and 2028/29 based the degree of the deterioration, expected deterioration rate and delivery within the portfolio of works being undertaken by the communications team.

Table 4 Cost estimate for Option 2

Communications hut location	
Brooks communications hut	
West Gap communications hut	
McMinns communications hut	
Venn communications hut	
Union Reef communications hut	
Ali Curung communications hut	
Larrimah communications hut	
Mataranka communications hut	
Total	

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

Since the driver of this investment is deterioration of the communications huts that are located in remote areas, substituting increased maintenance is not a valid option. This will not provide the required degree of protection against the weather, humidity and animals. Only capital expenditure to repair the enclosures will address the underlying issues.

4. Recommendation

The recommended option is Option 2 – Repair the communications huts at an estimated cost of \$0.4 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 “PWC Strategic Direction” as indicated in the table 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 Prudence

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 is a small scale project that will be predominately delivered by external contractors. No delivery risks have been identified.

4.4 Customer considerations

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

Feedback received through customer consultation undertaken at the time of writing this PBC, 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 shows a summary of the expenditure requirements for the 2024-29 regulatory period.

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

Item	FY25	FY26	FY27	FY28	FY29	Total
Capex	-	-	-	188	188	375
Opex	-	-	-	-	-	-
Total	-	-	-	188	188	375

4.6 High-level scope

A detailed scope and cost estimate / build up is provided in Appendix A.

Appendix A. Cost estimation

The estimate shown in Table 7 is based on the last works undertaken on communications huts. The estimate shown in Table 8 is based on an estimate using internal labour rates and an estimate of effort required to complete each task

Table 7 Estimate breakdown for communication hut refurbishment

Location	Works completed	Civil	Electrical	Internal
Brooks	Hut repaint, roof seals and water proofing, Metal gal recoating Power migration from Telstra to PWC			
West Gap	remove battery box, replace roof sheeting, new colourbond and flashing, repaint, deadlocks Power migration from Telstra to PWC			
McMinns	Hut repaint, roof seals and water proofing, Metal gal recoating			
Venn	Hut repaint, roof seals and water proofing, Metal gal recoating Power migration from Telstra to PWC			
Union Reef	Re-roof, fabricate and fit solar panel frame, paint etc			
Ali Curung	Hut repaint, roof seals and water proofing, Metal gal recoating Power migration from Telstra to PWC			
Larrimah	Hut repaint, roof seals and water proofing, Metal gal recoating Power migration from Telstra to PWC			
Mataranka	Hut repaint, roof seals and water proofing, Metal gal recoating Power migration from Telstra to PWC			
Sub total				
Total				

Table 8 Build up of the internal labour component

Task	Units	Rate	Cost
Prepare site / equipment	10		
Plan outages and access	4		
Complete electrical pre works and planning for migration from Telstra to PWC	40		
Documentation/design updates includes BCs	30		
Total			

Contact

Power and Water Corporation

55 Mitchell Street, Darwin NT 0800

Phone 1800 245 092

powerwater.com.au

PowerWater