



Regulatory Investment Test for Distribution (RIT-D)

Reliability Corrective Action Condition-Based Service Line Remediation

Notice of No Non-Network or SAPS Options
14 October 2026



Part of Energy Queensland

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CONTENTS

1	Introduction	2
	1.1 Purpose	2
	1.2 About Ergon Energy Network	2
2	Identified Need	4
	2.1 Safety Performance and Regulatory Obligations	4
	2.2 Current Performance	6
	2.3 Need for Investment	8
	2.4 Asset Lifecycle Management and Risk Considerations	9
	2.5 Technical Characteristics of the Identified Need	9
3	Potential Credible Options Identified	10
4	Social Licence and Community Engagement	10
	4.1 Community Engagement	10
	4.2 Social Licence	11
	4.3 Circular Economy Considerations	11
	4.4 Greenhouse Gas Emissions	11
5	Rationale that there is no viable non-network OR SAPS Options	12
	5.1 Methodologies and Assumptions	12
	5.2 Consideration of Non-Network Options	12
6	Conclusion and Next Steps	14

1 INTRODUCTION

1.1 Purpose

Ergon Energy Corporation Limited (Ergon Energy Network) has determined on reasonable grounds, in accordance with clause 5.17.4(c) of the National Electricity Rules (NER), that there is no non-network or a Stand-Alone Power System (SAPS) option that is a potential credible option, or that forms a significant part of a potential credible option that would address the identified need.

This notice sets out the reasons for this determination, including any methodologies and assumptions used. Ergon Energy Network publishes this notice in accordance with clause 5.17.4(d) of the NER.

1.2 About Ergon Energy Network

Ergon Energy Network is part of Energy Queensland and manages an electricity distribution network which supplies electricity to more than 790,000 customers. Our vast operating area covers over one million square kilometres (around 97% of the state of Queensland) from the expanding coastal and rural population centres to the remote communities of outback Queensland and the Torres Strait.

Our electricity network consists of approximately 160,000 kilometres of powerlines, one million power poles, and 455,000 service lines along with associated infrastructure such as major substations and power transformers.

We also own and operate 33 stand-alone power stations that provide supply to isolated communities across Queensland which are not connected to the main electricity grid.

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2 IDENTIFIED NEED

Ergon Energy Network's service line assets provide the electrical connection between the low-voltage (LV) distribution network and customer-owned points of connection. Ergon Energy Network currently manages more than 455,000 service line connections across its distribution network.

Key characteristics of the service line asset fleet include:

- Approximately 33% of the asset population is over 40 years old, with the majority of these assets assessed as being in poor condition.
- Legacy service types, including open wire, concentric neutral screen, and colour-coded PVC services, are experiencing accelerated deterioration due to age-related degradation and known historical design and material issues.
- An additional 5% of the asset population is expected to reach a similar age and condition profile within the next five years.

In addition to the service line conductors themselves, the service line asset class incorporates several associated connection components located at the Point of Attachment (POA), including service fuses, clamps, service bonds, service hooks, service raisers and mains connection hardware. These components are critical to maintaining a safe and reliable customer connection and are also subject to inspection and maintenance requirements under the Electrical Safety Regulation 2026 (Qld) (ESR).

Assets operate across a diverse range of environmental and geographical conditions, with several regions subject to severe climatic and operational stresses that further accelerate deterioration.

As these assets approach and exceed their expected service life of approximately 40 years, age-related deterioration, legacy asset issues and challenging operating environments are contributing to increasing numbers of defects and unassisted failures, resulting in a growing incidence of electric shocks and tingles. This deterioration is resulting in significant asset performance, reliability, and safety challenges across the services fleet.

2.1 Safety Performance and Regulatory Obligations

Ergon Energy Network's key safety obligations are under the *Queensland Work Health and Safety Act 2011* and the *Electrical Safety Act 2002*, along with associated regulations.

- **Primary Work Health and Safety Duty**

As a Person Conducting a Business or Undertaking (PCBU), Ergon Energy Network must ensure, so far as is reasonably practicable, the health and safety of:

- Workers
- Contractors
- Visitors
- Members of the public who may be affected by its operations.

This includes:

- Providing safe systems of work
- Maintaining safe plant and equipment

Notice of No Non-Network or SAPS Options

- Managing workplace risks
- Providing information, training and supervision
- Consulting with workers on safety matters.

- **Electrical Safety Duty**

Under the *Electrical Safety Act 2002*, Queensland's electrical safety framework is designed to protect workers, consumers and the public from electrical risks. The associated Electrical Safety Regulation 2026 provides detailed compliance requirements for meeting those obligations.

For an electricity distributor such as Ergon Energy Network, this means managing risks associated with:

- Overhead powerlines
- Underground cables
- Substations
- Distribution assets
- Electrical work and maintenance activities.

The primary safety performance for service line assets is monitored through the annual rate of reported electric shocks, expressed as shocks per thousand customers per month. Analysis of historical incidents shows that the majority of reported electric shocks are associated with service line neutral conductor failures.

In Queensland, electricity distribution entities and other businesses must notify the Electrical Safety Office (ESO) of certain electrical incidents, including all Serious Electrical Incidents (SEI). In addition to immediate notification requirements, organisations must maintain records of reportable incidents for a minimum period of five years and comply with specific reporting obligations and dedicated notification processes.

Accordingly, Ergon Energy Network maintains comprehensive records of all reported electric shock incidents, including those associated with service line neutral failures. Following an internal audit and subsequent risk review undertaken in response to an ESO Improvement Notice¹, Ergon Energy Network committed to reducing the annual rate of neutral-related electric shocks to **0.01 shocks per thousand customers per month by 2032¹**.

The need to manage service line assets is also driven by statutory obligations under the *Electrical Safety Act 2002* (Qld) and the ESR 2026. These obligations require Ergon Energy Network to operate and maintain its network in an electrically safe condition and undertake inspection and maintenance activities at reasonable periodic intervals. Relevant requirements include:

- ESR Schedule 2, which prescribes exclusion zones for overhead electric lines;
- ESR Schedule 7, which prescribes minimum clearance requirements for low-voltage overhead service lines;
- ESR section 264-Inspection and maintenance of integrity of insulation, which requires:

¹ Improvement Notice I1017003, Risk Assessment Review – Entity neutral (open circuit entity neutral 2021-2022, Action Plan (15/07/2021))

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- “An electricity entity must ensure the integrity of the insulation of the relevant part of the electrical entity’s works is inspected and maintained ... inspection and maintenance must be performed as periodic reasonable intervals”.
- “An electricity entity must also ensure the integrity of the insulation of the clamp or other apparatus at the point where consumer mains are connected to the electricity entity’s overhead service line is inspected and maintained ... inspection and maintenance must be performed at periodic reasonable intervals.”

These obligations establish a requirement for ongoing inspection, maintenance and replacement of deteriorated assets to support safe operation of the network and achievement of safety performance targets.

2.2 Current Performance

Ergon Energy Network is currently not on track to achieve its performance target as committed to the Queensland ESO. Over the past five years, Ergon Energy Network has recorded an average of approximately **162 electric shock incidents per year** associated with service line assets. This is equivalent to approximately **0.017 shocks per thousand customers per month**, which would exceed Ergon Energy Network’s agreed 2032 target of 0.01 shocks per thousand customers per month. Achieving the target would require reducing annual shock incidents by around 40%, from approximately 162 incidents per year to around 96 incidents per year.

Historical performance data also indicates that the services asset fleet experiences:

- More than **13,000 defects** classified as Priority 0 (P0), Priority 1 (P1), and Priority 2 (P2).
- More than **5,500 unassisted failures** over the same period.

The historical trend in electric shock incidents demonstrates that service line assets continue to present a material safety risk.

Figure 1 shows that annual electric shock performance has remained above the target trajectory required to achieve the agreed 2032 performance objective of 0.01 shocks per thousand customers per month. This indicates that the current level of safety risk remains higher than the acceptable long-term target and requires continued intervention.

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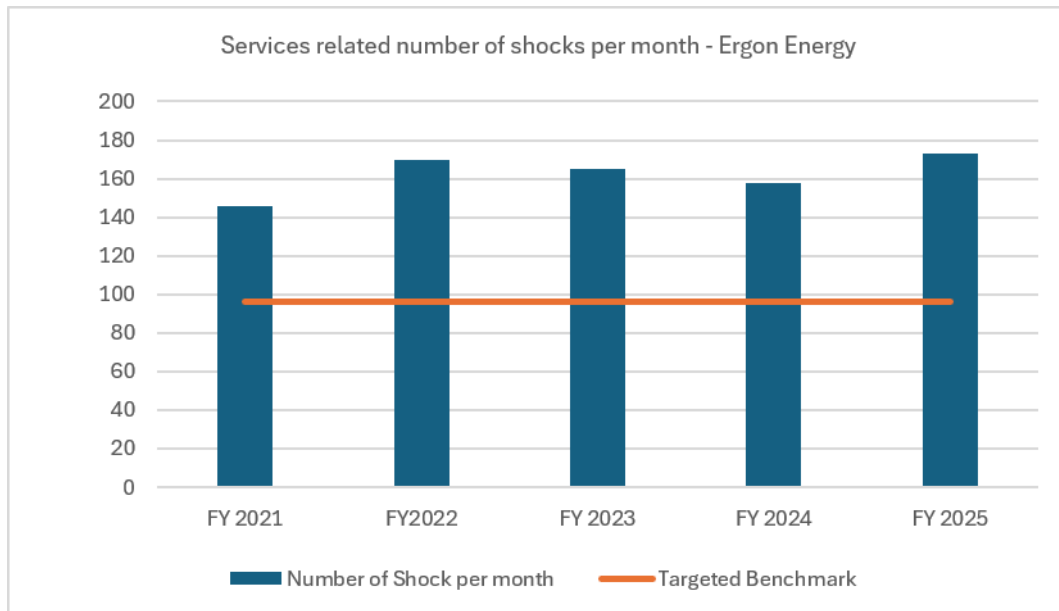


Figure 1: Service-related shock performance data - Ergon Energy Network

Unassisted failures represent one of the leading indicators of service deterioration and deteriorating fleet condition. **Figure 2** shows that the service line asset population continues to experience a substantial number of annual failures despite ongoing replacement and defect remediation activities.

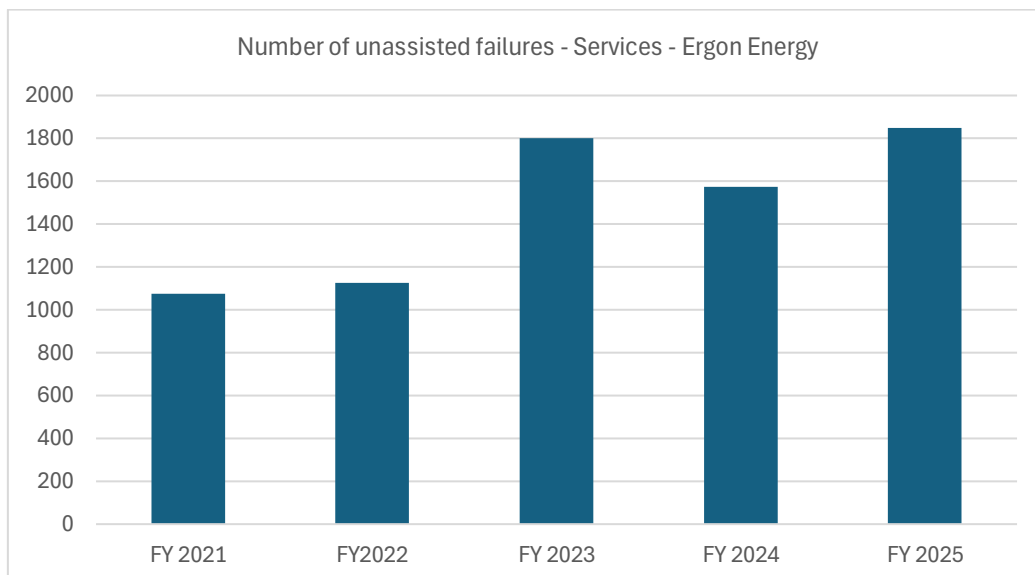


Figure 2: Service-related unassisted failure data - Ergon Energy Network

Comparison of the trends shown in Figure 1 and Figure 2 demonstrates a strong relationship between service line failures and electric shock performance. Years with elevated unassisted failure volumes generally correspond with elevated electric shock occurrence, indicating that deterioration of service line assets contributes directly to safety performance outcomes. Consequently, reducing service line failures through targeted replacement of ageing assets is expected to contribute to a

Notice of No Non-Network or SAPS Options

reduction in electric shock incidents and support achievement of Ergon Energy Network's 2032 safety performance target.

2.3 Need for Investment

Historical analysis demonstrates that service line deterioration, defects and unassisted failures are key contributors to electric shock incidents. Accordingly, reducing defects and unassisted failures through targeted replacement of ageing and high-risk assets is considered the most prudent and cost-effective means of improving safety performance and meeting regulatory obligations.

The recurring gap between actual performance and the target trajectory indicates that existing inspection and defect rectification activities alone are insufficient to achieve the safety commitment. Continued replacement of ageing and high-risk service line assets is therefore required to reduce the likelihood of neutral failures and associated electric shock incidents.

To achieve the required ESO safety commitment, Ergon Energy Network must continue replacing approximately **14,000 service lines annually**, comprising:

- **8,500 targeted replacements** of ageing and high-risk assets; and
- **5,500 reactive replacements** associated with failed or defective services.

If Ergon Energy Network does not invest in addressing this identified need and discontinues the targeted replacement program, the condition and performance of the service line fleet will continue to deteriorate. As a result, service failures, defects, and associated safety risks are expected to increase significantly.

Internal Weibull statistical modelling indicates, without intervention, that annual service failures are forecast to increase from approximately **1,900 failures in 2024/25** to around **2,400 failures by 2030**, representing an increase of more than 25%. This deterioration would likely result in:

- Increased risk of electric shock and other safety incidents to customers, the public, and field personnel.
- Reduced network reliability and service quality due to a growing number of service failures and customer outages.
- Continued non-compliance with Ergon Energy Network's commitment to reduce neutral-related electric shocks.
- Increased risk of regulatory intervention, enforcement action, and reputational impacts associated with ongoing breaches of agreed safety improvement commitments and action plans.
- Higher reactive maintenance and emergency response costs as the asset population continues to age and fail at an increasing rate.

Accordingly, continuation of the targeted service lines replacement program is required to manage asset risk, maintain regulatory compliance, improve safety outcomes, and support delivery of Ergon Energy Network's long-term service performance objectives.

Notice of No Non-Network or SAPS Options

2.4 Asset Lifecycle Management and Risk Considerations

Service line assets are managed through a combination of inspection, defect rectification, condition-based replacement and failure response activities. Asset deterioration is driven by age-related degradation, environmental exposure and operational stresses, resulting in increasing levels of defects, failures and associated safety risks.

The principal risks associated with deteriorating service line assets include:

- electric shock arising from neutral failures and deteriorated connection points;
- loss of supply resulting from conductor or connection failures;
- fire ignition from failed or fallen overhead service line conductors;
- damage to customer electrical equipment; and
- increasing emergency response and reactive maintenance costs.

In accordance with Energy Queensland's risk management framework and so far as is reasonably practicable (SFAIRP) principles, defect based and proactive replacement of deteriorated services remains the most effective long-term risk treatment for managing these safety, reliability and compliance risks.

2.5 Technical Characteristics of the Identified Need

To be considered technically viable, any credible option would need to meet the following technical requirements:

Table 1: Technical characteristics requirements

Description	Applicability Remark
Size of load reduction or additional supply	Not applicable
Location	Throughout Ergon Energy Network's network
Contribution to power system security or reliability	Maintains reliable supply to customers in accordance with Ergon Energy Network's regulatory obligations
Contribution to power system fault levels	Not applicable
Operating profile	Compatible with Ergon Energy Network's current operating environment

Notice of No Non-Network or SAPS Options

3 POTENTIAL CREDIBLE OPTIONS IDENTIFIED

Ergon Energy Network has considered all options that could reasonably be classified as a credible option without bias to energy source, technology, ownership or whether it is a network option, a non-network or a SAPS option.

Following assessment, Ergon Energy Network has not identified any technically feasible and cost-effective non-network, or hybrid option, capable of addressing the identified need at a network-wide scale while delivering equivalent safety, reliability and customer outcomes.

Accordingly, Ergon Energy Network identified and evaluated the following network options:

- **Option 1 (Base Case, Preferred Option)** – Business as usual (BAU) replacement of all failed and unrepairable defective services together with approximately **8,500** targeted service replacements annually (approximately **14,000** services per annum in total).
- **Option 2** - Base Case with a 50% reduction in targeted service replacements (approximately **10,000** services per annum).
- **Option 3** - Base Case with a doubling of targeted service replacements (approximately **22,000** services per annum).
- **Option 4** – Base Case with no targeted service replacements (approximately **5,500** services per annum).

Option 3 was not preferred due to its significantly higher cost to customers and lower overall cost-benefit outcome compared with Option 1.

Options 2 and 4 were not preferred as economic assessment indicated lower overall value and a greater likelihood of increased safety and reliability risks resulting from higher service failure volumes, as forecast by Weibull modelling.

Option 1 is the preferred option, based on 20 years of Net Present Value (NPV) modelling, as it:

- supports continued reduction in electric shock risk and improved safety performance;
- maintains compliance with Ergon Energy Network's safety obligations and agreed improvement commitments;
- manages unassisted failure rates and maintains network reliability;
- provides an estimated customer benefit of approximately \$115 million (predominantly safety) compared to Option 4; and
- delivers the most efficient balance between risk reduction, customer value and expenditure.

Accordingly, continuation of the Base Case in accordance with the AER-approved 2025-2030 regulatory determination is the recommended option.

4 SOCIAL LICENCE AND COMMUNITY ENGAGEMENT

4.1 Community Engagement

All credible options involve replacement of existing service lines within their current locations and do not involve network expansion or the development of new infrastructure corridors.

Consequently, implementation of the program is not expected to result in material impacts on the broader community beyond those normally associated with routine replacement activities.

Notice of No Non-Network or SAPS Options

Ergon Energy Network has therefore not identified any stakeholder groups that would be materially affected by the implementation of the proposed program.

4.2 Social Licence

Ergon Energy Network will continue to manage any social licence considerations through its established Community Engagement Framework and associated customer communication processes.

No social licence issues have been identified that materially influence the assessment or implementation of the credible options.

4.3 Circular Economy Considerations

Materials removed during the replacement program will be managed through established recycling and waste disposal processes in accordance with company procedures and industry practices.

Given the nature and scale of the replaced assets, no material circular economy impacts have been identified.

4.4 Greenhouse Gas Emissions

The proposed program is not expected to have a material impact on Australia's greenhouse gas emissions.

Service lines facilitate customer connection to the electricity network and are independent of generation technology. The replacement program neither increases electricity demand nor influences the mix of generation sources supplying customers.

This is further discussed in Table 2 below, where Ergon Energy Network has determined that the change in Australia's greenhouse gas emissions for the potential preferred option does not result in a material change in market benefit.

Table 2: Changes in Australia's greenhouse gas emissions

Scope of emissions	Considerations for this DPAR
Direct emissions from generation in the NEM	Immaterial – The preferred option does not involve generation
Direct emissions in the NEM other than from generation	Immaterial
Fugitive emissions from the extraction and transport of fuel	Immaterial
Embodied emissions in construction materials for the project	Immaterial
Embodied emissions in assets outside the project	Immaterial – Emissions outside of the project do not materially change
Emissions associated with losses	Immaterial
Emissions in other sectors that change as a direct result of the project	Immaterial – Emissions in other sectors do not materially change

Notice of No Non-Network or SAPS Options

5 RATIONALE THAT THERE IS NO VIABLE NON-NETWORK OR SAPS OPTIONS

5.1 Methodologies and Assumptions

To be considered viable, any non-network option would need to meet the following technical requirements:

Table 3: Technical requirement considerations

Technical Requirements Description	Applicability Remark
Adequate Load Capacity	All these requirements can't be specified at this stage as this condition-based services replacement program is widespread across the entire Ergon Energy Network's network and no specific areas or customers are targeted.
Location Specific application	
Contribution to Network security/reliability	
Compatibility with fault level requirements	
Appropriate operating profile with safety performance, regulatory compliance and cost effectiveness	

5.2 Consideration of Non-Network Options

Potential credible options must be technically feasible, commercially viable, and capable of being implemented within the timeframe required to address the identified need.

Ergon Energy Network assessed a range of potential non-network solutions and determined that no non-network or SAPS option is capable of addressing the identified need, either as a standalone solution or as a component of a broader solution. The assessment outcomes are summarised in Table 4.

Table 4: Non-Network Options

Options Descriptions	Consideration Remark
5.2.1 - Network Load Control	All listed options were considered in assessing the identified need. However, the identified need arises from the deterioration of a large and geographically dispersed population of service line assets and the associated safety, reliability and compliance risks, rather than from network capacity constraints. As a result, traditional non-network solutions such as demand management, demand response, embedded generation and load control do not address the underlying cause of the identified need.
5.2.2 - Demand Management Programs	
5.2.3 - Demand Response Arrangements with Customers	
5.2.4 - Increased Generation/Supply Options	
5.2.5 - Customer Call Off Load (COL)	
5.2.6 - Customer Embedded Generation (CEG)	The identified need affects assets across Ergon Energy Network's entire network and is therefore widespread rather than location-specific. Given the scale of the asset population and the ongoing requirement to inspect, maintain and replace
5.2.7 - Large Scale Customer Generation (LSCG)	

Notice of No Non-Network or SAPS Options

	deteriorating services, non-network alternatives (of which none have been identified) would likely be significantly less cost-effective than the proposed network options. Continued replacement of ageing and defective services is required to reduce electric shock risk, maintain network reliability and resilience, and support compliance with applicable regulatory and service performance obligations.
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Ergon Energy Network considers that no non-network or SAPS arrangement represents a credible network solution to address the identified need.

However, as part of its assessment, Ergon Energy Network examined a customer-owned **alternative supply arrangement** incorporating a roof-top solar PV, inverter system, battery storage and a small backup diesel generator set. However, whilst alternative supply arrangements may be technically feasible for individual customers, they do not address the underlying need to manage a geographically dispersed population of ageing service line assets. As a result, the need exists irrespective of the source of electricity supply and would remain even if alternative generation technologies were adopted by individual customers.

Furthermore, the provision of customer-owned alternative supply systems falls outside the scope of Ergon Energy Network's service replacement program and would require individual customer investment and consent.

An alternative supply arrangement, based on 40 years of NPV modelling, identified the following limitations:

- **Timeframe Constraints:** The current service remediation program operates within defined defect rectification timeframes, including P0 (one day), P1 (30 days) and P2 (nine months). In contrast, implementation of an alternative supply arrangement typically requires a minimum of three weeks and is dependent on equipment availability, customer engagement and installation resources. Consequently, alternative supply arrangements cannot reliably address identified risks within P0 response requirements and are likely to be unable to meet the rectification timeframe for the majority of P1 defects.
- **Regulatory Constraints:** The current Queensland regulatory framework does not permit Ergon Energy Network to disconnect customers from the distribution network and replace network services with customer-based alternative supply arrangements as part of this program.
- **Capital and Operating Cost Impacts:** A typical alternative supply installation is estimated to cost approximately \$30,000 compared with less than \$3,000 for replacement of a service line. In addition, alternative supply systems generally have a service life of approximately 10 to 20 years, compared with around 40 years for a replacement service, resulting in substantially higher lifecycle costs.
- **Financial Modelling Outcomes:** Forty-year NPV modelling indicates that replacement of a standard service with an alternative supply arrangement results in significantly poorer economic outcomes than continuation of the service replacement program. Key findings include:
 - Total NPV of approximately negative \$94,000 for the alternative supply arrangement compared with approximately negative \$29,000 for service replacement.

Notice of No Non-Network or SAPS Options

- Capital costs approximately 25 times greater than service replacement.
- Operating costs approximately 1.5 times greater than service replacement.
- **Customer Consent Requirements:** Implementation of an alternative supply arrangement would require Explicit Informed Consent from the customer and would therefore depend on individual customer preference rather than network need. Ergon Energy Network's role would be limited to providing customers with sufficient information regarding costs, benefits and operational implications to support informed decision-making.
- **Site and Footprint Constraints:** Many customers may not have sufficient space or suitable site conditions to safely accommodate solar PV panels, battery systems, backup generation equipment and associated infrastructure.

For these reasons, Ergon Energy Network has concluded that alternative supply arrangements are not a technically practical or economically efficient solution to address the identified need and do not represent a credible alternative to the proposed replacement program.

Despite these limitations, Ergon Energy Network remains committed to supporting non-network options or alternative supply arrangements where it presents the most viable option - particularly in rural areas with high costs to serve or access/reliability challenges.

6 CONCLUSION AND NEXT STEPS

Following assessment of all potential network, non-network alternatives and SAPS options, Ergon Energy Network has concluded that no non-network or SAPS option presents a credible option, or forms a significant component of a credible option, capable of addressing the identified need. Accordingly, Ergon Energy Network publishes this Notice of No Non-Network or SAPS options report in accordance with clause 5.17.4(d) of the NER.

The next step in the RIT-D process is publication of the Draft Project Assessment Report (DPAR).