Jemena Electricity Networks (Vic) Ltd

2026-31 Electricity Distribution Price Review - Revised Regulatory Proposal

Supporting justification document

Service Replacement - Business Case

Jemena
bringing energy to life

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1. Executive Summary

Key highlights

- This program is required to mitigate risk of overhead service line failure and risks on the Jemena Electricity Network (JEN).
- Service line replacements are required as a result of customer-initiated complaints and discovery via our asset inspection and the neutral testing programs.
- Our approach has identified a prudent, cost-effective program of replacements to ensure that we reduce identified risks, maintain network performance and also address JEN compliance requirements.
- The program involves replacing 9.9km overhead service lines and associated breakaway devices and brackets upon asset failure.
- The program recommends completion by 30 June 2031, with an estimated total capital expenditure of $9.18M ($2024).

1.1 Purpose

This document provides the business case to implement service replacement activities during the 2026-31 regulatory period. The proposed program, with a total capital expenditure of $9.18M, is part of our forecast replacement capital expenditure.

1.2 Identified need

An overhead service is defined as the terminating span that connects the distribution low voltage overhead mains (JEN asset) to the point of supply (customer's asset), including the associated hardware such as termination clamps, brackets, and connectors. Whilst low voltage overhead services are singularly one of the least expensive items on the distribution system; as an overall asset class the volume and value is significant.

There is in excess of 158,000 overhead services owned and operated by JEN, some of which are deteriorating in condition. Addressing the deteriorating condition of overhead service lines is prudent given the associated hazards and age. Overhead service lines operate in an environment where they are subject to a harsh climate and potential abrasion by vegetation.

Primary failure modes for overhead service lines include:

- Electrical failure of cable conductor, insulation material and joints/terminations;
- Corrosion of neutral screen causing high resistance or open circuited neutrals and lack of earth bonding;
- Mechanical failure of cable and or anchoring fixtures due to deterioration, and physical impacts; and
- Cable damage associated with abrasion of the insulation by vegetation.

The known issues with service lines are described below:

Issue	Description of Issues

1	**Asset risk** - The key issues associated with overhead service lines are deteriorating conditions because of age, with hazardous risks identified with failure. Overhead service lines are subject to a variety of failure modes, including electrical failures, corrosion, mechanical failures due to physical impacts, and cable damage from vegetation.
2	**Regulatory risk** – JEN has a duty to minimise safety risks are to design, construct, operate, maintain and decommission the network to minimise hazards and risks to the safety of any person and damage to the property. JEN also must meet reliability of supply obligations. This replacement program identifies projects to maintain network performance and meet compliance obligations.

The overhead service line sub-asset class, as per the JEN Asset Class Strategy, has an asset criticality score of 'High' due health and safety risk to staff and the public caused by electrical shocks associated with broken or high impedance neutrals.

Some benefits of replacement include:

- Reduced risk of electric shocks to customers caused by deteriorated service line neutrals;
- Reduced risk of fire starts due to catastrophic service line failure;
- Resolution of hazards associated with non-compliant service line installations and ground clearance heights.

JEN also recognises its responsibility to act prudently and efficiently when investing in the distribution network to meet customer and community needs. One way we do this is by adopting asset management practices that put controls in place to test the investment need. Our best practice asset management activities involve balancing costs, opportunities and risks against performance.

In preparing our proposed expenditure, we followed capital expenditure objectives that reflect our customers' expectations, the capital expenditure drivers and capital expenditure objectives and criteria contained in the NER. Our objectives are to:

- Meet customers' expectations that we should maintain our current levels of network reliability at the most efficient cost over the long term;
- Meet our customers' expectations that our network and communities are able to withstand and recover from extreme weather events;
- Manage safety, environmental, electrical system and security risks to as low as practicable and comply with all applicable regulatory obligations efficiently over the long term;
- Connect new customers to the electricity network and meet the changing energy needs of existing customers, ensuring we can meet or manage expected demand for all customers; and
- Optimise exports and imports from distributed energy resources and CER to the distribution network.

1.3 Credible options considered

Table 1 sets out the credible replacement options JEN has considered.

Table 1: Credible options summary

Option	Total capital expenditure ($2024,m)	Description	Ranking
Option 1 – Do nothing	-	Make safe and leave customers off supply	2

Option	Total capital expenditure ($2024,m)	Description	Ranking
Option 2 - Replacement levels to maintain network performance and reliability and meet compliance obligations	**9.18**	Undertake service replacement at current levels to ensure safe and continuous supply of electricity to affected customers	**1**

1.4 Recommendation

It is recommended that Option 2 is adopted. This option provides the most financially and operationally viable option to mitigate the risks of service cable failure due to associated risks.

Based on this, a forecast investment of $9.18M is required. This option best meets the long-term interests of JEN customers and is consistent with the National Electricity Objective and other regulatory obligations.

1.5 Regulatory considerations

The objective of the replacement program is to undertake replacement activities to ensure network performance and to meet JEN compliance obligations, to maintain customer supply reliability across the JEN network given their current condition and future risks.

JEN's investment decisions are ultimately guided by the National Electricity Objective (NEO). Additionally, JEN is required to meet the requirements of the National Electricity Rules (NER), Victorian Electricity Distribution Code of Practice (EDCoP), and public and industry expectations for distribution system performance, which require capital expenditure objectives to be achieved.

1.6 Financial information

This business case proposes a total capital investment of $9.18M.

This project proposed to be completed by 2031. Table 2 provides the project budget by calendar year.

Table 2: Proposed expenditure by regulatory year, $2024

Regulatory Year	Proposed Expenditure ($M)
FY27	$1.73M
FY28	$1.89M
FY29	$1.89M
FY30	$1.86M
FY31	$1.83M
Total proposed expenditure	**$9.18M**

2. Identified need

2.1 Business and socio-economic context

An overhead service is defined as the terminating span that connects the distribution low voltage overhead mains (JEN asset) to the point of supply (customer's asset), including the associated hardware such as termination clamps, brackets, and connectors. Whilst low voltage overhead services are singularly one of the least expensive items on the distribution system; as an overall asset class the volume and value is significant.

There is in excess of 158,000 overhead services owned and operated by JEN, with 97% of these being of three main types:

- Neutral Screened;
- Grey twisted PVC; and
- LV ABC.

Over 20% of the population of service lines are of non-preferred type. Much of these are beyond useful life and this cohort of the population is exhibiting condition issues associated with age.

Addressing the deteriorating condition of service lines is prudent given the associated hazards and age. LV service lines operate in an environment where they are subject to a harsh climate and potential abrasion by vegetation.

Service lines have an average life expectancy of 40 years. The installation of neutral screened service lines occurred between 1960 and 1974. The average age of non-preferred type service lines is 50 years with a proportion of the population significantly older than that.

In the event of failure, the customer would remain off supply until the service was replaced. It is not a feasible option to leave customers off supply.

2.2 The identified need and key drivers

2.2.1 Identified need

2.2.1.1 Life expectancy

As prescribed in *ELE PR 0012 – Network Asset Useful Lives Procedure*,[1] the applicable useful life for an overhead service line is 40 years.

The review of asset useful lives considers asset lives based on good industry practice and specific JEN experience and represents the lives of assets at which end-of-life replacement will be considered. JEN has referenced a number of reviews of asset useful lives from consulting agencies and discussions with other Distribution Businesses (DB's) to arrive at these asset lives.

2.2.1.2 Age profile

The LV overhead service age profile encompasses a broad timespan, with some of the LV services dating back to the 1930's. LV overhead services installed on JEN are listed below in Table and the overhead services line age profile in shown in Figure 1.[2]

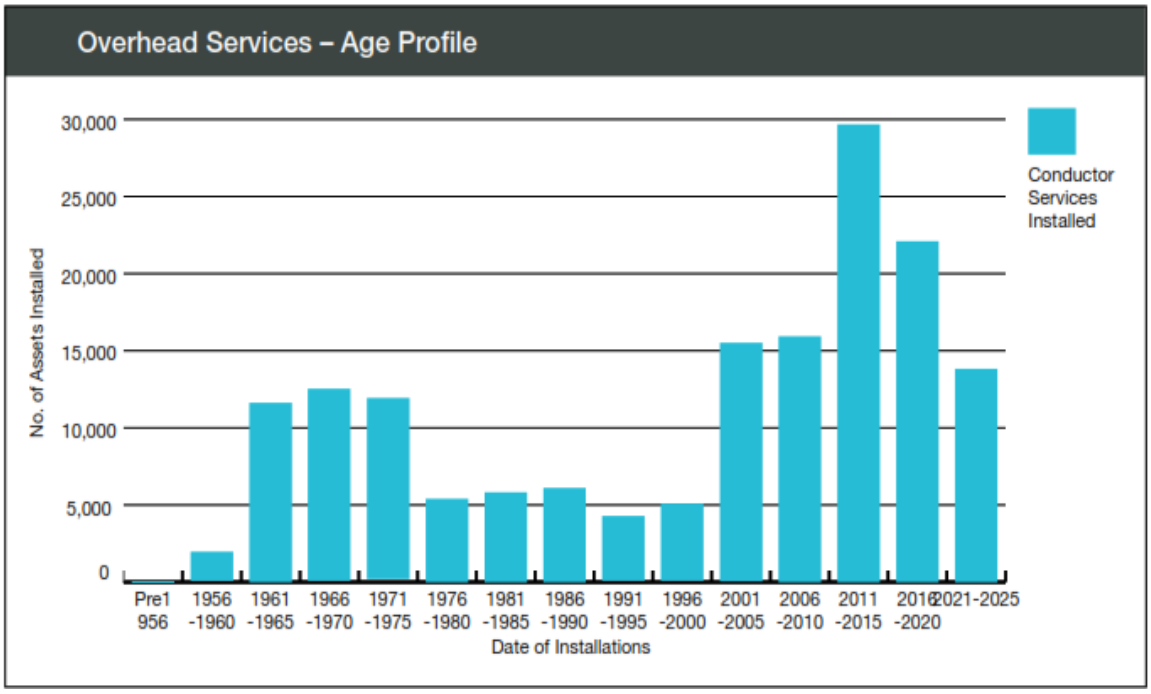
[1] JEN - RP - Support - ELE-999-PR-IN-012 Network Asset Useful Lives Procedure - 20251201 – Public

[2] JEN – RIN – Support – Electricity Distribution Asset Class Strategy – 20250131 – Public.

Table 3: LV Overhead Service Population by Type

Bare/Open Wire	1930's	1990's	1,215	0.77
Red Lead	1940's	1960's	33	0.02
Neutral Screened	1960's	1974	37,621	23.70
Twisted Wire	1976	1989	14,820	9.33
ABC	1989	Present	102,147	64.34
Total	**-**	**-**	**158,767**	**100.00**

Figure 1: LV Overhead Services - Age Profile



2.2.2 Key drivers

2.2.2.1 Failure

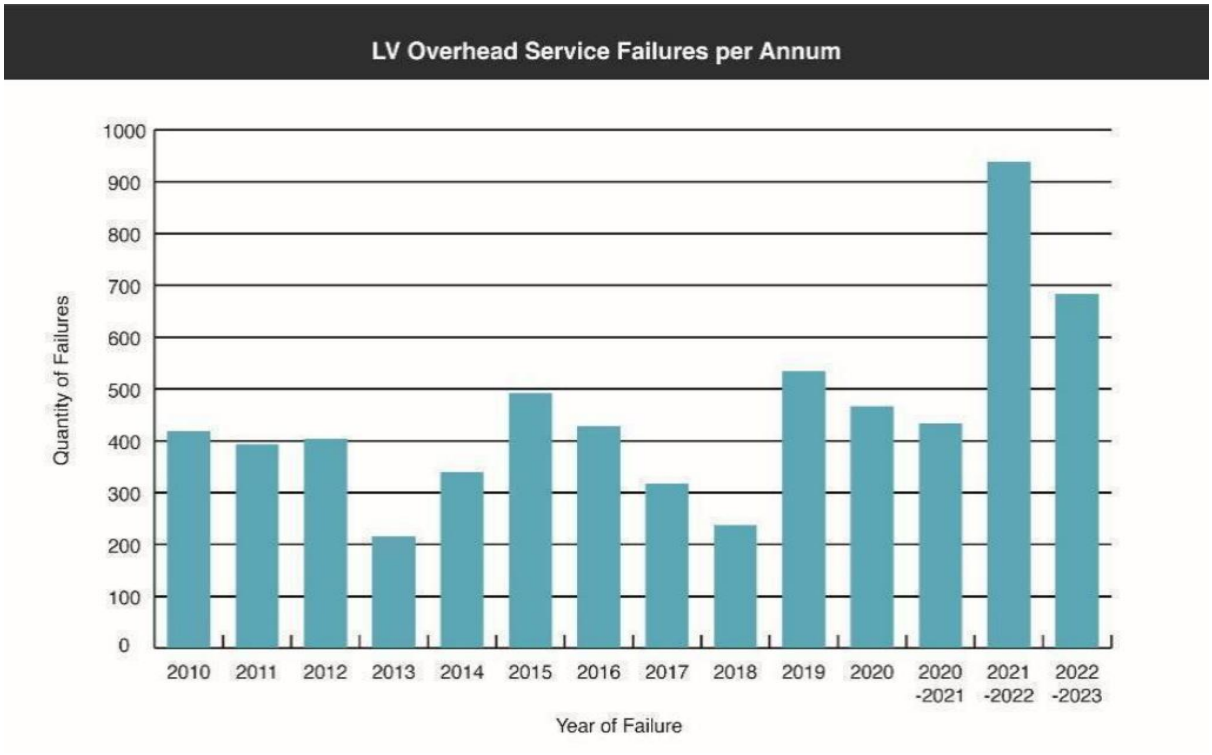
Primary failure modes for overhead service lines include:[3]

- Electrical failure of cable conductor, insulation material and joints/terminations;
- Corrosion of neutral screen causing high resistance or open circuited neutrals and lack of earth bonding;
- Mechanical failure of cable and or anchoring fixtures due to deterioration, and physical impacts; and
- Cable damage associated with abrasion of the insulation by vegetation.

[3] JEN – RIN – Support – Electricity Distribution Asset Class Strategy – 20250131 – Public.

Figure shows LV Overhead Service Failures per annum.

Figure 2: LV Overhead Service Failures per annum[4]



Failure rates are low in relation to the number of LV overhead services installed. This indicates that the additional proactive service replacement programs appear to be having a positive effect on the performance of this asset class.

However, failures continue to occur across the service population and ongoing replacement is required.

2.2.2.2 Electric shocks

The major risk associated with overhead services and terminations is electrical shocks that result from damaged service neutral conductors or connections.

Investigations into reports of minor electrical shocks continue to identify failure of neutral screened services as a contributor to electrical shock incidents, with about 66% being attributable to a failure in a neutral screened service. Aluminium neutral screened cable is particularly problematic. It is not possible to distinguish between aluminium and copper neutral screened cables externally. The remainder of incidents are made up of other non-preferred services.

2.2.2.3 Fire hazards and asset deterioration

Other risks associated with overhead service lines include:

- **Fire hazard** associated with Private Overhead Electric Lines (POEL, including overhead service lines) in High Bushfire Risk Areas (HBRA). Currently, the Victorian Service and Installation Rules require that where “a POEL has to be substantially re-constructed in a hazardous bushfire risk area the line is to be placed underground”. Hence, all POEL’s in the HBRA will eventually be placed underground.

[4] JEN – RIN – Support – Electricity Distribution Asset Class Strategy – 20250131 – Public.

- **Insulation failure** through UV degradation on some LV service cable types. A Safety Gram from Energex highlighted that some Low Voltage XLPE service cables installed during 2005 and 2006 (LV ABC) have experienced insulation failure through UV degradation. XLPE service cable from the same manufacturer was received during the same timeframe and installed on JEN.

2.2.2.4 Regulatory compliance

Safety and reliability

Consistent with obligations under National Electricity Objective and Jemena's commitment to continuous improvement, Jemena is recommending continuing replacement programs for overhead service lines. This replacement program will maintain high levels of safety and reliability by removing the hazard associated with overhead service lines completely upon failure.

The Electricity Safety Act, s98

The general duty of major electricity companies, including Jemena, is to minimise safety risks. Duties of the *Electricity Safety Act 1998* (ESA) which requires a Major Electricity Company (MEC) to design, construct, operate, maintain and decommission its supply network to minimise As Far As Practicable (AFAP) the hazards and risks to the safety of any person, damage to the property and the bushfire danger arising from the supply network.

Electricity Safety Act, s83B

The general duty of specified operators, including Jemena, is to minimise bushfire danger.

(1) A specified operator must design, construct, operate, maintain and decommission an at-risk electric line to minimise as far as practicable the bushfire danger arising from that line

Victorian Service & Installation Rules

The Service & Installation Rules form the requirements for the connection of electrical installations to the Victorian Electricity Distribution Networks. Relevant sections include:

- Section 7.4 Overhead Services

Investment decisions

In line with the NEO, JEN's investment decisions aim to maximise the NPV to electricity consumers. The objective of this project is to maintain the reliability of supply to customers, given the current condition of the assets. This strategy must align with other JEN strategies and plans and the project must comply with associated regulatory requirements.

JEN's investment decisions are ultimately guided by the NEO. Additionally, considerations such as the capital expenditure objectives set out in the NER (clause 6.5.7) are particularly relevant to JEN's investment decisions:

> *a) A building block proposal must include the total forecast capital expenditure for the relevant regulatory control period which the Distribution Network Service Provider considers is required in order to achieve each of the following (the capital expenditure objectives):*
>
> > *(1) Meet or manage the expected demand for standard control services over that period*
> >
> > *(2) Comply with all applicable regulatory obligations or requirements associated with the provision of standard control services*
> >
> > *(3) To the extent that there is no applicable regulatory obligation or requirement in relation to:*
> >
> > > *(i) The quality, reliability or security of supply of standard control services; or*

(ii) The reliability or security of the distribution system through the supply of standard control services,

to the relevant extent:

(iii) Maintain the quality, reliability and security of supply of standard control services

(iv) Maintain the reliability and security of the distribution system through the supply of standard control services.

(4) Maintain the safety of the distribution system through the supply of standard control services.[5]

Additionally, the EDCoP sets out provisions relevant to JEN's planning, design, maintenance, and operation of its network, most notably section 19.2 (Good Asset Management) and section 13.3 (Reliability of Supply):

Section 19.2 – Good Asset Management

A distributor must use best endeavours to:

a) Assess and record the nature, location, condition and performance of its distribution system assets

b) Develop and implement plans for the acquisition, creation, maintenance, operation, refurbishment, repair and disposal of its distribution system assets and plans for the establishment and augmentation of transmission connections:

- *To comply with the laws and other performance obligations which apply to the provision of distribution services including those contained in this Code*
- *To minimise the risks associated with the failure or reduced performance of assets*
- *In a way which minimises costs to customers taking into account distribution losses.*

c) Develop, test or simulate and implement contingency plans (including where relevant plans to strengthen the security of supply) to deal with events which have a low probability of occurring, but are realistic and would have a substantial impact on customers.

Section 13.3 – Reliability of Supply

A distributor must use best endeavours to meet targets determined by the AER in the current distribution determination and targets published under clause 13.2.1 and otherwise meet reasonable customer expectations of reliability of supply.

When making decisions to invest, JEN must comply with these obligations.

2.2.2.5 Existing controls

Given the volume of service lines that have exceeded or are about to exceed useful asset life, replacement volumes must be maintained. Controls to manage the hazards associated with service failure include:

- Replacement programs, including:
  - Proactive non-preferred type service line rectification program
  - Opportunistic non-preferred type service line replacements
  - Condition based service line replacement program

[5] NER, cll 6.5.6(a), 6.5.7(a).

- Visual inspection of all service lines, on 3-year rotation in HBRA and 4-year rotation in LBRA
- JEN service neutral impedance monitoring AMI analytics tool, including:
    - Reactive service line replacement program
- Neutral integrity testing program on a 10-year rotation for legacy meters, unmetered supplies and AMI meters with minimal loads
- Earthing systems
- Technical standards

2.2.3 Proposed replacement programs and activities

Our proposed expenditure is informed by specific activities, each assigned to service codes (in brackets):

Program & Service Code	Activities
Service Fault Replacement (RMF)	Replacement of an overhead service due to 'in-service' failure. Works may be as a result of: • A customer-initiated fault call; or • A maintenance item identified through an asset inspection activity. The activity includes: • Initial onsite fault finding at supply pole and customers installation • NST testing • Service Inspection and audit • Install new XLPE service, connections, clamps and retire old service • Single, two, and three phase services • Re-attachment of a previously installed breakaway device and animal anti climb guard • Visually check and tighten any loose LV hardware on the same structure
Replace Service and Alter Terminations (RMJ)	Replacement of an overhead service inclusive of a breakaway device and extra height bracket at the pole end. Works may be as a result of: • A customer initiated fault call; or • A maintenance item identified through an asset inspection activity. The activity includes: • Installation of extra height bracket either pole or house end • Replacement of single and multi-phase service cables and NST testing • Connections and clamps (non-breakaway) • Re-attachment of a previously installed breakaway device • Visually check and tighten any loose LV hardware on the same structure
Install Disconnect Device and Re-sag (RML)	The installation of an approved breakaway device into an existing and/or replaced overhead service or new XLPE type single phase service and includes re-sagging of an existing service. Works may be as a result of: • A customer initiated fault call; or • A maintenance item identified through an asset inspection activity The activity excludes: • Service cable replacement

Replace Services – Planned (RMP)	Replacement of an overhead service. The replacement may be as a result of: • Voltage complaints • Asset Inspection; and • Neutral testing program. The activity includes: • Replacement of single and multi-phase service cables • Connections and clamps • Visually check and tighten any loose LV hardware on the same structure Alternatively, the replacement of overhead services may be in conjunction with other asset replacement works being conducted on that structure i.e. pole or crossarm replacements. • As part of programmed low service height rectification program; and • As part of programmed non-preferred service replacement program

2.3 Asset risk (or opportunity) analysis

2.3.1 Short description of the affected Jemena assets

LV overhead service lines operate in an environment where they are subject to a harsh climate and potential abrasion by vegetation. Overhead service lines have an average life expectancy of 40 years.

As previously identified, the major risk associated with LV overhead services and terminations is electrical shocks that result from damaged service neutral conductors or connections.

Other risks associated with overhead service lines include:

- **Fire hazard** associated with Private Overhead Electric Lines (POEL, including overhead service lines) in High Bushfire Risk Areas (HBRA); and
- **Insulation failure** through UV degradation on some LV service cable types.

2.3.2 Asset condition and risk assessment

Asset criticality is a measure of the risk of specified undesired events faced when utilising equipment. The overhead service line sub-asset class, as per the JEN Asset Class Strategy, has an asset criticality score of 'High' due health and safety risk to staff and the public caused by electrical shocks associated with asset failure and broken or high impedance neutrals.[6]

2.4 Consistency with Jemena strategy and plans

This section describes how this project is consistent with JEN's objectives and strategies:

- **Provision of Service Levels and Reliability:** Ensuring service levels and reliability meet customer expectations.
- **Modern Capabilities:** Deployment of modern equivalent capabilities in the network to remain relevant to customers in the longer term.
- **Prudent and Efficient Expenditure:** Ensuring expenditure is prudent and efficient, aligning with customer expectations regarding affordability.

[6] JEN – RIN – Support – Electricity Distribution Asset Class Strategy – 20250131 – Public.

JEN seeks to ensure that lifecycle costs are both efficient and effective. This business case is consistent with this requirement and aligns with the long term vision of the network, as set out in the Asset Management Plan (AMP) and annual planning reports.

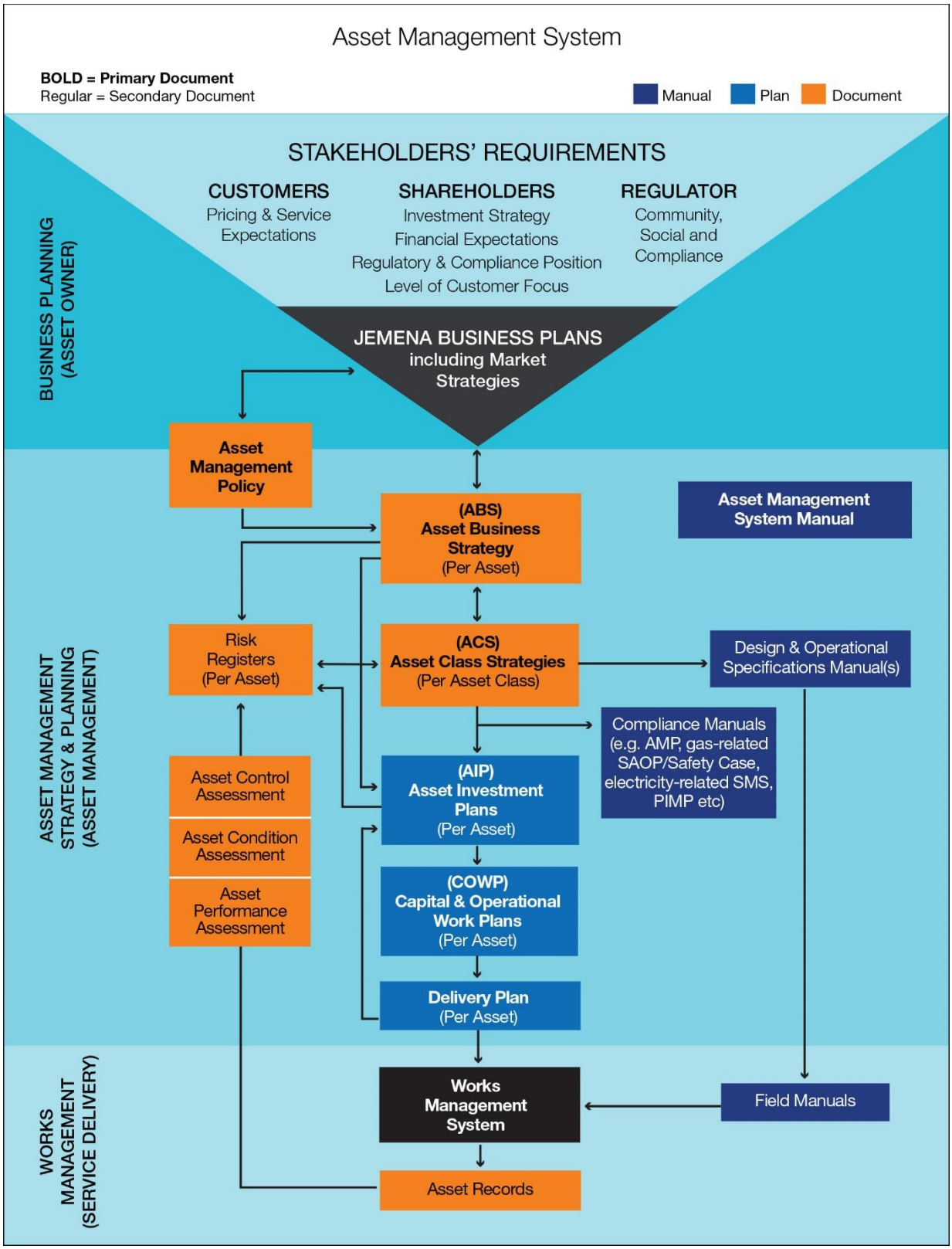
This proposal aligns with Asset Management Strategies, Plans and Policies contributing to a safe workplace for JEN employees and contractors. By addressing identified issues, JEN can reduce the risk of injury or environmental incident.

JEN abides by Australian asset and risk management industry standards (ISO 55001 and ISO 31000:2018) which is part of JEN's internal risk and asset management framework documents (ELE PL 0004 and JAA PO 0050).

Figure outlines the Jemena asset management system and where the Asset Management Plan (**AMP**) is positioned within it. The AMP covers the creation, maintenance and disposal of assets including investment planned to augment network capacity to meet increasing demand and to replace degraded assets to maintain reliability of supply to meet Jemena Business Plan requirements.

This strategic framework facilitates the planning and identification of business needs that require network investment documented via business cases.

Figure 3: The Jemena Asset Management System



JEN also recognises its responsibility to act prudently and efficiently when investing in the distribution network to meet customer and community needs. One way we do this is by adopting asset management practices that put controls in place to test the investment need. Our best practice asset management activities involve balancing costs, opportunities and risks against performance.

In preparing our proposed expenditure, we followed capital expenditure objectives that reflect our customers' expectations, the capital expenditure drivers and capital expenditure objectives and criteria contained in the NER. Our objectives are to:

- Meet customers' expectations that we should maintain our current levels of network reliability at the most efficient cost over the long term;
- Meet our customers' expectations that our network and communities are able to withstand and recover from extreme weather events;
- Manage safety, environmental, electrical system and security risks to as low as practicable and comply with all applicable regulatory obligations efficiently over the long term;
- Connect new customers to the electricity network and meet the changing energy needs of existing customers, ensuring we can meet or manage expected demand for all customers; and
- Optimise exports and imports from distributed energy resources and CER to the distribution network.

3. Comparison of credible options

3.1 Identifying credible options

The following feasible options could be executed to address the business need, problem or opportunity.

1. **Option 1 is 'do nothing'**, which assumes that there is minimal expenditure on service replacement therefore fault restoration and maintenance activities such as inspections, condition monitoring, preventive maintenance and defect repairs will not be undertaken. Given the criticality of these issues and the lack of risk mitigation, this option is not considered credible.
2. **Option 2 is 'replacement levels to maintain network performance, reliability and to meet compliance obligations'**, which is an approach that invests in the replacement of service lines upon asset failure, as proposed in this business case based on historical trend forecasts. This option optimises replacement levels to ensure current levels of network reliability whilst responding to our customers who have indicated they value a stable network. This is evidenced by our customer engagement, which highlights 'maintaining the network' being more important to customers than 'improving the network'.

3.2 Developing credible options

Table shows the extent to which each option addresses the identified issues.

Table 4: Credible Options Analysis

Issue	Option 1	Option 2
Asset risk Deteriorating conditions because of age, with hazardous risks identified with failure. Overhead service lines are subject to a variety of failure modes, including electrical failures, corrosion, mechanical failures due to physical impacts, and cable damage from vegetation.	○	●
Regulatory risk JEN has a duty to minimise safety risks are to design, construct, operate, maintain and decommission the network to minimise hazards and risks to the safety of any person and damage to the property. JEN also must meet reliability of supply obligations.	○	●

●	Fully addressed the issue
◑	Partially addressed the issue
○	Did not address the issue

Each of these options are discussed in detail below.

3.2.1 Option 1: Do nothing

The 'do nothing' option assumes there is minimal expenditure on service replacement therefore fault restoration and maintenance activities such as inspections, condition monitoring, preventive maintenance and defect repairs will not be undertaken. Given the criticality of these issues and the lack of risk mitigation, this option is not considered credible.

3.2.2 Option 2: Replacement levels to maintain network performance, reliability and to meet compliance obligations

The 'replacement levels to maintain network performance, reliability and to meet compliance obligations' is an approach which invests in the replacement of service lines upon asset failure. This is based on historical trend forecasts. Replacement of these assets upon failure are necessary to prevent the ongoing hazards associated with service line neutral failures and electrical shocks.

Replacing underground cables as required assists in mitigating consequences associated with a failure of this type of asset, which are 'run to failure'. This is the recommended option given their historically high reliability performance.

This option would maintain current levels of network reliability, and optimises replacement levels to maintain this reliability whilst responding to our customers who have indicated they value a stable network moreso than improvements to the network. This is evidenced by our customer engagement, which highlights 'maintaining the network' being more important to customers than 'improving the network'.[7]

Jemena's Peoples Panel noted 'Jemena needs to prioritise investing in reliability by assessing, building, and maintaining the network to meet changes in operating conditions and withstand network failures'.[8] This position was reiterated by the First Nations and Disability Customer Voice Groups.

This option resolves identified issues while aligning with the JEN asset class and business strategies. The total capital cost of this option is forecasted at $9.18M based on activities commencing in 2027. This option is preferred given historic failure rates and the age of assets proposed to be replaced.

As detailed in this business case, several individual programs have been identified to ensure that we prevent hazards and risks upon failure, maintain network performance, reliability and address our compliance requirements. Forecast replacement volumes and expenditure proposed under Option 2 is set out in Table 5.

Table 5: Option 2 Replacement Volumes and Expenditure - LV Overhead Service Lines

Unique ID	Service Code	Activity	Forecast Replacement Volumes					Proposed Expenditure ($2024,'000)					
			FY27	FY28	FY29	FY30	FY31	FY27	FY28	FY29	FY30	FY31	Total
A152	RMF	Service Fault Replacement (m)	900	900	900	900	900	754.4	753.9	753.6	739.3	720.3	**3,721**
A153	RMJ	Replace Service and Alter Terminations (m)	380	380	380	380	380	513.1	513.1	513.1	513.1	513.1	**2,565**
A155	RML	Install Disconnect Device	212	212	212	142	65	37.9	37.9	37.9	25.3	11.6	**150**
A156	RMP	Replace Services – Planned (m)	541	745	745	745	745	421.6	581.1	581.1	581.1	581.1	**2,746**

N.B. Total figures have been rounded.

[7] See JEN - Att 02-01 Customer engagement – 20250131.

[8] See JEN - Att 02-01 Customer engagement – 20250131, s.5.1.

4. Option analysis

4.1 Justifications

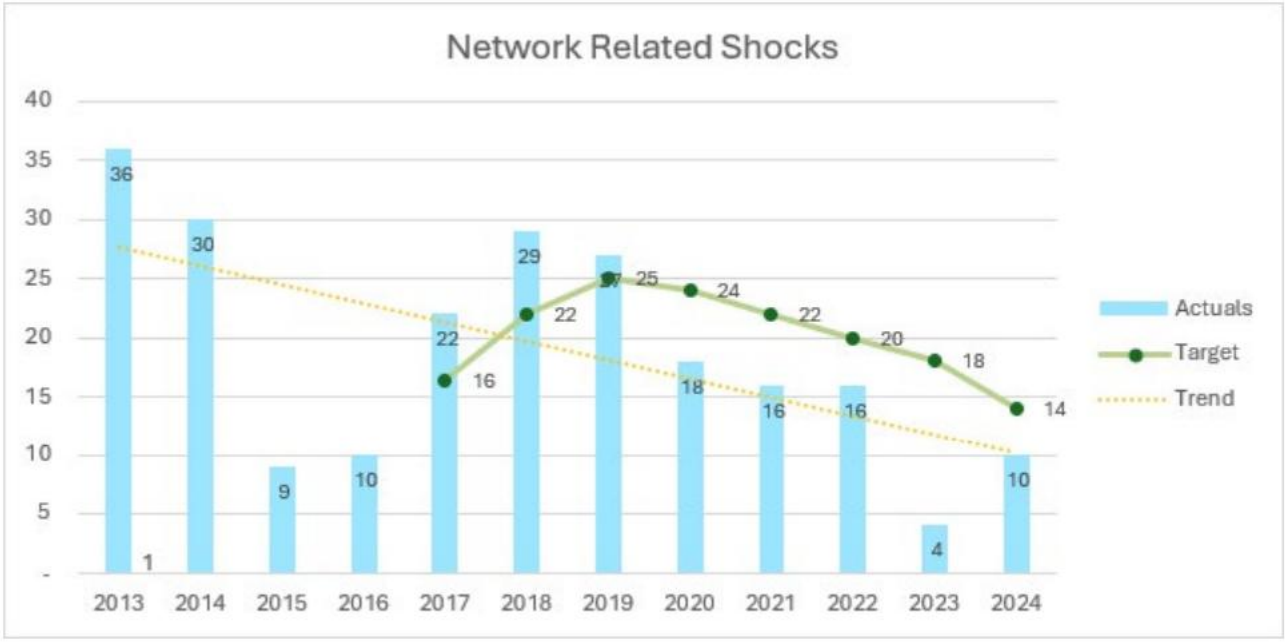
4.1.1 Customer benefits

The benefit to customers of asset replacement upon failure is realised through the mitigation of customer safety risks while ensuring fiscally prudent allocation of resources. Some benefits of replacement include:

- Reduced risk of electric shocks to customers caused by deteriorated service lines neutrals;
- Reduced risk of fire starts due to catastrophic service line failure;
- Resolution of hazards associated with non-compliant service line installations and ground clearance heights.

Since the introduction of existing controls there has been a decrease in the number of reported electric shocks as shown in Figure 4.

Figure 4: Number of network related shocks on the JEN network 2013 to 2024



4.1.2 Replacement volumes

Replacement of overhead service lines upon failure is necessary to prevent hazards associated with service line failures, service line neutral failures and electrical shocks.

The number of overhead service lines replaced as part of opportunistic works will decrease each year, as there will be fewer opportunities to perform non-preferred service line replacements opportunistically given the increasing likelihood that a nonpreferred or non-compliant service line will already have been replaced. This necessitates the need for ongoing replacement as assets are run to failure.

LV overhead services are replaced according to *ELE-999-GL-EL-003, JEN - Overhead Service Line Procedural Standard*.[9] Replacement of an LV overhead service will occur in the following circumstances:

- Proactive routine replacement programs in poor performing suburbs based on the number of shocks and service rectifications;
- Failure of or damage to a service line or service termination;
- When a maintenance notification has been created following inspection and testing as prescribed by the *Electricity Safety (Installations) Regulations 2009*;
- In conjunction with asset replacement or project work involving pole or pole top assembly replacement or conductor replacement, see *JEN GU 0010 – JEN Planned and Opportunistic Maintenance and Workmanship Guidelines*;[10] and
- Where re-sagging of the service line does not achieve minimum regulated heights as prescribed by the *Electricity Safety (Installations) Regulations 2009*. See *ELE-999-GL-EL-003 JEN - Overhead Service Line Procedural Standard*.

Generally - overhead service lines are replaced based on condition. All service defects result in the replacement of the service line.

It has been assessed through best engineering judgement that the stated replacement volumes in Option 2 are necessary to adequately mitigate the risk posed by ageing service lines in addition to other controls such as online service neutral monitoring, as well as to maintain network performance and address JEN compliance requirements.

4.2 Financial analysis for the preferred option

4.2.1 Financial analysis

This business case proposes a total capital investment of $9.18M.

This project proposed to be completed by FY31. Table 6 provides the project budget by calendar year.

Table 6: Proposed expenditure by regulatory year, $2014

Regulatory Year	Proposed Expenditure ($M)
FY27	$1.73M
FY28	$1.89M
FY29	$1.89M
FY30	$1.86M
FY31	$1.83M
Total proposed expenditure	**$9.18M**

[9] ELE-999-GL-EL-003, JEN - Overhead Service Line Procedural Standard.

[10] JEN GU 0010 – JEN Planned and Opportunistic Maintenance and Workmanship Guidelines

5. Recommendation

It is recommended that Option 2 is adopted. This option provides the most financially and operationally viable option to mitigate the risks of overhead service failure due to associated risks.

Based on this, a forecast investment of $9.18M is required. This option best meets the long-term interests of JEN customers and is consistent with the National Electricity Objective and other regulatory and compliance obligations.