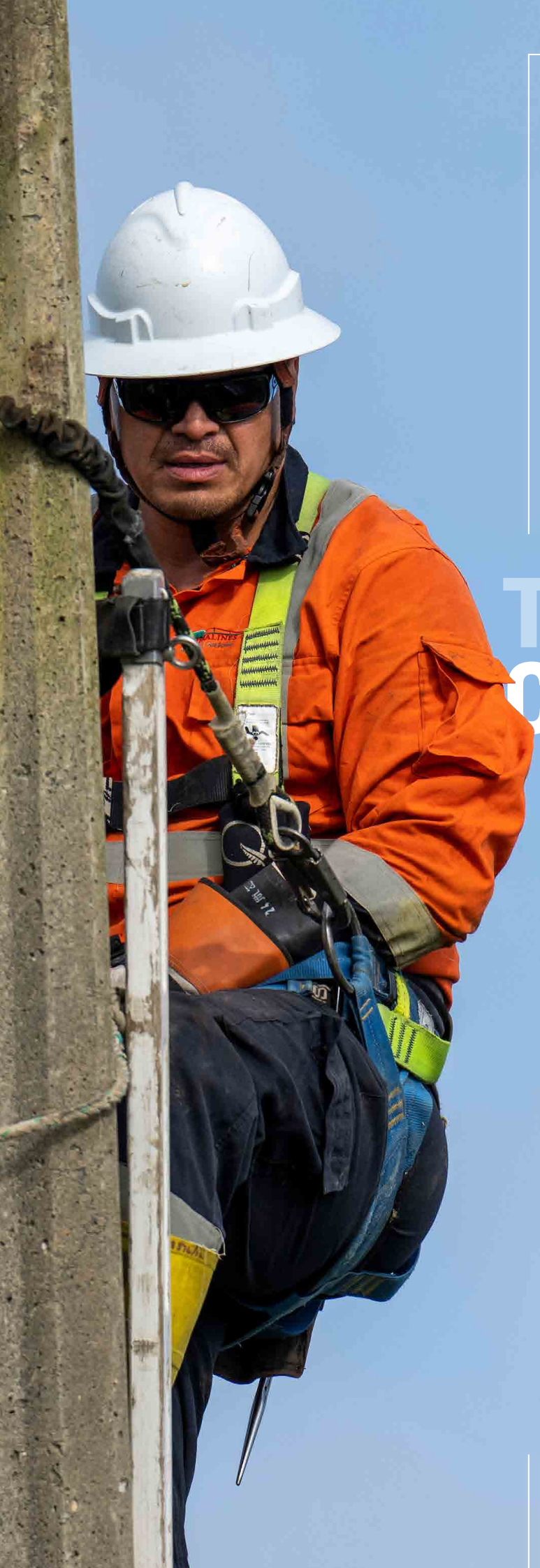
2024-34 REGULATORY ASSET MANAGEMENT PLAN

CENTRALINES
LIMITED

2024-34 REGULATORY ASSET MANAGEMENT PLAN

OUR PEOPLE | OUR POWER

This Regulatory Asset Management Plan (RAMP) is available for public disclosure and applies for the period 1 April 2024 to 31 March 2034.



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SUMMARY OF THE PLAN

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2024-34 REGULATORY ASSET MANAGEMENT PLAN

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1. SUMMARY OF THE PLAN

1.1 New Zealand Electricity Sector

Electricity Distribution Businesses (EDBs) are an integral part of New Zealand's electrical infrastructure, forming the physical link between the transmission network and electricity consumers. Centralines owns the distribution network that serves Central Hawke's Bay consumers. The network is managed and operated by Unison Networks Limited under a Management Services Agreement (MSA) with Centralines.

Electricity supply is provided to Centralines predominantly at 33kV from a single Transpower grid exit point (GXP) and is connected by Centralines' sub-transmission network to zone substations. At zone substations, the voltage is converted to 11kV for distribution. Distribution transformers throughout the network then reduce the voltage to 400V for end use. Centralines' role in the New Zealand electricity industry is shown in Figure 1-1.

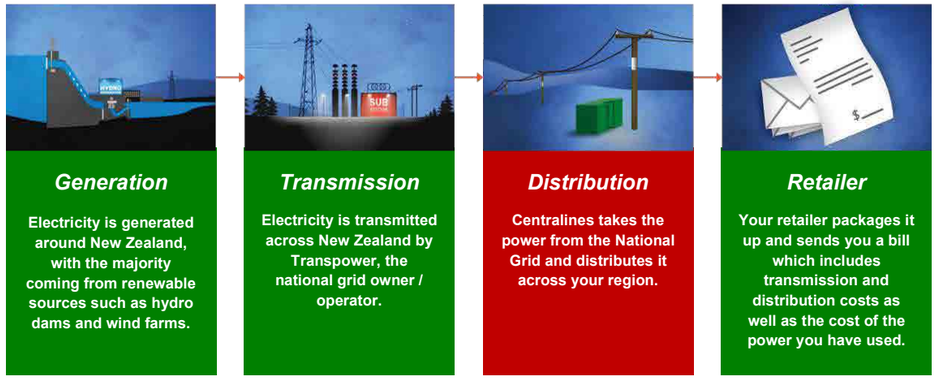


Figure 1-1: New Zealand Electricity Industry Diagram

When taking a supply of electricity, customers deal with electricity retailers like Contact, Genesis, Meridian, and Mercury. The bill that customers receive includes the cost of the energy as well as a contribution to the cost of maintaining the electricity distribution network and the National Grid. The electricity distribution component of the typical consumer's bill is around 27%[1].

It should be noted that this legacy structure is being beginning to evolve with more and more distributed generation being introduced at both the distribution level and by the end customer. This is resulting in two-way power flows which will become more prevalent as the penetration of distributed generation increases.

[1] https://www.ea.govt.nz/consumers/my-electricity-bill/

1.2 About Centralines

Centralines is in the business of providing a safe, reliable, and cost-effective supply of electricity to their customers throughout the Central Hawke's Bay region. This is achieved through the provision, operation, and long-term management of their electricity distribution infrastructure, including overhead lines, underground cables, transformers, and substations. Centralines currently supplies electricity to approximately 9,400 consumers. Centralines' supply area is shown in Figure 1-2.

Figure 1-2: Map of Centralines' Network

1.2.1 Ownership and Governance

Centralines is wholly owned by the Central Hawke's Bay Consumers Power Trust (CHBCPT) on behalf of Central Hawke's Bay's electricity consumers. Centralines' Board of Directors is appointed by the CHBCPT.

The electricity distribution sector is regulated by the Commerce Commission to ensure that the long-term interests of consumers are protected. This regulation means that many EDBs:

- are limited to what they can charge their customers
- must meet prescribed customer service levels, and
- must regularly disclose certain information about their operations.

In 2021, the High Court granted an application by the CHBCPT to vary its Trust Deed. This change meant that there would no longer be appointees to the Trust with all Trustees being elected. This satisfied criteria in The Commerce Act for Centralines to be deemed "consumer owned". Being "consumer owned" results in Centralines being subject to lighter regulation which aligns better to smaller, consumer owned, electricity distribution businesses.

With this status confirmed by the Commerce Commission, Centralines is now exempt from price and quality regulation but remains subject to information disclosure requirements. The benefit to consumers is less volatility in prices year-to-year and more flexibility for Centralines. This will ensure Centralines can undertake and sustainably fund expenditure at appropriate levels to meet the needs of stakeholders and ensure a safe and reliable network.

Beyond Centralines' customers, shareholders, primary service providers and the Commerce Commission, Centralines has many other stakeholders (refer section 2.7). Centralines is committed to understanding the interests of these stakeholders and ensuring that key requirements are met. The processes Centralines uses to achieve this are discussed further in Section 2.

1.2.2 Organisational Structure

Centralines has adopted the organisation structure outlined in Figure 1-3 below. This structure reflects the significant number of asset management related services that are outsourced to Unison, Centralines' management services provider. There is a Management Services Agreement (MSA) in place between Centralines and Unison which details the requirements of both parties to ensure the effective and efficient management of the network and associated risks.

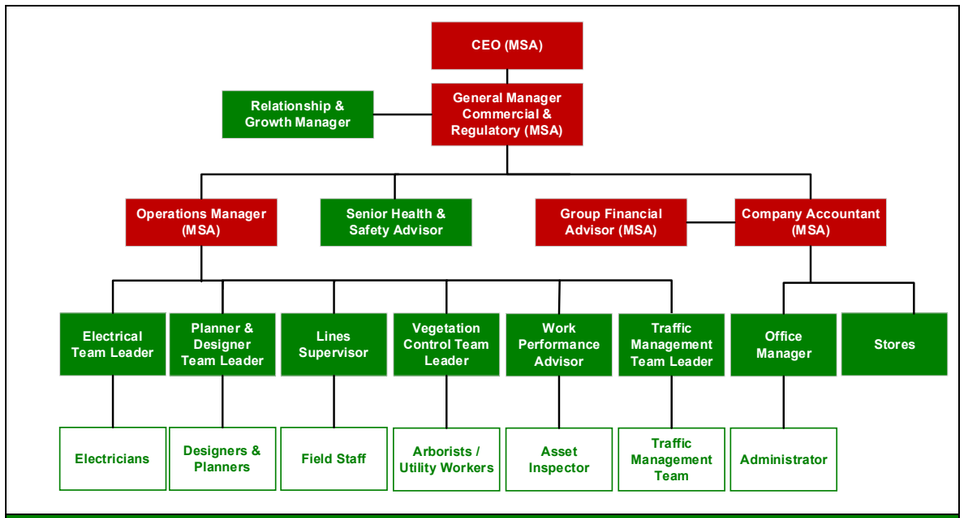


Figure 1-3: Centralines' High Level Organisational Structure

1.2.3 Purpose, Vision, and Values

Centralines' purpose is to *"deliver a reliable and affordable electricity supply to meet our customers' aspirations for wellbeing, growth and sustainability"*.

Centralines' corporate vision is ***"****a customer-centric partner that enables growth and long-term prosperity for Central Hawke's Bay*".

Values really matter to Centralines and define Centralines as an organisation. They underpin Centralines' organisational culture and inform the behaviours that are expected of employees.

Centralines' Values are:

- *Safety — Is part of our lives*
- *Teamwork — We are one team*
- *Integrity — Truth, honesty, respect*
- *Openness — We are approachable*
- *Passion — In everything we do*

Centralines' Purpose, Vision and Values influence all components of the Asset Management System (AMS).

1.3 About this Regulatory Asset Management Plan (RAMP)

The Regulatory Asset Management Plan (this document) is Centralines' key external asset management publication. It is designed to meet the requirements of the Commerce Commission's electricity distribution information disclosure framework.

The RAMP is a composite of the many documents that form part of Centralines' AMS and includes the:

- Asset Management Policy — principles that Centralines commits to in asset management
- Asset Management Strategy and Objectives — Centralines' Asset Management Objectives (AMOs), and the strategy to ensure those objectives will be met, and
- Asset Management Plan (AMP) — register of asset related constraints and risks and project proposals to be implemented within the ten-year planning period to manage down those risks.

1.3.1 Structure of the RAMP

The structure of the RAMP is set out in Table 1-1, and includes reference to applicable sections of the information disclosure determination to assist in the assessment of compliance.

Section Name	Description	Determination Reference
1. Summary of the Plan	Overview of the RAMP and Centralines' company profile.	3.1
2. Background and Objectives	Centralines' AMOs and the strategy employed to meet them.	3.2 – 3.17
3. Service Levels	The performance measures used to evaluate Centralines' performance against its AMOs.	5. - 10.
4. Network Development Plans	Overview of the assumptions, processes, and systems that Centralines employs to formulate network development plans. Provides a detailed breakdown of network development projects for the planning period.	11.1 – 11.12 4.1 - 4.3 excluding 4.2.6 12.7
5. Lifecycle Asset Management Planning	Overview of the assumptions, processes, and systems that Centralines employs to formulate its asset maintenance and renewal plans. Provides a detailed breakdown of maintenance plans and renewal projects for the planning period.	12.1 – 12.7 4.2.6, 4.4 - 4.5
6. Non-Network Development, Maintenance and Renewal	Overview of Centralines' approach to management of non-network assets, including vehicles and buildings.	13.
7. Risk Management	Overview of risk processes of the AMS.	14.
8. Evaluation of Performance	Evaluation of Centralines' asset management performance against the Service Levels disclosed in the 2021 RAMP.	15.
9. Capability to Deliver	Explains how Centralines assures itself that the AMP can be delivered.	16. 17 1 – 17.5
10. Schedules	Completed schedules containing required asset management information.	2.6.1 (1) (d), 2.6.1 (1) (e), 2.6.1 (2)
Appendix A: Glossary of Terms	Key technical and industry terms and acronyms.	

Table 1-1: Structure of the RAMP

1.4 Asset Management at Centralines

As discussed in 1.2.2, Centralines, under provisions of a MSA, contracts Unison Networks Limited (Unison) to provide asset management services.

Managing electricity networks is Centralines' Asset Management service provider's core skill set. The service provider sees asset management as a long-term undertaking, because of:

- the high dependence that Centralines' customers have on the electrical infrastructure now, and for the foreseeable future, and
- the long-lived nature of assets that are managed.

At the heart of Centralines' Asset Management service provider's philosophy is the goal of balancing cost, risk, and performance according to stakeholder requirements. To ensure that this idea is embedded at all levels of asset management, an Asset Management System (AMS) has been developed. The AMS ties together and aligns all asset management activities.

Core components of the AMS include the Asset Management Policy, Asset Management Objectives and three key asset management processes:

- Asset Management Planning — development of plans that ensure AMOs will be met, including asset renewal and asset capability improvement
- Lifecycle Delivery — the safe execution of asset management plans, to ensure work is delivered efficiently and in conformance to quality standards, and
- Continual Improvement — to monitor, measure and evaluate the performance of assets and asset management, and actions taken to continually improve how things get done.

1.4.1 ISO 55001 Certification

ISO 55001:2014 is an international standard that specifies the requirements for an AMS. It builds on the management systems approaches utilised in ISO 9001 for quality management and ISO 14001 for environmental management.

Centralines' service provider Unison was the first company in New Zealand to be certified to this standard which was confirmed in March 2018 through accredited auditor, British Standards Institute (BSI). This certification provides further external scrutiny and validation of its AMS and means, Unison can measure itself up to the best asset managers globally. After successfully passing all subsequent compliance and surveillance audits, this certification remains current. While the ISO 55001 certification is specific to the Unison Network, key frameworks and processes developed as part of the certification process have been adopted to manage the Centralines network.

1.4.2 Asset Management Policy

Centralines' Asset Management Policy is detailed in Table 1-2 below. The policy comprises 15 principles that Centralines has committed to in the delivery of asset management. The policy was developed by the management team and approved by Centralines' Board of Directors.

Asset Management Policy
1. Ensuring that our people take personal responsibility for managing risks to ensure the safety of: • themselves • their colleagues • contractors, and • members of the public. 2. Ensuring that our assets are safe, resilient, free from defects and do not impact adversely on the environment. 3. Ensuring compliance with all applicable legislative and regulatory requirements and industry and internal standards. 4. Taking a risk-based, quality systems approach to asset management through an asset management system that is aligned to the principles of ISO 55001. 5. Using data, information, technology, and effective processes to support fact-based and robust decision-making. 6. Implementing asset management plans that: • propose efficient levels of expenditure • manage risk in the Asset Portfolio, and • ensure customer service levels will be met consistently over the long-term. 7. Investing in assets prudently and undertaking asset management in a way that represents value for money for our customers and owners. 8. Working closely with our owners, customers and other stakeholders and being responsive to all feedback, requests, and complaints. 9. Playing a positive, engaged, and communicative role in the development of infrastructure to serve our communities. 10. Acting ethically and transparently to gain the trust and respect of our communities. 11. Providing appropriate levels of resource to enable asset management objectives to be achieved. 12. Monitoring, measuring, and reporting on asset and asset management performance. 13. Developing the capability of our people and teams to enable them to reach their potential in asset management. 14. Fostering a positive, diverse, and inclusive work environment that motivates our people to deliver their best each day. 15. Ensuring that our people are supported and empowered to find ways to do things better and continually improve asset management at Centralines.

Table 1-2: Asset Management Policy

1.4.3 Strategic Asset Management Objectives (AMOs)

Strategic AMOs are identified through the analysis of requirements of, and commitments to key stakeholders. These commitments are contained in a variety of service level agreements, compliance and legislative requirements and Centralines' Corporate Strategic Objectives and Statement of Corporate Intent.

Centralines' Strategic AMOs are detailed in Table 1-3 below. More detailed information can be found in Section 2.3.4.

Strategic Asset Management Objectives
1. Ensure people are safe around Centralines' assets. 2. Deliver a reliable and compliant electricity supply to customers. 3. Improve customers experience in relation to asset management services. 4. Improve the financial performance of the asset management plan without compromising network performance or asset integrity. 5. Improve the delivery performance of the Annual Works Plan. 6. Improve asset management capability to support the development and execution of asset management strategies and plans. 7. Improve the communication of the asset management system and strategy to staff. 8. Improve the environmental sustainability, performance, and resilience of asset management activities. 9. Maintain compliance with all applicable legislative and regulatory requirements.

Table 1-3: Strategic Asset Management Objectives

1.5 Key Stakeholder Information

Centralines firmly believes this RAMP should be accessible to readers of varying levels of technical understanding, and that all stakeholders should be able to extract the information they require. From experience, Centralines recognises that for many stakeholders (including the majority of Centralines' customers), the information of most interest is:

- key information pertaining to Centralines' network
- the level of service and performance that can be expected, and
- projects that have been initiated to improve the quality of electricity supplied.

To this end, this section provides an executive summary of these areas.

1.5.1 *Centralines' Asset Portfolio & Industry Comparison*

Centralines' suite of assets is referred to as the Asset Portfolio. Table 1-4 outlines some of the key statistics (as of March 2022) associated with Centralines' Asset Portfolio, along with a comparison against the industry median for context.

Metric	Description	Centralines	Industry Median
Value of Asset Portfolio	Centralines' Regulatory Asset Base.	$67.2M	$500M
Capital Expenditure	Total capital expenditure.	$12.9M	$43.63M
Operating Expenditure	Total operating expenditure.	$5.3M	$25.72M
System Length	Total length of all energised circuits.	1,836 km	5,418 km
Consumers Connected	Total installation control points (ICPs) connected to the network.	9,054	76,673
Peak Demand	Peak system demand.	22MW	242MW
Electricity Supplied	Electricity entering system for supply to consumers.	108GWh	1,124 GWh
SAIDI	System Average Interruption Duration Index — measure of the number of (raw non-normalised) minutes per year the average consumer is without electricity supply.	214.8 minutes	286.4 minutes
SAIFI	System Average Interruption Frequency Index — a measure of the number of (raw non-normalised) interruptions per year that affect the average consumer.	2.18	2.347

Table 1-4: Network Comparison between Centralines and Industry Median of NZ EDBs

1.5.2 *Performance Measures & Targets*

Centralines' Strategic Asset Management Objectives (AMOs) provide the ability to report on whether the needs and expectations of AMS stakeholders are being met.

The current measures that enable Centralines to monitor and improve performance in relation to these AMOs is provided in Table 1-5 below. More detail on Centralines' objectives and associated performance measures is provided in Section 3 – Service Levels.

Key Result Area	Strategic Asset Management Objective	Measurements	Targets 2024 / 2025
Health and Safety	Ensure people are safe around Centralines' assets.	Asset failures resulting in serious harm or fatality to a member of the public.	0
		Number of severity one, field crew, health, and safety internal audit findings.	0
		Percentage of priority 1, 2, and 3 asset defects completed within required timeframes.	100%
Network Reliability	Deliver a reliable and compliant electricity supply to customers.	Unplanned SAIDI, less than SCI Target (minutes).	<62.83
		Unplanned SAIFI, less than SCI Target (interruptions).	<3.16
		Number of annual, verified power quality complaints.	≤ 5
Customer Service	Improve customers' experience in relation to asset management services.	Percentage of planned shutdowns finishing outside notified outage windows.	< 15%
		Centralines responses not completed within Utilities Disputes (UDL) time limits.	0
		Timeframe to complete standard low voltage customer connection.	<15 business days
		Timeframe to complete investigation of power quality issue.	<20 business days
Financial	Improve the financial performance of the asset	Total annual network CapEx is within ±10% of total budget.	< ± 10%

Key Result Area	Strategic Asset Management Objective	Measurements	Targets 2024 / 2025
	management plan without compromising network performance and asset integrity.	Total annual network OpEx is within ±10% of total budget.	< ± 10%
Service Delivery	Improve delivery performance of the Annual Works Plan.	Delivery of the annual network capital works programme.	Programme completed in full.
		Delivery of the annual planned network maintenance programme.	Programme completed in full.
		Delivery of non-standard customer projects outside of agreed scheduled date.	0
		Number of severity 1 and 2 work practice and quality outcomes from internal field audits.	0
Innovation and Continual Improvement	Improve the asset management capability to support the development and implementation of the asset management strategies and plans.	Delivery of Asset Management Capability Plan Delivery.	100%
		Centralines' asset management service provider (Unison) maintains ISO 55001 certification.	ISO 55001 Certification
	Improve the communication of the asset management strategy to all Centralines' teams.	Percentage of new Centralines staff who received an asset management induction within three months of commencing employment.	100%
		Percentage of Centralines staff receiving an annual asset management briefing.	100%
	Improve the environmental sustainability performance and resilience of the asset management activities.	Number of environmental breaches resulting in environmental contamination due to the failure or an asset, asset system or associated containment.	0
		Centralines' network resilience maturity is assessed on an annual basis through the EEA's Resilience Management Maturity Assessment Tool (RMMAT).	Completed

Key Result Area	Strategic Asset Management Objective	Measurements	Targets 2024 / 2025
Assurance	Maintain compliance with all applicable requirements.	Percentage of non-compliances identified through Legislative Compliance Programme in relation to Asset Management have a corrective plan in place.	100%
		Number of instances of unanticipated legal challenge or government investigation occurring.	0

Table 1-5: Performance Measures & Targets

1.5.3 Programmes and Projects to Improve Network Performance

The lifecycle asset management and network development plans and options presented in Sections 4 and 5 of the RAMP reflect an asset management philosophy that attempts to balance performance with other considerations including the management of risk and cost. The planning period considered by this RAMP sees a continuation of capital investment in the network to:

- manage any risks associated with Centralines' network assets
- meet customer-driven growth
- maintain network security
- meet customer service levels and network reliability targets, and
- ensure compliance with regulatory requirements, e.g., health, safety and environmental.

Resilience forms a key part of Centralines' approach to asset management and the recent experience of Cyclone Gabrielle has reinforced the importance of this focus area. Some projects for this financial year that support the above objectives and are expected to improve network performance are shown in Table 1-6 below. For a full list refer to Sections Four and Five.

Project Name	Category
Waipawa GXP asset acquisition and ODID	System Growth
Feeder 15 Install Gaisford Terrace Ring	Other - RSE
Feeder 86 – Upgrade Sub B4 / 201	System Growth
Waipukurau ZS – Additional CB (Ovation)	System Growth
Feeder 14 – Close Ring Pole 900237 & RMU	Other - RSE
Feeder 14 – Install Isolation Point	Other - RSE
RCS replacement program	Other - RSE
Feeder 13 Replace 523 with RCS	System Growth

Project Name	Category
Replace 556 with New RCS	System Growth
Install new sectionaliser on Feeder 76	Other - RSE
RCS and ABS replacement program	Asset Renewal
Replace 15 Mahanga ABS's	Asset Renewal
Wilder Road 33kV Stage 7 refurbishment	Asset Renewal
Wilder Road 33kV Stage 8 refurbishment	Asset Renewal
Conductor replacement Feeder 46	Asset Renewal

Table 1-6: Projects that Will Improve Network Performance

Centralines is undertaking several strategic projects and programs to support the delivery of its AMOs and meet the expectations of its customers and stakeholders, these include:

- the construction by Centralines of an indoor 33kV switchboard to replace Transpower's aging outdoor equipment at Ongaonga providing Centralines greater planning and operational flexibility, improved response, and enhanced reliability
- active work on upgrades to facilitate large user decarbonisation through the electrification of industrial processes including heat and refrigeration, and.
- a continued focus on resilience in asset management following Cyclone Gabrielle with plans to carry out further network vulnerability assessments.

1.5.4 Network Reliability

Network reliability is an important indicator of the quality of service being received by customers from their EDB. A large variety of indices have been developed by industry to provide an indication of network reliability and performance. The most applied measures which are industry referenced and used by the regulator are:

- SAIDI (System Average Interruption Duration Index) — measures, on average, the total number of minutes a customer is without power per annum, and
- SAIFI (System Average Interruption Frequency Index) — measures, on average the total number of interruptions of over a minute, a customer experiences per annum.

The attainment of "consumer owned" status, exempts Centralines from these quality thresholds. Centralines however, continues to maintain reliability targets and measures and reports on its performance. This is to provide stakeholders with confidence in the continued performance and reliability of Centralines' network.

Refer to section 8.5 for a summary and evaluation of Centralines' network performance for the 2023/24 financial year.

1.6 The Electricity Sector: A Changing Landscape

New Zealand is on a journey to reduce carbon emissions to mitigate the impact of climate change. Nearly half of New Zealand's emissions come from agriculture, however it is widely believed that meeting New Zealand's emissions reduction targets requires electrification of transport, process, space, and water heating; and increasing the proportion of renewable generation. This will lead to a gross reduction of 30% in carbon emissions.

Even though 82% of New Zealand's electricity comes from renewable sources, it only contributes 28% of New Zealand's energy requirements, and a substantial proportion of non-renewable energy (petrol and diesel) is used for transport. New Zealand's electricity sector has a significant role to play in reducing the country's emissions.

As the costs of clean transport and energy technologies come down and climate concerns grow, the sector is seeing an increased uptake of electric vehicles and growth in charging stations as well as continued connection of small-scale solar systems in both residential and commercial settings, along with an increase in grid-scale solar connected to distribution networks.

This decarbonisation of the electricity sector is resulting in decentralisation of the electricity system. This is where more generation is distributed across many smaller units resulting in an increasing amount of embedded generation and storage from sources like solar farms, batteries, and combined heat. Digitalisation, which is the integration of digital technologies across the entire electricity system, is also evolving rapidly and becoming more prevalent. This will support effective network management in real-time and enable greater customer engagement and participation.

1.6.1 Government Targets and the Sector's Response

In 2019 the Government made the commitment to reduce greenhouse gases to net zero by 2050 as part of its Climate Change Response (Zero Carbon) Amendment Bill. The Climate Commission proposed emissions targets for three five-year periods. The Government of the day adopted these in 2022 and to help meet them, introduced clean car discounts for vehicles with low-to-no emissions, and an Investment in Decarbonising Industry (GIDI) fund to facilitate transition of process heat to electricity or biomass. Although both initiatives have since been reversed, the new Government remains committed to the emissions reductions targets and is introducing its own measures in support of these including fast track consenting of electricity infrastructure and an increase in public EV charging. Refer to Section 2.10 for the latest update on drivers impacting on the industry and Centralines.

To play their part, New Zealand's electricity sector is collectively taking steps to ensure that systems and solutions are designed, operated, and delivered to support New Zealand's ambitions to reduce carbon emissions.

Consequently, twelve companies in 2022 commissioned the Boston Consulting Group (BCG) to prepare a sector-wide response on how it can meet the Government's targets for reducing emissions. The resulting report presents two themes directly related to the distribution sector. The first is the "scaling up" of transmission and network investment. The "just in time" replacement approach the current regulatory system supports is not suitable for the required rapid electrification and renewable generation growth. To enable investment under less certain conditions, regulatory mechanisms need to change.

BCG forecasts that to prepare networks for rapid electrification, there needs to be investment in the distribution sector of $22 billion in the 2020s, $25 billion in the 2030s and $24 billion in the 2040s.

Meeting the demand from electrification affordably without even greater level of investment is behind the second theme; the enabling of a smart electricity system, flexible enough to cope with future evolutions in demand shifting and response. For electricity distribution businesses, this means having real-time visibility of capacity and power quality across all voltage levels, so that scheduling and calling on flexibility resources becomes almost automated.

1.6.2 Strategy to Enable Electrification

Unison, Centralines' management service provider has been preparing for significant change in the electricity and wider energy sector over the last decade, starting with the implementation of its smart grid strategy in 2010, and more recently the journey towards excellence in asset management culminating in ISO 55001 certification. These initiatives have been applied to the management of the Centralines network.

One of the key focus areas within their smart grid strategy has been the monitoring and control on sub-transmission and 11kV networks, increasing visibility and enabling better customer service through faster restoration of supply after faults.

Electrification presents risks, challenges, and opportunities for New Zealand EDBs. Electricity flows are predominantly one way and distribution networks have not been designed for multi-directional flow, Centralines anticipates that small-scale distributed energy resource (DER) systems and the electrification of transport will have the greatest impact on the low voltage network. Further, the uptake of EVs has the potential to double household loads, causing overloading and power quality issues.

Continued adoption of smart technologies to provide visibility and management of the network at all voltage levels including the low voltage network is a key part on the strategy for managing these risks and enabling connection of these distributed and consumer energy resources.

1.6.3 Well-Placed to Adapt

Centralines continues to develop and evolve its strategy, invest, and improve asset management processes to respond to these challenges and keep the power on. The analysis and detail set out in this Regulatory Asset Management Plan illustrates some of the recent advances, and how Centralines will continue to deliver as New Zealand adapts to an electrified future.

This plan positions Centralines to thrive in this new era for the energy sector, providing a solid framework to deliver on the vision and commitment to ensure a flexible, resilient, modern, and sustainable network that can serve the future generations of its communities.

1.7 Upgrades & Replacements to Key Enabling Systems

1.7.1 Enterprise Asset Management System (EAMS)

Centralines' service provider Unison has numerous systems that enable and support asset management at Centralines. Unison's legacy Enterprise Asset Management System (EAMS) has been replaced as part of the implementation of a companywide Enterprise Resource Planning (ERP) System.

The new OneEnergy (EAMS) module is enabling the following asset management related benefits:

- improved asset condition information and work history, forecasting of risks, forward visibility for resource and material planning, material procurement and availability, and integration with related systems
- automated decision-making
- better information to field staff on work required and asset details, and
- enhanced systems to capture field information through tightly integrated mobility solutions.

The new system has been implemented for Unison's asset management activities during 2021 and is undergoing an optimisation phase to unlock more efficiencies. Following this phase, an implementation plan will be developed to roll the EAMS out to Centralines with completion expected in 2025.

1.7.2 Advanced Distribution Management System (ADMS)

In September 2021, Unison commenced planning an upgrade to its Advanced Distribution Management System (ADMS), with implementation completed in November 2023.

The key benefits this upgrade will deliver are:

- enhanced functionality
- a technical platform upgrade to maintain operating system support, and
- the integration of complementary business systems.

This upgrade includes features that will aid in Centralines' journey to transition from a Distribution Network Operator (DNO) into a Distribution System Operator (DSO) and unlock efficiencies to assist Centralines manage a growth in network work.

1.8 Stakeholder Feedback

Centralines encourages feedback on all aspects of the RAMP to enable continued improvement in meeting the needs of consumers and stakeholders. Feedback should be addressed to:

Mark Chatterton
Strategic Asset Manager
c/o Centralines Limited
17 Coughlan Road, PO Box 59, Waipukurau 4200, New Zealand
mark.chatterton@unison.co.nz

1.9 Determination Reference Mapping Table

Section 1 Reference		Determination Reference
1.1	New Zealand Electricity Sector	3.1
1.2	About Centralines	
1.3	About the Regulatory Asset Management Plan (RAMP)	
1.4	Asset Management at Centralines	
1.5	Key Stakeholder Information	
1.6	The Changing Energy Landscape	
1.7	Upgrades & Replacements to Key Enabling Systems	
1.8	Stakeholder Feedback	

Table 1-7: Determination Reference Mapping Table

SECTION 2 //// RUA

BACKGROUND & OBJECTIVES

CENTRALINES
LIMITED

CONTENTS

2. BACKGROUND AND OBJECTIVES

2.1 Introduction to this Section

Section 2: Background and Objectives provides an overview of the organisation and the Asset Management System (AMS), including the Asset Management Policy and the Asset Management Objectives (AMOs). A statement of Centralines' Asset Management Strategy is provided, along with a summary of the three key processes that ensure the strategy will be delivered effectively.

A table that maps the requirements of the Electricity Distribution Information Disclosure Determination to the information provided is available at the end of the section to support assessment of compliance.

2.2 Context of the Organisation

2.2.1 About Centralines

Centralines is the electricity distribution business (EDB) that serves the communities of Central Hawke's Bay. Centralines is owned by the Central Hawke's Bay Consumers Power Trust (CHBCPT) on behalf of the power consumers it supplies. It is responsible for connecting homes and businesses to its network, safely distributing electricity, and sustainably managing its infrastructure.

Centralines generates revenue by distributing electricity to approximately 9,400 consumers. The organisation also provides other services to its customers including:

- providing new connections to homes and businesses
- cutting and trimming trees near lines, and
- locating underground cables and providing close approach permits to ensure safe excavation around Centralines' assets.

Centralines works in partnership with all members of the electricity supply chain including generators, Transpower and retailers to meet the needs of electricity consumers. It also collaborates closely with other stakeholders including councils, government authorities and owners of other infrastructure to promote the effective management of community resources.

Centralines' infrastructure includes a network of lines, cables, transformers, switchgear, and other distribution equipment across the region it serves. These assets are used to distribute electricity to homes and businesses.

Electricity Distribution Businesses (EDBs) are natural monopolies, and most are regulated by the Commerce Commission, under the Default Price-Quality Path (DPP). The DPP places an upper limit on EDBs' revenues and sets minimum network performance standards according to the frequency and duration of outages. The Commerce Commission also requires all EDBs, including Centralines, to periodically disclose certain information, including this Regulatory Asset Management Plan (RAMP).

Under the Commerce Act, Centralines is deemed "to be consumer-owned". Being "consumer-owned" results in Centralines being subject to lighter regulation and exempt from price and quality regulation, which is better aligned to smaller, consumer-owned EDBs.

Centralines, under provisions of a Management Services Agreement (MSA), contracts Unison Networks Limited (Unison) to provide asset management services including:

- planning
- acquisition and construction
- livening
- operation and maintenance
- renewal and modification, and
- disposal.

A broad range of people with diverse skills are engaged in carrying out these asset management activities.

Unison was the first New Zealand organisation to be certified to ISO 55001. ISO 55001 is the international global benchmark for asset management capability and contains the requirements specification for an integrated, effective management system for asset management. While the ISO 55001 certification is specific to Unison and its own distribution network, key frameworks and processes associated with its Asset Management System (AMS), including asset management planning that were developed as part of this certification process, have been adopted to manage Centralines' distribution asset portfolio.

Centralines typically undertakes the majority of its own capital projects, asset maintenance and vegetation management activities through a small team of in-house resources. Some large, technically complex projects, mainly associated with zone substations are managed on Centralines' behalf by Unison.

Over recent years Centralines has utilised external contracting partners to assist in delivering the annual works plan and customer-initiated works. These relationships have been working well and have given Centralines the ability to complete numerous deferred projects as well as 95% of the current period's capital works programme.

Centralines is a responsible corporate citizen and responds to customer feedback. It takes a proactive stance on the health and safety of employees, contractors, and the public, and takes responsibility for the effective management of environmental impacts of its operations.

2.2.2 *Purpose Vision and Values*

Centralines' purpose is to *"deliver a reliable and affordable electricity supply to meet our customers' aspirations for wellbeing, growth and sustainability"*.

Centralines' corporate vision is *"a customer-centric partner that enables growth and long-term prosperity for Central Hawke's Bay*".

Centralines is instrumental to the region's social and economic wellbeing, by ensuring one of the country's more sparsely populated regions has access to affordable and reliable electricity. Through the safe distribution of electricity to homes and businesses in Central Hawke's Bay, Centralines enables its community to prosper.

As a collaborative partner in the developing energy economy, Centralines continues to evolve to meet its customers' and wider stakeholders' changing needs, while embracing major changes in the strategic environment. This includes climate concerns and advances in technology which, in the future, will change the way energy is produced, stored, and used.

The energy value chain is in the early stages of a significant transformation from a system that was "centrally planned" to an "internet of energy", which will see consumers in control. With policy and regulation responses, Centralines will shape the scope of its electrical distribution business while opening opportunities for new services and business models.

By remaining close to its customers, Centralines will continue to build insights and understanding of their changing needs. At the same time, it is crucial that Centralines engages the diverse talents of its people and the wider community to harness new ideas. With a focus on delivery, Centralines will do whatever it takes to find solutions for its customers and the community it serves.

A realistic view of the future is being developed to determine where and what role(s) Centralines is going to play. Incremental changes in what Centralines does and how it invests will form part of this journey, which is not without risk. Centralines will explore and assess opportunities relating to the new energy economy and infrastructure services in other markets.

Continued provision of a valued and evolving customer service proposition will see Centralines play its part in enabling long-term prosperity and success for the community it serves.

Centralines understands the importance of people, culture, and climate to enable effective asset management. The behaviours and attitudes that Centralines is committed to and expects of its people are encapsulated within its five organisational values presented in Figure 2-1. Asset management is aligned with these values through the Asset Management Policy.

Figure 2-1: Centralines' Values

Centralines' people understand that the term 'best practice' is context-dependent, and is influenced by factors including the demographics, economies, and geographies of the region it serves and the scale of the business. For Centralines, in the asset management domain, best practice is about making optimal trade-offs between asset lifecycle cost, performance and risk that best reflect the needs of their customers and other stakeholders.

2.3 Overview of Centralines' Asset Management System (AMS)

A key pillar of Centralines' Asset Management service provider's corporate strategy is to establish a strong competence in asset management. This is supported through the implementation of an Asset Management System (AMS). Through this process they are committed to:

- developing asset management plans that optimise investment on a total lifecycle basis
- ensuring all teams are clear in their responsibilities and are appropriately empowered
- making decisions about priorities through consideration of relative risk
- using data and information to support fact-based decision-making
- communicating to all stakeholders on asset management issues relevant to their role
- continually improving in all facets of asset management, and
- implementing novel and innovative asset management solutions where this will best support achievement of the Asset Management Objectives (AMOs).

Centralines' AMS has been established based upon existing:

- asset management capabilities
- processes and procedures
- standards
- practices, and
- institutional knowledge in the management of electricity distribution networks and assets.

Its primary function is to provide structure and connectivity to ensure that asset management is in all cases delivered in alignment with:

- stakeholder requirements
- Corporate Strategic Objectives, and
- the Asset Management Policy.

An overview of the key elements of Centralines' current and future AMS, which is yet to be fully developed to the ISO 55001 standard, is provided in Figure 2-2 and the following sections.

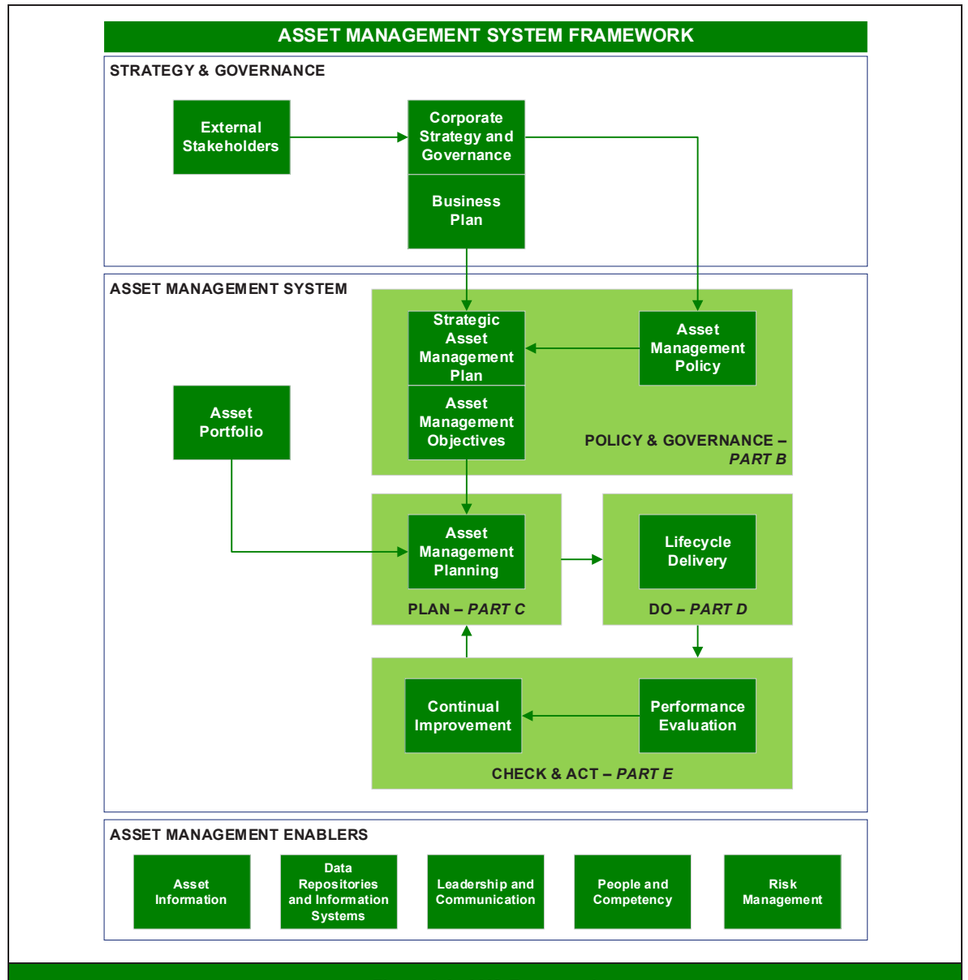


Figure 2-2: AMS Framework

2.3.1 Corporate Strategy

Centralines' strategy and corporate governance processes integrate strategic decision-making with the requirements and expectations of external stakeholders. This results in the annual development and Board ratification of the Business Plan which contains Centralines' Corporate Strategic Objectives.

The AMS is one of the key organisational systems supporting the delivery of the portfolio of Corporate Strategic Objectives. Other systems include customer service processes, environmental management processes, and health and safety management processes. These business systems are supported by the Integrated Management System (IMS) which includes specification of processes that are applicable across the business, such as documentation control, internal audit, and risk management (refer to Figure 2-5).

2.3.2 Asset Management Policy

Centralines' Asset Management Policy (CL-AMS-0001) is a foundational, stand-alone controlled document in the AMS. It ensures that asset management is aligned and connected with the purpose, vision and values of the organisation and is displayed in Centralines' office to promote awareness. The Policy is:

- reviewed at least every two-years
- authorised by Unison's General Manager Commercial & Regulatory, and
- approved by the Board and Unison's Chief Executive.

The Policy comprises 15 principles that Centralines has committed to in the delivery of asset management, as set out in Table 2-1. Centralines' AMOs are linked to these policy principles.

Asset Management Policy Principles
1. Ensuring that our people take personal responsibility for managing risks to ensure the safety of: • themselves • their colleagues • their contractors, and • members of the public.
2. Ensuring that our assets are safe, resilient, free from defects and do not impact adversely on the environment.
3. Ensuring compliance with all applicable legislative and regulatory requirements and industry and internal standards.
4. Taking a risk-based, quality systems approach to asset management through an asset management system that is aligned to the principles of ISO 55001.
5. Using data, information, technology, and effective processes to support fact-based and robust decision-making.
6. Implementing asset management plans that: • propose efficient levels of expenditure • manage risk in the Asset Portfolio, and • ensure customer service levels will be met consistently over the long-term.
7. Investing in assets prudently and undertaking asset management in a way that represents value for money for our customers and owners.
8. Working closely with our owners, customers and other stakeholders and being responsive to all feedback, requests, and complaints.
9. Playing a positive, engaged, and communicative role in the development of infrastructure to serve our communities.
10. Acting ethically and transparently to gain the trust and respect of our communities.
11. Providing appropriate levels of resource to enable asset management objectives to be achieved.
12. Monitoring, measuring, and reporting on asset and asset management performance.
13. Developing the capability of our people and teams to enable them to reach their potential in asset management.
14. Fostering a positive, diverse, and inclusive work environment that motivates our people to deliver their best each day.
15. Ensuring that our people are supported and empowered to find ways to do things better and continually improve asset management at Centralines.

Table 2-1: Asset Management Policy Principles

2.3.3 Asset Portfolio

The Asset Portfolio is the comprehensive inventory of assets which must be managed in accordance with the AMS. Asset information associated with individual assets and asset systems comprising the Asset Portfolio is a key enabler of decision-making processes throughout the AMS. The Asset Portfolio is defined below.

Inclusions (the Asset Portfolio)	Exclusions
All assets comprising Centralines' electricity distribution networks. Assets comprising Centralines' Regulatory Asset Base (RAB). Conductive assets, e.g., wires, cables, switchgear, and transformers. Non-conductive assets, e.g., poles, stay wires and substation buildings. Assets permanently installed to monitor the operating environment, condition and other information relating to the asset, e.g., weather stations, oil condition monitors and meters. Overhead assets, e.g., conductors, insulators and crossarms, ground mounted assets, e.g., ring-main units and pedestals, and underground assets, e.g., cables. Operational land holdings used for electricity distribution. Asset information systems and supporting IT infrastructure. Some assets located on customer premises as defined within Line Function Services Agreements. Low voltage streetlight circuits, fuses, and ripple relays up to the base of streetlight poles where these are owned by Centralines.	Personal Protective Equipment (PPE) used by Centralines' employees. Vehicles and tools owned by Centralines. Non-network buildings and land owned by Centralines. Portable test equipment that is not permanently installed on the network, e.g., power quality loggers, distributed temperature sensing equipment and oil spectroscopy testers. Customer service mains, i.e., electrical infrastructure beyond the fuse located inside pedestals and on private property (not within council owned road reserve). Electricity meters, smart meters, and ripple relays at customer premises. Some assets energised at 11kV located on customer premises as defined in relevant schedules of Line Function Services Agreements, ownership agreements or Memorandum of Understandings (MOUs). Streetlight poles and associated hardware.

Table 2-2: Asset Portfolio

2.3.4 *Asset Management Objectives*

The process used to develop and review Centralines' strategic Asset Management Objectives (AMOs) is detailed in Figure 2-3 below. This process ensures full alignment with strategic business drivers and enables the development of tactical AMOs for inclusion in fleet strategies and other processes.

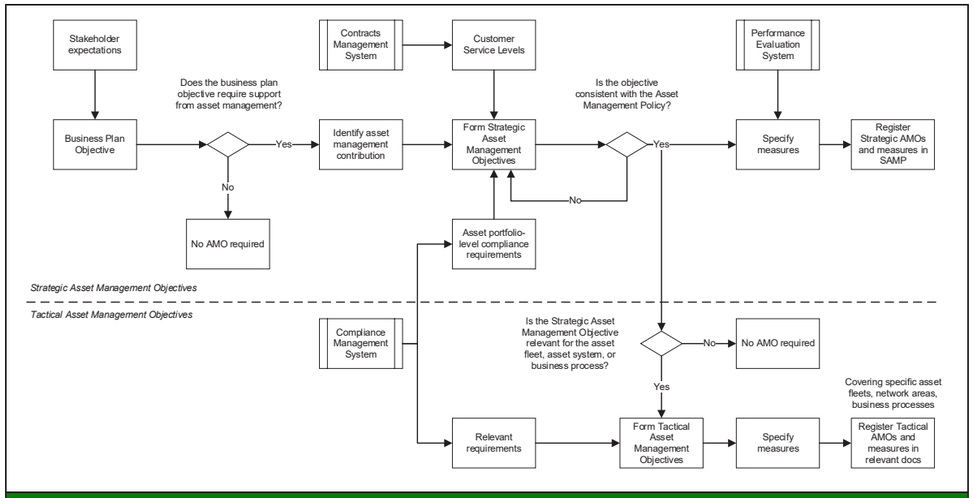


Figure 2-3: AMO Development Process

Strategic AMOs are identified through the analysis of commitments to customers contained in service level and other agreements, compliance requirements and the Centralines' Corporate Strategic Objectives. These are then validated for consistency against the principles of the Asset Management Policy. This check ensures:

- selected objectives are aligned with asset management principles, and
- each asset management principle is reflected in at least one objective.

Measures are then developed for each objective to ensure they are specific, measurable, achievable, relevant and timebound (SMART). To maintain flexibility and focus, the key results and measures may be reviewed and adjusted periodically. Feedback from performance evaluation processes guide their selection.

This process supports formation of aligned tactical AMOs. These objectives exist at lower levels of the AMS, for example for asset fleets, asset systems and business processes.

Centralines' Strategic AMO's are set out below in Table 2-3 below.

Strategic Asset Management Objectives
1. Ensure people are safe around Centralines' assets.
2. Deliver a reliable and compliant electricity supply to customers.
3. Improve customers' experience in relation to asset management services.
4. Improve the financial performance of the asset management plan without compromising network performance or asset integrity.
5. Improve the delivery performance of the Annual Works Plan.
6. Improve asset management capability to support the development and execution of asset management strategies and plans.
7. Improve the communication of the asset management system and strategy to staff.
8. Improve the environmental sustainability, performance, and resilience of asset management activities.
9. Maintain compliance with all applicable legislative and regulatory requirements.

Table 2-3: Strategic Asset Management Objectives

Summary descriptions and justifications of Centralines' Strategic AMOs are outlined in Table 2-4 below.

Asset Management Objective	AM Policy Principle	Description / Justification
1. Ensure people are safe around Centralines' assets.	1, 2, 3	The most important asset management priority is to ensure the safety of Centralines' staff, contractors, and members of the public. This objective complements and aligns with the objectives of Centralines' Health and Safety Management System (HSMS) and Public Safety Management System (PSMS).
2. Deliver a reliable and compliant electricity supply to customers.	3, 4, 5, 6, 7	The supply of electricity is an essential service. Centralines' customers and stakeholders expect a reliable supply that meets acceptable service levels and are aligned to any legislative quality requirements.
3. Improve customers experience in relation to asset management services.	8, 9, 10	Customers expect Centralines to be responsive, easy to deal with and meet the commitments it makes to them. These expectations are increasing as digital technologies and service delivery capabilities continue to evolve.
4. Improve the financial performance of the asset management plan without compromising network performance or asset integrity.	5, 6, 7	The investment requirements of Centralines' AMP have a direct link with the cost and affordability of the service. Accordingly, all network investment must be prudent and efficient.

Asset Management Objective	AM Policy Principle	Description / Justification
5. Improve the delivery performance of the Annual Works Plan.	2, 11, 12	The safe, efficient, and cost-effective delivery of Centralines' Annual Works Plan ensures that risks in the asset portfolio will be mitigated, and assets and asset systems will be fit for purpose and available to deliver a safe and reliable electricity supply.
6. Improve asset management capability to support the development and execution of asset management strategies and plans.	4, 5, 13, 15	Appropriate asset management maturity and capability is required to achieve AMOs. Continually improving Centralines' asset management maturity is necessary to be able to respond to the challenges and opportunities created by a changing electricity sector.
7. Improve the communication of the asset management system and strategy to staff.	13, 14, 15	Centralines' people and key stakeholders need to better understand its Asset Management System (AMS) and strategy, which drives asset management decision-making and outcomes. Centralines believes providing this "line of sight" will support the engagement and commitment of its people and assist in continuously improving its asset management performance.
8. Improve the environmental sustainability, performance, and resilience of asset management activities.	2	Environmental sustainability is of increasing interest to Centralines' stakeholders, especially with respect to climate change. In Centralines' most recent Business Plan, improving its environmental sustainability performance has been introduced as a strategic objective.
9. Maintain compliance with all applicable legislative and regulatory requirements.	3	Centralines is committed to being a good corporate citizen and compliance with all legislation and regulation represents a minimum threshold.

Table 2-4: Strategic Asset Management Objective Descriptions

The current measures that enable Centralines to monitor and improve performance in relation to these AMOs are detailed in Section 3: Service Levels.

2.3.5 Asset Management Plan

The Asset Management Plan (AMP) is the specification of major work to be undertaken on or in association with the assets over a ten-year period to enable AMOs to be achieved. Decisions about priorities are enabled through application of the risk management processes defined in the Centralines Risk Management Framework and translated for specific use in asset management in the AMS Risk Management Guidelines discussed in Section 7 – Risk Management.

2.3.6 Lifecycle Delivery Processes

Centralines' Lifecycle Delivery processes include:

- the real-time network management performed by Unison's Network Operations Centre (NOC)
- management of the capital works programme
- asset maintenance and inspection programmes
- construction and livening of new assets
- vegetation management, and
- associated configuration management and transactional processes essential to ensure assets are safe and fit to deliver the AMOs.

2.3.7 Performance Evaluation

Evaluation of the performance of the AMS is accomplished through:

- measurement against performance indicators related to AMOs
- the achievement of specified business outcomes, and
- the internal audit of processes and systems of the AMS to assure conformance to requirements.

2.3.8 Continual Improvement Process

The feedback generated through the processes specified above is a primary input into Continual Improvement (CI) processes, and includes feedback on:

- both asset capability and condition, and
- the organisation's asset management capability.

The CI processes utilised by the AMS are consistent with the organisational approach to continual improvement provided in Centralines' Integrated Management System (IMS).

2.3.9 Asset Management Enablers

All asset management processes are enabled by:

- appropriate asset management information which is stored and accessible from fit for purpose data repositories and information systems
- effective leadership and communication processes
- a well-defined organisational design
- people who have appropriate skills, competencies, and qualifications, and
- processes that utilise risk management concepts and principles to support effective decision-making.

2.4 Purpose of the Regulatory Asset Management Plan (RAMP)

2.4.1 Purpose Statement

The purpose of this Regulatory Asset Management Plan (RAMP) is to publish information about Centralines' AMS, and the asset management plans that are developed to manage down risks and secure opportunities, in support of the AMOs. This enables interested stakeholders to make an informed judgement about the appropriateness of Centralines overall approach to asset management and to learn of changes in the asset portfolio that may impact them. In addition to this, the RAMP ensures that Centralines is compliant with the requirements of the Electricity Distribution Information Disclosure Amendments Determination 2017.

The purpose of asset management planning is to ensure that the AMOs specified in Table 2-3 are achieved by the organisation for the benefit of all stakeholders.

2.4.2 Documented Plans

Figure 2-4 provides a hierarchical view of the documented plans produced as outputs of the annual business planning processes utilised by Centralines, and their relationship with the RAMP.

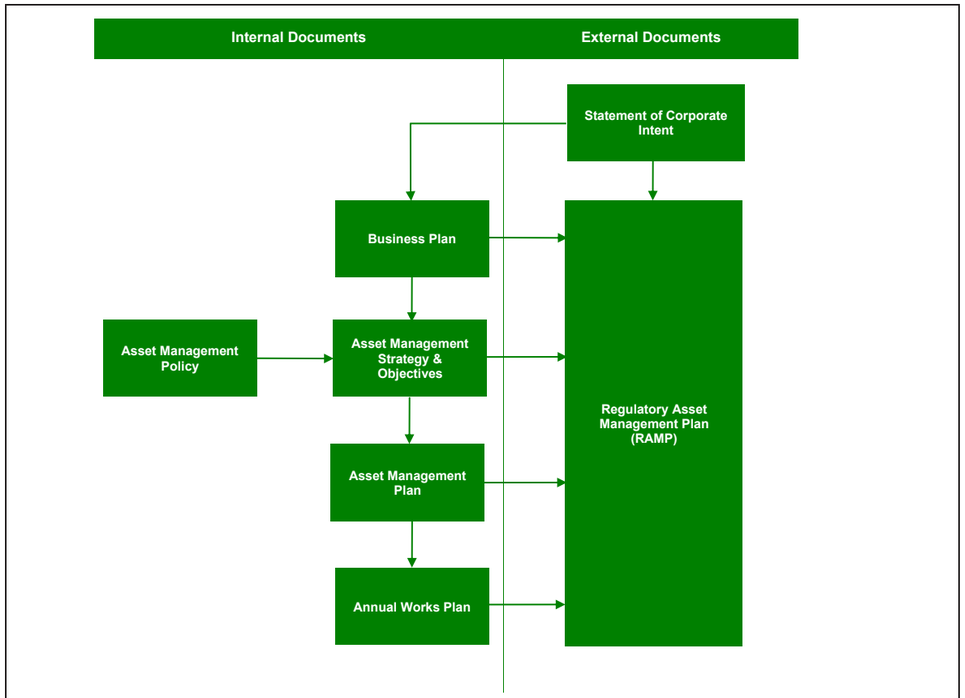


Figure 2-4: Consolidation of Asset Management Information in the RAMP

2.4.2.1 Statement of Corporate Intent

The Statement of Corporate Intent (SCI) sets out the Centralines scope of activities and strategic aims as well as the key performance targets for the next three financial years. It is a requirement of the Energy Companies Act 1992 and is refreshed and published annually on Centralines' website. The SCI provides top-level guidance to the development of the asset management policy and strategy, and although rare, significant changes to the SCI requires a detailed review of subordinate plans.

2.4.2.2 Business Plan

The business plan is Centralines' key strategic plan and therefore is highly influential in driving the asset management strategy. The business plan contains the following elements:

- a review of Centralines' strategic context both internally and externally
- Centralines' corporate strategic objectives
- a review of Centralines' performance in past periods against corporate strategic objectives, and other goals and targets
- financial information including capital and operating expenditure forecasts, revenue forecasts and a summary of the company's financial position, and
- an overview of key strategic initiatives for the organisation in the next period.

The business plan is reviewed and approved annually by Centralines' Board of Directors.

2.4.2.3 Asset Management Policy

The asset management policy specifies Centralines' commitments in the delivery of asset management. It is reviewed at least every two years to ensure continued alignment with the SCI and business plan.

2.4.2.4 Asset Management Strategy and Objectives

The asset management strategy is a container for Centralines' AMOs, as well as the documents that record Centralines' strategies for achieving the objectives.

2.4.2.5 Asset Management Plan

The asset management plan (AMP) is the register of the major work required in the asset portfolio to ensure that AMOs are met. Most of the work registered in the AMP is capital work, however major non-routine maintenance programmes may be included. It has a ten-year horizon, where:

- the first two-years are well-defined proposals of work ready to be actioned
- the next three-years are plans with high levels of confidence, and
- the remaining five-years are speculative, but represent the best plan based upon available information.

For all work registered in the AMP the following information must be provided:

- the assets to be worked on
- the issue driving the requirement for work
- an assessment of the level of risk associated with the issue utilising the Risk Management Framework, and
- the proposal of work required to manage down the risk, including:
  - the recommended timing and estimated cost
  - any risks in delivering the work
  - shutdown windows required, and
  - contractor resource requirements.

2.4.2.6 *Annual Works Plan*

The annual works plan (AWP) is the consolidated programme of work to be conducted on the Asset Portfolio in a given financial year. This includes the following types of work:

- major capital projects from the AMP, including any large customer driven projects
- preventive maintenance programmes including inspections
- provisions for small scale customer driven projects
- provisions for minor asset replacements, e.g., pole replacements following inspections, and
- provisions for reactive maintenance, e.g., fault response.

The AWP is compiled and scheduled collaboratively by both Unison and Centralines' Operations Team.

2.4.3 Business Management System

The AMS is aligned with Centralines' Business Management System Framework (BMSF) which has been adopted from Centralines' service provider to enable its effective implementation and sustainment. The BMSF supports Centralines' three primary management systems. The supporting processes within the IMS are outside the scope of the AMS but must be available to enable the AMS to function as required. These include:

- a controlled document system and associated processes
- an internal assurance framework
- a legislative compliance programme
- emergency / crisis management processes
- competency management systems and processes
- complaints management processes
- records management systems and processes
- incident management processes, and
- a continual improvement process.

Centralines' BMSF is represented in Figure 2-5 with the red outline representing the scope of the AMS in this context.

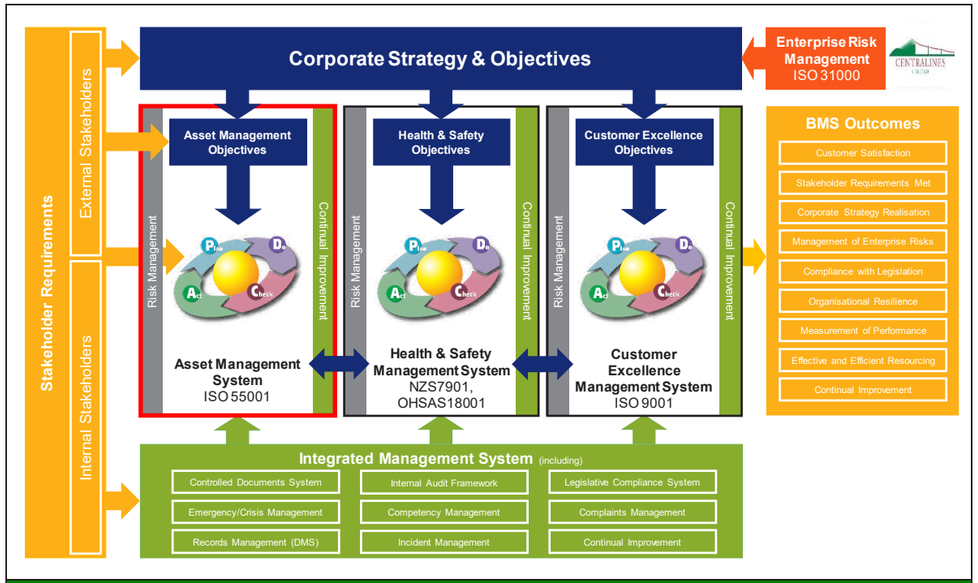


Figure 2-5: Business Management System Framework

2.5 Planning Period of the Regulatory Asset Management Plan

The RAMP covers the period from 1 April 2024 to 31 March 2034. Necessarily all prospective information is provided based upon the currently best assumed future. As for any long-term planning, uncertainty increases the further forward in the future it is looked. This is due to factors including:

- the condition of assets
- demand growth
- government policy and changes to regulatory and legislative regimes
- the cost and availability of contracting resources
- technology changes, and
- stakeholder expectations.

Accordingly, for the first five-years of the planning period, more detailed information in respect of asset management plans is provided. In the second half of the planning period, plans are presented in less detail reflecting increasing uncertainty.

2.6 Date of Director Approval

The RAMP was approved by Centralines' Board of Directors on 28 March 2024.

2.7 Centralines' Stakeholders

The requirements and expectations of stakeholders are strongly influential in Centralines' asset management strategy and decision-making processes.

Table 2-5 and Table 2-6 set out Centralines' key external and internal stakeholders respectively. The Stakeholder Interests column provides the key expectations of the stakeholder in relation to Centralines' operations, including the information, notification and coordination required by the stakeholder from Centralines.

2.7.1 External Stakeholders

Table 2-5 summarises Centralines key external stakeholders, how their interests are identified, and what their interests are.

External Stakeholder	Role / Relationship	How Stakeholder Interests are Identified	Stakeholder Interests
Electricity consumers	Customers of the overall electricity supply chain	• Customer surveys • Customer enquiries • Customer feedback and complaints	• A reasonably priced service that meets performance expectations. • Infrastructure is safe, environmentally sustainable and supports local amenity. • Information about changes to prices is effectively communicated. • Notification of planned outage windows and conformance to these windows by Centralines. • Planned outages minimised on especially cold days of the year. • Information about restoration following unplanned outages is available.
Household consumers	End recipient of distribution service. Pay costs of service	• Customer surveys • Customer enquiries • Customer feedback and complaints	• On demand and reliable access to as much electricity as they need – 24/7. • Infrastructure that keeps their families, home, possessions, and streets safe from harm. • Minimal disruption to their daily lives — including from planned or unplanned electricity outages or field works. • Energy and infrastructure that is environmentally sustainable and supports the drive for zero carbon.

External Stakeholder	Role / Relationship	How Stakeholder Interests are Identified	Stakeholder Interests
			• A network that anticipates, is ready for, and incentivises their future energy and technology needs. • Empathetic and customer centric handling of any complaints. • Simple, convenient operational processes for contacting and dealing with their distributor. • Assistance in upgrading/changing the energy infrastructure at their homes. • Pricing where all customers can afford power, they reasonably need without causing physical deprivation or financial duress. • Information that gives them transparency and certainty about network actions and expectations, especially during times of outage.
Major customers	Industrial customers supplied at HV who have a contract with Centralines	• Customer surveys • Customer enquiries • Customer feedback and complaints • Relationship Meetings	• Expectations as for general electricity consumers. • Changes to Line Function Service Agreements are well managed. • Engagement around planned outage requirements.
Electricity retailers	Customers, downstream participant in electricity supply chain	• Relationship meetings	• Effective communication on transactional matters, including new connections, outages, and billing submissions. • Effective engagement and negotiation of changes to pricing structures, tariffs, and Use of System Agreements. • Centralines meeting its requirements under Use of System Agreements, including network performance requirements.
Transpower	Upstream asset owner in the electricity supply chain	• Relationship meetings • Engagement through projects	• Effective communication on transactional matters, including planned work, billing submissions and account management.

External Stakeholder	Role / Relationship	How Stakeholder Interests are Identified	Stakeholder Interests
		• Transpower disclosures and planning documents	• Sharing of long-term planning information including demand forecasts. • Coordination of planned work and associated outage management. • Coordination between service provider's Network Operations Centre and Transpower System Operator, especially in grid emergency situations.
Councils (District, City and Regional)	Territorial authorities, local government, local infrastructure owner	• Relationship meetings • Engagement through projects • Planning documents issued by Councils	• Infrastructure is sensitive to local amenity, compliant to planning requirements, such as District Plans, and are environmentally sound. • Sharing of long-term planning information to support synergies. • Project coordination to ensure effective service corridor management and minimal disruption to communities. • Coordination of civil defence and emergency management. • Notification of environmental issues.
Landowners	Individuals, iwi, and businesses with interests in land	• Engagement through projects • Enquiries, feedback, or complaints	• Engagement and negotiation on access requirements and the location of new infrastructure. • Local infrastructure is safe, tidy, and well-maintained. • Notification of vegetation management issues and plans to address these issues. • Engagement on asset related issues in proximity to land holdings. • Understanding, sensitivity, and respect towards cultural issues in relation to land.
Electricity Networks' Association	Industry association	• Involvement and participation	• Regular management engagement with the Association and its members to support industry collaboration and advance the interests of the industry. • Involvement and support in regulatory submissions. • Participation on industry working groups.

External Stakeholder	Role / Relationship	How Stakeholder Interests are Identified	Stakeholder Interests
Other electricity distribution businesses	Industry peers	• Information sharing forums • Asset Management Plans	• Collaboration on issues of mutual interest, including information sharing, joint projects, and trials, and associated commercial arrangements. • Contracting resource support for businesses affected by major events such as storms and natural disasters.
Electricity Engineers' Association	Industry association	• Involvement and participation on working groups	• Involvement in working groups, sharing of knowledge and best practices. • Funding support for initiatives including research and working groups. • Promotion of electrical engineering as a career pathway for young New Zealanders.
Commerce Commission	Economic regulator	• Regulatory requirements • Documents issued by the Commission • Engagement processes coordinated by the Commission	• Disclosure of information including Regulatory Asset Management Plans in conformance with requirements. • Submissions and feedback on proposed changes to regulatory framework.
Electricity Authority	Electricity market regulator	• Regulatory requirements • Documents issued by the Authority	• Compliance with market rules, associated electricity industry legislation, regulation, and codes. • Consultation and issues-based correspondence. • Participation and cooperation with investigations.
WorkSafe New Zealand	Health and safety regulator	• Regulatory requirements • Engagement on specific issues • Documents issued by the Authority	• Engagement in working groups and consultation processes. • Notification of incidents and near misses. • Compliance with legislative and regulatory requirements.
Office of the Auditor-General	Independent regulator	• Engagement during audits • Review of documents	• Efficient use of electricity bill payers' funds through effective asset management.

External Stakeholder	Role / Relationship	How Stakeholder Interests are Identified	Stakeholder Interests
		issued by the OAG	• Participation and cooperation with audit processes initiated from time to time.
Utilities Disputes Commissioner	Industry regulator	• Cooperation in any investigations • Review of decisions by the Commissioner	• Participation in dispute resolution processes. • Provision of information and records to support dispute resolution processes. • Adherence to rulings not found in Centralines' favour.
New Zealand Police	Partner agency	• Relationship meetings • Information sharing	• Notification of accidents involving Centralines' assets. • Coordination of responses to incidents and compliance with incident management processes. • Response capability from Centralines' first responders.
Fire and Emergency Response New Zealand	Partner agency	• Relationship meetings • Information sharing	• Notification of fires and emergencies involving Centralines' assets. • Coordination of responses to incidents and compliance with incident management processes. • Response capability from Centralines' first responders.

Table 2-5: Centralines' External Stakeholders and their Interests

2.7.2 Internal Stakeholders

Table 2-6 summarises Centralines' key internal stakeholders, how their interests are identified, and what their interests are.

Internal Stakeholder	Role/Relationship	How Stakeholder Interests are Identified	Stakeholder Interests
Central Hawke's Bay Consumers Power Trust (CHBCPT)	Owner of Centralines on behalf of power consumers	• Annual General meeting • Meetings between Trustees, Directors, and	• Reporting of performance against Statement of Corporate Intent (SCI). • Effective and efficient asset management performance. • Prompt resolution of issues raised by Centralines' power consumers.

Internal Stakeholder	Role/Relationship	How Stakeholder Interests are Identified	Stakeholder Interests
		Executive Management	
Board of Directors	Corporate governance Strategic direction	• Monthly Board meetings	• Performance against the Corporate Strategic Objectives. • Regular reporting on the health of the AMS and performance against AMOs. • Effective management of the organisation, especially relating to health and safety performance.
Executive Management	Governance Policy and strategy Enterprise risk management	• Business Plan • Communication and engagement with staff	• Regular management review of the health of the AMS and performance against AMOs. • Escalation of strategic risks in the Asset Portfolio and the AMS where necessary, especially relating to the impact of DER. • Quarterly reports on progress towards the implementation of the AMS.
Centralines employees	Internal customers Users and advocates Implementers	• One-on-one discussions with managers • Satisfaction surveys • Training and development processes	• Awareness of the AMS and its implications for roles and responsibilities, and how teams work together. Providing a basis for understanding why certain actions are important. • Awareness of significant risks and potential consequences of deviating from defined asset management practices. • Training and education on asset management, the AMS and role specific skills and competencies. Professional development. • A secure role in a respected and professionally managed organisation. • Information about asset management risks, particularly relating to health and safety.
Centralines Operation Teams	Primary supplier of contracting services	• Relationship meetings • Collaboration on projects	• Awareness of the AMS and why particular actions are important. • Visibility of the asset management plan to support business planning. • Information about asset management risks, particularly relating to health and safety.

Internal Stakeholder	Role/Relationship	How Stakeholder Interests are Identified	Stakeholder Interests
			• Effective collaboration in work management including project delivery. • Two-way feedback on performance and areas for improvement. • Minimised churn in the work programme to drive efficiency and support schedule compliance. • Quality technical standards and operating procedures.
Other contractors and vendors	Supplier of goods and services	• Relationship meetings • Contract negotiation processes	• Information about asset management risks, particularly relating to health and safety. • Adherence to terms and conditions of trade and contractual obligations. • Two-way feedback on performance and areas for improvement. • Quality technical standards and operating procedures.

Table 2-6: Centralines' Internal Stakeholders and their Interests

2.7.3 How Stakeholder Interests are Accommodated in Asset Management Practices

The importance of accommodating stakeholder interests in asset management is recognised in the asset management policy, and this flows through into the AMOs, and the design of the business processes utilised in the AMS.

Centralines' performance against the AMOs is measured and reported monthly to provide an overview of how effective Centralines is in meeting stakeholder interests. Where gaps are identified between actual and targeted levels of performance, opportunities for improvement are considered and actions are put into place through the continual improvement process of the AMS.

2.7.4 How Conflicting Interests are Managed

Situations sometimes arise where Centralines must make asset management decisions that bring interests of different stakeholders into conflict. Once such a situation has been identified, Centralines endeavours to work with each of the parties to ensure that their respective interests have been properly and fully understood.

Often through this process a solution that is acceptable to each party can be identified. If such an outcome is not possible however, Centralines uses principles of natural justice, fairness, and equity to come to a decision. The guidelines applied in order of importance are:

- health and safety of Centralines' employees, contractors, and the public
- compliance with statutory and regulatory requirements
- congruence with the SCI
- congruence with Centralines' Asset Management Policy
- reasonable needs of customers
- synergy with asset management plans
- lowest lifecycle cost, and
- congruence with other stakeholder interests.

In all cases the reasons for the decision will be communicated openly with all parties.

2.8 Accountabilities and Responsibilities for Asset Management

2.8.1 Corporate Governance

Leadership and commitment to the AMS starts at the corporate governance level of the organisation. Centralines' governance level is represented by the board of directors. Directors have ultimate accountability for approving the strategic direction of the business as proposed by the chief executive and management team. Once the organisational strategic plan is approved, it is the responsibility of the management level to implement it. The organisational strategic plan has a strong influence on Centralines' asset management strategy and objectives and the *line of sight* that runs through the AMS.

2.8.1.1 Approval for Asset Management Decisions

Enterprise-wide strategic initiatives relating to asset management are approved by directors as part of the business plan in Centralines' annual planning processes.

As well as asset management strategic initiatives, approval from directors is also required in respect of network projects costing more than five hundred thousand dollars. When the need for such a project has been identified through asset management planning processes, a board report is compiled. The structure of the report includes:

- an explanation of the constraint motivating the project
- the possible options for addressing the constraint
- selection of the optimum option with justification from both a technical and commercial perspective
- identification of any risks associated with the selected option, and
- a disaggregated costing for the project, and an estimated timeframe for delivery.

2.8.1.2 Reporting on Asset Management Outcomes

Performance against the AMOs specified earlier is reported to directors at the monthly board meeting. Explanations are provided by senior management in respect of deviations from expected performance.

Asset management related outcomes including network reliability, progress in the execution of asset management plans, network CapEx and OpEx budget management and health and safety outcomes are all reported on.

Progress against asset management strategic initiatives is typically reported quarterly. At the conclusion of these initiatives an internal review of the organisation's performance in executing the project is furnished to the board with opportunities for improvement identified.

Performance against measures underpinning the AMOs that are not part of standard board reporting are reported at the end of the financial year as part of the annual business planning process.

Each year a detailed board report is prepared on network performance. This report includes in-depth analysis that:

- examines network performance from a range of perspectives
- critically probes underlying trends
- highlights areas where improvement is required, and
- provides an update on changes to the quality regulatory framework.

2.8.2 Leadership Processes

Unison's Executive Management Team (EMT) and the General Manager Commercial & Regulatory initiate and lead the implementation, utilisation, and sustainment of Centralines' AMS. These are driven by the following top-level processes:

- establishment and communication of Centralines' Asset Management Policy
- annual management review of asset management strategy and objectives
- communication to all members of the organisation on asset management performance, and the extent to which this supports the corporate strategic objectives
- consolidation of all legacy asset management processes, practices, plans and other material into the AMS
- annual delivery and disclosure of either a full Regulatory Asset Management Plan (RAMP) or RAMP Update documents that are compliant with the Electricity Distribution Information Disclosure Determination (2012) NZCC 22
- planning and implementation of AMS Capability Projects by Centralines' Management service provider to drive continual improvement and build asset management capability
- ongoing internal assurance, management review and external audit of the AMS, and
- engagement by Centralines' management service provider with external groups and subject matter experts in certain domains to augment and grow capabilities, including:
    - the Institute of Asset Management (IAM)
    - the Electricity Engineers' Association (EEA)
    - the Electricity Networks Association (ENA)
    - the New Zealand Organisation for Quality (NZOQ)
    - the Asset Management Council (AMC)
    - the EPE Centre of the University of Canterbury, and
    - Asset Dynamics.

2.8.3 Leadership Responsibilities

In accordance with their defined position descriptions and authorities, all Centralines' managers and team leaders are required to:

- model the company values in leadership actions, decisions, and communications
- encourage and coach people to apply the company values in their day-to-day work and challenge behaviours that do not match Centralines' values
- communicate clear performance expectations to people so that they understand how their role contributes to the achievement of Centralines' vision
- coach and support people to:
    - identify their personal development needs
    - formulate and implement an individual development plan, and
    - assess its impact on results and relationships.
- inspire and motivate teams by leading, guiding, and providing motivational and developmental feedback to build a high performing team and individuals
- cultivate an environment of continuous improvement, innovation, and initiative by facilitating an open exchange of ideas
- take a long-term view and formulate effective strategies consistent with the business strategy, and
- develop and build relationships, engage in cross-functional activities, collaborate across boundaries, and utilise contacts to build and strengthen internal processes.

2.8.4 Organisational Structure

Centralines' asset management organisation is led by Centralines' asset management service provider, which includes six groups tasked with managing the functional activities required to deliver Centralines' corporate objectives. Each group is led by a General Manager reporting to the Group Chief Executive, as shown in Figure 2-6.

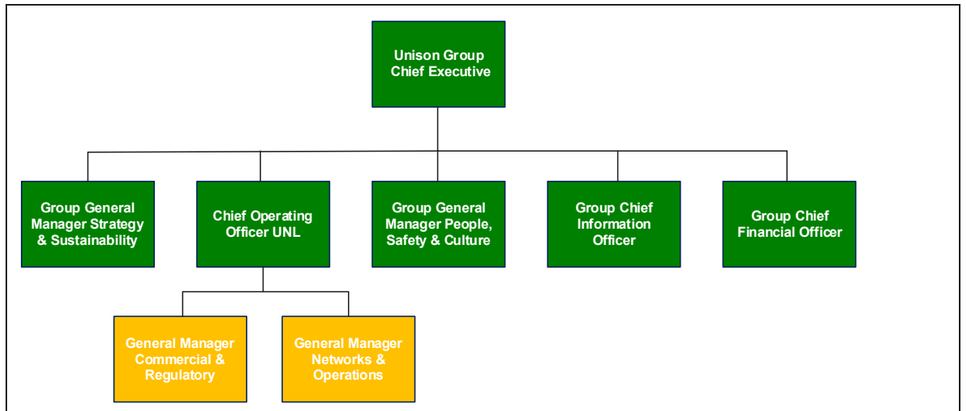


Figure 2-6: Management Structure of the Asset Management Organisation

2.8.4.1 *General Manager Commercial & Regulatory*

The General Manager Commercial & Regulatory ensures that the management service provider delivers the asset management outcomes as outlined in the Management Services Agreement.

2.8.4.2 *General Manager Networks & Operations*

The General Manager Networks and Operations is assigned responsibility for the AMS, which includes:

- coordinating review of the asset management policy
- aligning the AMOs with the corporate strategic objectives
- overseeing and coordinating the asset management plans, and
- organising management review and external assessment of the AMS.

2.8.4.3 *Management Responsibilities*

The board delegates financial approval of up to $500k to the Chief Executive and the General Manager Commercial & Regulatory in respect of network CapEx projects.

While the management service provider's General Manager Networks & Operations has primary responsibility for implementation of the AMS, each of the other management service provider's General Managers has an important role to play in the asset management organisation, as shown in Table 2-7.

Position	Key Accountabilities
Group Chief Information Officer	• Enterprise asset management systems (information systems) • Infrastructure and communications hardware • Business analysis
General Manager Networks & Operations	• Facilitate development of Asset Management Strategy and Objectives • Lead execution of asset management strategies • Asset management planning including network development planning • Asset information management • Real-time operation of the network
Group Chief Financial Officer	• Treasury and financial control • Procurement and logistics

Position	Key Accountabilities
General Manager Commercial & Regulatory	• Customer projects • Customer engagement and service levels • Billing • Risk management and review • Internal audit • Legal and regulatory compliance • Pricing
Group General Manager People, Safety and Culture	• Human resources and organisational culture • Health and safety

Table 2-7: General Manager Key Accountabilities within Asset Management System

2.8.4.4 *Responsibility for Asset Management System Processes*

The service provider's Networks and Operations Group, reporting to the GM Networks & Operations has the primary responsibility for the AMS. The structure of the group is represented in Figure 2-7. It indicates the primary areas of responsibility of each Line Manager in the key processes of the AMS.

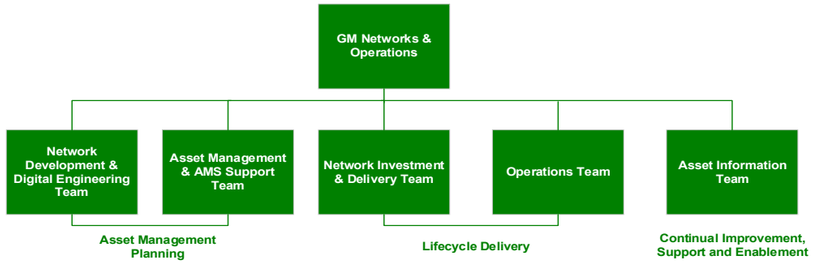


Figure 2-7: Management of the Asset Management System

Further detail on the key processes that each team is responsible for is provided in the following tables.

Planning Processes	Responsible Team
Network Development Planning	Network Development
Contingency Planning	Asset Management
Asset Renewal Planning	Asset Management
Maintenance Planning	Asset Management
Works Planning and Consolidation	Network Investment and Delivery
CapEx Programme Establishment	Network Investment and Delivery

Table 2-8: Responsible Teams for Planning Processes

Lifecycle Delivery Processes	Responsible Team
Work Management	Network Investment and Delivery with field work undertaken by Centralines
Switching and Outage Management	Operations team with field work undertaken by Centralines
Asset Portfolio Control	Asset Management
Asset Information Management	Asset Management

Table 2-9: Responsible Teams for Lifecycle Delivery Processes

Continual Improvement Processes	Responsible Team
Performance Evaluation	Asset Management
Internal Audit	Asset Management
Coordination of Management Review	Asset Management
Coordination of Capability Projects	Asset Management
Continual Improvement	Asset Management

Table 2-10: Continual Improvement Processes

2.8.4.5 *Responsibility for Field Operations*

The field delivery of asset lifecycle activities that are specified in the RAMP including design, construction, inspection, maintenance, refurbishment, fault response and repair, vegetation management, and replacement and disposal is the responsibility of Centralines' Operations Manager.

The vast majority of this work is carried out by Centralines' field staff who work out of the Centralines' Waipukurau depot. The field staff report to the Centralines' Operations Manager who in turn reports to the management service provider's General Manager Commercial & Regulatory, as shown in Figure 2-8. Collaboration takes place between Centralines staff and the management service provider's Networks and Operations Teams to ensure the efficient and effective delivery of projects.

An example of this is the close collaboration for work taking place in the field between the Operations Manager and the management service provider's Network Operations Centre (NOC). This collaboration ensures:

- the network is configured in a way that allows work to proceed
- the impact of outages is minimised
- safety protocols relating to access to the network are observed, and
- Centralines' field staff have the information that they require about the state of the network to work safely.

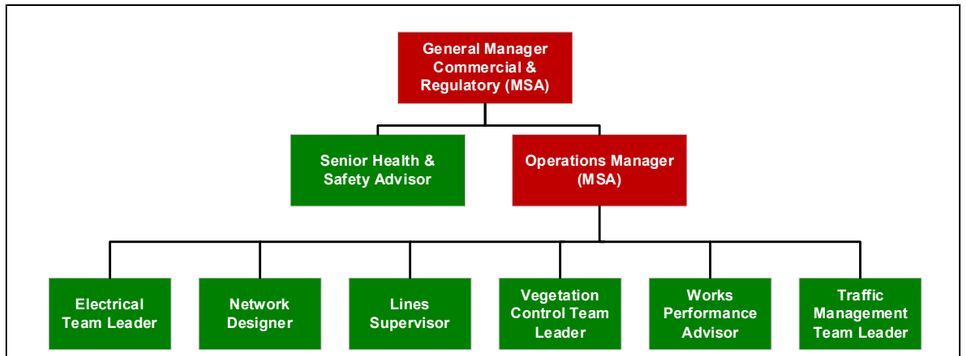


Figure 2-8: Field Leadership Structure of Centralines

2.8.4.6 *Outsourcing of Field Operations*

Centralines, on occasion, subcontracts work during times when demands on contracting resources cannot be met by the company's existing capacity. From time-to-time Centralines also directly engages other contractors when specialist capabilities are required. An example of this is substation design and related project engineering functions which are performed by the management service provider's Network Investment and Delivery Team, when required.

2.9 Significant Assumptions made in the RAMP

In preparing the RAMP for a ten-year planning period, it is necessary for a number of assumptions to be made. Centralines' planning assumptions fall into five main categories:

- macro-environmental assumptions
- assumptions about actions of regulatory bodies and other external entities
- governance and ownership assumptions
- asset management planning assumptions, and
- price inflator assumptions.

The significant assumptions under each of these categories are described below.

2.9.1 Macro-environmental Assumptions

Assumption	Significance of the Assumption
No change to the structure of the electricity industry	Centralines' Business Plan and AMS are premised upon the assumption that the current industry structure will not change and that Centralines will remain an electricity distribution business. Changes to the structure of the industry could alter one or more of the input parameters to the RAMP which would have a fundamental impact on the plans disclosed.
No significant changes in customer demands for power quality and reliability	Centralines' customer service levels are an important input into the RAMP. They have been formulated based upon Centralines' understanding of customer needs through quality regulation and Centralines' own customer engagement. Significant changes in the needs of customers in relation to power quality and reliability due to a societal or technological shift could result in Centralines' AMOs and customer service levels becoming out-of-date. Any subsequent update to these could have an impact on the RAMP.
No material uptake of distributed energy resources on Centralines' networks over the planning period	Technologies such as solar photovoltaic (PV) cells and batteries have the potential to reshape the electricity industry if they reach a level of efficiency that makes them complementary to or even a credible alternative to centralised generation, transmission, and distribution. Research on these technologies strongly suggests that they will have an impact on the business, but that material uptake will occur beyond the planning period of the RAMP within Centralines' network footprint. Most of the assets that will be installed during the ten-year planning period will however last far beyond that time (some assets have a life of up to 80 years). It is therefore essential that the asset investment decisions being made now consider the prospect of future uptake of distributed energy resources. Research in this area is discussed further in the context of constraint forecasting in Section 4: Network Development Plans.

Table 2-11: Macro-Environmental Assumptions

2.9.2 Assumptions About Actions of Regulatory Bodies and Other External Entities

Assumption	Significance of the Assumption
Industry regulators employ and strengthen incentives for innovation and excellence in asset management	Centralines strongly believes that best-practice asset management combined with an appropriate regulatory framework will lead to long-term benefits for electricity consumers. Industry regulators should therefore incentivise EDBs to innovate and continuously improve asset management outcomes. Centralines' asset management service provider continues to invest in innovation which will generate long-term asset management benefits in the form of reduced capital expenditure with the potential for improvements in service quality for consumers. Current regulatory settings and approaches are ineffective in promoting businesses to take a long-term view. Additional short-term costs associated with innovation and research and development are not rewarded by long-term payoffs to the regulated business. Accordingly, innovation and research and development activities are undertaken despite regulation, not because of it.
The regulatory environment provides sufficient investment certainty for Centralines	To make the decision to invest, Centralines requires sufficient certainty that we will be able to make a return on that investment over the asset life (up to 80-years). Industry regulators have an important role to play in balancing the long-term interests of consumers with creation of a regulatory environment that is sufficiently certain for businesses to invest. The RAMP assumes that the regulatory environment will adapt to threats posed by consumer uptake of alternatives, including electrification and that this uptake does not result in undue risk to Centralines.
Availability of field personnel capability and capacity to deliver the RAMP	Suitably resourced and competent field personnel, both in-house and external, will be necessary for the delivery of the RAMP. It is assumed that such a resource will continue to exist within Centralines' network footprint during the planning period. It is recognised however that increased demand from unprecedented customer connection growth means Centralines will need to augment its current workforce capability through productivity improvement, recruitment and contracting in external resource. In Centralines' estimation there are two main sources of uncertainty relating to this assumption. Firstly, will the industry continue to be able to attract people into electrical, line mechanic, fitting and technician apprenticeships at a rate that keeps up with people leaving the workforce and to cater for increasing work volumes? Secondly, will contracting businesses be able to match the pace of change in electricity distribution network technology and upskill and supplement their existing workforce?

Table 2-12: Assumptions about Actions of Regulatory Bodies and other External Entities

2.9.3 Governance and Ownership Assumptions

Assumption	Significance of the Assumption
Centralines remains wholly owned by the Central Hawke's Bay Consumers Power Trust (CHBCPT)	A key assumption in Centralines' organisational strategic plan is that the business remains wholly owned by the CHBCPT. This assumption is therefore also relevant in the AMS and asset management planning. A change in ownership or ownership structure could alter key input parameters to the AMS including the: • asset management strategy and objectives • availability of funding to deliver on asset management plans, and • risk appetite. It is likely that asset management plans would need to be re-formulated entirely. Under the Trust Deed of the CHBCPT, every five-years the Trustees are required to initiate a review of ownership of shares in Centralines. The ownership review is taking place this year.
Constant appetite for risk at a corporate level	Risk to the business is an input into all decision-making. Risk associated with decisions is assessed against the company's risk appetite which is managed across the following categories: • financial • legal and contractual • reputational and customer • business operations and disruption, and • people, staff, and contractors. Centralines' risk appetite is premised upon the company's internal and external environments. Changes in these environments could result in a shift to a more aggressive or conservative stance. A material change to Centralines' risk appetite would systematically affect Centralines' asset management plans.

Table 2-13: Governance and Ownership Assumptions

2.9.4 Asset Management Planning Assumptions

Assumption	Significance of the Assumption
Accuracy of constraint forecasts	Constraint forecasting provides a view of the expected future outputs required of Centralines' assets. It is therefore a fundamental part of both the Asset Management Strategy and Objectives, and asset management planning elements of the AMS. Traditionally, the key uncertainty in constraint forecasting has been the rate of growth in the number of dwellings and businesses of different types connected to the network. To address this type of growth Centralines has drawn upon demographic and economic data and projections to create constraint forecasts down to the level of 11kV feeders to enable development of robust asset management plans. This is the approach that has been taken in formulating the AMP and it is assumed that this will be fit-for-purpose for the first half of the planning period. Centralines believes that uptake of distributed energy resources (DER) and electric vehicles and ongoing improvements in energy efficiency will render such constraint forecasting approaches incomplete. Future demand forecasting will need to be able to forecast not only the quantity of consumers, but also their energy use intensity by segment, degree of distributed energy resource uptake, and be able to provide information down to the level of low voltage (400V) reticulation.
Situational awareness of the network continues to improve, and this delivers opportunities to defer, curtail or otherwise reduce network expenditure without resulting in increased network risk	Centralines has been installing sensors and automated switches on their network for some time, and Centralines' adoption of their service provider's, Advanced Distribution Management System (ADMS) provides enhanced situational awareness. This, coupled with Unison's maturing asset management capability, is enabling better asset management decisions to be made, and ultimately will result in more efficient and effective asset management. The theme of improved situational awareness leading to better asset management remains a key plank in Centralines' asset management strategy, and it is assumed that progress will continue to be made. The network expenditure forecasts in this RAMP assume that Centralines improved situational awareness does continue to enable the managed deferral of investment. The key factor that could lead to a difference between the expenditure forecasts disclosed and actual information recorded in future disclosures is if the situational awareness developed reveals that Centralines earlier understanding of the condition of a material quantity of assets was optimistic. In such a situation, this would in fact require investment to be brought forward, rather than deferred. Although this would have an unfavourable financial impact, it would mean that underlying network risk would be reduced.

Table 2-14: Asset Management Planning Assumptions

2.9.5 *Price Inflator Assumptions*

Capital and operational expenditure forecasts reported in the RAMP have been indexed for future years to take into account wage and material price inflation.

The rates used are provided in Table 2-15, presented as a forecast annual rate of inflation.

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
CapEx	3.78%	2.61%	2.0%	1.97%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
OpEx	3.78%	2.61%	2.0%	1.97%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%

Table 2-15: Price Inflator Assumptions

2.10 Overview of the Asset Management Strategy and Delivery

2.10.1 *Strategic Context*

Centralines' business environment is becoming increasingly uncertain due to a range of macro-environmental factors. An environmental scanning capability has been established to identify key issues which require a strategic response over a five to 15-year horizon. Figure 2-9 outlines some of the key trends and factors Unison is tracking, while Figure 2-10 and Figure 2-11 summarise 2023 environmental and energy industry trends and the likely direction these will take in 2024.

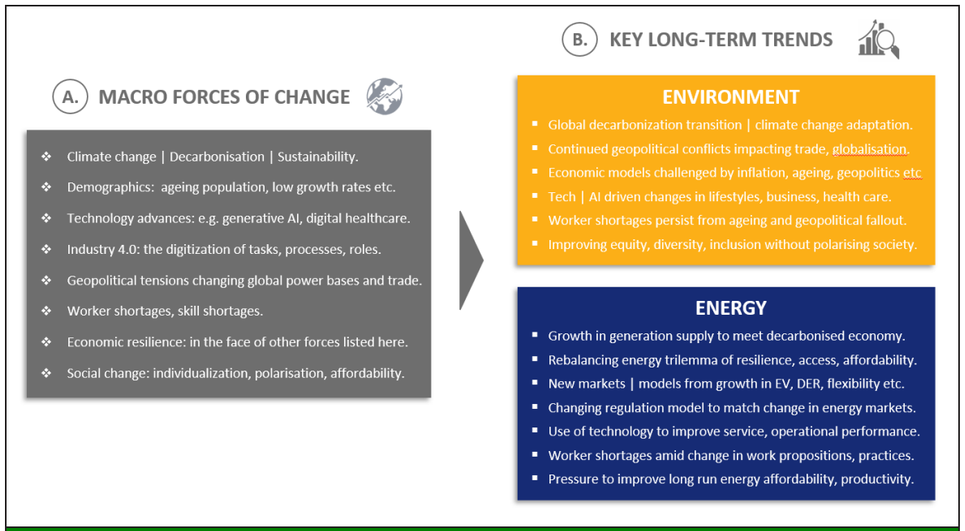


Figure 2-9: Macro Forces of Change

Figure 2-10: 2023 Environmental Trends & Likely Direction in 2024

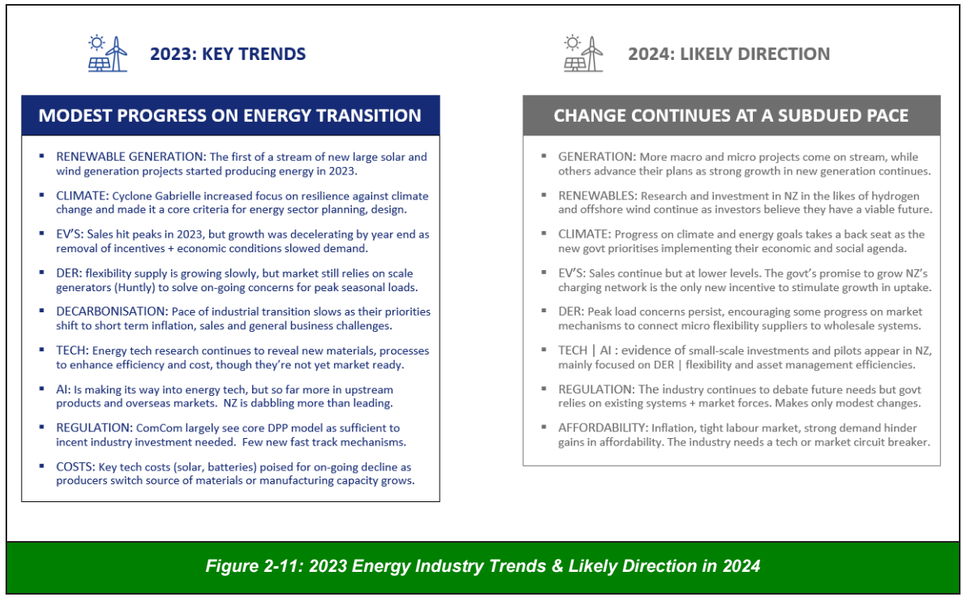


Figure 2-11: 2023 Energy Industry Trends & Likely Direction in 2024

Table 2-16 details external drivers, associated factors, and the potential implications for Centralines.

Driver	Factors	Implications
Climate Change	The UN 'Broken Record' report says even if the world meets all its pledges, there's only a 14% chance warming will stop at 1.5 degrees. Officials say NZ is not on-track to meet its first climate budget in 2025 and has 1.5 megatonne CO_2 gap to close. IEA sees strong, clean investment and policy but says, the pace is too slow and notes geopolitical disruption is a big risk. Ipsos research says 66% of New Zealanders expect to see severe climate impacts in their area over the next 10 years. World agreed at COP28 to transition from fossil fuels but also acknowledged climate change needs a much wider solution.	• The closer climate targets get, and bigger the gap, the stronger public and government pressure for change will get. • The energy industry is making progress but still needs to ask itself if it can do more or do it faster. • Public concern for climate change means there will be an expectation for support and role modelling from Centralines and its sector. • Transitioning to clean fuels is only part of the solution. IEA etc encourage a wider focus on food and forests etc.
Economy	Inflation appears about to peak and reserve banks are signalling the first lowering of interest rates in 2024. But inflation is not beat, it will just be lower. NZ isn't expected to hit RBNZ targets until sometime in 2025. Geopolitical conflicts are also having a strong influence on economies and trade and may even reignite inflation. This all impacts the government's tax take and amount they can spend, which again subdues economic activity. Migration is the NZ's bright spot but won't save us from modest economic growth in 2024 and maybe beyond.	• Managing costs will remain a challenge for the electricity industry with pressure on the industry to unlock efficiency gains. • Many customers (residential, commercial) will remain under pressure and concerned about costs, including energy. • Customers will be cautious about new investment and only proceed if they must, or if they are confident of a long-term return. • There will be pressure on the government for an increased and more effective infrastructure spend.

Driver	Factors	Implications
Artificial Intelligence	Development continues to infiltrate everyday life, work. • images and video creation vs text • more digital and physical robotics • autonomous vehicles • designs and build products vs just supporting them (i.e. via chatbots). Use in business process is growing and AI can become more of a co-pilot for workers vs replacing their jobs. Concern AI will drive misinformation in 2024 elections. More governance will ground the hype as the world wrestles with ethics of AI, and concentration of supplier power. Investors expect a return from AI. Bulk of future value will be in scaling AI uses vs innovating what it can do.	• The hype will continue, and Centralines needs to look beyond that to figure out AI's best use for itself and its customers. • Vast potential to enhance business operations in ways that can help Centralines' staff and develop rather than replace them. • To retain public trust, Centralines will need to use AI ethically. • Rapid pace of development means its influence can change quickly and Centralines will need to adapt with some agility. • Data access, quality and usability is still the key to all AI.
Transport	EV growth has been following the typical 'S' curve that in time leads to exponential scale and critical mass. 2023 saw both peak sales and a rapid slowing of the rate of sales growth in both overseas and NZ vehicle markets. The next cohort of buyers on the S curve are more price sensitive and are feeling the current economic squeeze. Public charging network growth is lagging vehicle growth. Long term battery costs, and manufacturing capacity support growth but the slowing pace puts climate targets at risk. ICE isn't dead. Toyota are investing big in ammonia' engines which could yet be part of transport's transition.	• Transport has been called out as a key to carbon targets and its transition to clean energy is important to all. • EV growth provides both new demand and new sources of load management to the energy sector. • It's getting closer to the sort of critical mass when the network impact is real and will need active solutions. • Centralines will need to keep preparing for its arrival and developing solutions even if EV growth slows for a year or more. • Centralines needs to be ready to adapt quickly if policy changes to try and accelerate that growth and hit climate targets.
Solar Energy	Advances in materials, process and manufacturing is expected to drive	• Plan for and expect more growth in the next decade. Potentially

Driver	Factors	Implications
	the long-term decline in costs and improve features. Countries are 'onshoring' to reduce global dependence on China who currently dominate the solar tech, and manufacturing. Global investor confidence is strong. In NZ large scale farms continue to be planned, built or commissioned. • Genesis-Lauriston 63 MW • Energy Farms-Opunake 110 MW • Lodestone -Kaitia etc 230 MW • Meridian- Swannanoa 130 MW Residential attractiveness and, economics are also improving. Growing combination with batteries increases the potential role and influence solar has on New Zealand's electricity system.	even more than envisaged in BCG estimates. • Investors will expect support to connect facilities to the electricity system and maximise their efficiency and value. • Consider priority to be given in wider network objectives. • Growth adds pressure for change in market models and regulation around flexibility, peak load management. • Watch for a change and uplift in residential penetration which could reach a critical mass at some point.

Table 2-16: External Driver Analysis

2.10.2 Strategy Overview

The focus of Centralines' strategy is aligning and keeping abreast of the changing energy landscape. The accelerating drive for decarbonisation combined with improving economics of DERs, such as solar photovoltaics and batteries as well as managing the organisation sustainably are the key factors on which Centralines' strategy is based. Centralines believes that the timing and magnitude of the impact that DER will have are inherently unknowable. However, it is clear widespread uptake of these technologies would impact the organisation's existing business model.

Centralines' Management service provider has aligned their business with ISO 50001 through the development of an AMS. In their view this represents best practice and will support Centralines' overall asset management aspiration of delivering best practice asset management decisions. This will allow Centralines to respond to the changing environment with flexibility and ease.

The Strategy Framework presented in Figure 2-12 represents the current practice, in which:

- AMOs are established based upon external and internal context and alignment with the principles of the Asset Management Policy is ensured.
- Measures are developed to quantify the gap between where current asset performance and asset management capability levels lie in relation to where they must be for the AMOs to be realised.
- Asset management strategies are developed to close gaps, considering the lifecycle of the assets.
- Strategies are implemented in asset management plans as well as through separate improvement initiatives.

- Implementation progress is reported on as required, and major projects are reviewed upon completion. Externally facilitated assessments of asset management maturity against good practice standards (formerly PAS 55:2008; now ISO 55001:2014), and expert review of key pieces of work are employed as quality assurance mechanisms.

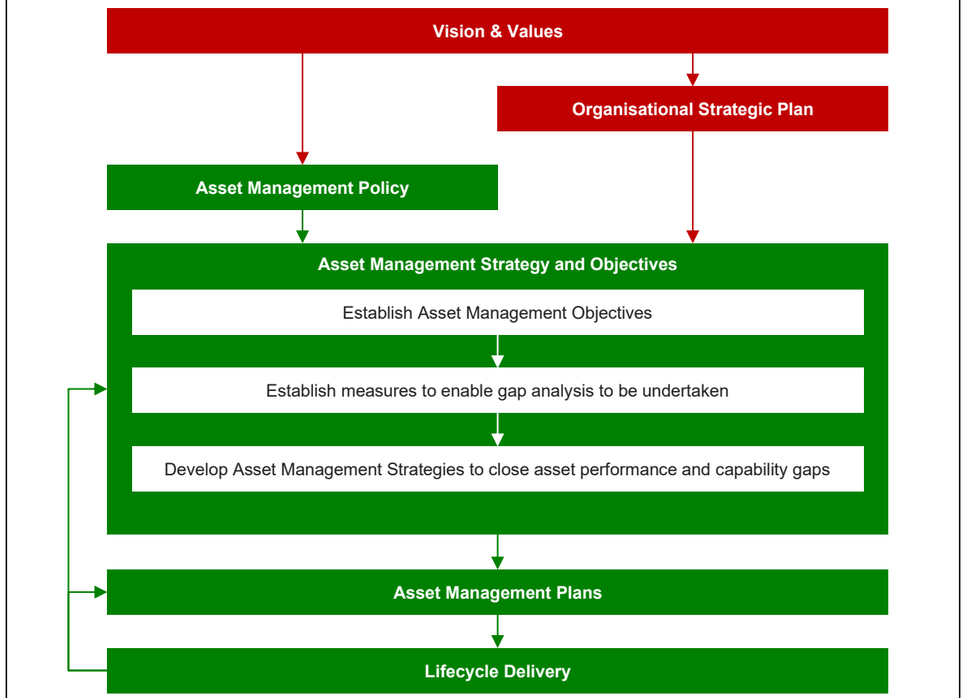


Figure 2-12: Asset Management Strategy and Objectives in the Asset Management System

2.10.3 Processes of the Asset Management System

The AMS ensures the effective implementation of the asset management strategy. The AMS comprises three primary processes:

- Asset Management Planning
- Lifecycle Delivery, and
- Continual Improvement.

These processes ensure:

- the asset strategy considers the lifecycle of the assets
- the AMOs drive investment programmes, including the AMP, and
- costs, risks, and system performance are controlled through the implementation of the AMP.

2.10.3.1 Asset Management Planning

Planning within the AMS is required to provide assurance that:

- risks to the asset portfolio are managed, and
- opportunities for improvement are realised.

Centralines' planning processes are well-defined and embedded in the business. They utilise asset information and apply risk management principles to ensure that decision-making is robust and fact-based. The outputs are plans that specify clear tasks and projects to be initiated and scheduled to maximise the efficiency of resource utilisation.

The desired outcome of Centralines' asset management planning is the achievement of the AMOs specified in Table 2-3. These objectives are explicitly selected to align with Centralines' Asset Management Policy and Corporate Strategic Objectives therefore ensuring alignment with Centralines' asset management planning processes.

The key output of the planning process is the Asset Management Plan (AMP). This contains the details of all major work required on the Asset Portfolio over a ten-year planning horizon. This work includes:

- specialist and complex capital projects
- customer requested work
- asset refurbishments, and
- long lead-time corrective work including pole replacements.

All work proposals submitted to the AMP must meet certain information requirements, including assessment against the AMP risk schema. This ensures that an acceptable balance between cost, risk and performance can be reached, and therefore resources are efficiently and prudently deployed.

The AMP is supplemented with other plans including:

- plans for routine asset maintenance and vegetation management, and
- contingency and business continuity plans that are developed collaboratively by Centralines' service provider.

Centralines utilises the majority of their asset management service providers' asset planning system which is represented in Figure 2-13 below.

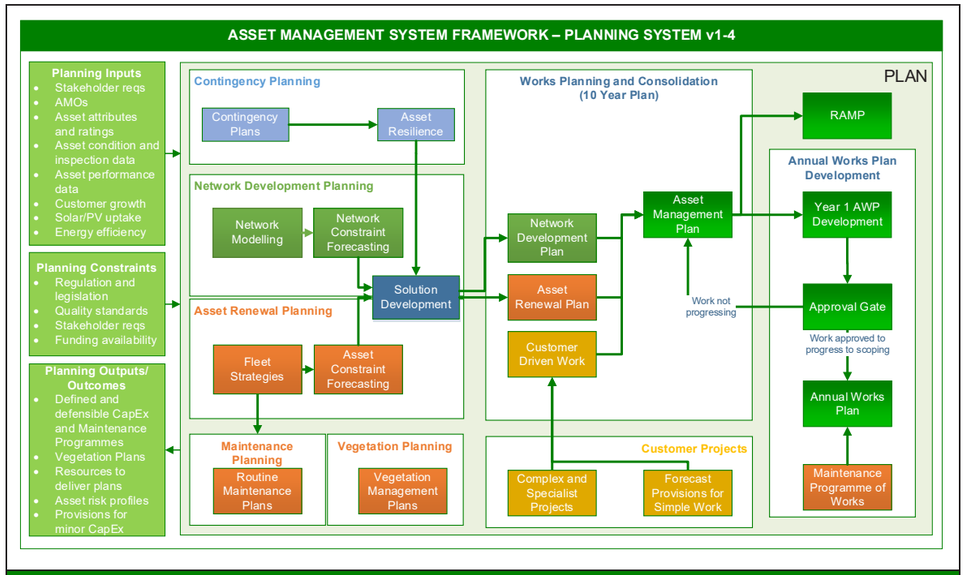


Figure 2-13: AMS Planning Systems

Figure 2-13 identifies eight sub-processes of the planning system, and these are outlined in Table 2-17.

Process	Description
Network Development Planning	• Model a range of possible future demand scenarios and identify the most plausible ones to utilise for planning. • Quantify the risk associated with capability constraints in the asset relating to capacity, security and voltage compliance over a ten-year planning horizon based upon selected demand scenario(s). • Specify project proposals to address high priority risks and submit these proposals to the AMP.
Asset Renewal Planning	• Identify and quantify risks in the asset portfolio relating to asset condition. • Specify project proposals to address high priority asset condition risks and submit these proposals to the AMP. • Specify project proposals to improve the resilience of the asset portfolio based upon requirements from enterprise risk management and contingency planning processes.
Customer Projects	• Forecast the volume of customer simple work over the planning period and submit proposed provisions to the AMP. • Identify any complex and specialist projects requested by customers and submit these proposals to the AMP.
Works Planning and Consolidation	• Coordinate the annual works planning and consolidation process. • Manage the AMP including supporting teams to provide submissions and closing out completed work.

Process	Description
	• Quality assure submissions to the AMP to ensure submissions are complete and technically sound. • Manage the optimisation of the AMP to ensure efficiencies in the plan are realised. • Coordinate reporting, management review and approval processes, and provide information to support the formulation of the RAMP. • Provide contracting service providers with a forward view on the required resources and capabilities to deliver the AMP.
CapEx Programme Establishment	• Establish the annual CapEx programme for the following financial year by identifying the CapEx projects and budget provisions required. • Introduce fiscal constraints (if any) and strategic investment criteria. • Initiate the project scoping process to ensure that work requests are available on a timely basis to: o Centralines' Operations Team, and o other contracting service providers.
Maintenance Planning	• Establish annual routine maintenance plans including: o preventive maintenance programmes, and o asset inspection and monitoring programmes.
Vegetation Planning	• Establish the annual plan for the management of vegetation, including trees encroaching on the line corridor, that represent a risk to the asset portfolio.
Contingency Planning	• Establish contingency plans to mitigate the impact of high impact, low probability (HILP) events, should they occur. • Through Enterprise Risk Management (ERM) processes supported by AMS stakeholders, identify, and quantify resilience risks in the asset portfolio.

Table 2-17: Planning System Sub Processes

2.10.3.2 Lifecycle Delivery

Lifecycle Delivery comprises activities required to support the:

- sustainable operation and technical integrity of Centralines' network, and
- effective and efficient implementation of asset management plans.

In this way, Lifecycle Delivery can be thought of as '*assets doing things and things being done to assets*' through the asset lifecycle. There are three key issues dealt with in Lifecycle Delivery:

1. Specification and Control of Work — the key activities that support network operations and implementation of asset management plans, and how they are controlled, and risks are managed to ensure consistent quality outcomes.
2. Technical Change Management — how change in the Asset Portfolio is controlled and technical integrity is maintained so that assets remain safe and fit to deliver the operational outcomes specified in the AMOs.

3. Outsourcing — the framework by which Centralines assures itself that the Lifecycle Delivery activities that are conducted either in house or in part by third parties meet the quality requirements of the AMS.

Centralines utilises the majority of their Asset Management service provider's Lifecycle Delivery Framework which is shown in Figure 2-14 below.

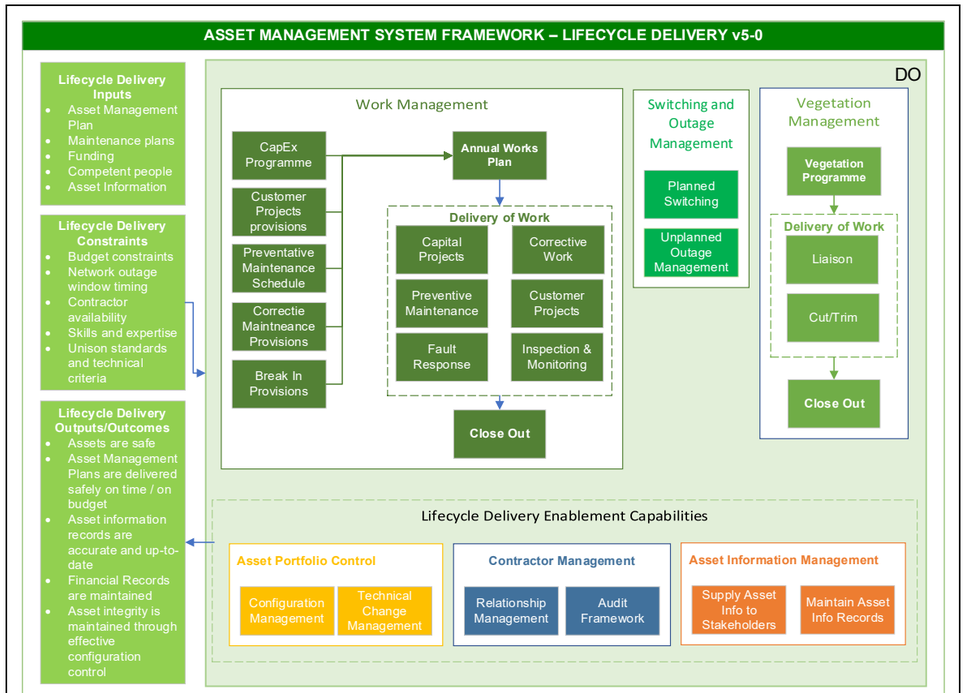


Figure 2-14: Lifecycle Delivery Framework

Further detail on the key processes within the Lifecycle Delivery Framework is provided in Table 2-18.

Process	Description
Work Management	The process by which project and maintenance work is undertaken across the network. It assists resources to be productive and effective in maximising equipment safety and reliability.
Vegetation Management	Identification of vegetation issues and securing of landowner consent for cutting work through the liaison process. Cutting and trimming of vegetation to ensure line corridors are clear.
Contractor Management	Utilise existing in-house resources or engage appropriately competent and cost-effective, outsourced contracting service providers to undertake work on assets. Issue work to internal resources or contracting service providers. Measure performance of contracting service providers under contractual frameworks.
Switching and Outage Management	Develop switching plans to enable work on the network to proceed. Identify the occurrence of unplanned outages and coordinate the response, including dispatch of first responder.
Asset Portfolio Control	Maintenance of the configuration of the Asset Portfolio to ensure integrity. Technical Change Management processes to ensure that risk of change in the Asset Portfolio is effectively managed.
Asset Information Management	Record asset information generated from Lifecycle Delivery activities within asset information systems including OneEnergy and GIS. Respond to requests for asset information from Centralines' teams, contracting service providers, and third parties such as other utilities.

Table 2-18: Key Processes in the Lifecycle Delivery Framework

2.10.4 Continual Improvement

To ensure Centralines is well positioned to support the organisation to respond to the possibility of disruption in the electricity sector, continual improvement in all facets of asset management is vital.

The Continual Improvement Framework encompasses the 'Check' and 'Act' of the PDCA cycle within the AMS. Therefore, the purpose of these processes is to:

- monitor and evaluate the performance of assets, asset management, and the AMS
- deliver corrective action to respond to non-conformity and provide clear guidance on requirements for preventive action, and
- ensure that changes made to the AMS are controlled and result in sustained improvement.

The Continual Improvement Framework developed by their management service provider has been adopted by Centralines and is shown in Figure 2-15 below.

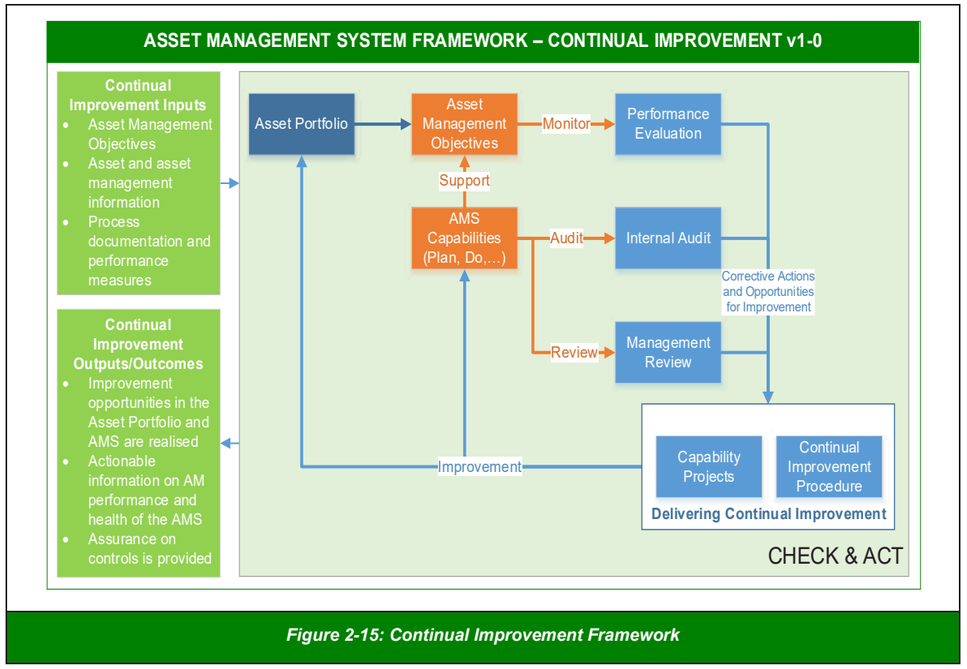


Figure 2-15: Continual Improvement Framework

Further detail on the processes supporting continual improvement is set out in Table 2-19.

Process	Description
Performance Evaluation	• Establish SMART performance indicators based upon the AMOs. • Manage the performance evaluation framework to measure performance against the performance indicators over time. • Report on performance to stakeholders.
Internal Audit	• Deliver a risk-based internal audit programme against the processes of the AMS to ensure that risk controls are effective. • Provide feedback to teams on the alignment of processes with ISO 55001, asset management strategy, and the effectiveness of controls. • Identify corrective actions that are required. • Identify opportunities for improvement.
Management Review	• Systematic periodic review of the status and performance of key elements of the AMS to ensure situational awareness of the management team.

Capability Projects	• Deliver strategic change projects to establish and enhance the capabilities within the AMS.
	• Deliver effective change management including:
	  ○ engagement of people and teams
	  ○ training and competency development

Process	Description
	○ controlled documentation, and ○ change to information systems.
Continual Improvement Procedure	• Provide and manage a register of required corrective actions and opportunities for improvement (CI Register). • Risk prioritise work to be undertaken and provide a planning function. • Commission solutions to improve the asset portfolio and AMS and close-out projects in the CI Register, including: ○ improving identification of non-conformity and targeting of corrective action, and ○ implementing preventive actions to avoid non-conformity in the first place. • Quality assure the work undertaken and verify its effectiveness in addressing the non-conformity or opportunity for improvement.

Table 2-19: Key Processes Supporting Continual Improvement

2.11 Overview of Systems and Information Data Management

2.11.1 Introduction to Asset Information Strategy

Information, including asset information is a key enabler of the AMS, as shown in Figure 2-2. Information is utilised by Centralines to support:

- the delivery of the key processes of the AMS, being
  - planning
  - lifecycle delivery
  - continual improvement, and
  - consequential reporting requirements,
- communication to a range of stakeholders including both internal employees and contractors, and
- awareness of all internal stakeholders of the current performance of both the Asset Portfolio and the AMS, allowing them to be effective in their role as it is relevant to asset management.

Alignment between the key types of information and the asset management processes are shown in Table 2-20.

AM Processes	Information Available
Policy and Governance	• Corporate strategic objectives • Capital investment strategy • Risk management framework • Regulatory requirements • Asset management policy principles • Communication plans

AM Processes	Information Available
Asset Management Planning	• Asset management objectives • Proposals for work within the AMP • Asset class strategies including technical standards • Asset health reporting and asset risk information
Lifecycle Delivery	• Asset work histories • Geospatial information about assets • Asset risks • Schedules for work on assets • Maintenance programmes and procedures • Asset master data and information generated through technical change management processes • Budgets for work to be done and project cost information • Work delivery reports
Continual Improvement	• Continual improvement opportunities registered • Performance against asset management objectives • Results of internal audits and external assessments • Outcomes from management reviews • Project plans for capability projects

Table 2-20: Asset Management Processes Alignment to Information Requirements

To ensure that information is fit for purpose to meet the requirements above, Centralines asset management service provider has developed AMS-0007 AMS Asset Information Strategy. The strategy has four top-level goals:

1. know what asset information is required to perform each asset management capability
2. acquire the asset information required in a way which optimises the cost, risk, performance trade off
3. know the state (quality, completeness, timeliness, and accuracy) of the asset information we have, and
4. be able to make informed decisions about asset information that appropriately balance the trade-off between asset performance, cost, and risk.

2.11.2 Responsibility for Asset Information

Centralines' management service provider's Asset Information Governance Group (AIGG) is a committee established to implement the Asset Information Strategy. They set direction and priorities for asset information improvement. The AIGG is primarily composed of Centralines' management service provider's Networks and Operations Managers and is chaired by their Asset Management Systems Manager.

The transactional processes for managing asset information are the responsibility of the Asset Information Team within the Asset Management Team. This includes:

- the maintenance of asset attribute information following asset change, and
- management of asset location and connectivity data within Unison's geo-spatial information system (GIS).

The responsibility for the maintenance and management of asset information systems and the supporting hardware resides with Centralines' management service provider's Information Management Group (IMG). There is close collaboration between the Asset Information team and IMG to ensure alignment between the teams. IMG has a representative on the Asset Information Governance Group (AIGG).

2.11.3 Identification of Asset Information Requirements

Subordinate to the Asset Information Strategy are the Asset Information Management procedures. These procedures are summarised in Figure 2-16, where each block represents a procedure implemented in the organisation. Together the asset information strategy and procedures represent a well-integrated system for managing asset information to support the achievement of Centralines' AMOs.

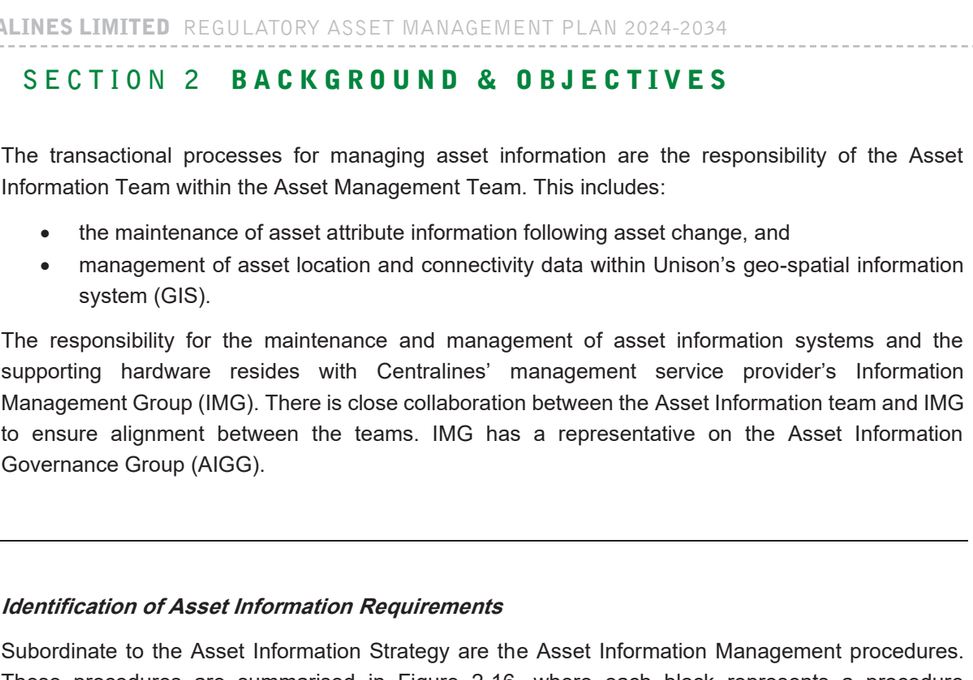


Figure 2-16: Asset Information Management Procedures

The 'Plan Asset Information Improvements' procedure is utilised to identify new asset information requirements to support the lifecycle management of assets. Diagrams for this procedure, and the following procedure that sees new requirements implemented are provided in Figure 2-17 and Figure 2-18.

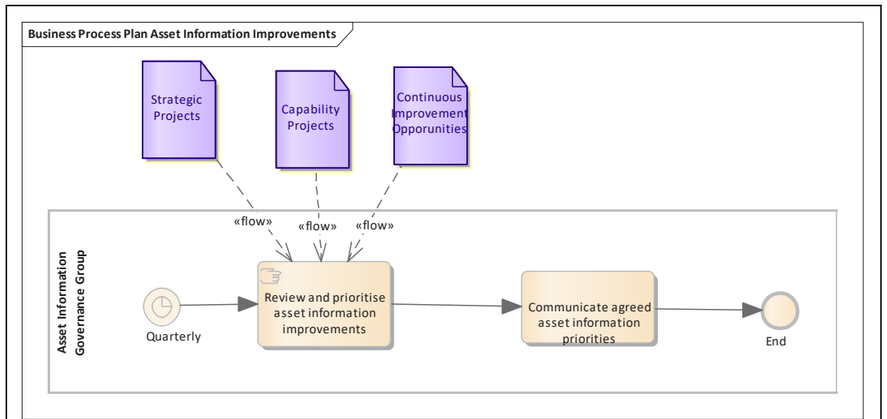


Figure 2-17: Plan Asset Information Improvements

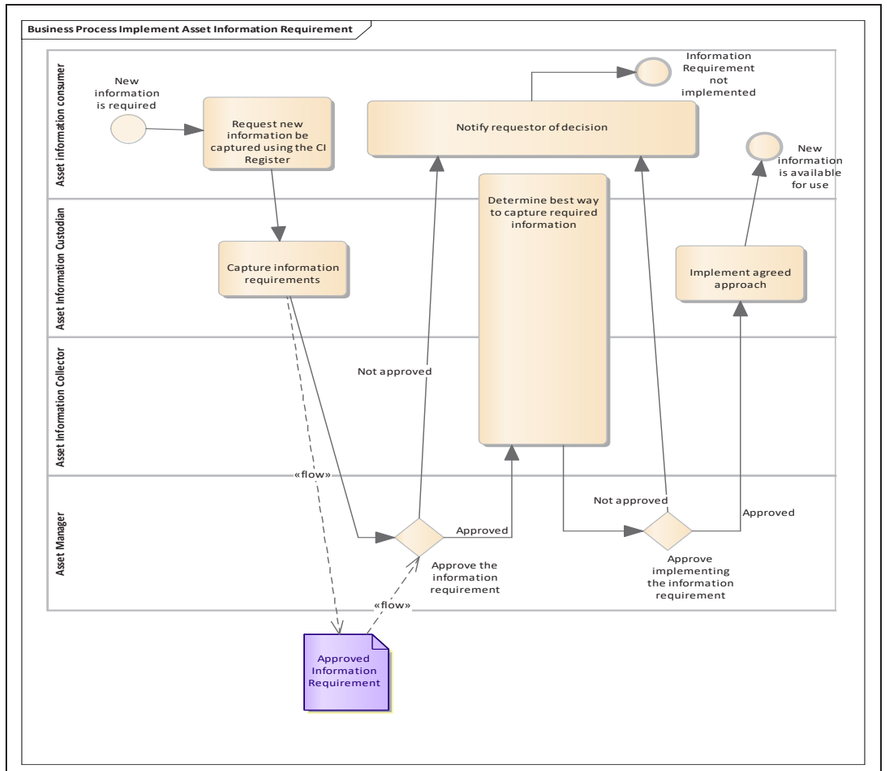


Figure 2-18: Implement Asset Information Requirement

2.11.4 Information Systems

Centralines and their management service provider utilise a number of systems as repositories for information relevant to asset management, as set out in Table 2-21.

Name of System	Description
OneEnergy EAMS	OneEnergy is Centralines' management service provider's Enterprise Asset Management System (EAMS). OneEnergy houses the asset register which is the master repository for asset data and stores both current attributes as well as historical information. The asset data that OneEnergy masters is available for viewing within the GIS. OneEnergy also provides works management functionality. This integrates with the asset register module of OneEnergy allowing the recording of asset management interventions against asset records.
GE Smallworld GIS	The Geo-spatial Information System (GIS) stores records of network assets according to their location and electrical connectivity. This includes the electrical connectivity within substations. Design and estimation of CapEx projects is mastered in the Design Manager module of the GIS.
Schneider ADMS	The Advanced Distribution Management System (ADMS) integrates SCADA with a suite of advanced distribution management and grid optimisation applications. Network operation and control includes managing and communicating with assets in the field along with tools to enable operators to make informed decisions based on the current network status. Network optimisation and analysis provides the ability to optimise the state of the network. It identifies the optimal configuration to reduce electrical losses and maximise asset utilisation.
Bentley and Meridian Drawing Management	The Meridian drawing management system integrates with the Bentley Microstation Computer-Aided Design (CAD) tool to manage the versioning and renditions of CAD drawings. It gives CAD technicians the functionality to work on projects and then publish finished drawings. The drawings are discoverable to the business via the Meridian web client.
Master Data Services	Microsoft Master Data Services (MDS) is a system for storing relatively static but important information used by key downstream systems and processes. It is primarily used for storing manufacturers' specifications of electrical and physical characteristics of equipment models.
Microsoft 0365	Microsoft 0365 is the system used to track, manage, and store documents while keeping a record of the various versions created and modified by different users. SharePoint 2016 stores-controlled documents including standards, which will be progressively moved to 0365 during 25/26.
OSISoft PI Historian	PI is the primary tool used for the storage and analysis of time series data generated by telemetered network devices. Each data point for each piece of equipment is assigned a unique reference tag against which data is recorded and can be accessed. Interfaces are developed between PI and other

Name of System	Description
	applications in use in the business. Examples of data recorded in PI include switching events, transformer oil temperature, and current and voltage values at measuring points.
Exonet	Centralines stand-alone financial system which is totally independent from Centralines' management service provider's financial system.
Gentrack	Gentrack is Centralines' management service provider's Customer Relationship Management (CRM) information system. It provides a platform for consumption and ICP based network billing. Gentrack also manages the new connections and decommissioning process, network tariffs and registry updates.

Table 2-21: Information Systems

These systems provide essential data for risk assessments, investment decision-making and performance monitoring functions in the AMS. A range of tools are used to both report from these data sources and to extract data for further analysis.

2.11.4.1 Integration of Information Systems

The integration of the key information systems set out above is shown in Figure 2-19. The arrows represent the flow of data and information from one system to another.

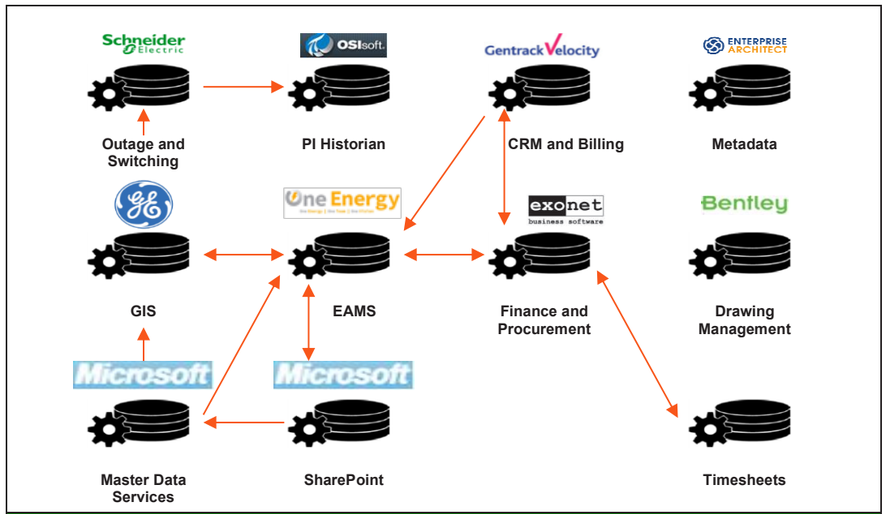


Figure 2-19 Integration of Information Systems

2.11.5 Assuring the Quality and Accuracy of Asset Management Information

To assure that data is suitable for achieving Centralines' business goals, from time-to-time it is necessary to review the state of the data required to support those goals. This requires a series of activities to check, and if necessary, remedy the data quality. Figure 2-20 provides a generic process for completing this data assurance.

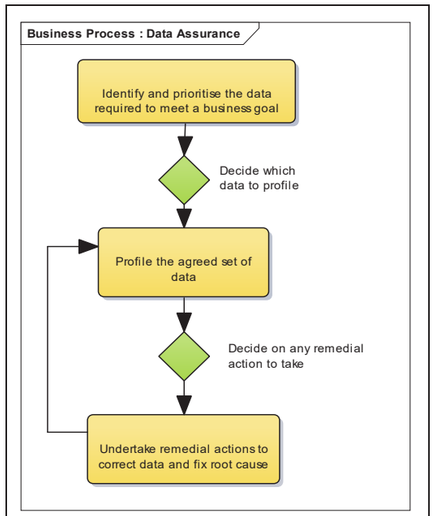


Figure 2-20: Data Assurance Process

When new data requirements are established, part of the procedure for implementing these new requirements is to establish a means of monitoring the quality of the information on an ongoing basis. This is part of the 'Determine best way to capture required information' block in Figure 2-18.

2.12 Asset Management Processes

2.12.1 Asset Inspections

Inspections and monitoring programmes involve the acquisition of information about the condition of assets to enable informed, risk-based decisions about their ongoing maintenance and eventual replacement to be made. As well as this, physical inspections are in some cases required by legislation to provide assurance of the safety and integrity of Centralines' network.

The primary objectives of inspection and monitoring programmes are to:

- Ensure the safety of assets:
  - many of Centralines' assets are situated in public areas, meaning regular inspection is required to ensure that assets are free from damage and are secure, and
  - meet legislative requirements.

- Improve network reliability:
  - reduce unplanned/forced outages affecting customers
  - enable planned repairs or replacement prior to an asset failing in service, and
  - improve network performance.
- Extend asset life:
  - reduce permanent damage to parts, components, and equipment, and
  - detect and correct problems as they occur.
- Optimise lifecycle costs and increase return on capital invested:
  - reduce repair and operating costs
  - prevent catastrophic costs
  - reduce overtime
  - reduce parts inventory requirements, and
  - reduce insurance premiums.

Inspections and Monitoring Programmes generate both measurement data as well as metadata, i.e., data about the measurement data. The measurement data may be:

- qualitative data, e.g., condition grades
- single measurements
- tables of measurements, e.g., over an observation period
- commentary about what was observed, e.g., a patch of rust, or
- photographs and other digital imagery.

The metadata may include:

- where the measurements were collected from — this can be either where samples were obtained from or where direct measurements were taken
- when the measurements were collected — the date and time and ambient conditions, and
- who collected the information — the individual, the monitoring device, the specific measurement instrument utilised.

An overview of how an Inspection and Monitoring Programme is developed is provided in Figure 2-21.

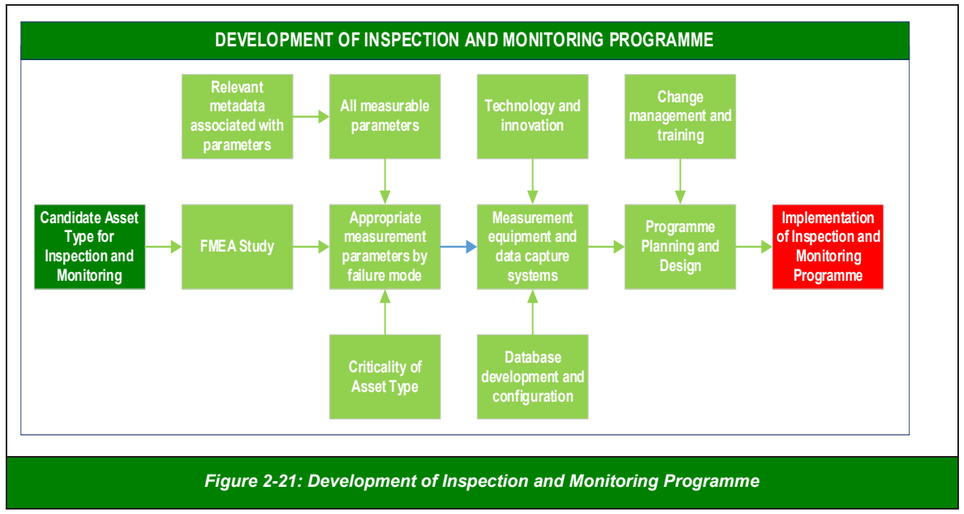


Figure 2-21: Development of Inspection and Monitoring Programme

When considering the inspection and monitoring approach for a class of equipment, consideration is given to the following factors:

- the design and characteristics of the asset, including:
  - why inspection and monitoring are required, and
  - what should be monitored in terms of failure modes and consequences
- information about techniques and methodologies that can be used for advanced inspection and condition monitoring, including library information and what is available in the marketplace
- how measurements can be utilised to support:
  - condition assessment, and
  - estimation of remaining life, and
- the benefits of the overall approach in terms of:
  - return on investment, and
  - savings associated with prevention of failure.

Where people are required to obtain data, they require Standard Maintenance Procedures (SMPs) which specify the:

- tasks
- quality to be achieved, and
- expectations of what they will deliver when undertaking these tasks.

Examples include the need for cleanliness when taking oil samples for dissolved gas analysis and where to position probes for partial discharge assessment.

Centralines' current inspections and monitoring programmes are detailed in Section 5.

2.12.2 Preventative Maintenance

Preventive maintenance is work undertaken to ensure that assets continue to fulfil their intended functions in their present operating context, resulting in their service life being optimised. Preventive maintenance procedures are developed through a well-defined analysis involving considerations of the equipment, how it is being operated, and its environment. The successful implementation of preventive maintenance programmes results in the following benefits:

- assets perform consistently through their service lives
- the rate of unexpected failures is minimised
- the service life of assets is optimised
- safety performance is improved with workplace injuries avoided
- SAIDI and SAIFI performance impacts are minimised, and
- legislative requirements are satisfied, including safety, environment, and sustainability.

The last benefit is a function of not only avoiding unscheduled downtime but also optimising the percentage of time an asset is in downtime.

Preventive maintenance procedures and their application are an essential means for Centralines to assure safe and reliable operations.

The development of preventive maintenance procedures requires:

- an assessment of asset criticality that ranks the criticality of individual assets and components, based on relevant financial and non-financial business consequences of failure modes
- a routine means of identifying which procedures need review or assets are missing appropriate tactics, based on the consequences of equipment failure modes
- the ability to track progress on completing and implementing the procedures needed
- an adequate level of expertise to undertake reviews of the procedures
- engagement with field resources and equipment specialists to cross-check and advise improvements to preventive maintenance procedures, and
- a timely and efficient process to update systems with improved procedures.

The effectiveness of preventive maintenance procedures is assessed by equipment work history and considers the:

- rate of urgent repairs and frequency and duration of scheduled downtime
- availability of condition information so that condition-based actions may be triggered as needed, and
- proportion of preventive maintenance is adequate when compared to the need for repairs and condition-based interventions.

2.12.3 Network Development Planning Processes

2.12.3.1 Planning Network Development Projects

The central objective of Network Development Planning (NDP) is striking the optimal balance between risk, performance, and cost. The NDP process is repeated twice a year and incorporates improvement measures to ensure the best possible balance is achieved.

The purpose of NDP is to:

- identify risks in the network associated with changes or introduction of demand and / or generation on the network, and
- propose projects to address these risks.

The NDP process comprises Network Constraint Forecasting and Solution Development activities.

The inputs, outputs, and workflow for both processes are outlined in their respective documents:

- AMS-1006 Network Constraint Forecasting Process, and
- AMS-1008 Solutions Development Process.

The goal of Network Development Planning is to ensure that:

- at peak times customer energy/electrical needs are met without compromising the operating parameters of the asset, i.e. thermal overload, and
- customers receive compliant quality of supply, e.g., voltage.

To achieve this, the risk profile is determined. This involves:

- estimating the timing of one or more constraints arising in the asset, and
- quantifying the impact of the constraint in financial terms.

This process enables the Network Planning team to prioritise the development of solutions to resolve the constraints, where the risk is sufficient that action should be taken to control it.

Solutions are developed by identifying the most optimal control for the risk, considering the key asset management drivers of cost, risk, and performance. The most optimal solution may not require direct action by Centralines, but instead may involve the engagement of other parties to enable the successful resolution of the constraint.

When an appropriate solution has been identified, this solution is proposed as a capital project to the AMP, or work is issued out of an OpEx provision.

2.12.3.2 Process for Delivery of Capital Projects

The implementation of Centralines' Capital Projects follows the process shown in Figure 2-22.

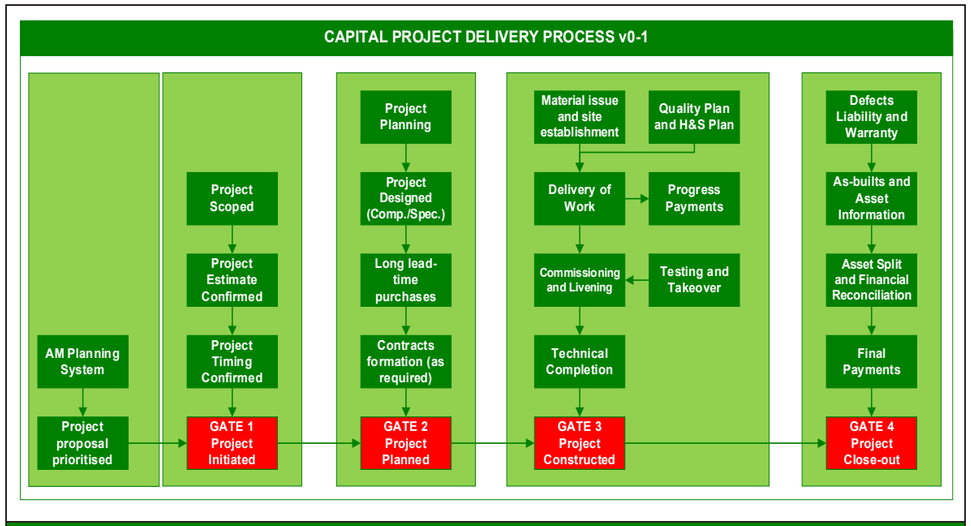


Figure 2-22: Process for Delivery of Capital Projects

This process requires:

- a project scope / solution to be registered in the AMP with a reasonable estimate of, costs, resources, and required time frames. The project benefits must be quantified and be credible / justified before being technically approved.
- a project may only proceed to detailed planning once the requirement has been approved by delegated managers of Centralines' management service provider.
- resources to plan a project may be internal or external but, will represent a cost incurred in the project budget.
- the project be planned and approved before the budget period in which it starts, or special approval to expedite the work must be approved by the General Manager Commercial & Regulatory.
- when a project is expedited, a risk assessment is required to determine potential problems with its scope, budget, or timeframe for delivery. Once project costs are approved, the project forms part of the budget for the site in the year in which it commences, and the detailed scope must cover the potential impact on operations.

- the project has an appointed project manager. The project manager is:
  - required to resource the project, secure resources, confirm the budget and the project schedule
  - accountable for the safety of the project, its environmental compliance and management of the safety plan
  - accountable for the quality of the project and the strategy for commissioning the works at the completion of technical work
  - to develop a communications plan, advising stakeholders of the progress of the work plus any requirement for their involvement, and
  - is accountable for keeping the risk register up-to-date and recording all risks and their controls as they become known. This can include all environmental, operations and sustainability risks.
- a commissioning plan be communicated to all relevant stakeholders well before the scheduled time of commissioning to seek their feedback and agreement. When the project requires change to the configuration of the site, the commissioning plan will cover how the information systems and site procedures will be updated.
- review of the quality of the project, including its planning and delivery plus the outcomes in terms of assets and systems commissioned before the project can be closed out.

2.12.4 Measuring Network Performance

Unison's Advanced Distribution Management System (ADMS) is utilised for controlling and measuring Centralines' network and performance. The process for utilising this system is set out in Figure 2-23.

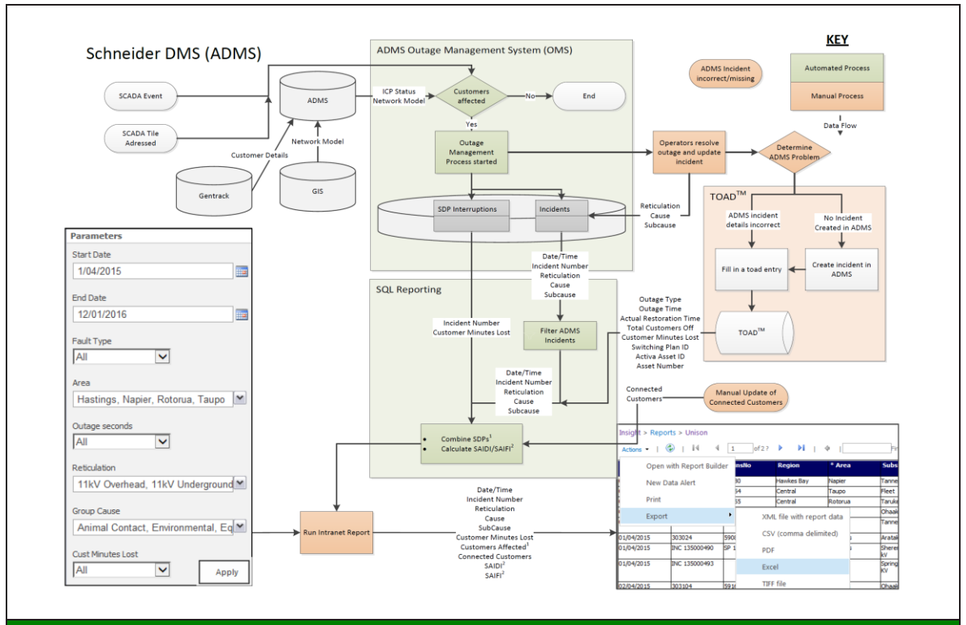


Figure 2-23: Measuring Network Performance

2.13 Documentation, Controls and Review Processes

2.13.1 Documentation

Centralines has adopted and utilises the majority of their management service provider's suite of controlled documents to support effective management of the organisation. The controlled document system and associated processes ensure that documents are accessible, current, and appropriate for use. The controlled document system is a specially managed environment within the document management system, DocStore. This system is managed by the Centralines' management service provider's Technical Writer Team Leader.

A controlled document may be modified, or a new one added when a gap is identified to define a specific asset management process or procedure.

Internal audit processes require access to these documents. They are used to baseline any difference between what Centralines intends by way of asset management, and what is happening within the organisation.

Corporate documented information is held within the controlled document system in the following categories:

- Asset Management System governance (AMS series)
- Commercial (CM series)
- Contracting (SD series)
- Corporate (FC series)
- Emergency Plans
- Health and Safety (HS series)
- Information Management (IT series)
- Network Standards (NK series)
- Operating Standards (OS series), and
- Standard Operating Procedures (SOPs).

Key asset management documents are managed within the AMS series including the:

- Asset Management Policy
- Asset Management Objectives, and
- subordinate documents that specify AMS processes, such as Asset Management Planning.

These documents along with key technical standards, plans and reports are set out in the AMS document framework in Figure 2-24.

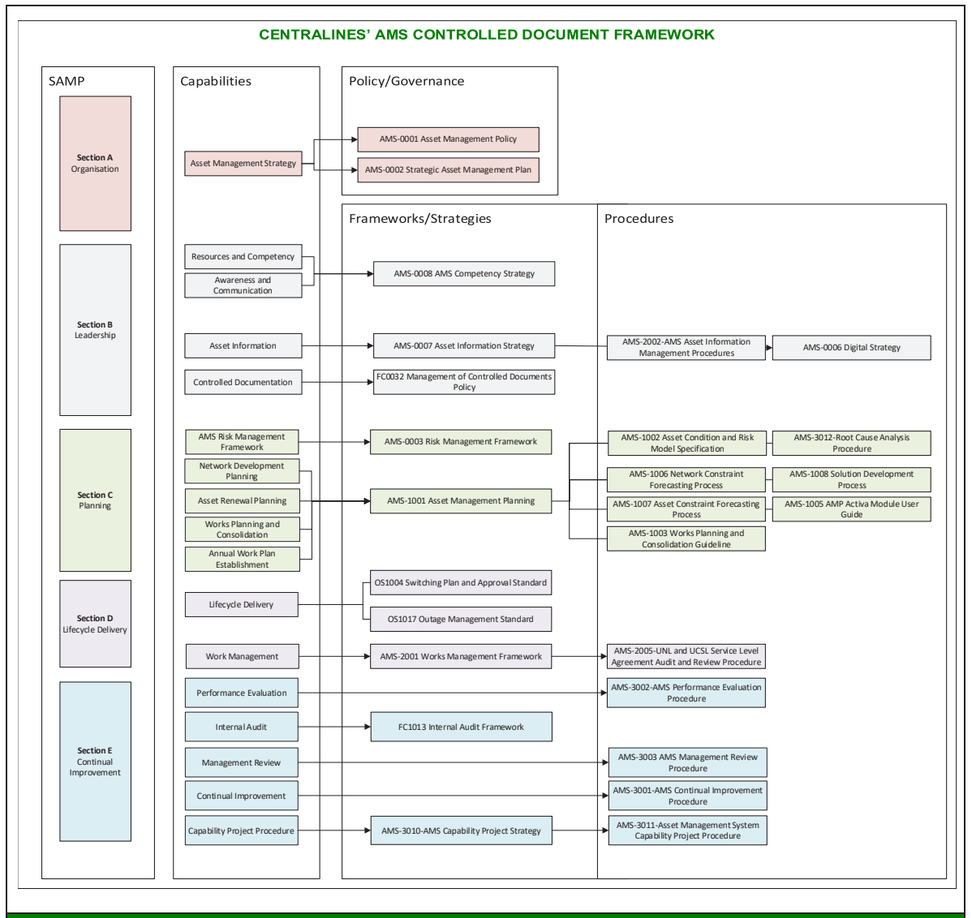


Figure 2-24: AMS Documentation Framework

Technical documents including network policies, standards and operating standards are managed within the NK, OS, and SD series. These documents are supplemented with SOPs and safety alerts, which are often issued as an interim measure before changes are incorporated within primary technical documentation.

The Centralines' management service provider's Networks Standards Team, within the Asset Management Team is responsible for supporting and enabling Networks and Operations to produce efficient documentation. They assist to develop associated communication and training requirements

Centralines' management service provider's Technical Writer Team Leader chairs the AMS Controlled Document Governance Group. This group ensures AMS controlled documents are fit for purpose and resources are efficiently deployed to manage these documents.

Registration of issues in the Continual Improvement (CI) Register is the process by which the Network Standards Team is notified of a requirement to add or adjust technical documents.

Documents of external origin relevant to the AMS fall into four main categories. The management process for each category is specified in Table 2-22.

Document Category	Management Process
External standards	Managed through a subscription with SAI Global for the standards required by the Centralines' Management service provider's Networks Standards Team.
Legislation, regulation, and codes of practice	Managed through a subscription with LexisNexus by the Management service providers' Senior Legal Counsel. Centralines' employees are advised to access current legislation and subordinate regulation through the New Zealand Government service at www.legislation.co.nz.
Contracts, consents, easements, and other binding documents	Managed through service providers contracts register by the Administration Team.
Original equipment manufacturer (OEM) documentation	Electronic records are stored with the project file on DocStore by the responsible Project Engineer. New hardcopy and legacy documentation are filed in the East Wing of the service provider's offices by the service provider's Asset Specialists Technical Lead.

Table 2-22: Documents of External Origin

2.13.2 Control of Processes

Control of processes within the AMS is achieved as follows:

- Each process has an assigned process owner who is accountable to the Chief Operating Officer for its:
  - specification and documentation
  - implementation
  - monitoring for compliance, and
  - continual improvement.
- The process owner is supported through delegation to the management representative for the AMS.
- Subject Matter Experts (SMEs) who are people who work in the process, are called upon to develop, review and improve controls such as standards and procedures, training materials and performance measures.
- The process owner has the mandate to initiate a review of process controls as well as internal audit of processes. Each of these tasks is delegated to the management representative for the AMS, for coordination. A review of process controls involves an evaluation of whether the controls are appropriate, given the risk profile of the process. Internal audit involves an assessment of how well the process is performing and whether procedures are being conformed to. The approaches to review of process controls and internal audit are set out in a simplified form in Figure 2-25.

These processes apply both to internal and outsourced processes of the AMS.

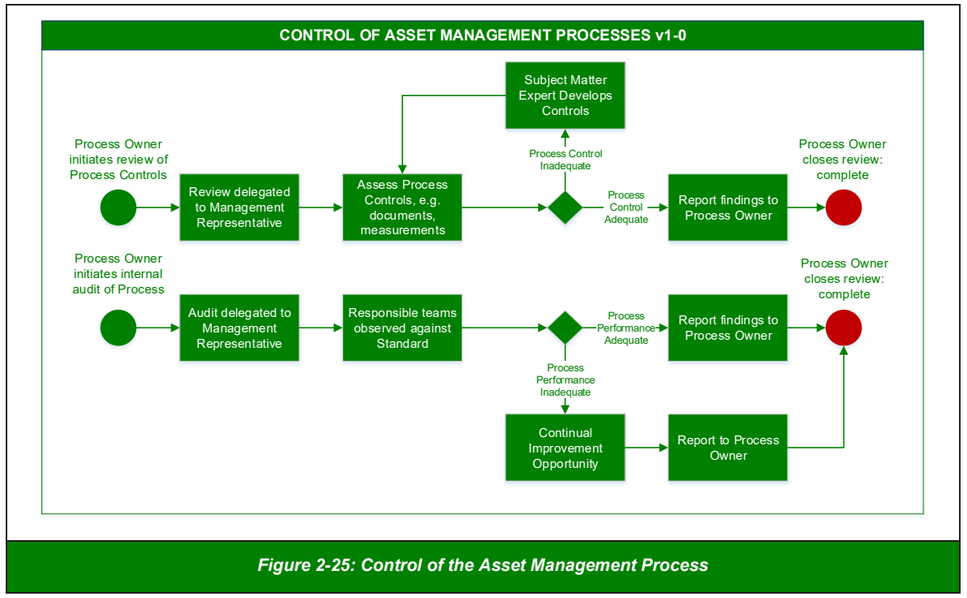


Figure 2-25: Control of the Asset Management Process

Where conformance issues or other process performance shortcomings are identified, then a continual improvement opportunity may be raised in the CI Register.

2.13.3 Management Review

Regular top management review of the various components of the AMS is undertaken to assure its ongoing fitness-for-purpose and effectiveness. The management service provider's Chief Operating Officer is responsible for management review, with coordination delegated to the service provider's AMS Manager. The process for management review is documented in AMS-3003 AMS Management Review Procedure.

The following items are subject to management review:

- the health of the AMS
- continuing suitability of the Asset Management Policy and the AMOs
- the SAMP
- changes in external and internal issues and risks relevant to the AMS
- incidents which have occurred and remedial actions that have been taken
- the AMP
- the Lifecycle Delivery performance including the quality of, and progress through work programmes
- the CI Register
- the performance of active capability projects
- outcomes from recent internal audits
- assessments and audits by external bodies
- customer and other stakeholder feedback including complaints
- recommendations for improvement including other factors, such as resources and training, and
- the performance of the Asset Portfolio, asset systems and individual assets.

The 15 items listed above are addressed through five management review meetings of varying frequency, as specified in Table 2-23.

Meeting	Frequency	Chair	Items Covered
AMS Governance Meeting	Annually	Chief Operating Officer	1, 2, 3, 4
AMP Review Meeting	Six-monthly	Network Investment and Delivery Manager	7
N&O Strategic Risk Committee Meeting	Quarterly	Asset Management System Manager	5, 6
Work Management Monthly Meeting	Monthly	Network Investment and Delivery Manager	8
Continual Improvement Meeting	Monthly	Asset Management System Manager	1, 9, 10, 11, 12, 13, 14
Network Performance Meeting	Monthly	Chief Operating Officer	5, 6, 14, 15

Table 2-23: Summary of Management Reviews

Meeting documents including briefing notes, performance information and minutes are stored within the management review SharePoint library.

2.13.4 Internal Audit

The Centralines' Business Management System Framework (BMSF) referred to earlier includes a strong audit capability within the internal assurance framework. This framework from Centralines' management service provider is applied to some of the key business processes that have been adopted and are being used by the organisation. In the AMS, this capability has three main purposes.

1. Assess the competency of the various teams in their functional roles within the AMS.
2. Test conformance to planning and decision-making processes and the execution of activities.
3. Provide a basis for identification of corrective actions and continual improvement opportunities.

The Internal Audit process is set out in Figure 2-26.

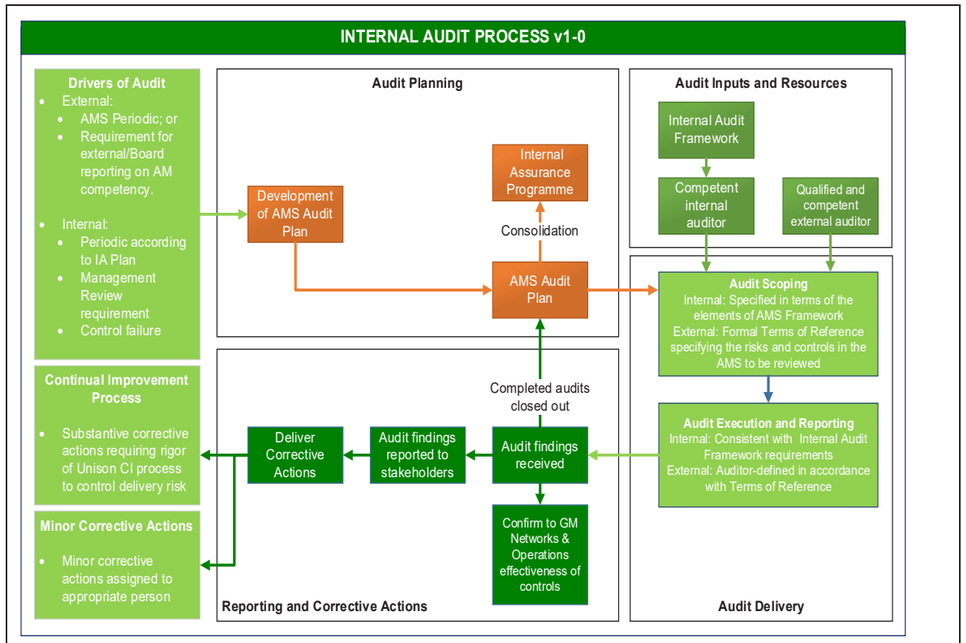


Figure 2-26: Internal Audit Process

A three-year internal audit plan has been developed collaboratively between the service providers. The Group Risk & Sustainability Manager is responsible for enterprise internal assurance, and the Asset Management System Manager is the management representative for the AMS.

This plan links planned internal audits to the controlled documentation specifying processes of the AMS, and the relevant clause of ISO 55001.

Internal audits are scheduled based on the risks associated with those processes. Higher risk processes are audited more frequently than those of a lower risk. The likelihood risk is based on the results of the previous audit, while the consequence risk is based on the criticality of the overall process to Centralines' AMS and strategy. Other information is also included in the risk assessment where relevant.

The scope of the periodic internal audit is limited to conformance of teams with the specified processes. This is appropriate given that the processes have been developed to meet the requirements of ISO 55001, and that this is tested through the external audit process for certification to the standard.

For each of the internal audits specified in the plan, audit tools are progressively being developed. The audit tools include checklists and open-ended questions that probe the effectiveness of the implementation of processes and systems, and support capabilities, including training and resourcing.

2.13.4.1 Reporting of Internal Audit Outcomes

The outputs of all internal audits are presented to the Asset Management System Manager. If the Asset Management System Manager is satisfied that the audit has fulfilled the Audit Plan or Terms of Reference the report will be issued to relevant stakeholders, including the Group Risk & Sustainability Manager. Where the driver for the audit has been Executive Management, the Board or external stakeholders, the Asset Management System Manager will engage with the Chief Operating Officer to establish the next steps for reporting.

Process owners of the process being audited are responsible for raising corrective actions and opportunities for improvement in the CI Register.

2.14 Communication of Asset Management Strategy and Objectives

Asset management outcomes are communicated formally at Centralines through the mechanisms listed below.

- the Business Plan is made available to all employees. This document contains a comprehensive review of asset management outcomes for the previous financial year
- on a quarterly basis a business-wide performance brief is delivered by Management
- the Operations Manager holds a monthly Team Brief where topical asset management outcomes are presented and discussed
- automated network performance and reliability reports are sent to key employees daily detailing year-end targets, current performance, and forecasts for SAIDI and SAIFI, as well as recent outages
- incidents and urgent changes to SOPs are drawn to the attention of all employees through safety alert bulletins. These are sent to all employees by email, pinned up in visible locations around the office and managers are required to communicate details to employees
- relevant asset management outcomes are included within employee performance frameworks which are reviewed and discussed six-monthly with their manager and
- favourable and important asset management outcomes are celebrated within the organisation.

2.15 Determination Reference Mapping Table

Section 2 Reference		Determination Reference
2	Background and Objectives	3.2
2.1	Introduction to this Section	
2.2	Context of the Organisation	
2.3	Overview of Centralines' Asset Management System	
2.4	Purpose of the Regulatory Asset Management Plan (RAMP)	3.3 including 3.3.1, 3.3.2, 3.3.3, 3.3.4, 3.3.5
2.5	Planning Period of the Regulatory Asset Management Plan	3.4
2.6	Date of Director Approval	3.5
2.7	Centralines' Stakeholders	3.6 including 3.6.1, 3.6.2, 3.6.3, 3.6.4
2.8	Accountabilities and Responsibilities for Asset Management	3.7 including 3.7.1, 3.7.2, 3.7.3
2.9	Significant Assumptions made in the RAMP	3.8 including 3.8.1, 3.8.2, 3.8.3, 3.8.4, 3.8.5, 3.9
2.10	Overview of the Asset Management Strategy and Delivery	3.10
2.11	Overview of Systems and Information Data Management	3.11 3.12
2.12	Asset Management Processes	3.13 including 3.13.1, 3.13.2, 3.13.3
2.13	Documentation, Controls and Review Processes	3.14, (i), (ii), (iii), (iv), (v)
2.14	Communication of Asset Management Strategy and Objectives	3.15, (i), (ii)

Table 2-24: Determination Reference Mapping Table

SECTION 3 //// TORU

SERVICE LEVELS

CENTRALINES
LIMITED

2024-34 REGULATORY ASSET MANAGEMENT PLAN

CONTENTS

3. SERVICE LEVELS

3.1 Introduction to this Section

Centralines uses monitoring, measurement, and analytical processes to evaluate its asset management performance. This provides a check on whether stakeholder requirements are being met, and if therefore, value is being realised from the asset portfolio. It also supports continual improvement of the asset portfolio and Asset Management System (AMS).

The Asset Management Objectives (AMOs) specified in Section 2 provide coverage of stakeholder requirements and expectations. They are therefore utilised as the basis for identifying what must be measured and monitored to ensure appropriate performance levels.

3.2 Performance Evaluation Overview

3.2.1 Purpose

The purpose of performance evaluation is to monitor key metrics to ensure the effectiveness, efficiency, performance, and continuous improvement of Centralines' AMS and related processes.

Performance evaluation includes determining:

- what needs to be monitored and measured
- the best frequency and method of measurement, and
- how and when the results will be analysed and evaluated.

Performance evaluation covers the evaluation and reporting of:

- asset performance
- asset management performance, and
- the effectiveness of the Asset Management System (AMS).

In summary, performance evaluation reports on whether the needs and expectations of stakeholders of the AMS are met.

3.2.2 Principles

Listed below are the requirements that must be adhered to for all performance evaluation activities.

1. Reports must be provided regularly on performance trends of the AMS to:
    - the General Manager Commercial & Regulatory — as the role with overall accountability for the AMS, and
    - all employees who contributed to the data being reported on.
2. There must be a specified use for all information collected. This will be to support an approved AMS measure.

3. All relevant Centralines employees and contractors must support the collection of performance evaluation measures approved by the General Manager Commercial & Regulatory. Those impacted by data collection for performance evaluation of the AMS will be provided with an explanation of the use and purpose of the data.
4. The collection of performance evaluation measures must be done in a way that minimises the impact on staff.
5. A balanced set of measures must be used to avoid skewing measures towards one outcome at the expense of another outcome. For example, focusing on network performance at the expense of cost.
6. Data captured for performance evaluation of the AMS must be aggregated so it is not used to measure the performance of individuals. It must not be linked to any Human Resources performance management system.

3.3 Performance Evaluation Procedure

The diagram in Figure 3-1 shows the overall process flow for performance evaluation along with the key inputs and outputs.

The overall process flow is applied to:

- establish the Performance Indicator Framework (PIF)
- develop performance measures
- report on AMS performance, and
- investigate/evaluate AMS non-conformity.

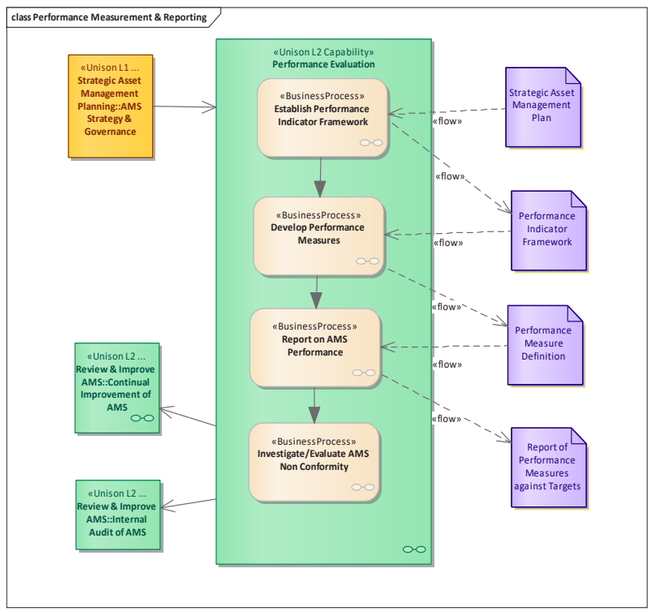


Figure 3-1: Performance Measurement and Reporting

3.3.1 Further Detail on Service Levels

The PIF provides a portfolio of performance indicators. These indicators can be used to conduct a quantitative measurement of AMS performance. It is intended that at any time a subset of these performance indicators will be implemented.

The General Manager Commercial & Regulatory selects performance indicators to be used over a given period. This selection is reviewed annually through the business planning process.

This approach:

- provides the General Manager Commercial & Regulatory with a basis for directing organisational attention towards issues of strategic importance
- supports the organisation to tailor the extent of performance measurement to the internal and external context of the organisation over time, and
- recognises performance measurement is a non-trivial cost to an organisation of Centralines' scale.

When the General Manager Commercial & Regulatory selects a new performance indicator for measurement, consultation with the relevant teams will be undertaken to decide details for the performance measure.

The General Manager Commercial & Regulatory must approve the confirmation of appropriate performance levels and measurement systems for each team. Measurement and reporting against the performance indicator will then be adopted into the Performance Measurement Framework.

Outcomes of performance measurement may include:

- initiation of an internal audit, and
- the subsequent implementation of recommended corrective actions.

3.3.2 Development of Performance Measures

When a new performance indicator is selected for measurement by the General Manager Commercial & Regulatory, the relevant teams are required to agree to:

- the performance level to be achieved
- the business rules for measurement, including responsibilities for measurement, where applicable
- the review process, where the performance is assessed using the agreed measures, and
- how corrective actions will be initiated to address any gaps, including through the continual improvement process.

3.3.3 AMS Performance Reporting

Reporting on the performance of the AMS:

- provides information on each team's capability to contribute to the achievement of the AMOs relevant to their function, and
- enables the organisation to effectively drive improvement through the Continual Improvement process.

3.4 Performance Measures

Centralines' performance measures are provided below and are aligned to the nine Strategic Asset Management Objectives, specified in Section 2. In respect to each performance measure that has been implemented, the following information is provided:

1. The measurement approach for the performance indicator.
2. Performance targets.
3. The justification for the measure and targeted level of performance.
4. Historical performance levels, where available.

3.4.1 Ensure People are Safe Around Centralines' Assets

3.4.1.1 Measurements

Number of asset failures resulting in an injury (serious harm) or fatality to the public.

Number of severity 1, field crew, health and safety internal audit findings.

Percentage of priority 1, 2, and 3 asset defects completed within required timeframes.

3.4.1.2 Performance Targets

Measurements	Targets 2024/25
Number of asset failures resulting in an injury (serious harm) or fatality to a member of the public.	0
Number of severity 1, field crew, health and safety internal audit findings.	0
Priority 1, 2, and 3 asset defects completed within required timeframes.	100%

Table 3-1: Performance Targets – Ensure People are Safe Around Centralines' Assets

3.4.1.3 Justification for Targeted Level of Performance

Ensuring the safety of Centralines' staff, contractors and members of the public is the most important priority in asset management. This objective aligns with and complements, the objectives of Centralines' Health and Safety Management System (HSMS) and Public Safety Management System (PSMS).

Any asset failure resulting in harm to members of the public, would be totally unacceptable and subsequently Centralines is totally committed to managing risks to ensure this does not eventuate.

The number of severity 1 findings from Centralines field crew internal health and safety audits is set at zero, as serious harm to any field staff member is again deemed totally unacceptable. Any severity 1 audit finding could indicate a potential process failure which would be a major concern and require investigation and corrective actions.

Priority 1, 2 and 3 asset related defects in the asset portfolio have the potential to cause harm to people and property. Once identified, these defects must be prioritised and actioned through existing processes to ensure they are corrected within the required timeframes.

3.4.1.4 Historic Performance

Financial Year Ending	Target	Actual	Target Met
2019	= 0	0	✓
2020	= 0	0	✓
2021	= 0	0	✓
2022	= 0	0	✓
2023	= 0	0	✓

Table 3-2: Historic Performance – Number of Asset Failures Resulting in Serious Harm or Fatality to Member of the Public

Financial Year Ending	Target	Actual	Target Met
2019	= 0	0	✓
2020	= 0	0	✓
2021	= 0	0	✓
2022	= 0	0	✓
2023	= 0	0	✓

Table 3-3: Historic Performance – Number of Severity 1 Non-Conforming Field Crew Internal Health and Safety Audit Findings

Historical performance for priority 1, 2, and 3 asset defects followed up within required timeframes is a new measure. It is expected, following the implementation of the new EAMS and once Centralines has adopted the associated processes, this data will be available and reported on.

3.4.2 Deliver a Reliable and Compliant Electricity Supply to Customers

3.4.2.1 Measurements

Statement of Corporate Intent (SCI) unplanned SAIDI target.

SCI unplanned SAIFI target.

Number of annual, verified power quality complaints.

3.4.2.2 Performance Targets

Measurements	Targets 2024/25
SCI unplanned SAIDI target.	< 62.83
SCI unplanned SAIFI target.	< 3.16
Number of annual verified power quality complaints.	≤ 5

Table 3-4: Performance Targets – Deliver a Reliable and Compliant Electricity Supply to Customers

3.4.2.3 Justification for Targeted Level of Performance

Electricity is an essential service. Stakeholders, customers, and regulators expect Centralines to provide a reliable supply, that meets agreed service levels and all legislative requirements.

While no longer required to meet regulated quality targets, stretch unplanned SAIDI and SAIFI targets (which are lower than the regulatory limit would have been) were developed and included within Centralines' Statement of Corporate Intent (SCI). These targets ensure that there is a sustained focus on continuous improvement and ensuring a reliable electricity supply is provided to customers.

Current targets for the number of verified power quality complaints are based on the historic annual performance of Centralines. The processes being utilised for Network Development Planning (referred to in Section 5 of Centralines' RAMP) will over time result in a reducing likelihood of power quality issues on the network. It is anticipated such issues are unlikely to occur with any frequency by the end of the planning period. This assumes that there is no significant change to patterns of demand and energy use intensity.

3.4.2.4 Historic Performance

Financial Year Ending	Target	Actual	Target Met
2021	< 62.83	38.46	✓
2022	< 62.83	68.64	x
2023	< 62.83	72.81	x

Table 3-5: Historic Performance – SCI Target for Unplanned SAIDI

Financial Year Ending	Target	Actual	Target Met
2021	< 3.16	1.49	✓
2022	< 3.16	1.645	✓
2023	< 3.16	2.2	✓

Table 3-6: Historic Performance – SCI Target for Unplanned SAIFI

3.4.3 *Improve the Customer Experience Rating for Asset Management Services*

3.4.3.1 *Measurements*

Percentage of planned shutdowns finishing outside notified outage windows.

Centralines responses not completed within Utilities Disputes (UDL) time limits.

Timeframe to complete standard low voltage customer connection.

Timeframe to complete investigation of power quality issue.

3.4.3.2 *Performance Targets*

Measurement	Target 2024/25
Percentage of planned shutdowns finishing outside notified outage windows.	< 15%
Centralines responses not completed within Utilities Disputes (UDL) time limits.	0
Timeframe to complete standard low voltage customer connection.	< 15 business days
Timeframe to complete investigation of power quality issue.	< 20 business days

Table 3-7: Performance Target – Improve the Customer Experience Rating for Asset Management Services

3.4.3.3 *Justification for Targeted Level of Performance*

While a requirement to ensure the asset portfolio remains fit for purpose, planned shutdowns are often disruptive and inconvenient to customers. To minimise this disruption and allow customers to prepare appropriately, adherence to notified outage windows is very important.

UDL offers a service to resolve complaints that have been unable to be resolved between utilities such as Centralines and their customers. The UDL resolution process prescribes time limits for responses to customer complaints which Centralines seeks to meet in all cases to ensure any issues are resolved in a timely manner.

Delivery of and adherence to a schedule of standard low voltage customer connections is important to both the reputation of Centralines and to provide assurance and confidence to customers that a supply will be available within agreed timelines.

When power quality issues are raised, there is an expectation these issues will be investigated and resolved efficiently within agreed timeframes.

3.4.3.4 *Historic Performance*

Financial Year Ending	Target	Actual	Target Met
2020	0	0	✓
2021	0	0	✓
2022	0	0	✓
2023	0	0	✓

Table 3-8: Historic Performance – Centralines Responses Not Completed Within Defined UDL Time Limits

3.4.4 *Improve the Financial Performance of the Asset Management Plan without Compromising Network Performance and Asset Integrity*

3.4.4.1 *Measurements*

Network CapEx is within ±10% of total budget.

Network OpEx is within ±10% of total budget.

3.4.4.2 *Performance Targets*

Measurements	Targets 2024/25
Network CapEx	< ± 10%
Network OpEx	< ± 10%

Table 3-9: Performance Targets – Improve the Financial Performance of the Asset Management Plan without Compromising Network Performance and Asset Integrity

3.4.4.3 *Justification for Targeted Level of Performance*

The investment requirements of Centralines' Asset Management Plan have a direct link to the cost and affordability of the service. Accordingly, all network investment must be prudent and effective. This applies to both CapEx and OpEx.

Less than 10% variance to the total CapEx and OpEx budgets is deemed an acceptable level of variance to support effective management of the organisation. This level of variance recognises the fact that there are uncertainties in the delivery of annual Network CapEx and OpEx programmes of work that cannot be completely managed down.

3.4.4.4 *Historic Performance*

Financial Year Ending	Target %	Actual	Target Met
2023	± 10	-19.7	x

Table 3-10: Historic Performance – Network CapEx

Financial Year Ending	Target %	Actual	Target Met
2023	± 10	3.9	✓

Table 3-11: Historic Performance – Network OpEx

3.4.5 Improve Delivery Performance of the Annual Works Plan

3.4.5.1 *Measurements*

Delivery of the annual network capital works programme.

Delivery of the annual planned network maintenance programme.

Delivery of non-standard customer projects outside of agreed scheduled date.

Number of severity 1 and 2 work practice and quality outcomes from internal field audits.

3.4.5.2 *Performance Targets*

Measurements	Targets 2024/25
Delivery of the annual network capital works programme	Programme completed in full
Delivery of the annual planned network maintenance programme.	Programme completed in full
Delivery of non-standard customer projects outside of agreed scheduled date.	0
Number of severity 1 and 2 work practice and quality outcomes from internal field audits.	0

Table 3-12: Performance Targets – Improve Delivery Performance of the Annual Works Plan

3.4.5.3 *Justification for Targeted Level of Performance*

The safe, efficient, and cost-effective delivery of Centralines' Annual Works Plans ensures that network risks are managed appropriately and that assets will remain fit for purpose to deliver electricity distribution services safely and effectively.

Delivery of and adherence to a schedule of non-standard customer projects is important to both the reputation of Centralines and to provide assurance and confidence to customers that projects will be delivered as agreed.

The number of severity 1 and 2, non-conforming internal audit findings of work practices and quality outcomes is set at zero as any significant quality breaches that could lead to major incidents are deemed unacceptable.

3.4.5.4 Historic Performance

Financial Year Ending	Target	Actual	Target Met
2019	≤ 0	0	✓
2020	≤ 0	0	✓
2021	≤ 0	0	✓
2022	≤ 0	2	x
2023	≤ 0	2	x

Table 3-13: Historic Performance – Number of Severity 1 and 2 Non-Conforming Internal Audit Findings of Contractor Work Practices and Quality Outcomes

3.4.6 Improve the Asset Management Capability to Support the Development and Implementation of the Asset Management Strategies and Plans

3.4.6.1 Measurements

Delivery of the Asset Management Capability Plan.

Centralines' asset management service provider (Unison) maintains ISO 55001 certification.

3.4.6.2 Performance Targets

Measurements	Targets 2024/25
Delivery of the Asset Management Capability Plan.	100%
Centralines' asset management service provider (Unison) maintains ISO 55001 certification.	ISO 55001 Certification

Table 3-14: Performance Targets – Improve the Asset Management Capability to Support the Development and Implementation of the Asset Management Strategies and Plans

3.4.6.3 Justification for Targeted Level of Performance

Sufficient and appropriate asset management maturity, staff engagement, capability and continuous improvement is required to achieve AMOs. Continually improving Centralines' asset management maturity and capabilities is necessary to appropriately manage risk and respond to the challenges and opportunities created by a changing electricity sector.

3.4.6.4 Historic Performance

Financial Year Ending	Target	Actual	Target Met
2019	ISO 55001 Certification	ISO 55001 Certification	✓
2020	ISO 55001 Certification	ISO 55001 Certification	✓
2021	ISO 55001 Certification	ISO 55001 Certification	✓
2022	ISO 55001 Certification	ISO 55001 Certification	✓
2023	ISO 55001 Certification	ISO 55001 Certification	✓

Table 3-15: Historic Performance – Centralines' Asset Management Service Provider (Unison) Maintains ISO 55001 Certification

3.4.7 Improve the Communication of the Asset Management strategy to all Centralines' Teams

3.4.7.1 Measurements

Percentage of new Centralines staff who received an asset management induction within three months of commencing employment.

Percentage of Centralines staff receiving an annual asset management briefing.

3.4.7.2 Performance Targets

Measurements	Targets 2024/25
Percentage of new Centralines staff who received an asset management induction within three months of commencing employment.	100%
Percentage of Centralines staff receiving an annual asset management briefing.	100%

Table 3-16: Performance Targets – Improve the Asset Management Capability to Support the Development and Implementation of the Asset Management Strategies and Plans

3.4.7.3 Justification for Targeted Level of Performance

Sufficient and appropriate staff engagement is critical to ensure the success of an organisation. Providing asset management "line of sight" to all staff facilitates a common understanding of what is required to achieve asset management and organisational strategic objectives and how progress will be measured.

3.4.8 Improve the Environmental Sustainability, Performance and Resilience of the Asset Management Activities

3.4.8.1 Measurements

Number of environmental breaches resulting in environmental contamination due to the failure or an asset, asset system or associated containment.

Centralines' network resilience maturity is assessed on an annual basis through the EEA's Resilience Management Maturity Assessment Tool (RMMAT).

3.4.8.2 Performance Targets

Measurements	Targets 2024/25
Number of environmental breaches resulting in environmental contamination due to the failure or an asset, asset system or associated containment.	0
Centralines' network resilience maturity is assessed on an annual basis through the EEA's Resilience Management Maturity Assessment Tool (RMMAT).	Completed

Table 3-17: Performance Targets – Improve the Environmental Sustainability, Performance and Resilience of the Asset Management Activities

3.4.8.3 Justification for Targeted Level of Performance

Centralines' environmental policy commits the organisation to sound environmental management which is reflected throughout its business values, systems, and operations. A key aspect of this is that Centralines' assets do not cause harm to their physical environment through the discharge of contaminants.

Centralines manages a significant number of network assets, the majority of which are exposed and susceptible to a wide range of extreme events. Centralines' network resilience maturity must continue to improve to ensure it is able to respond appropriately to these events and meet its regulatory obligations and customer expectations.

3.4.9 Maintain Compliance with all Applicable Requirements.

3.4.9.1 Measurements

Percentage of non-compliances, in relation to asset management identified through the Legislative Compliance Programme, that have corrective plans in place.

Instances of unanticipated legal challenge or government investigation.

3.4.9.2 Performance Targets

Measurements	Targets 2024/25
Percentage of non-compliances identified through Legislative Compliance Programme in relation to Asset Management have a corrective plan in place.	100%
Number of instances of unanticipated legal challenge or government investigation occurring.	0

Table 3-18: Performance Targets – Maintain Compliance with all Applicable Requirements

3.4.9.3 Justification for Targeted Level of Performance

As an ethical, stakeholder focused organisation, Centralines is committed to complying fully with all relevant legislation and managing down the risk of legal challenge or government investigation resulting from its acts or omissions.

3.5 Performance Measure Summary

Table 3-19 below summarises the respective measurements for each strategic Asset Management Objective and targets for the 2024/25 financial year.

Key Result Area	Strategic Asset Management Objective	Measurement	Targets 2024 / 2025
Health and Safety	Ensure people are safe around Centralines' assets.	Asset failures resulting in serious harm or fatality to a member of the public.	0
		Number of severity 1, field crew, health, and safety internal audit findings.	0
		Percentage of priority 1, 2, and 3 asset defects completed within required timeframes.	100%
Network Reliability	Deliver a reliable and compliant electricity supply to customers.	Unplanned SAIDI, less than SCI Target (minutes).	< 62.83
		Unplanned SAIFI, less than SCI Target (interruptions).	< 3.16
		Number of annual, verified power quality complaints.	≤ 5
Customer Service	Improve customers' experience in relation to asset management services.	Percentage of planned shutdowns finishing outside notified outage windows.	< 15%
		Centralines responses not completed within Utilities Disputes (UDL) time limits.	0
		Timeframe to complete standard low voltage customer connection.	< 15 business days
		Timeframe to complete investigation of power quality issue	< 20 business days
Financial	Improve the financial performance of the asset management plan without compromising network performance and asset integrity.	Total annual network CapEx is within ±10% of total budget.	< ± 10%
		Total annual network OpEx is within ±10% of total budget.	< ± 10%
Service Delivery	Improve delivery performance of the Annual Works Plan.	Delivery of the annual network capital works programme.	Programme completed in full.

Key Result Area	Strategic Asset Management Objective	Measurement	Targets 2024 / 2025
		Delivery of the annual planned network maintenance programme.	Programme completed in full.
		Delivery of non-standard customer projects outside of agreed scheduled date.	0
		Number of severity 1 and 2 work practice and quality outcomes from internal field audits.	0
Innovation and Continual Improvement	Improve the asset management capability to support the development and implementation of the asset management strategies and plans.	Delivery of Asset Management Capability Plan Delivery.	100%
		Centralines' asset management service provider (Unison) maintains ISO 55001 certification.	ISO 55001 Certification
	Improve the communication of the asset management strategy to all Centralines' teams.	Percentage of new Centralines' staff who received an asset management induction within three months of commencing employment.	100%
		Percentage of Centralines' staff receiving an annual asset management briefing.	100%
	Improve the environmental sustainability performance and resilience of the asset management activities.	Number of environmental breaches resulting in environmental contamination due to the failure or an asset, asset system or associated containment.	0
		Centralines' network resilience maturity is assessed on an annual basis through the EEA's Resilience Management Maturity Assessment Tool (RMMAT).	Completed
Assurance	Maintain compliance with all applicable requirements.	Percentage of non-compliances identified through Legislative Compliance Programme in relation to Asset Management have a corrective plan in place.	100%

Key Result Area	Strategic Asset Management Objective	Measurement	Targets 2024 / 2025
		Number of instances of unanticipated legal challenge or government investigation.	0

Table 3-19: Summary of Performance Measures & Targets

3.6 Determination Reference Mapping Table

Section 3 Reference		Determination Reference
3.1	Introduction to this Section	5, 6, 7 including 7.1, 7.2, 8, 9, 10
3.2	Performance Evaluation Overview	
3.3	Performance Evaluation Procedure	
3.4	Performance Measures	
3.5	Performance Measure Summary	

Table 3-20: Determination Reference Mapping Table

SECTION 4 //// WHĀ

NETWORK DEVELOPMENT PLANS

CENTRALINES LIMITED

Contents

4. NETWORK DEVELOPMENT PLANS

4.1 Introduction to this Section

This section provides an overview of how Centralines conducts network development planning and continually improves its network development programme. It demonstrates how the various elements of network development planning fit together to achieve Centralines' Network Development Objectives, informed by the Asset Management Objectives (AMOs) detailed in Section 2.

4.1.1 Network Overview

Centralines owns and operates network assets across the Central Hawke's Bay region. These assets cover an area of 3,334 km^2, aligning with the boundaries of the Central Hawke's Bay District Council, and serve approximately 9,400 customers.

Supply is received via a single Transpower grid exit point (GXP) at OngaOnga. Centralines, after negotiations with Transpower, has agreed to purchase the majority of the 33kV assets on the OngaOnga site. Centralines is developing a project currently scheduled for the 2024/25 financial year to undertake alterations and upgrades to these assets to optimise future operational capabilities.

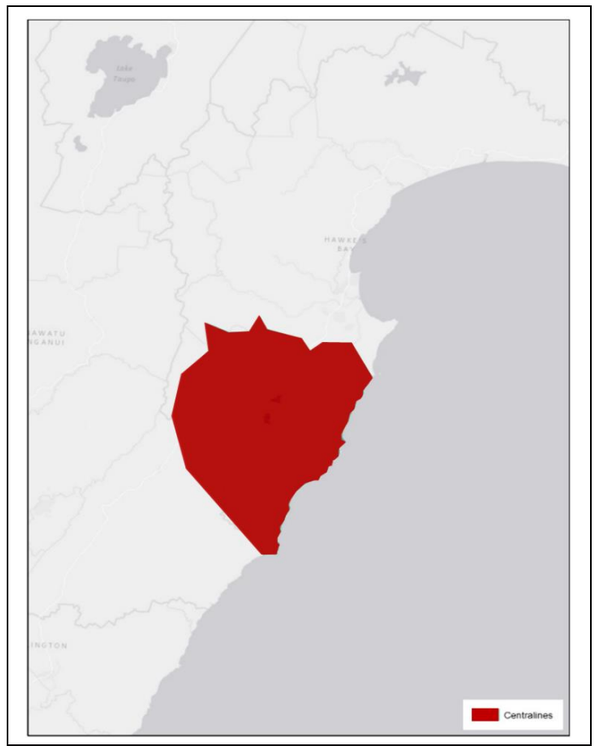


Figure 4-1: Map of the Centralines' Network

4.1.1.1 *Load Characteristics*

The load is a mix of agricultural, industrial, residential, and commercial. Because of the hot dry summers, the system experiences a summer peak, driven by irrigation load. The winter peak is lower but not significantly so.

Approximately 1% of customers currently have distributed generation connected to the grid. At this level it does not have a material impact on the load.

4.1.1.2 *Large Customers*

Large customers are those with a peak load greater than 1MVA. These customers often have unique network configurations, and in these cases, Centralines takes special measures to ensure compatibility with network operations. Centralines also works with these customers to ensure that maintenance is scheduled at appropriate times.

Centralines has two large customers that represent approximately 25% of the demand on the network. These are Silver Fern Farms at Takapau and Ovation Limited at Waipukurau.

4.1.1.3 *Supply Points and Embedded Generation*

There is no significant embedded generation, and the network is supplied from a single GXP at OngaOnga.

The GXP is connected by four separate, overhead 110kV circuits: two from Dannevirke to the south and two from Fernhill to the north. The GXP is normally supplied by the lines from Dannevirke. A single 110kV bus supplies a 20MVA and 30MVA transformer bank.

At the same site, an 11kV supply is provided by a single, Transpower-owned 33/11kV transformer. The supply point is the terminals of the 11kV switchgear owned by Transpower.

4.1.1.4 *Peak Demand, Total Energy Delivered and Firm Capacity*

Peak demand and total energy delivered is measured at the GXP. As there is only one GXP it also represents total network demand. As this is a GXP measurement, the total energy delivered is net of generation.

Supply	Peak Demand (MVA)	Total Energy Delivered (GWh)	Firm Capacity Winter (MVA)
Waipawa GXP	21	118	26

Table 4-1: Peak Demand and Total Energy Delivered Measured at GXP

4.1.1.5 *Sub-Transmission Network*

Urban areas are supplied by a meshed sub-transmission network that provides a high level of security (n-1). Rural areas are supplied by a radial sub-transmission network providing an acceptable level of security (n).

Figure 4-2 provides geographical views of the sub-transmission network. Table 4-2 lists the capacity and security of the zone substations across the network.

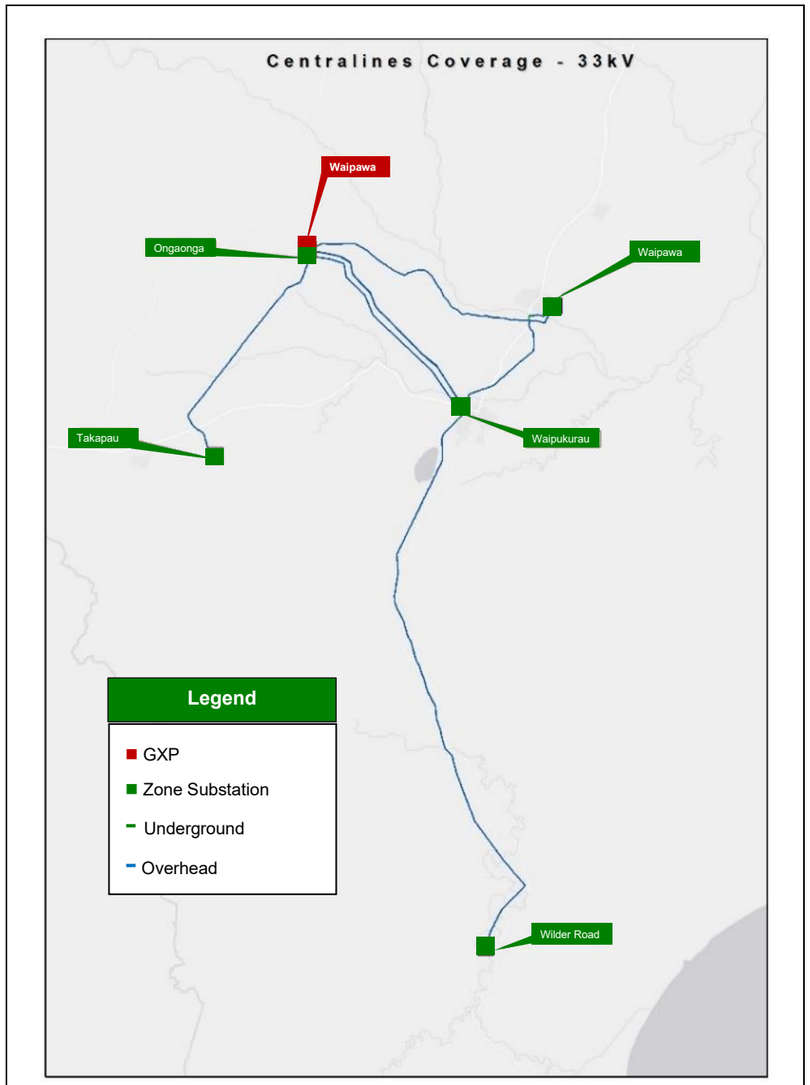


Figure 4-2: 33kV Sub-Transmission and Point of Supply Network

Zone Substation	Supply Voltage	Sub–transmission Security	Installed Capacity (MVA)	Power Transformer Security
Waipukurau	33kV	n-1	15	n-1
Waipawa	33kV	n-1	15	n-1
Wilder Road	33kV	n	2	n
Takapau	33kV	n(1)	15	n-1

Table 4-2: Zone Substation Capacity and Security

(1) Two transformer substation, supplied by a single 33kV circuit.

4.1.1.6 *Distribution Network*

Undergrounding across the distribution (11kV and 400V) networks is undertaken when appropriate as part of Centralines' Lifecycle Asset Management Process. Table 4-3 details the current portion of the networks that are underground.

Network Type	Portion of the Network Underground
11kV Network	2.4%
400V Network	27.3%

Table 4-3: Portion of Distribution Network which is Underground

4.1.1.7 *11kV Network*

The 11kV network in urban areas has a high level of interconnectivity and provides considerable flexibility during contingency events. This results in a high level of security in these areas.

The 11kV network in rural areas is predominantly overhead radial feeders with concrete poles and timber crossarms. 11kV interconnectivity is limited and supply can be compromised during a single contingency event.

Network loads are generally small and spread across large geographical areas.

4.1.1.8 *400V Network*

The 400V network in the urban area has interconnectivity between adjacent distribution transformers.

The 400V network in the rural and remote rural areas is predominately radial overhead conductors with concrete poles and timber crossarms and the transformers are sized to the customers' requirements.

4.1.1.9 *Changes to Load Forecast from Previous RAMP*

Centralines' load forecasting model utilises economic factors and building consent volumes to predict the likely future number of new connections. This is an appropriate method for forecasting typical connections, but often does not accurately signal potentially large commercial or industrial connections or growth associated with land use changes.

Section 4.2.3. outlines potential challenges of decarbonisation and more broadly electrification. Load growth associated with decarbonisation and electrification is not easily accounted for in short term forecasts as this is specific to individual organisations and customers. This section outlines the anticipated growth in Central Hawke's Bay and any subsequent constraints. Projects required to mitigate these constraints are provided in Section **Error! Reference source not found.**.

Waipukurau is at the centre of Centralines' decarbonisation journey. Ovation has recently received GIDI funding to install an electric hot water system, this industrial load combined with residential development has prompted a detailed review of the capacity of Centralines' 33kV assets supplying Waipukurau. Residential growth is also clustered in Waipukurau with significant rural and urban residential growth zoned in the spatial plan.

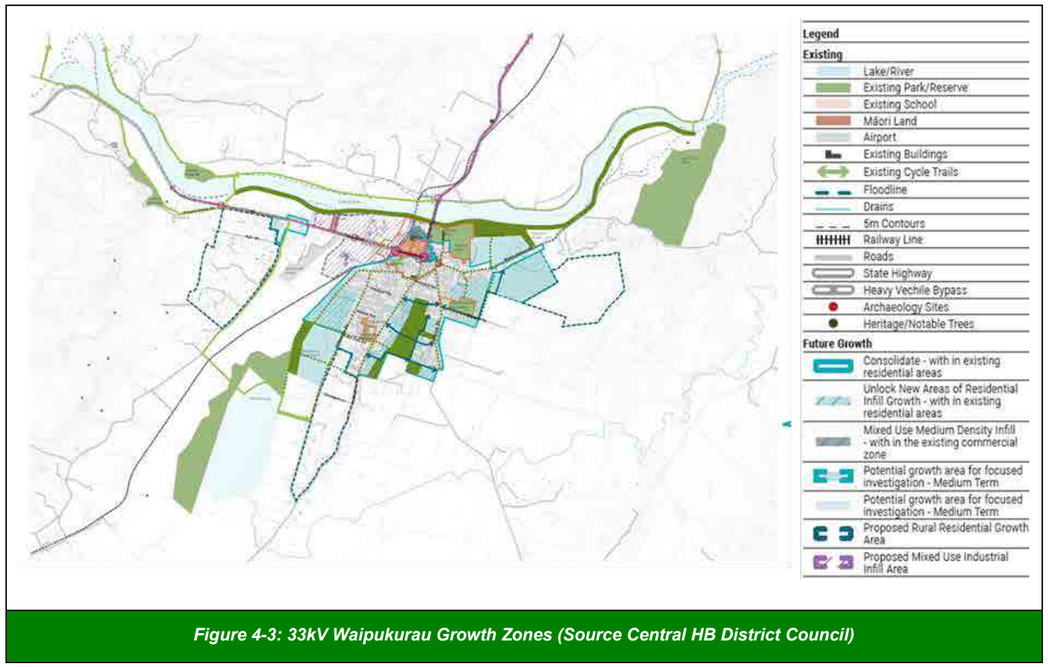


Figure 4-3: 33kV Waipukurau Growth Zones (Source Central HB District Council)

4.2 *Network Development Planning Objectives, and Criteria*

Centralines' network development objectives are informed and translated directly from the AMOs in Section 2. The network development objectives are to:

- meet customer-driven needs
- maintain network security and service levels
- meet power quality requirements
- meet regulatory and legislative requirements, and
- provide value in a changing energy economy.

These objectives have been distilled into the following network development criteria:

- power quality
- security of supply, and
- preparing for an uncertain future.

These criteria are discussed further below.

4.2.1 Power Quality

Power quality is considered over both short and long-term planning horizons to ensure solutions to current power quality constraints are appropriate long-term solutions.

As power quality issues can result from problems on both Centralines' network and their customers' own installations or equipment designs, Centralines has published a Network Connection Standard on its website. This standard outlines the responsibilities of both Centralines and the customer, to ensure all connection parties receive electricity supply to appropriate quality and performance standards. The standard is also referenced in Centralines' Use of System Agreement with all retailers and in the Customer Connection Agreement with each customer.

Centralines' Quality of Supply Standard and asset design standards specify the limits of key power quality parameters on voltage regulation, voltage unbalance, harmonic distortion, flicker, and voltage fluctuation. The specified limits are summarised in Table 4-4. Of these, voltage regulation and unbalance are monitored proactively using in-situ data and modelling tools while the others are managed on a reactive ad-hoc basis as issues are identified.

Power Quality	Specified Limits
Voltage regulation	230V +/- 6%
Voltage unbalance	Less than 2%
Total harmonic distortion voltage	Less than or equal to 5%
Flicker	Short term – less than 1.0, Long term – less than 0.8
Voltage fluctuation	Various limits specified in respective design standards

Table 4-4: Power Quality Parameters and Limits

Centralines is also working with Metering Equipment Providers (MEPs) to source voltage data from smart meters to enable proactive voltage monitoring of the low-voltage network. Voltage data trials have been carried out with MEPs to test end-to-end processes. The data obtained has been analysed, voltage issues identified and prioritised, and mitigation plans put in place. The solutions to these issues range from simple tap position changes at local distribution transformers to upgrades of transformers and the low-voltage network.

4.2.2 Security of Supply

To ensure the network meets its agreed performance targets and obligations, Centralines applies a set of security of supply criteria based on the established framework set out in Table 4-5 and Table 4-6. The framework defines the level of security for different customer load types and load sizes. The criteria are used to identify network security constraints when contingency events occur and to guide the selection of solutions to mitigate these constraints.

Centralines reviews these criteria and adjusts its network restoration approach using smart network technologies, network demand profiles and customer expectations (as identified in customer surveys). This is to ensure these criteria remain appropriate and continue to meet network performance targets.

Security of Supply Restoration Times	
Class D – Single large customer	Agreed individually with customer
Class C – CBD	N-1 – 50% restored within 15 minutes remainder within 45 mins N-2 – 50% restored within 60 minutes remainder within 3 hours Bus fault – 50% restored within 60 minutes remainder within 3 hours
Class B – Urban	N-1 – 50% restored within 45 minutes remainder within 2 hours N-2 – 50% restored within 3 hours
Class A2 – Rural up to 1MVA	N-1 – 50% restored within 2 hours
Class A1 – Rural up to 500kVA	No targets

Table 4-5: Summary of Non-Regulatory Planning Criteria and Standards

Substation	Target	Compliant	Comments
Waipukurau Urban	Class C	Yes	
Waipukurau Rural	Class B	Yes	Possible from back-feeding or transferring load
Waipawa Urban	Class C	Yes	
Waipawa Rural	Class B	Yes	Possible from back-feeding or transferring load
Takapau	Class A2 Class D	Yes	Substation supplies one large customer and the surrounding rural area
OngaOnga 11kV	Class A2	Yes	Due to automation in the area
Wilder Road	Class A1	Yes	Due to automation in the area

Table 4-6: Security of Supply Classification and Compliance by Substation

In addition to managing restoration times, other aspects of network performance also need to be managed in contingency conditions. These include ensuring the safety of people, the security of zone substations, maintaining system voltages, and not exceeding network element loading and protection relay operating limits. All must be managed to ensure Centralines achieves an optimal balance between customer expectation and performance targets, without any adverse effects on assets.

4.2.3 Preparing the Network for the Future

4.2.3.1 Change Drivers to New Zealand's Electricity System

The electricity system supporting New Zealand's economy and lifestyle is changing. This change is being shaped through the decarbonisation of the New Zealand economy and is resulting in:

Decentralisation

Decentralisation is the reduced reliance on a handful of large generating plants and the distribution of generation across many smaller units. It also refers to the increasing amount of embedded generation and storage coming online including solar farms, batteries, combined heat, power sources on business sites and residential solar panels.

Digitalisation

The complex changes occurring in the energy market will require effective network management in real time. Digitalisation provides the means to achieve this through comprehensive monitoring and control across the entire electricity system from generation to transmission and distribution supply and demand. Digitalisation also provides the foundation for innovation by enabling monitored information to be analysed to identify system efficiency improvement opportunities.

While the transformation of the electricity system will support environmental sustainability and improved energy equity, the system will be significantly more complex than it is today. Many of the techniques currently employed to manage the transmission system may become relevant at a distribution level to deal with the hundreds of thousands or millions of nodes.

Changes in weather patterns due to climate change is having a major impact on New Zealand's electricity system. Weather events that were classified as rare (e.g., one in one hundred) are occurring more frequently. La Niña and El Niño weather patterns are becoming more frequent resulting in extreme wet or dry weather.

4.2.3.2 Centralines Response to Changes in the Electricity System

In response to the above-mentioned changing environment, Centralines has developed a strategy to build capability in the following key areas to enable the smooth integration of these technologies onto the network:

1. Low Voltage (LV) Network Visibility

Increased penetration of distributed energy resources in the distribution network has the potential to create issues on low voltage (400 volt) circuits which traditionally have less mature levels of asset information quality and are not remotely monitored. Centralines has developed and is undertaking a programme of work to enhance both static and dynamic asset information for low voltage networks. This initiative supports safety, investment efficiency, and the capability of the network to host distributed energy resources.

Centralines has created a low voltage data framework and is developing strategies to cost-effectively capture both static and dynamic data.

2. Network Standards

Network standards provide definitive guidance to teams that undertake the design, construction, operation, and maintenance of Centralines' network. These standards play a critical role in assuring the technical integrity of assets and asset systems. As stakeholder requirements of Centralines' services evolve, so must network standards. Low voltage network design and Distributed Energy Resource (DER) connection standards are key areas of focus for Centralines' roadmap, as the low voltage network will be impacted the most from high levels of DER penetration.

Traditionally, low voltage networks have been designed for one-way power flow only, but as the uptake of DER increases, electricity networks will start experiencing more complex, two-way power flows. This will lead to power quality related issues; hence Centralines is investigating novel ways to design electricity networks to cater for the uptake of new technology (EVs, DER) and the future energy needs of its consumers. An example of this is shown in Figure 4-4 below where rather than utilising the traditional "daisy chaining" of circuits, consumers can be supplied off distribution hubs, accommodating monitoring and automation equipment as well as local energy storage units such as batteries.

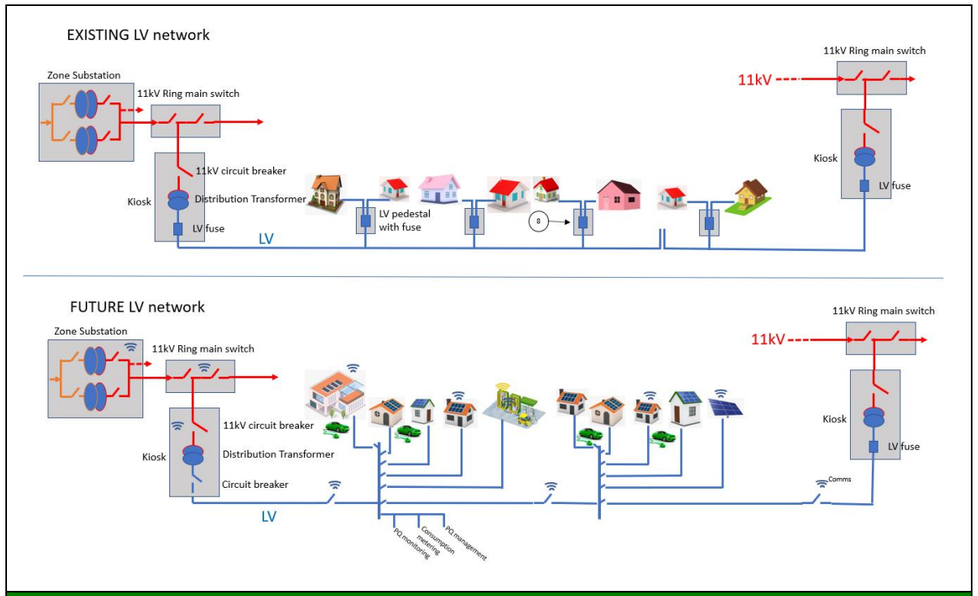


Figure 4-4: Existing and Future Low Voltage Network

In 2021/22 Centralines updated its low-voltage network design standard, in 22/23 the distributed generation connection standard was reviewed and in 23/24 this standard will be updated and published based on the outcomes of the review.

3. Flexibility

Borrowing from international experiences, the term 'flexibility' is increasingly being used in New Zealand with an example being the Electricity Authority's recent consultation document. It is defined as *"modifying generation and / or consumption patterns in reaction to an external signal (such as a change in price) to provide a service within the energy system".*

Current examples of flexibility within the electricity system are demand response schemes where contracts allow customers to be compensated for reducing load at certain times to optimise the transmission or distribution network.

In the future when there is increased penetration of controllable DER, these customer-owned resources could be used to provide a range of services to different participants within the electricity system. These services could include energy, transmission support, ancillary services, and distribution network support. Ideally these resources would be consistently allocated to the greatest need, which requires enabling regulation, effective coordination between participants and market-based mechanisms. If these measures were effective, customers would be able to realise the full value of their investments in distributed generation and storage while contributing to a more environmentally sustainable electricity system.

Centralines will be investigating methods to publish the opportunities for third parties to assist in alleviating constraints in the medium to long term.

4. Updating Centralines' Planning Process

Centralines' existing planning process is reliant on new connections, consent applications, assumptions on organic growth and long-term council plans for the region. It is based on a singular view which has worked well in the past when household loads were stable and could be predicted with reasonable accuracy.

Advancements in technologies such as electric vehicles and DER will have a significant impact on network loading if they are not understood and managed accordingly. With uncertainty surrounding uptake rates for electric vehicles and small-scale DER, having a singular view of future demand on the network is no longer adequate.

In the 2022/23 financial year, a one-off scenario planning exercise was carried out to understand how planning could be implemented in the Centralines context.

One of the key learnings was that the existing planning process is inadequate for scenario planning, and a new process is required which is shown conceptionally below. The yellow boxes and text highlight new capabilities that will need to be developed. The new capabilities being developed are:

- Monitoring and forecasting macro-inputs such as uptake rates of electric vehicles and DER
- Generation of scenario-based load forecasts down to the low-voltage network
- Scenario-based constraints forecasting and resource modelling, and
- Flexibility service as an option in the solutions toolset.

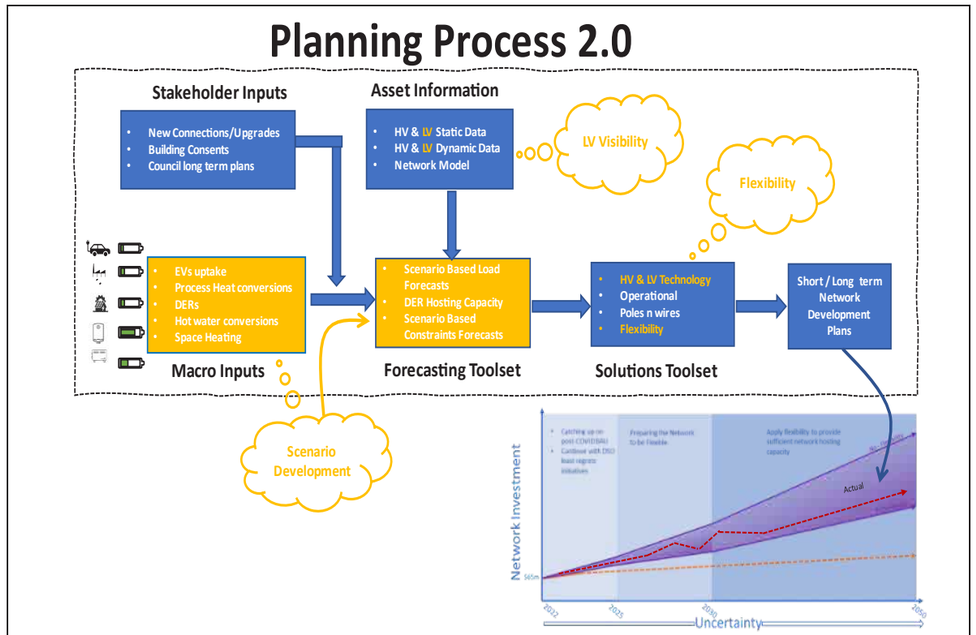


Figure 4-5: Network Planning Process 2.0

In 2023, a strategic initiative "Planning Process 2.0" was created. This initiative considered data sources and frameworks to track multiple technology and growth factors to enable the development of load forecast scenarios. In 2024 this initiative will continue developing further forecasting and solution models.

4.2.3.3 Distributed Generation Policy

Centralines continues to support the objectives of customers wishing to utilise distributed generation (DG) by ensuring any potential detrimental effects are prevented or mitigated. The regulations categorise DG into two categories - 10kW or less, and above 10kW. There are different processes and requirements for each category. The Distributed Generation Policy, process information, and application form are available on Centralines' website www.centralines.co.nz.

The key principles of Centralines' Distributed Generation Policy are:

- DG can be connected to Centralines' electricity distribution network on fair and equitable terms which do not discriminate between different DG schemes.
- Centralines will make the terms under which DG can be connected and operated within its electricity distribution network as clear and as straightforward as possible and will progress all applications to connect DG to its electricity distribution network as quickly as possible.
- Technical and safety standards for the DG connection and operation on Centralines' electricity distribution network will be based on best practice, and will aim to meet the needs and protect the interests of DG schemes, other customers and Centralines, and
- Centralines will comply with legislation and regulatory requirements regarding the DG connection and application on its electricity distribution network.

Centralines recognises the value of DG in a number of ways and encourages the development of DG where it will provide real benefits to both the generator and Centralines. Centralines also recognises that DG can have undesirable effects on the network. Any new DG is modelled and analysed to ensure key policies in the connection documents are met.

4.2.4 *Customer Savvy and Engagement*

Historically, customers have enjoyed a reliable electricity supply at a given price based on their electricity consumption. This 'one size fits all' approach does not cater for when customers use electricity or *how much* capacity is provided. Technology innovation and advancement has transformed the way customers use electricity. Centralines' customers are becoming active participants demanding great service with an increasing range of choices and an increased level of interaction. Centralines needs to ensure the electricity pricing structure has enough flexibility to avoid cross-subsidisation. The data and communication platform will also be integral to meeting the expectations of Centralines' customers.

4.3 *Network Development Planning Process*

4.3.1 *Overview*

Network Development Planning (NDP) is an important part of Centralines' Asset Management System (AMS).

The overarching objective of NDP is to strike an optimal balance between risk, performance, and cost. The NDP process is undertaken bi-annually and is reviewed regularly, with any identified, value-adding improvement opportunities being scoped, and developed to ensure the best possible balance is achieved.

The purpose of NDP is to:

- identify network risks associated with changes or the introduction of demand and/or generation on the network, and
- propose projects to address these risks.

The goal of the process is to ensure that:

- at peak times customers energy / electrical needs are met without compromising the operating parameters of the asset, i.e., thermal overload, and
- customers receive compliant power quality.

Figure 4-6 outlines the key elements of Network Development Planning. There are two key components of NDP:

1. Network Constraint Forecasting
2. Solution Development

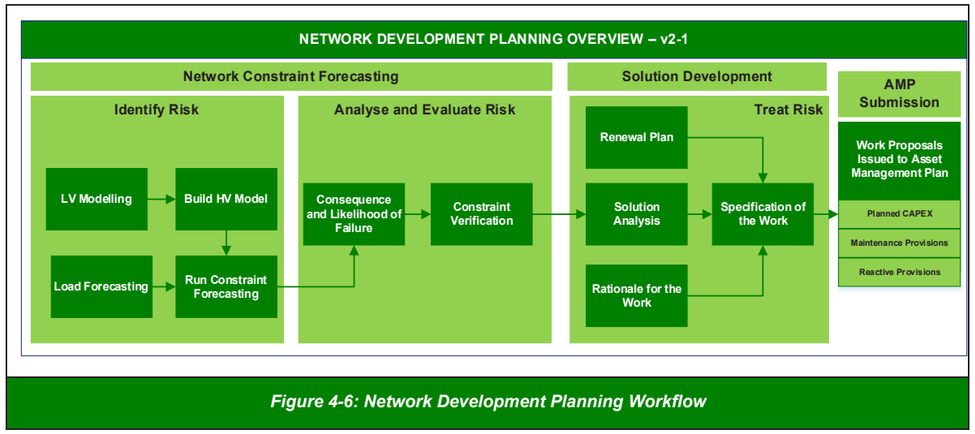


Figure 4-6: Network Development Planning Workflow

4.3.2 *Network Constraint Forecasting*

Network Constraint Forecasting (NCF) identifies, analyses, and evaluates risks associated with changes in demand and how customers utilise electricity. The goal of NCF is to systematically identify assets at risk of:

- current overload
- supplying non-compliant voltage (both over and under) to customers, and
- breaching the security of supply criteria.

NCF involves forecasting future network demands and the application of a network model that assesses the capabilities of assets and asset systems based on this demand. The results of this power flow modelling identify the timing and magnitude of potential constraints. Each constraint is assessed in terms of its likelihood (timing) and consequence to form a holistic risk profile on potential constraints. This risk profile can then be used to justify and prioritise investment.

Figure 4-7 below provides an overview of each stage of the NCF process.

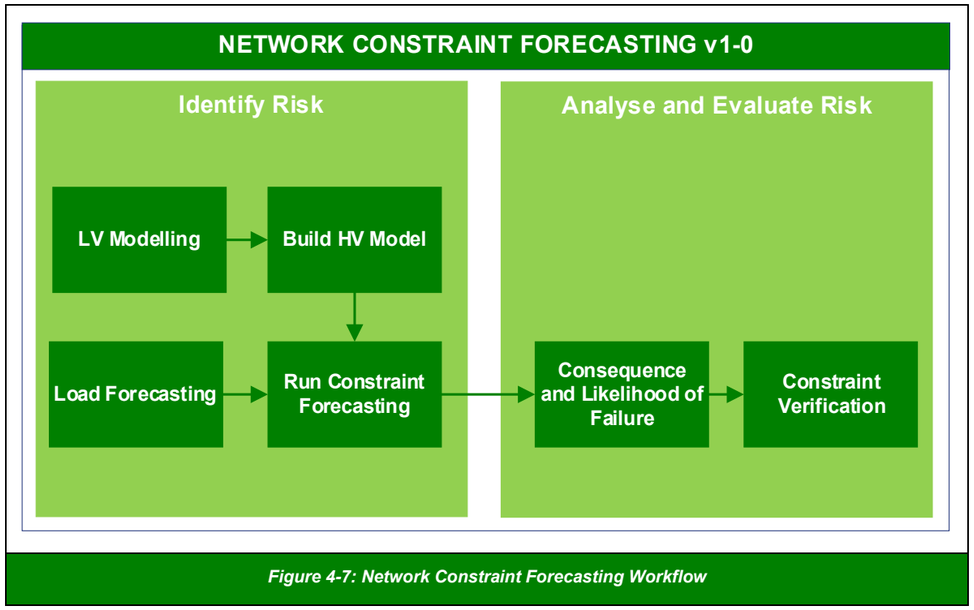


Figure 4-7: Network Constraint Forecasting Workflow

4.3.2.1 Data Inputs

The data required to complete Network Constraint Forecasting is summarised in Table 4-7.

Information Type	Information
Historical Load Data	• ICP demand records (e.g., smart meter data) • Network demand records
Network Model	• Connection of assets • Open points
Asset Attribute Information and Master Data	• Impedance • Maximum rating
Economic Projections	• GDP • Population • Number of dwellings
Consequence of Failure	• Financial information about assets and potential penalties for the cost of non-supply

Table 4-7: NCF Data Inputs

4.3.3 Identify Risk

4.3.3.1 Load Normalisation

The objective of load normalisation is to determine the network load in its normal state. Logged demand data from 11kV feeders is normalised by removing abnormalities such as contingency network switching or poor-quality data.

4.3.3.2 Load Estimation

The objective of load estimation is to estimate the peak load and peak diversity at a distribution transformer level. Estimation of the distribution transformer peak load is achieved through either the summation of smart meter data or the calculation of the after diversity maximum demand (ADMD).

ADMD calculations bridge the gap where:

- consumers have yet to convert to the smart meter system, or
- data from the retailer is not available.

The methodology used in NCF works (with a defined margin of error), over a wide range of customer types. These calculations are also relevant for combinations of customer types, e.g., residential commercial, light industrial.

4.3.3.3 Ten-Year Forecast

The ten-year forecast is a reasonable estimation of the expected demand requirements used for short and medium-term asset management planning. This forecast captures the demand change, connection location and timing of load changes on Centralines' high voltage network.

New Connections

A new connection application is created when customers approach Centralines with the intent to connect. New connection demand is added to the ten-year load forecast where:

- the requested capacity is larger than 200kVA, and
- the customer has signed a contract to connect or there is a high likelihood that the project will proceed.

Building Consent Applications

Consent applications provide a useful indication of customers' intent to connect new loads to Centralines' network. Consent application demand is added to the ten-year load forecast where:

- the customer has not already approached Centralines with a new connection application
- the capacity requirements can be reasonably estimated, and
- the capacity requirement is larger than 200kVA.

Organic Growth Assumptions

Centralines applies a small growth rate to its ten-year forecast to account for changes in the average demand requirements of customers. This organic growth rate is useful for determining areas of the network which are approaching maximum capacity.

Large Customer Point Loads.

Centralines understands that large industrial customers can have a major impact on network assets due to growth or electrification of existing processes. As such, Centralines is committed to strengthening relationships with key users. These relationships will allow Centralines to more accurately predict and model point load increases for inclusion in risk-based growth modelling.

4.3.3.4 Low Voltage Modelling

A representation of the current low voltage (LV) network is needed to identify constraints. Centralines' approach involves simplifying the LV model to a single equivalent impedance model that can be run alongside an HV model. Monte-Carlo[1] analysis is used to simplify the LV model to a single equivalent impedance.

4.3.3.5 Network Equipment Ratings

Network Equipment Ratings define the current carrying capacity of Centralines' conducting assets in the context of their local conditions. There are two types of ratings applied.

Base Rating

The base rating is a rating using standard parameters for the type of conductor. These base ratings are usually conservative but provide a useful way of describing common type ratings and flagging asset constraints early for further investigation.

The following assumptions are used for base ratings:

1. Lines
   - design and build temperature of 50º Celsius unless recorded otherwise
   - ambient temperature of 30º Celsius, and
   - 1m/sec wind speed.

2. Cables
   - soil thermal resistivity of 1.2
   - cables are installed in duct, and
   - maximum continuous rating (MCR).

Local re-rating

[1] A risk management technique used for conducting a quantitative analysis of risks.

If an asset has been flagged as having a potential loading constraint, it will often be re-rated. This re-rating considers local parameters and the operating environment. Below are some of the variables that are often considered in a local re-rating.

1. Lines
   - monthly ratings based on monthly maximum temperatures compared with monthly load profile data
   - site survey and re-assessment of the designed line temperature, and
   - dynamic ratings using real time weather data (these schemes may be implemented in the control room for use when network is in an abnormal state).

2. Cables
   - site sampling of soil thermal resistivity
   - cyclic rating calculated with known load profiles
   - direct buried rating, and
   - adjacent cable de-rating.

4.3.3.6 Load Flow Model

The constraint forecasting model is built in a software package called Powerfactory by DIgSILENT. Data to build the model is extracted from Centralines' asset management systems. The model is updated regularly to ensure it reflects the current state of the network. The Powerfactory model simulates the:

- load through each conductor segment
- voltage at every node on HV feeders
- maximum and minimum LV voltage on transformer circuits using LV equivalent impedances, and
- fault levels.

4.3.3.7 Constraint Forecasting Case Studies

The timing and severity of constraints are identified by performing case studies as per Table 4-8.

Case Studies	Description
Maximum Load	Maximum peak loads applied over the entire network for the full load forecast period. This case study is used to determine undervoltage and overload constraints.
Minimum Load	Minimum peak loads applied over the entire network for the full load forecast period. This case study is used to determine overvoltage.
Security of Supply	Maximum peak loads applied to 33kV and 11kV feeders to determine where the network does not comply with the security of supply criteria. These studies are carried out manually when there is a significant change in load or network architecture.

Table 4-8: Case Study Descriptions

4.3.4 Analyse and Evaluate Risk

4.3.4.1 Consequence and Likelihood

Risk (consequence and likelihood) is estimated for each constraint based on the impacts on performance, safety, and environment. The evaluated risk is used to determine the urgency and relative priority of each constraint.

4.3.4.2 Constraint Verification

Constraint verification ensures constraints being raised by the constraint forecast model are verified and validated before they are submitted as an issue in the AMP. This is achieved by using supplementary asset data, site visits or manual checks. Often a process of elimination will confirm the constraint exists.

4.3.5 Constraint Forecasting Improvements

4.3.5.1 Low Voltage Visibility

Centralines has started an LV Visibility project that will identify the likely information required by the business in relation to the LV network in the future. This will allow the development of strategies and processes to enable this information to be efficiently collected. This project is expected to improve the accuracy and confidence of LV modelling in NCF.

4.3.5.2 Smart Meter Data

Consumption data from smart meters significantly improves the accuracy and confidence of load estimation. Better load estimations enhance constraint identification allowing more prudent investment decisions. Centralines has prepared its systems and processes to make full use of smart meter data as it becomes available. A project is underway with the goal of obtaining a regular and complete update of smart meter data from retailers.

4.3.5.3 Load Forecasting

Centralines is continuing to improve it load forecasting capabilities. A prototype load forecasting algorithm is being developed to estimate unique organic load growths driven by demography and environmental factors. Technology and customer driven load changes will be incorporated in future models (refer 4.2.3.2).

4.3.5.4 Value of Lost Load

Centralines' current process and systems to identify security of supply constraints rely on deterministic rules and manual studies. The SAIDI and SAIFI impact of faults is often the predominant driver for motivating network improvements.

Value of Lost Load or VoLL is the economic cost of demand not served during supply interruptions. Centralines believes that VoLL impact analysis is an important way to measure the true impact of interruptions to our different customer groups. There is a project underway to look at how Centralines can systematically incorporate VoLL analysis is our constraint analysis.

4.3.5.5 Stakeholder Engagement

While new connections and consent data provide strong independent predictors of growth, these tend to be clustered towards the first three years. Engaging with developers, major customers, councils, and mana whenua allows Centralines to more accurately model and plan for growth in the three-to-ten-year window. This is crucial to optimise network investment and reduce the risk of asset stranding. Centralines formalised this data through the Energy Efficiency & Conservation Authorities (EECA) DETA study on decarbonisation and in 2024 will utilise the EECA Regional Energy Transition Accelerator (RETA) study to further refine outputs. Centralines understands that its stakeholders are driving changes in energy usage and existing relationships will become more critical in a dynamic energy future.

4.3.6 Load Forecasting Tool (LFT) Outputs

The LFT forecast extends out to a 20-year horizon for each month on each 11kV feeder. The Network Development Planning process considers the first ten-year outlook of load forecasts for planning purposes and the ten-year-plus outlook for longer term trend consideration.

Below are the expected zone substation loads in MVA for Centralines.

Known As	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Waipukurau	9.5	11.0	11.2	13.2	15.4	15.5	15.6	15.7	15.8	15.9
Waipawa	4.6	4.8	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7
Takapau	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7.0
OngaOnga	5.2	5.7	6.2	6.5	6.8	7.0	7.1	7.3	7.5	7.6
Wilder Road	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0

Table 4-9: Zone Substation Load MVA Forecasts

4.3.7 Solution Development

The purpose of Solution Development is to identify and specify the preferred engineering solution to mitigate risks in the network. These risks are identified by the Network Constraint Forecasting process for inclusion in the AMP.

Solution Development requires:

- an understanding of the risk, the physical asset, and its surrounds, and
- awareness of network constraints, available options, other planned work, and cost/estimating.

Solution Development commences when:

- a constraint has been identified
- the risk has been quantified, and
- the risk is sufficient that action should be taken to control it.

Solution Development involves identifying the most optimal control for the risk, considering the key asset management drivers of cost, risk, and performance.

Solution Development is completed when:

- an appropriate solution has been identified, and
- this solution has been proposed as a capital project to the AMP, or work has been issued out of an OpEx provision.

4.3.7.1 Solution Development Process

Figure 4-8 outlines the key elements of Solution Development.

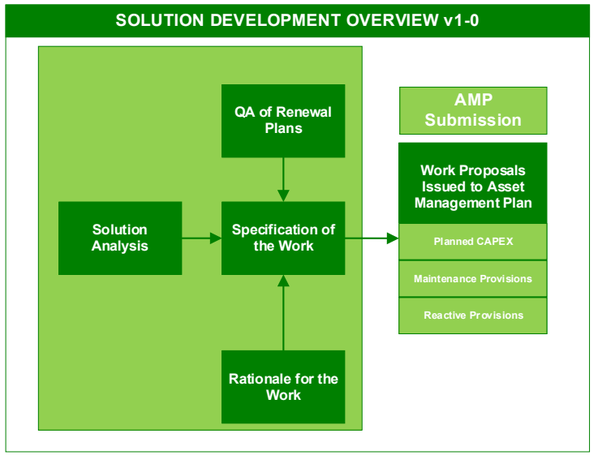


Figure 4-8: Solution Development Workflow

The key steps in Solution Development are set out below.:

- solution analysis
- specification of the work
- rationale for the work, and
- submission to the AMP.

4.3.7.2 Solution Analysis

Solution analysis involves the evaluation of all AMP issues spanning years three to ten to form a combined ten-year view of work. While issues arising in years one and two form part of the overall process, they are not reviewed in the solution analysis stage. Year one and two issues are scoped and approved to proceed before they reach the year one and two planning horizon.

The constraints map is a tool developed to enable the Analysis and Solutions Engineers to view and group issues geographically.

Consultation between the Network Development and Asset Management Teams is needed to ensure proposed solutions benefit from potential timing synergies that may be achieved across both constraint types. The same level of systematic and optimised decision-making is practiced during a combined evaluation to ensure alignment with the Asset Management Objectives (AMOs). This results in clusters of issues that can be assigned to a specification of work.

4.3.7.3 Specification of the Work - Scope Solution

A specification of work is completed by an assigned engineer and considers and includes the following:

- the context of each cluster (applying knowledge from supporting systems)
- the potential packaging of solutions
- preparation of the specification for work to meet the key drivers of asset management, and
- generation of a project in the AMP to resolve the identified issues.

Work specified as part of Network Development will have primary motivation as outlined in Section 4.2 but will have secondary motivations based in Life Cycle Asset Management Planning where packaging efficiencies are identified.

This specification provides the basis for estimating the project value and details the following:

- the asset(s) to be installed, maintained, renewed, or removed
- the work required including installation and construction or, in the case of maintenance, references to the appropriate standards, and
- relevant issues registered against the project.

4.3.7.4 *Rationale for the Work*

This provides the justification for the selected solution including rationale where the solution is mitigating more than one identified constraint or issue. The level of detail will vary depending on the complexity of the solution but typically includes the description, supporting calculations and other relevant information. The developed rationale forms part of the executive summary which is submitted against the issue or constrain in the AMP.

4.3.7.5 *Submission to the AMP*

Every six months, projects are submitted to the AMP for quality assurance and final approval.

Quality assurance of the AMP submissions involves:

- frequent reviews throughout the year by the Technical Leads to ensure the objectives of the rationale and specification of works are met, and
- a full review by the Strategic Asset Manager and Energy Solutions Manager one month prior to the bi-annual Works Planning and Consolidation submission.

4.3.7.6 *Solutions Toolbox*

The available solutions in the 'solutions toolbox' to address the identified network constraints are summarised in Table 4-10: Solutions Toolbox. Centralines is actively exploring possible expansion of the solutions toolbox using new technologies to further enhance the efficiency of the network.

Constraint	Network Solution	Non-network Solution
Voltage	• Upgrade conductor • Install feeder • Install Voltage Regulator	• Reactive VAr compensation • Fast transfer scheme • Network reconfiguration (existing asset)
Continuous current capacity	• Upgrade conductor • Install feeder • Install transformer • Establish substation • Install embedded generation	• Reactive VAr compensation • Fast transfer scheme • Demand-side management • Real-time monitoring • Cyclic ratings (selected asset classes) • Network reconfiguration (existing asset)

Fault current capacity	• Asset upgrade	• Decrease fault rating by:
		  ○ substation earthing compensation, and
		  ○ network reconfiguration (existing asset).

Quality of supply, e.g., dips harmonics flicker	• Install feeder • Install transformer	• Network reconfiguration (existing asset) • Behind the meter solutions • Distributed generation • Energy storage
Network security	• Install feeder • Install transformer • Establish substation • Install recloser • Install embedded generation	• Dynamic ratings (selected asset classes) • Fast transfer scheme • Reactive VAr compensation • Demand-side management • Network reconfiguration (existing asset) • Self-healing scheme • Distributed generation • Energy storage
Network reliability	• Install feeder • Install recloser • Overhead to Underground asset conversion • Install embedded generation	• Network reconfiguration (existing asset) • Substation earthing compensation • Fast protection • Self-healing scheme • Distributed generation • Energy storage

Table 4-10: Solutions Toolbox

4.3.7.7 *Network Options*

Network solutions are based on traditional network reinforcement approaches and typically provide technically sound long-term solutions. Examples are power transformer, pole, conductor, and cable upgrades.

To ensure traditional network solutions are designed to be as energy and economically efficient as possible the following factors are considered:

- direct effect of heat losses
- voltage and reactive power optimisation, and

- network configuration.

Standardised designs are applied to specify equipment and installation details. Where possible, cost estimates are based on typical costings based on engineering knowledge or actual costing from completed works.

4.3.7.8 Standardised Designs

Where possible, Centralines utilises standardised designs for assets to maximise cost efficiencies throughout the asset management lifecycle. Standardisation of design in different asset types are summarised below.

Asset	Standardisation
33kV overhead lines	Standard drawings, design and construction methodologies are in place. Standard materials used include concrete Busck poles and ACSR, AAC or AAAC conductor. These are available as standard designs in Design Manager for planners' cost estimates and for designers.
33kV underground cables	Standard drawings, design and construction methodologies are in place. Standard materials used include different sizes of XLPE cable. These are available as standard designs in Design Manager for planners' cost estimates and designers.
Power transformers	Due to the value of this asset, Centralines tenders each one to ensure cost efficiency.
33kV circuit breakers	Standard drawings, design and construction methodologies are in place. The standard outdoor circuit breaker used is an Alstom GL107 unit.
11kV circuit breakers and switchboards	Standard drawings, design and construction methodologies are in place. Standard equipment used includes Reyrolle Pacific (RPS) 11kV indoor boards and the Cooper Nova recloser for outdoor use.
Zone substation buildings and equipment	Due to the value and low number of new constructions of zone substations, Centralines designs each one specifically for the site and the network's technical requirements.
Ripple injection plants	Standard drawings, design and construction methodologies are in place. Standard equipment used is Landis+Gyr (L+G).
Poles	Standard drawings, design and construction methodologies are in place. Standard materials used include concrete Busck poles used across the industry for maximum cost efficiency. These are available as standard designs in Design Manager for planners' cost estimates and for designers.
11kV and 400V lines	Standard drawings, design and construction methodologies are in place. Standard materials used include ACSR, AAC, AAAC, ABC conductors and Busck poles. These are available as standard designs in Design Manager for planners' cost estimates and for designers.

Asset	Standardisation
11kV and 400V cables	Standard drawings, design and construction methodologies are in place. Standard material used is PVC-coated XLPE cable. These are available as standard designs in Design Manager for planners' cost estimates and for designers.
Distribution Transformers	Standard drawings, design and construction methodologies are in place. Standard equipment used includes pole-mount 15-300kVA and ground-mount 30-1000kVA ETEL transformers. These are available as standard designs in Design Manager for planners' cost estimates and for designers.
Distribution Switchgear – Air Break Switches, 11kV Fuses and Reclosers / Sectionalisers	Standard drawings, design and construction methodologies are in place. Standard equipment used includes Cooper Nova reclosers, ENTEC RCS, Schneider ABSs, S&C 11kV fuses (DDOs). These are available as standard designs in Design Manager for planners' cost estimates and for designers.
Distribution Switchgear – Ground Mounted Switches and Ring Main Units	Standard drawings, design and construction methodologies are in place. Standard equipment used is the ABB Safelink RMU. These are available as standard designs in Design Manager for planners' cost estimates and for designers.
Voltage Regulators	Standard drawings, design and construction methodologies are in place. Standard equipment used is the Cooper Voltage Regulator. These are available as standard designs in Design Manager for planners' cost estimates and for designers.
Pedestals	Standard drawings, design and construction methodologies are in place. Six different pedestals are available to cater for varied site and technical requirements. Most are available as standard designs in Design Manager for planners' cost estimates and for designers.
Sensors	Standard drawings, design and construction methodologies are in place. Many different sensors are available to cater for varied technical requirements. Most are available as standard designs in Design Manager for planners' cost estimates and for designers.
Communications	Standard equipment used includes analog radio and fibre to substations.

Table 4-11: Standardisation Across Assets

4.3.7.9 Non-Network Options

Non-network solutions utilise new technologies to provide cost-effective alternatives to traditional network solutions. Technical advantages can include:

- reduction in system losses
- no detrimental impact on fault level, and
- improvement in asset utilisation and in voltage profile.

Non-network solutions, including the ability to rerate or offload assets, are considered by default for all major Network Development constraints. As such, any project scheduled within the next two years will have had considered all available non-network solution options.

Where possible cost estimates are based on typical costing based on engineering knowledge or actual costing from completed works.

4.3.7.10 Solution Toolbox Enhancement Initiatives

Centralines is continuing its proactive approach to realise benefits from new techniques and technologies as solutions to constraints. There are two active enhancement initiatives:

1. Flexibility
2. Alternative energy systems, and

Flexibility

Centralines has utilised ripple control of hot water demand as a demand-side response for many years. It has historically been used primarily to manage regional peak demand. The Flexibility initiative explores demand response technologies to define and develop Centralines' demand response philosophy, policy, and strategy. Initial analysis has shown that the potential to mitigate network constraints is highest when solutions are combined with modern operating procedures such as fast transfer schemes. Centralines is continuing to develop flexibility trials as a standard method for deferring network investment. Currently time flexibility markets and solutions are too immature and not readily available to resolve or defer network investment and are therefore not proposed for constraints in the first two years. As flexibility markets mature and are subsequently adopted by Centralines and the wider industry, they will become a viable alternative to capital investment and will be considered for constraints in years three to ten.

Alternative Energy Systems

Centralines recognises off-grid systems as a technology with the potential to reduce the cost of serving its remote rural customers. This is considered a high priority opportunity due to the increasing maturity of technology and the potential benefits from their application on the network. This initiative has trialled large, embedded generators and smaller islanded alternatives. Large, embedded generators have been adopted as a standard solution available to mitigate reliability constraints. Future work will consider more novel technologies such as renewable generation combined with battery backup.

4.4 Network Development Projects

4.4.1 2024/25 Material & Non-Material Projects

Projects greater than $250k are considered material and will be discussed in a greater level of detail. Details of material projects for the ten-year planning period are outlined in the sections below as well as all projects (material and non-material) planned for 2024/2025.

Project Number	Project Name	Category	Cost $
2024/2025 Material Projects			
203380	Waipawa GXP ODID	System Growth	3M
206176	Feeder 15 Install Gaisford Terrace Ring	Other - RSE	665K
206163	Feeder 86 – Upgrade Sub B4 / 201	System Growth	350k

Table 4-12: Material Projects for 2024/2025

Project Number	Project Name	Category	Cost $
2024/2025 Non-Material Projects			
208738	Waipukurau ZS – Additional CB (Ovation)	System Growth	50k
208264	Feeder 14 – Close Ring Pole 900237 & RMU	Other - RSE	100k
208266	Feeder 14 – Install Isolation Point	Other - RSE	85k
208256	Install new sectionaliser on Feeder 76	Other - RSE	85k
209165	Replace RCL R155 at Pole 907086 on Feeder 76	Other - RSE	85k
208257	Feeder 76 Replace ABS 528	Other - RSE	85k
209093	Feeder 13 ABS 455 Replace with RCS	Other - RSE	85k
209091	Feeder 13 Replace 523 with RCS	System Growth	85k
209094	Feeder 13 Replace 556 with RCS	System Growth	85k
208261	Feeder 45 Replace ABS 652 with RCS	System Growth	85k
208259	Feeder 45 - Replace ABS 643 with RCS	System Growth	85k

4.4.2 Material Projects for 2025/2026 to 2028/2029

Project Number	Project Name	Category	Cost $
206162	Feeder 86 – Loading Constraint	System Growth	350k
208253	Voltage Constraint Feeder 2 North	Quality of Supply	350k
208274	Feeder 4, 11kV Conductor Upgrade	System Growth	800k
208254	Voltage Constraint Feeder 18	Quality of Supply	350k
208272	Voltage Constraint Feeder 19	Quality of Supply	350k
208284	Voltage Constraint Feeder 46	Quality of Supply	350k
208287	Feeder 4 – Voltage Constraint When Back-Feeding	Quality of Supply	350k
208286	Feeder 1 – Voltage Constraint When Back-Feeding	Quality of Supply	350k
206177	Feeder 83 – Voltage Constraint On	System Growth	350k
206178	Upgrade Cable Waipawa Substation	System Growth	560k
206181	Create Backfeed Between Feeder 74 And 75	Other - RSE	450k
206195	Voltage Constraint Feeder 88	Quality of Supply	350k
206168	Second Transformer at Wilder Road	System Growth	1.5M

Table 4-14: Material Projects for 2025/2026 to 2028/2029

4.4.3 Material Projects for 2029/2030 to 2033/2034

Project Number	Project Name	Category	Cost $
202232	Waipukurau Substation N-1 Rating Exceeded	System Growth	6M
206197	Install Alternative Supply to Takapau Zone Substation	Quality of Supply	6M
206203	Install 14.3km ADSS Aerial Fibre Circuit Between Waipawa GXP and Takapau	Quality of Supply	475k
206170	Waipawa GXP Reinforcement	System Growth	3M
206171	Zone Sub at Waipawa GXP	System Growth	3.5M
206173	Upgrade Waipukurau 33kV Lines 1 & 2	System Growth	6M

Table 4-15: Material Projects for 2029/2030 to 2033/2034

4.4.4 Material Projects for 2024/2025

Project Number	Title	Constraint Description	Options	Cost $	Solution
203380	Waipawa GXP Asset Acquisition & ODID	Transpower asset divestment and Centralines ODID project. Centralines has agreed to take over the 33kV bus at Waipawa GXP from Transpower. The existing bus is a legacy outdoor construction requiring upgrades to modern standards. This project will replace the existing bus with a modern indoor board allowing for expansion as Central Hawke's Bay requires additional sub-transmission circuits.	Network – Construct expanded indoor board. Network- Accept existing outdoor board.	3M	Construct new indoor 33kV board
206176	Feeder 15 Install Gaisford Terrace Ring.	Gaisford Terrace is an 11kV spur with no backfeed available, in 2022 this section experienced a cable fault requiring generation for several days. Customer reliability and the cost of generation has prompted Centralines to review the security risk in this area.	Network – Install backfeed.	665k	Install Backfeed
206163	Feeder 86 – Upgrade Sub B4/201	Otane is identified as an expansion area with consented subdivisions and ongoing construction activity. Growth in Otane is predicted to overload transformer and create voltage issues for existing customers.	Network – Upgrade existing unit. Network– Install new transformer	350k	Upgrade transformer

Table 4-16: Material Projects for 2024/20245

4.4.5 Material Projects for 2025/2026 to 2028/2029

Material projects for the 2025/26 to 2028/29 years are outlined below.

Project Number	Title	Constraint Description	Options	Cost $	Solution
206162	Feeder 86 – Loading Constraint	Predicted growth in Otane will create capacity constraints on Feeder 86	Network: Reconductor Network: Peaking generation Network: Reconductor entire circuit Network: Reconductor and offload Accept risk	350k	Reconductor and reconfigure network
208253	Voltage Constraint Feeder 2 North	Under-voltage indicated on Feeder 2 North - SH50 (Tikokino), Holden Road, Matheson Road, and Smedley Road: The report indicated that 92 transformers (239 ICPs) are at risk of breaching the regulatory voltage levels in the next ten-years.	Network: Install voltage regulator Network: Reconductor Accept risk	350k	Install voltage regulator
208274	Feeder 4, 11kV Conductor Upgrade	Existing back-feed capability between Feeder 4 and adjacent feeders is limited by 6km of Gopher conductor	Network: Reconductor Accept risk	800k	Reconductor
208254	Voltage Constraint Feeder 18	Under-voltage indicated in constraint report on Feeder 18, Farm Road. The report indicated that 38 transformers (72 ICPs) are at risk of breaching the regulatory voltage levels in the next ten-years.	Network: Install voltage regulator Network: Reconductor Accept risk	350k	Install voltage regulator
208272	Voltage Constraint Feeder 19	Constraint – Under-voltage predicted in constraint report.	Network: Reconductor Network: Voltage Regulator Accept risk	350k	Install voltage regulator

Project Number	Title	Constraint Description	Options	Cost $	Solution
208284	Voltage Constraint Feeder 46	Voltage constraint predicted on Feeder 46.	Network: Reconductor Network: Voltage Regulator Accept risk	350k	Install voltage regulator
208287	Feeder 4 – Voltage Constraint When Back–Feeding	Feeder 4 is predicted to incur voltage constraints when used to back-feed neighbouring feeders.	Network: Voltage regulator Non-network: 11kV transfer scheme Accept risk	350k	Install voltage regulator
208286	Feeder 1 – Voltage Constraint When Back–Feeding	Feeder 1 is predicted to incur voltage constraints when used to back-feed neighbouring feeders.	Network: Install embedded generation Non-network: 11kV transfer scheme Accept risk	350k	Install voltage regulator
206177	Feeder 83 – Voltage Constraint	Predicted voltage constraint on Feeder 83.	Network: Install voltage regulator Network: Conductor upgrade	350k	Install voltage regulator
206178	Upgrade Cable Waipawa Substation	Predicted overload on cable supplying Waipawa Substation.	Network: Upgrade cable. Network: Reinforce 11kV offloads.	560k	Upgrade cable
206181	Create Backfeed Between Feeder 74 and 75	Customers on Feeder 74 and feeder 75 without back feed.	Network: Install 1.2km of line.	450k	Install line
206195	Voltage Constraint Feeder 88	Voltage constraint predicted on Feeder 88.	Network: Reconductor Network: Voltage regulator Accept risk	350k	Install voltage regulator
206168	Second Transformer at Wilder Road	Predicted growth will overcome the ability of the 11kV network to provide contingency to Wilder Road.	Network: Install second transformer	1.5M	Install second transformer

Project Number	Title	Constraint Description	Options	Cost $	Solution
			Network: Reconductor 11kV Non-Network: Flexibility		

Table 4-17: Material Projects for 2025/2026 to 2028/2029

4.4.6 Material Projects for 2029/2030 to 2033/2034

All projects for 2029/2030 to 2033/2034 are in the initial identification stage. High level, preferred solutions have been identified and costs estimated. However, all constraints and possible solutions will be reviewed during annual planning to confirm the constraints still exist and the timing of the constraints have not changed. More detailed investigation into the solutions will be undertaken closer to the planned commencement of the project.

Network development works for this period will be dependent on the energy demand growth experienced on the network. Most energy demand growth on the Centralines' network for the planning period is expected to be driven by customer-driven works and is not included here.

Customers have indicated that the current trade-offs between reliability and price are appropriate and as a result it is suggested that further investment will generally be limited to relatively minor upgrades to the worst-performing feeders to ensure that customers currently experiencing poor reliability on feeders are progressively upgraded.

Safety-driven upgrades are expected to remain relatively minor during the planning period, due to the relatively robust nature of the network, age profiles of the assets and the level of investment in renewals and replacements that are discussed in Section 5.

Project Number	Title	Constraint Description	Options	Cost $
202232	Waipukurau Substation N-1 Rating Exceeded	Long term growth projections from council would result in loads above the existing Waipukurau Substation rating Works are planned in 2024 to defer constraint until at least 2030	Network: Upgrade transformer only Network: Establish new zone substation Network: Upgrade full substation Non-Network: Flexibility	6M

Project Number	Title	Constraint Description	Options	Cost $
206197	Install Alternative Supply to Takapau Zone Substation	Takapau Zone Substation is Centralines second largest substation by demand and supplies the largest single customer. It is currently supplied via one 15km line with limited backup available through the 11kV network	Network: Alternative 33kV connection Network: Install embedded generation Network: 11kV transfer scheme Accept risk	6M
206203	Communications Between Waipawa GXP and Takapau Zone Substation	Issue C55E54C967 Communication to Takapau Substation is not reliable enough for modern protection and SCADA systems	Network: Install fibre to site	475k
206170	Waipawa GXP Reinforcement	Predicted load and generation growth will exceed the supply capabilities of the existing GXP	Network: Upgrade Transformers Non-Network: Flexibility	3M
206171	Zone Sub at Waipawa GXP	Predicted growth will exceed the supply capabilities of existing 11kV supplied from Waipawa GXP	Network: Create 33kV:11kV zone substation Network: Offload existing feeders onto other Centralines substations	3.5M
206173	Upgrade Waipukurau 33kV Lines 1 & 2	Predicted growth will exceed the 12MVA rating of Waipukurau circuits	Network: Reconductor Network: Build new circuits Non-Network: Flexibility	6M

Table 4-18: Material Projects for 2029/2030 to 2033/2034

4.5 Determination Reference Mapping Table

Section 4 Reference		Determination Reference
4.1	Introduction to this Section	11
4.2	Network Development Planning Objectives and Criteria	11.1, 11.2
4.3	Network Development Planning Process	11.1, 11.2, 11.11, 11.3, 11.4, 11.4.1, 11.4.2,11.5, 11.6, 11.7, 11.8.1,11.8.2, 11.8.4, 11.12, 11.12.1, 11.12.2
4.4	Network Development Projects	11.7, 11.8.3, 11.9 including 11.9.1 to 11.9.3, 11.10, including 11.10.1 to 11.10.3, 11.12.1 to 11.12.2

Table 4-19: Determination Reference Mapping Table

SECTION 5 //// RIMA

ASSET MANAGEMENT PLANNING

CENTRALINES
LIMITED

2024-34 REGULATORY ASSET MANAGEMENT PLAN

CONTENTS

5. ASSET MANAGEMENT PLANNING

5.1 Introduction to this Section

Section 5: This section provides an overview of Centralines' approach to Asset Management Planning. The specific planning processes covered within this section are:

- Asset Renewal Planning
- Maintenance Planning, and
- Vegetation Planning.

These planning processes are critical to provide assurance that risks to the Asset Portfolio are effectively managed and opportunities for improvement are realised.

This section also contains summary information on assets including:

- asset descriptions
- asset condition and performance assessments
- age profile graphs
- maintenance plans
- relevant Asset Management Objectives (AMOs) and associated replacement and refurbishment drivers
- tables detailing asset maintenance and renewal expenditure projections, and
- lists of known renewal projects over the planning period.

A table that maps the requirements of the Electricity Distribution Information Disclosure Determination to the information provided is available at the end of the section to support assessment of compliance.

Centralines' asset management service provider Unison is certified to ISO 55001 which is the international standard that contains the requirements specification for an integrated, effective, asset management system. Key processes and continuous improvements associated with asset management planning, including asset renewal and maintenance planning, developed as part of this certification, will be fully adopted over time to manage Centralines' asset fleet. This will result in the enhancement of processes described in this section.

5.2 Overview of Asset Management Planning

5.2.1 What is Asset Management Planning?

Asset management planning is the process that develops and manages the plans that specify future work on the asset portfolio over a ten-year planning horizon. These processes utilise asset information and apply risk management principles to ensure that decision-making is robust and fact-based.

All work proposals submitted to the Asset Management Plan (AMP) must meet certain information requirements, including assessment against the AMP Risk Schema. This ensures that an acceptable balance between cost, risk and performance can be achieved, and resources can be efficiently and prudently deployed. The outputs are plans that specify clear tasks and projects to be initiated and scheduled to maximise the efficiency of resource utilisation and capitalise on any synergies to effectively manage asset related risks.

The desired outcome of Asset Management Planning is to achieve Centralines' AMOs (Refer 2.3.4).

Centralines' Asset Management Planning System is represented in Figure 5-1. The planning processes covered in this section are highlighted in orange.

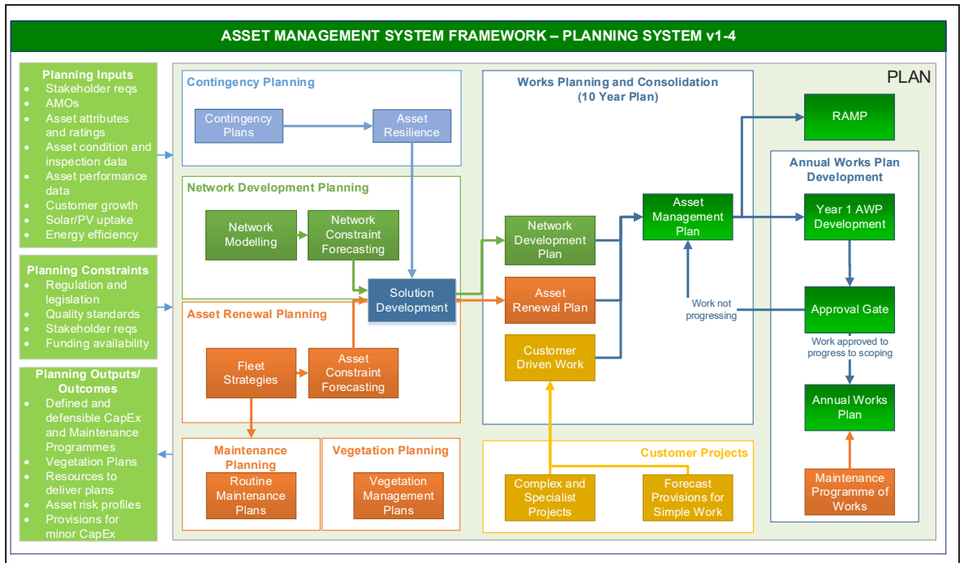


Figure 5-1: Asset Management System Framework – Planning Systems

5.2.2 Key Elements of Asset Management Planning

Table 5-1 below provides a brief description of the key elements of the Asset Management Planning processes covered in this section.

Asset Management Planning Process	Key Elements
Maintenance Planning	Establishment of annual routine maintenance plans including preventive maintenance programmes, and asset inspection and monitoring programmes.
Asset Renewal Planning	Identify and quantify risks in the Asset Portfolio relating to asset condition and capture these as constraints in the AMP. Consider options, develop solutions, and specify project proposals (including asset risk profiles and associated risk costs) to address high priority asset condition risks and submit these proposals to the AMP. These project proposals may include solutions to other types of identified constraints, i.e., capacity related issues in the same geographical confines. Specify project proposals to improve the resilience of the Asset Portfolio based upon requirements from enterprise risk management and contingency planning processes.
Vegetation Planning	Establishment of annual plans for the management of vegetation, including trees encroaching the line corridor, that represent risk to the Asset Portfolio.

Table 5-1: Asset Management Planning – Key Elements

5.2.3 Key Asset Management Planning Objectives and Drivers

The purpose of Asset Management Planning is to ensure that assets can perform their intended functions safely, reliably, and at lowest cost, throughout their lives to meet Centralines' AMOs.

To achieve this purpose, Centralines aims to optimise the cost of asset management while meeting network performance service levels, and not increasing the risk profile to the business. Centralines' objectives are to:

- ensure no assets cause health and safety risks to the public, employees, or contractors
- optimise asset renewal CapEx over the planning period
- optimise network OpEx over the planning period, and
- meet network performance for SAIDI and SAIFI in line with Statement of Corporate Intent (SCI) targets.

5.2.4 Asset Management System (AMS)

Figure 5-2 depicts at a high-level Centralines' Asset Management System (AMS) which ensures "line of sight" and alignment across the organisation.

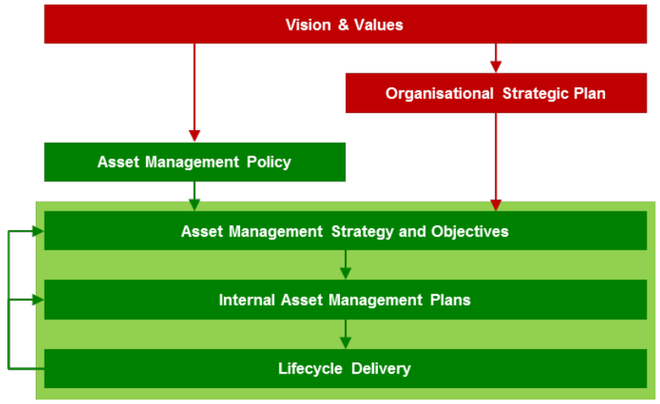


Figure 5-2: Asset Management System

5.3 Maintenance Planning

5.3.1 Maintenance Overview

Maintenance planning at Centralines is undertaken to ensure that Centralines' assets can support the achievement of its AMOs. Maintenance activities are designed to support an asset effectively continuing to perform its intended function until it requires renewal. This is achieved by understanding the condition of assets and how this changes over time by inspecting and testing, preventatively maintaining the assets, and correcting defects as they are identified.

5.3.2 Maintenance Planning Drivers

Maintenance is targeted to ensure that Centralines' assets can support the achievement of AMOs while optimising the balance between cost, risk, and performance. Supplementary, aligned, maintenance drivers are outlined in Table 5-2. Many of these drivers are integral and encompassed in Centralines' AMOs.

Driver	Driver Descriptions
Public, Employee and Contractor Health and Safety	Ensuring assets are fit for purpose and in a condition that allows them to be safely operated by Centralines' employees.
	Ensuring assets are physically secure and will not cause harm or be easily accessed under normal circumstances by Centralines' customers or members of the public.
	Taking all practicable steps to ensure any asset failures do not cause harm to Centralines' customers, contractors, members of the public and environment or cause damage to third party property.
	Taking all practicable steps to ensure Centralines' assets operate as intended and designed, e.g., a recloser or circuit breaker will operate correctly in the event of a fault and safely isolate the faulted section of network.
	Ensuring maintenance policies, programmes and practices align and are consistent with Centralines' Public Safety Management System.
Legislative and Regulatory Compliance	Ensuring Centralines' maintenance planning, policies and programmes meet all legislative and regulatory requirements.
	Where appropriate, ensuring Centralines' maintenance planning practices as a minimum conform to industry best practice, relevant standards and guidelines and original equipment manufacturers' (OEM) specifications.
Asset Information Gathering	Invasive and non-invasive testing, inspections, and diagnostics of assets to ascertain their status and condition. This information is essential in asset management decision-making and drives much of the asset renewal programme, as well as the planned and corrective maintenance programmes.

Driver	Driver Descriptions
Managing Risks of In-service Failures	Ensuring assets are fit for purpose and are adequately maintained to function as intended, over their useful lives.
	Ensuring Centralines' maintenance practices keep assets functioning at a level that meets current SCI network reliability performance targets.
	Extracting optimal value (including life extension) from Centralines' assets by timely, efficient, and cost-effective maintenance interventions.
	Ensuring asset testing and maintenance inspections are effective by obtaining relevant, accurate, and reliable, fit-for-purpose condition assessment data and information that can be transformed into knowledge thereby enabling optimal asset management decision-making.
Cost/Efficiency	Focusing on optimising costs by implementing appropriate maintenance strategies that proactively identify and address potential asset/network issues before they become faults, i.e., planned, and proactive versus reactive maintenance.
	Ensuring the best decisions are made between different modes of maintenance (repair, refurbish, or replacement) using sound engineering judgement, existing tools, and the development and enhancement of expert decision support systems.
	Working with Centralines' asset management service provider to identify and monitor efficiency measures, and make continuous improvements to procedures, processes, and practices, to improve the efficiency and delivery of the maintenance programme.
Manufacturer Specifications and Recommendations	Ensuring published guidelines on the maintenance of equipment are met (where appropriate) to ensure best practice.

Table 5-2: Centralines' Detailed Maintenance Drivers and Descriptions

5.3.3 Maintenance Planning Assumptions

Centralines' current maintenance strategies and plans have been developed and are being executed based on the assumptions detailed in Table 5-3.

Centralines' Maintenance Planning Assumptions
Data being used in asset management decision making is fit for purpose.
No significant changes in legislative, regulatory, or statutory requirements, e.g., Health and Safety, will transpire requiring major changes in focus or priorities.
Current network reliability performance targets are maintained, i.e., there is no material change to SCI SAIDI / SAIFI targets.

Table 5-3: Centralines' Maintenance Planning Assumptions

5.3.4 Maintenance Planning Process

Centralines' current maintenance planning approach is shown and explained in the Figure 5-3 and Table 5-4.

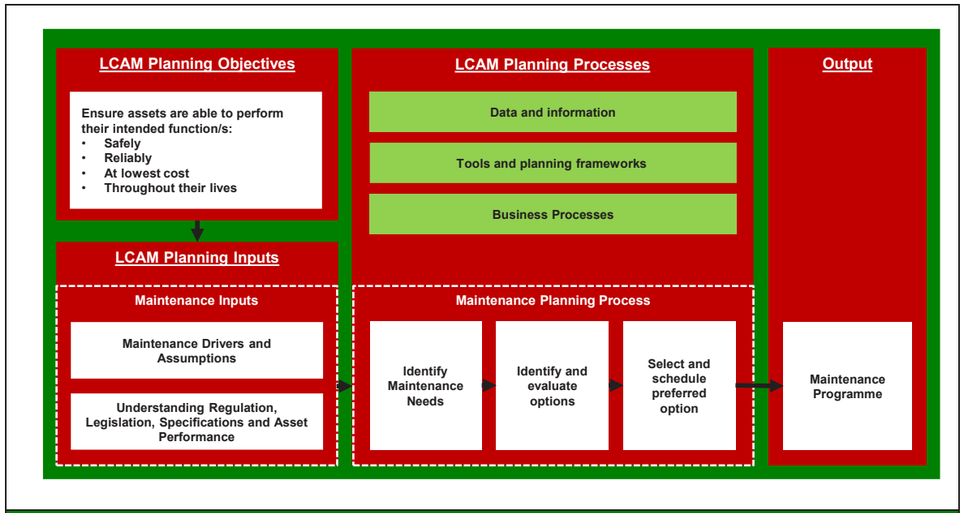


Figure 5-3: Maintenance Planning Approach

Group	Element	Description
Maintenance Inputs	Drivers and Assumptions	Maintenance drivers and assumptions are balanced qualitatively by asset engineers to form recommended, planned maintenance activities for each asset class.
	Regulations, Legislation, Specifications and Asset Performance Expectations	Asset engineers review relevant regulations and legislation as well as manufacturers' specifications / recommendations for asset maintenance. The asset engineers weigh these requirements against the performance expectations of the assets and any associated risks to determine the required maintenance types and levels.
Maintenance Planning Process	Identify Maintenance Needs	Maintenance requirements are identified by asset engineers. The asset engineers are tasked with assessing relevant regulation and legislation and the manufacturers' specifications for recommended maintenance types / levels. These 'base' requirements are then blended with the asset engineers' requirements for information gathering on the asset, the assets' individual performance requirements and history.
	Identify and Evaluate Options	The types of maintenance activities performed are driven primarily by the requirements of the maintenance programme and the availability of technology / equipment

Group	Element	Description
		and contractor resources. The asset engineers determine what type of maintenance will best meet the requirements and will be able to be delivered.
	Select and Schedule Preferred Option	A formal process of recommendations, challenge, review, and finalisation is followed to ensure outputs are optimal and deliverable. It is during this challenge and review process that contractor resourcing and budgeting is taken into consideration.
Maintenance Output	Maintenance Programme	The maintenance programme is the combined output of the maintenance planning process. It is an annually updated programme of work to maintain assets over the coming ten-year period. Types of maintenance included in the Maintenance Programme are described in Section 5.3.5.

Table 5-4: Centralines' Maintenance Planning Process

5.3.5 Maintenance Approaches

Centralines employs a combination of methods to maintain, inspect and test its portfolio of assets through its planned and reactive / corrective maintenance programmes. These include age, time, condition, reliability, and risk-based approaches.

5.3.5.1 Age Based Maintenance

Asset age is gradually becoming less of a driver in determining when a maintenance intervention should occur. However, age-related factors such as insulating materials in circuit breakers, e.g., oil vs vacuum or gas, cost and availability of spares and asset functionality will continue to impact on maintenance regimes and influence renewal programmes.

5.3.5.2 Time Based Maintenance

Time based maintenance is maintenance including inspections and testing conducted at a predetermined frequency or interval. This frequency is influenced by drivers such as regulatory and statutory requirements, industry guidelines and best practice, Centralines' engineering experience and original equipment manufacturers' (OEM) specifications.

5.3.5.3 *Condition Based Maintenance*

This maintenance occurs where it has been determined the most effective action is a maintenance intervention based on an asset's current condition. Condition based maintenance occurs through effective asset condition monitoring including inspections and testing, or as identified by other means such as Centralines' asset defect process (refer 5.3.7).

5.3.5.4 *Risk Based Maintenance*

Centralines is continuing to move towards Condition Based Risk Management (CBRM) which not only considers the condition of an asset but also the consequences and associated risks of that asset failing. CBRM over time will become more influential in the identification and prioritisation of maintenance and renewal programmes and tasks.

5.3.5.5 *Reliability Centred Maintenance*

This is maintenance that focuses on maintaining system reliability and performance. In a Centralines context this includes the identification of failure modes through Failure Mode and Effects Analysis (FMEA) or analysis of reported defects and the subsequent identification of maintenance or potential renewal strategies to mitigate these failures.

5.3.6 Maintenance Categories

Centralines' asset specific maintenance programmes and related activities incorporating the above approaches are classified into the following categories which are aligned to determination definitions.

5.3.6.1 *Service Interruption and Emergency Maintenance (Urgent Reactive Maintenance)*

This is reactive maintenance undertaken in the immediate or short-term in response to an unplanned event. Typically, these events relate to network faults caused by asset failures, vegetation, adverse weather, and third-party damage, etc.

Centralines generally breaks this category down into two levels of response.

1. First Response
   This is categorised as the initial response to find and isolate the fault, mitigate any health and safety risks and to subsequently fully or partially restore supply if possible.

2. Second Response
   This is further reactive maintenance work required beyond the scope of First Response to undertake either temporary or permanent repairs and restore supply. All the above relate to operational expenditure. A reasonable portion of second response activities will involve renewal of capital items, and as such will be carried out as capital expenditure under Asset Replacement and Renewal.

5.3.6.2 *Vegetation Management*

Vegetation Management includes the inspection, liaison and cutting activities (planned and reactive) associated with the control of vegetation for the primary purpose of compliance with the Electricity (Hazards from Trees) Regulations 2003. Centralines' vegetation control programme is determined by the outputs of routine feeder inspection programmes, and vegetation-related defects identified on the network through a number of other ways including customer and staff notifications.

Centralines is constantly reviewing and developing its vegetation control programme in an effort to improve the efficiency of the cutting programme and to mitigate the issues created by vegetation both within and outside the powerline corridor. An example of this is the introduction of an herbicide application programme and the optimisation of the programme utilising aerial feeder inspections when undertaken.

5.3.6.3 *Routine and Corrective Maintenance and Inspection (Planned/Preventative Maintenance)*

This category encompasses prescribed, budgeted maintenance tasks (maintenance baseline) carried out to an agreed schedule and typically includes routine asset maintenance and servicing, inspections, testing and condition assessments. A significant portion of this maintenance is prescribed by maintenance standards and related service codes adopted by Centralines.

This category also includes non-urgent remedial work carried out as planned activities after service interruption and emergency work or maintenance identified by Centralines' defect process, asset condition assessments, testing, inspections, and field observations.

5.3.6.4 *Asset Replacement and Renewal*

Asset replacement and renewal maintenance relates to the replacement or renewal of non-capital items. This covers planned remedial work on assets including replacement of asset components and asset refurbishment. Typically, this maintenance is initiated as a result of asset inspections and testing, condition assessments and defect reporting.

5.3.7 Defect Process

Centralines has a defect process which will be incorporated into its' service providers Enterprise Asset Management System (EAMS), OneEnergy.

The process details how identified network asset defects are reported, prioritised, and remediated. All identified defects are categorised in terms of urgency based on the rationale outlined in Table 5-5.

Note: The examples given below are indicative only and will be subject to the criticality of the asset and severity of the defect. These factors will be considered by the competent person raising the defect and will determine the priority.

Priority	Defect Type	Description	Response	Indicative Examples
P5	Minor Defect	Defects that do not affect the operational security of the network or present a safety hazard as determined by a competent person on site. Level of deterioration that will not result in functional failure before the next scheduled Preventive Maintenance or Inspections and Monitoring work.	Defect to be reported to UNL to be considered for inclusion in the AMP as part of a broader body of work in the future.	Graffiti on a pole, transformer, ped, etc A danger sign is missing on a pole Pollution or moss build-up on an insulator Missing possum guard Cable riser duct with slight UV damage Insulation breakdown on LV overhead conductor Deteriorating paintwork on substation building Lost connection to weather station or thermal resistivity sensor A discovered design issue with a specific model or age range equipment which can be opportunistically resolved Minor software/firmware issue
P4	Non-urgent defect (12 months)	Defects that do not affect the operational security of the network or present an immediate safety hazard as determined by a competent person on site. Level of deterioration that should not remain for more than 12 months.	Work is to be raised as Corrective Work and scheduled for an opportune time.	A staywire fence is broken or missing in a sheep paddock Ring main unit (RMU) has minor cracks in the concrete foundation
P3	Non-urgent defect (3 months)	Defects that do not affect the operational security of the network or present an immediate safety hazard as determined by a competent person on site. Level of deterioration that should not remain for more than three months.	Work is to be raised as Corrective Work and scheduled.	An air break switch (ABS) is difficult to operate, or has a broken or bent handle Ground mount transformer has a minor oil leak A leaning pole exceeding design limits Overhead conductor clearance issue to road/building Bent mounting bracket for overhead equipment
P2	Urgent Defect (1 month)	Defects that mean the network will be operated in an abnormal configuration until repairs can be made, or that failure of the asset is possible, but do not present an immediate safety hazard as determined by a competent person on site. Level of deterioration that should not remain for more than four weeks.	Work is to be raised as Corrective Work and scheduled for the current month.	High partial discharge is recorded on an insulator A pole with loose foundations A high temperature detected on a connection compared to adjacent equipment One earth missing or broken, but other earthing on nearby assets still present and MEN system is not compromised Bent cooling fins on a transformer
P1	Critical Defect	Defects that affect the operational security of the network, and/or are a safety hazard as determined by a competent person on site. Level of deterioration that requires immediate action.	Defect is to be addressed immediately. Work is to be raised in EAMS after Corrective Work is complete.	Is unsafe and requires immediate rectification Branch or other material on overhead conductor Missing screws due to vandalism Heavily frayed overhead conductor Pedestal unsecured allowing access to internals Arcing equipment Cracked insulator

Table 5-5: Defect Priority Descriptions

5.4 Asset Renewal Planning (ARP)

5.4.1 ARP Purpose

The purpose of Asset Renewal Planning (ARP) is to identify and prioritise assets for replacement or corrective maintenance. This planning is based on the condition-related risk of in-service failure and the likely consequences should a failure occur.

The ARP process culminates in the creation of a risk-based, ten-year asset renewal plan. Years one and two are very detailed in terms of specific, verified constraints, risk scoring, options analysis, optimal solution, project scope and cost.

Years three to five are less detailed and while constraints may be identified with defined risks, not all will be verified or specific solutions identified, and costings will be high level.

Years five to ten are again less detailed and all constraints are reviewed and updated on an annual basis to incorporate the latest asset information and ensure any new constraints are identified and appropriately managed.

5.4.2 ARP Overview

ARP involves balancing the risk of assets failing in service and the subsequent consequences, against the cost of renewal or other life extending interventions. ARP accesses diverse sources of information and is reliant on determining and understanding the physical condition of assets. This information is transformed into knowledge and actionable priorities by decision support tools such as CBRM. The outputs of these models are supplemented by the application of expert engineering judgements and verification by experienced field and specialist personnel who have detailed knowledge and experience of specific asset classes.

Where possible and available, standard information relevant to asset attributes and lifecycle information is stored in asset fleet strategies. These strategies recommend:

- the monitoring and inspections required to ascertain asset health, and
- asset specific considerations for the scope and timing of asset renewals.

Asset attribute and condition information, including most inspection results and test data is predominantly recorded within Centralines' service providers Enterprise Asset Management System (EAMS). This information supports the establishment of asset condition indices, which represents the likelihood of an asset failing within a given timeframe.

Another important risk factor to be considered is the consequence should an asset fail. A consequence framework has been developed which provides an output for each identified asset constraint and is combined with the likelihood factor (asset condition indices). This enables the establishment of a holistic risk assessment for each asset constraint, which facilitates the prioritisation of issues across the asset portfolio within the AMP. A risk cost can also be derived to support the justification of the work.

Centralines has adopted Unison's *AMS-0003 AMS Risk Management Guidelines* which provides guidance to managing risk within the AMS. This document describes four key activities:

- identify risk
- analyse risk
- evaluate risk, and
- treat risk.

The ARP process is set out in Figure 5-4 and shows the mapping to AMS-0003 activities. Submitting asset risks to the AMP is not considered part of risk analysis but is an important part of the process that culminates in projects being developed and included in agreed AMP work programmes.

ARP has four key components:

1. Asset Condition Analysis (identify risk)
2. Asset Risk Analysis (analyse and evaluate risk)
3. Solution Development (treat risk), and
4. AMP Submission.

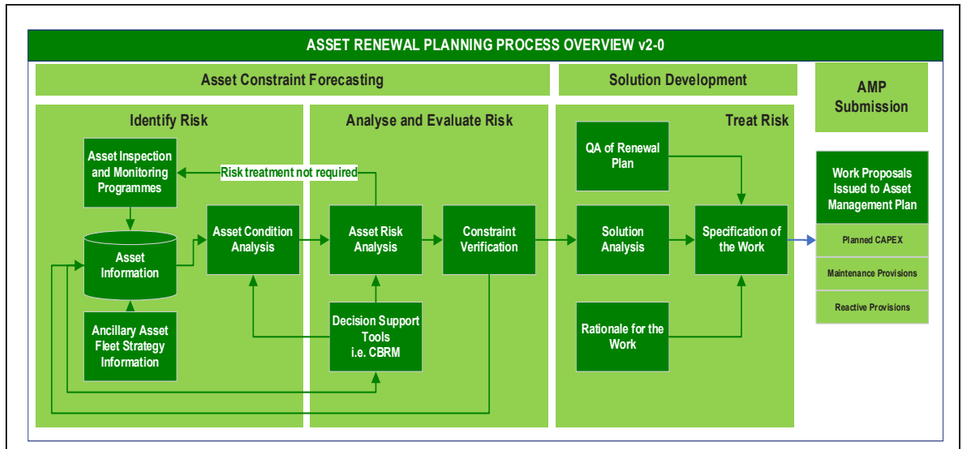


Figure 5-4: Asset Renewal Planning Overview

5.4.3 Asset Constraint Forecasting

5.4.3.1 Purpose

The purpose of Asset Constraint Forecasting is to identify risks based on asset condition. On completion of the condition analysis, a likelihood of failure is derived. This is used to rank assets based on condition across Centralines' asset portfolio.

5.4.3.2 *Overview*

Assets in poor condition have an increased likelihood of in-service failure, and therefore present an elevated risk to the business. Once identified, these assets are 'tagged' for replacement or corrective maintenance. This stage is aided by decision support tools such as CBRM. Critical inputs to determine asset condition are the asset's:

- age
- type
- inspection / test results
- work / defect and operational history, and
- any relevant environmental factors which influence the condition of the asset.

Figure 5-5 outlines an overview of the Asset Constraint Forecasting Process.

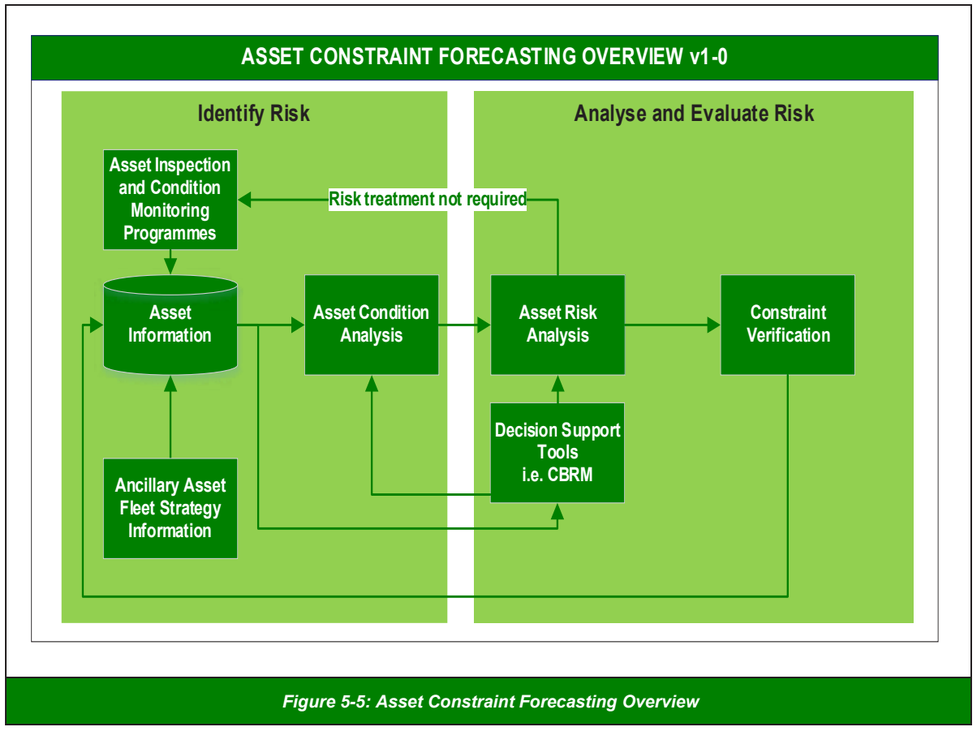


Figure 5-5: Asset Constraint Forecasting Overview

5.4.3.3 *Stages of Asset Constraint Forecasting*

Each stage of the Asset Constraint Forecasting Process is summarised in Table 5-6: Stages of Asset Constraint Forecasting below. There is a further document available *AMS-1007 - Asset Constraint Forecasting Process* which contains detailed information of this process.

Stage	Description
1. Asset Inspection and Condition Monitoring Programmes	Inspection and testing programmes are in place for respective asset fleets to: • understand the condition of their constituent assets, and • ensure individual assets can fulfil their functional requirements.
2. Asset Information	Attributes and test points for each asset are captured in either the Enterprise Asset Management System (EAMS) or an auxiliary condition database.
3. Ancillary Asset Fleet Strategy Information	Inputs regarding asset lifecycle strategy such as information from Safety Alerts, resilience planning, or internal audit findings.
4. Asset Condition Analysis	The review of the asset information and grading the condition of the asset to determine the likelihood of failure.
5. Asset Risk Analysis	This combines the likelihood of failure with the consequence factors such as safety, network performance, financial, and environmental impacts to determine the overall risk of failure of an asset.
6. Decision Support Tools	Tools such as CBRM are used to prioritise asset renewals based on the consequence and likelihood of an asset failure.
7. Constraint Verification	Validation of the asset risk to ensure risk models are functioning as expected. This can be performed through a site visit or desktop evaluation using available information in corporate systems.

Table 5-6: Stages of Asset Constraint Forecasting

5.4.4 Solution Development

5.4.4.1 *Purpose*

The purpose of Solution Development is to identify and specify the preferred engineering solution to mitigate risks in the network. These risks are identified by the Asset Constraint Forecasting process for inclusion in the AMP.

Solution Development requires:

- an understanding of the risk, the physical asset, and its surrounds, and
- awareness of network constraints, available options, other planned work, and cost / estimating.

Solution Development commences when:

- a constraint has been identified
- the risk has been quantified, and
- the risk is sufficient that action should be taken to control it.

Solution Development involves identifying the most optimal control for the risk, considering the key asset management drivers of cost, risk, and performance.

Solution Development is completed when:

- an appropriate solution has been identified, and
- this solution has been proposed as a capital project to the AMP, or work has been issued out of an OpEx provision.

5.4.4.2 *Solution Development Process*

Figure 5-6 outlines the key elements of Solution Development.

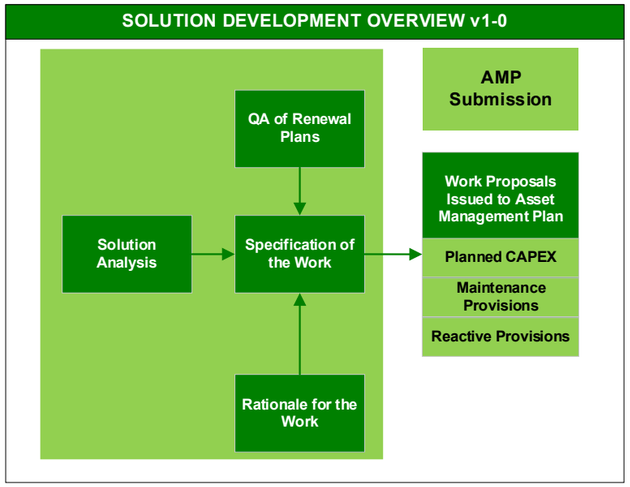


Figure 5-6: Solution Development Workflow

The key steps in Solution Development are set out below.

1. Solution analysis
2. Specification of the work
3. Rationale for the work
4. Submission to the AMP.

5.4.4.3 *Solution Analysis*

Solution analysis involves the evaluation of all the AMP issues spanning years three to ten of the planning horizon to form a combined ten-year view of work. While issues arising in years one and two of the planning horizon form part of the overall process, they are not reviewed in the solution analysis stage. Year one and two issues are scoped and approved to proceed before they reach the years one and two planning horizon.

The Network Development and Asset Management Teams work collaboratively to ensure proposed solutions benefit from potential timing and consolidation synergies that may be achieved across both constraint types. The same level of systematic and optimised decision making is practiced during a combined evaluation to ensure alignment with the Asset Management Objectives (AMOs). This results in clusters of issues that can be assigned to a specification of work.

5.4.4.4 *Specification of the Work - Scope Solution*

A specification of work is completed by an assigned engineer and considers:

- the context of each cluster (applying knowledge from supporting systems)
- the potential packaging of solutions, preparation of the specification for work to meet the key drivers of asset management, and
- generation of a project in the AMP to resolve the identified issues.

Work specified as part of ARP outlined in this section will be the primary driver for identifying optimum solutions. However, constraints identified by Network Constraint Forecasting (refer Section 4.4) and synergies with other identified work will be considered to ensure the optimisation and efficiency of identified solutions.

Specifications will detail:

- the asset(s) to be installed, maintained, removed, or renewed,
- the work requirement including installation and construction
- or in the case of maintenance, references to the appropriate standards defined in the project and
- relevant issues registered against the project.

This specification provides the basis for estimating the project value.

5.4.4.5 *Rationale for the Work*

This provides the justification for the selected solution including rationale where the solution is mitigating more than one identified constraint or issue. The level of detail will vary depending on the complexity of the solution but typically includes the description, supporting calculations and other relevant information. The developed rationale forms part of the executive summary which is submitted against the issue or constraint in the AMP.

5.4.4.6 *Submission to the AMP*

Every six months projects are submitted to the AMP for quality assurance and final approval

Quality assurance of the AMP submissions involves:

- frequent reviews throughout the year by the service providers Technical Leads to ensure the objectives of the rationale and specification of works are met, and
- a full review by the service providers Strategic Asset Manager and Energy Solutions Manager one month prior to the bi-annual Works Planning and Consolidation submission.

5.4.5 Planned Improvements to ARP

5.4.5.1 *Fleet Strategies*

A cornerstone of ARP is Centralines' respective asset fleet strategies. These strategies record key information related to the asset fleets in three main contexts.

1. What Centralines knows about the asset fleet, which details:
   - decisions made in the past and associated rationale
   - failure modes experienced both locally and outside of Centralines' portfolio, and
   - volumes and conditions of the assets within the fleet.
2. What Centralines needs from the asset fleet. This context details:
   - the functional requirements of the asset fleets aligned to corporate objectives through the Asset Management Policy and Asset Management Objectives.
3. How Centralines optimises what it needs from the assets through maintenance and renewal strategies.

Centralines has established a template for fleet strategies and a maturity roadmap articulating the current maturity of each fleet strategy and the intended development roadmap over time. The intention is for this content to perpetually evolve as the institutional knowledge of the organisation grows.

5.4.6 Asset Renewal Planning Drivers

Asset renewal planning is undertaken to ensure that Centralines' assets can support the achievement of its AMOs.

Centralines' renewal drivers incorporate cost, risk, and performance aspects. The challenge of quantifying and combining all relevant variables is in many cases complex. In practice, Centralines' renewal plan is regularly influenced by a combination of the drivers outlined in Table 5-7.

Centralines' Renewal Drivers
Reducing the likelihood of in-service failures (generally based on asset condition).
Mitigating or reducing the consequences and risks (staff and public safety, environmental, reputational damage, etc.) associated with an in-service failure and any cost-effective non-renewal mitigations that may be available.
Consideration of the availability and cost of spares and skilled resources.
The benefits of increased functionality, i.e., ability to provide network or asset condition information, etc., lower maintenance costs and increased performance of modern equivalents.
The difference in cost between a planned vs reactive asset replacement.
Synergies including both practical and economic considerations with other renewal projects which may result in the acceleration or deferral of asset renewals.
Integration synergies of asset renewal projects with other programmes of work including system growth, reliability, safety and environment and customer-driven projects.

Table 5-7: Centralines' Renewal Drivers

5.4.7 Renewal Expenditure Modelling Assumptions

The key assumptions underlying Centralines approach to modelling renewals are outlined in Table 5-8.

Renewal Expenditure Modelling Assumptions
Network assets become less reliable as they age.
There is a risk: Cost trade-off between replacing assets preventatively, i.e., pre-failure, and replacing assets reactively, i.e., post-failure.

Table 5-8: Renewal Expenditure Modelling Assumptions

5.4.8 Top-down Planning (Renewal Envelope)

Centralines uses the Renewal Envelope (RE) as a top-down budgeting tool to determine the optimal level of renewal relative to the total asset base. In practice, Centralines uses the RE each year to provide this top-down budget view which is then combined and compared with the bottom-up list of constraints (projects). An exercise is then undertaken as part of the asset management planning process to integrate and optimise these two views by balancing cost, risk, and performance drivers in alignment with Centralines' Business and Asset Management Objectives.

The RE looks at individual assets extracted from Centralines' GIS and calculates a benefit:cost ratio of renewal for each year on the planning horizon. Where this ratio exceeds one, the asset is flagged for renewal. The benefit:cost ratio in turn is strongly dependent on the ratio of reactive to preventative replacement cost for assets, by asset class.

The RE offers two additional modes of operation which are sometimes used for top-down renewal budgeting purposes, namely:

- fixed annual renewal investment, in which case the RE calculates the aggregate network remaining life expectancy over the planning horizon, and
- fixed aggregate remaining life expectancy for the network, in which case the RE calculates the annual renewal investment required over the planning horizon.

5.5 Asset Lifecycle Management by Asset Category

5.5.1 General Section Overview and Format

The assets which Centralines manages throughout their lifecycle are summarised in this section. The classes of assets covered in this section are listed in Table 5-9. These categories are consistent with the minimum requirements prescribed by the determination. Asset categories have been expanded in some instances to provide further clarity on lifecycle activities undertaken on groups of assets in each category.

Asset Class	Section Reference
Sub-transmission: 33kV Overhead Lines	5.7
Sub-transmission: 33kV Underground Cables	5.8
Zone Substation: Power Transformers	5.10
Zone Substation: 33kV Circuit Breakers	5.11
Zone Substation: 11kV Circuit Breakers and Switchboards	5.12
Zone Substation: Buildings	5.13
Zone Substation: Ripple Injection / Load Control Plants	5.14
Poles: All Voltages	5.15
Distribution and Low Voltage Overhead Lines	5.16
Distribution and Low Voltage Underground Cables	5.17
Distribution Transformers	5.18
Voltage Regulators	5.19
Overhead Distribution Switchgear	5.20
Ground Mounted Distribution Switchgear	5.21

Table 5-9: Asset Class Descriptions and Section References

Detailed information is provided on each of the above asset categories. Table 5-10 summarises the sub-sections included and describes the information provided under those sub-sections.

<table>
<tr><th>Sub-section Heading</th><th>Information Provided</th></tr>
<tr><td>Asset Group Category Description</td><td>Where a group of assets has been broken down, a general description of the high-level category is provided.</td></tr>
<tr><td>Asset Description and Quantity</td><td>Describes at a high-level each asset class, its function and voltage and provides details on the total number or length of assets included in the asset category.</td></tr>
<tr><td>Asset Condition and Performance</td><td>A high-level commentary is provided on the overall condition and performance of the asset category. Any systemic issues which have led to the premature replacement of assets are identified as well as mitigations to address these issues.</td></tr>
<tr><td>Asset Condition Assessment</td><td>For each asset category, the relevant excerpt from Schedule 12A has been included. This provides a general asset category condition overview based on 2024 information.
The condition grade of an asset is as described in the determination and detailed in the table below.
<table>
<tr><th>Condition Grade</th><th>Condition Description</th></tr>
<tr><td>H1</td><td>Replacement recommended.</td></tr>
<tr><td>H2</td><td>End of life drivers for replacement present, high asset related risk.</td></tr>
<tr><td>H3</td><td>End of life drivers for replacement present, increasing asset related risk.</td></tr>
<tr><td>H4</td><td>No drivers for replacement, normal in-service deterioration.</td></tr>
<tr><td>H5</td><td>As new condition – no drivers for replacement.</td></tr>
</table>
In addition, an assessment on the accuracy of the data used to grade the asset condition is included based on the determination descriptions in the table below.
<table>
<tr><th>Data Accuracy</th><th>Data Accuracy Description</th></tr>
<tr><td>1</td><td>Good quality data is not available for any of the assets in the category and estimates are likely to contain significant error.</td></tr>
<tr><td>2</td><td>Good quality data is available for some assets but not for others and the data provided includes estimates of uncounted assets within the category.</td></tr>
<tr><td>3</td><td>Data is available for all assets but includes a level of estimation where there is understood to be some poor-quality data for some of the assets within the category.</td></tr>
<tr><td>4</td><td>Good quality data is available for all the assets in the category.</td></tr>
</table></td></tr>
</table>

Sub-section Heading	Information Provided
Asset Age Profiles	Asset age profile graphs based largely on 2023 disclosure information are included. These graphs identify the quantity or length of assets and their corresponding installation or manufacture dates. There may be minor differences between the disclosure information and the graphs provided. This is due to data improvements which have enhanced the accuracy of the original information.
Maintenance Plan	Centralines' general approach to inspecting and maintaining each asset category is outlined together with a detailed description of the types of inspections, tests, and condition monitoring undertaken including the frequency. It can be assumed for all asset classes that corrective maintenance is carried out on an 'as required' basis following condition monitoring, tests, and inspections or as a result of Centralines' defect process.
Asset Replacement and Refurbishment	Renewal and refurbishment drivers are discussed.
Innovations	A description of any asset specific innovations that have deferred asset replacements is provided.
Controlled Documents	A table listing the relevant controlled documents for each asset class is provided in this sub-section. LCAM activities and tasks for each asset class are governed by a suite of controlled documents. These documents include design, construction and operational standards, service codes and procedures. They specify the asset specific requirements of tasks and activities that need to be undertaken throughout the lifecycle of the asset including the collection of relevant asset condition information.

Table 5-10: Asset Sub-Section Headings and Information Provided

5.6 Sub-transmission: Asset Group Overview

Centralines' sub-transmission network carries electricity from Transpower's Waipawa Grid Exit Point (GXP) in OngaOnga to Centralines' zone substations. This network also provides the interconnectivity between substations utilising a combination of predominantly overhead lines and some underground cables. Centralines' standard sub-transmission voltage is 33kV. Supply is also taken at 11kV (four feeders) directly from Transpower's Waipawa GXP.

Centralines has a number of 33kV sub-transmission lines and cables installed on Transpower's site. These assets are covered by Centralines' Access and Occupation Schedule Agreement which sets out the terms and conditions associated with Centralines' assets on Transpower's site.

5.7 Sub-transmission: 33kV Overhead Lines

5.7.1 Asset Description: 33kV Overhead Lines

Centralines' sub-transmission network incorporates 94 kilometres of 33kV overhead lines. These sub-transmission lines are predominately ACSR Dog (100mm^2) conductor with some copper conductor in zone substation switch yards.

5.7.2 Asset Condition and Performance: 33kV Overhead Lines

The overhead sub-transmission system is generally reliable, and current levels of maintenance are supporting favourable network performance. The relatively dry Central Hawke's Bay environment combined with low levels of airborne pollution provide for very low levels of natural degradation of the overhead network. The majority of the network is well insulated from the effects of coastal salt spray. No systemic issues have been identified with this asset class.

5.7.3 Asset Condition Assessment: 33kV Overhead Lines

Asset Category	Grade H1	Grade H2	Grade H3	Grade H4	Grade H5	Data Accuracy	% Forecast to be Replaced in next 5-Years
Sub-transmission: 33kV conductor			47%	47%	6%	2	

Table 5-11: Asset Condition Assessment: 33kV Overhead Lines

5.7.4 Asset Age Profile: 33kV Overhead Lines

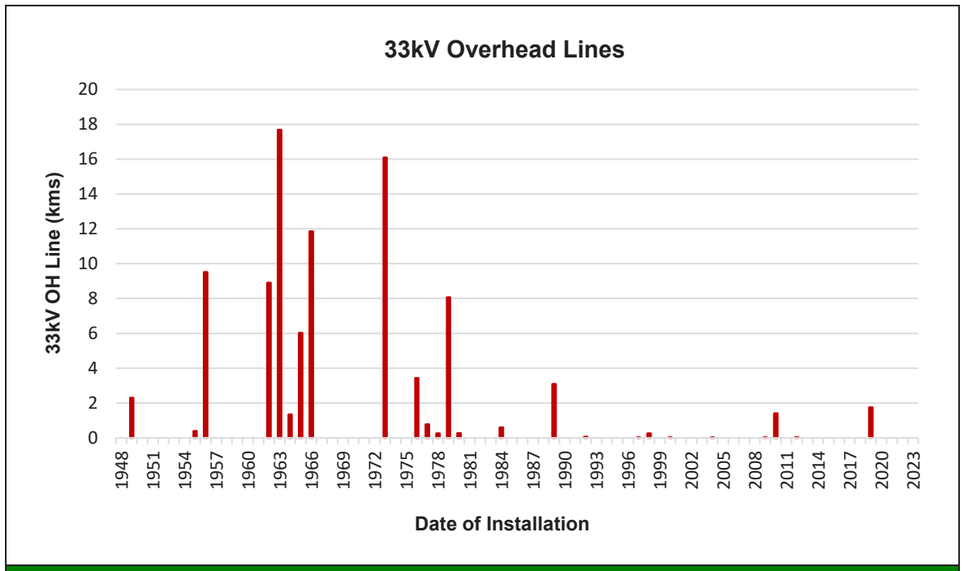


Figure 5-7: Asset Age Profile: 33kV Overhead Lines

5.7.5 Maintenance Plan: 33kV Overhead Lines

Centralines takes a proactive approach to inspecting and maintaining overhead sub-transmission lines. Table 5-12 details the maintenance undertaken on this asset class.

Condition Monitoring/Testing	Frequency
Aerial based visual inspection of all 33kV overhead lines.	Annually
Centralines' feeder surveys cover all overhead network assets and are a combination of aerial and ground based visual inspections depending on access and terrain.	5-year cycle

Table 5-12: Maintenance Plan: 33kV Overhead Lines

5.7.6 Asset Replacement and Refurbishment: 33kV Overhead Lines

33kV line renewals are primarily based on known asset condition. Current non-invasive technologies and methods to cost effectively and accurately determine the condition of overhead conductors are inconclusive and still evolving. Centralines will continue to work with the industry to develop and adopt best practice in this area. Current replacement and refurbishment drivers are outlined in Table 5-13.

Replacement/Refurbishment Drivers
• Asset condition based primarily on feeder inspection data. • Conductor type, design, age, and criticality. • Historical conductor performance records and trend analysis. • Results of specially commissioned laboratory conductor analysis. • Specific asset location and environmental considerations. • Condition Based Risk Management (CBRM) is being used to inform and assist in the identification and prioritisation of sub-transmission conductor replacement programmes.

Table 5-13: Asset Replacement and Refurbishment Drivers: 33kV Overhead Lines

5.7.7 Controlled Documents: 33kV Overhead Lines

Controlled Document Reference	Controlled Document Description
NK3002	Line Design Loadings
NK3022	Network Fusing Standard
NK3030	Design Requirements for Public Safety Standard
NK3041	Earth Manual – Standard Earths
NK5011	Inspection and Testing of Standard and SWER Earths Standard
NK5020	Feeder Survey and Condition Monitoring Standard
NK5080	Thermo-Vision Inspection Standard
NK5115	Re-Sagging Conductor Standard
OS1004	Switching Plan Application and Approval Standard
OS1006	Live Line Work Operational Practices Standard
OS1014	Process for Commissioning and Livening Equipment at Zone Substations
NK5080	Thermo-Vision Inspection Standard
SOP-112	SOP – Testing Corrosion on Conductors

Table 5-14: Controlled Documents: 33kV Overhead Lines

5.8 Sub-transmission: 33kV Underground Cables

5.8.1 Asset Description: 33kV Underground Cables

The sub-transmission cable network consists of 1.8 kilometres of cross-linked polyethylene (XLPE) insulated, aluminium underground cable located at Transpower's Waipawa GXP, at the

- connection between the 33kV overhead network and 33kV switchgear for Feeder Nine at the Waipawa Zone Substation, and
- railway crossing at Waipukurau on the Wilder Road 33kV circuit.

Sizes range from 35mm² to 400mm² and include both single and three core cables.

5.8.2 Asset Condition and Performance: 33kV Underground Cables

Centralines' sub-transmission underground cable is in good condition and no systemic issues have been identified.

5.8.3 Asset Condition Assessment: 33kV Underground Cables

Asset Category	Grade H1	Grade H2	Grade H3	Grade H4	Grade H5	Data Accuracy	% Forecast to be Replaced in next 5-Years
Sub-transmission: 33kV XLPE cable					100%	3	

Table 5-15: Asset Condition Assessment: 33kV Underground Cables

5.8.4 Age Profile: 33kV Underground Cables

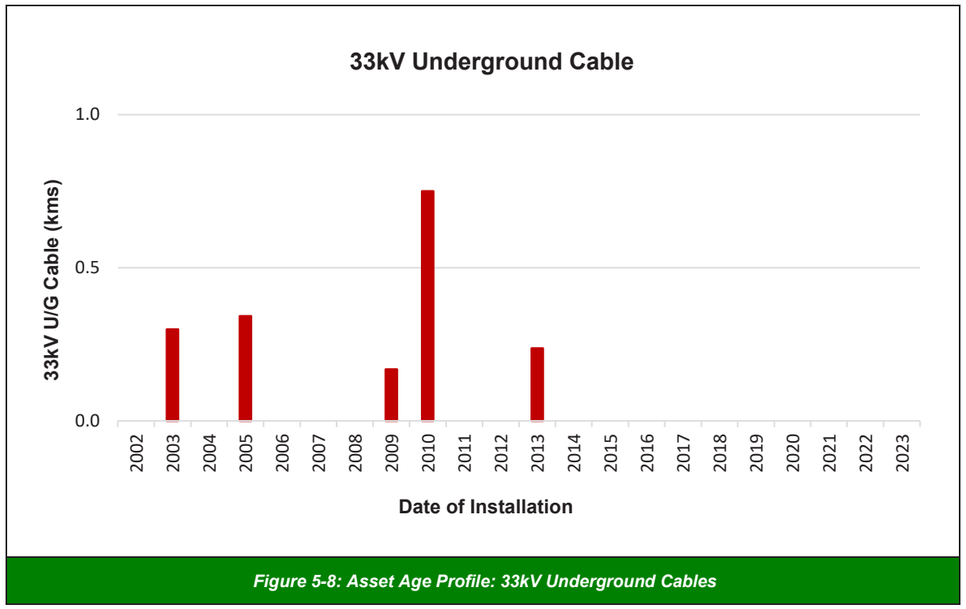


Figure 5-8: Asset Age Profile: 33kV Underground Cables

5.8.5 Maintenance Plan: 33kV Underground Cables

Table 5-16 details the maintenance undertaken on 33kV cables.

Condition Monitoring/Testing	Frequency
Visual inspections, corona detection, thermo scanning and non-invasive partial discharge testing of 33kV cable terminations within zone substations.	Annually
Aerial based visual inspection of all above ground 33kV cabling including pole cable risers and terminations.	Annually
Visual inspection of accessible, above ground cabling including pole cable risers as part of overhead line feeder surveys.	5-year cycle
Diagnostic cable testing is currently being undertaken on 33kV underground cables to determine baseline condition for future comparison and to determine frequency for future testing.	TBD

Table 5-16: Maintenance Plan: 33kV Underground Cables

5.8.6 Asset Replacement and Refurbishment: 33kV Underground Cables

Due to the 33kV sub-transmission cable on the Centralines' network being reasonably new and in good condition, no cable replacements are planned in the current RAMP planning period. Any future 33kV cable renewals will be based on the drivers detailed in Table 5-17.

Replacement/Refurbishment Drivers
• Cable type, design, age, and criticality. • Historical cable performance records and trend analysis. • Asset condition based on diagnostic test results and inspection data. • Condition Based Risk Management (CBRM) to be introduced in future to inform and assist in the identification and prioritisation of sub-transmission cable replacement programmes.

Table 5-17: Asset Replacement and Refurbishment Drivers: 33kV Underground Cables

5.8.7 Controlled Documents: 33kV Underground Cables

Controlled Document Reference	Controlled Document Description
NK3001	Underground Design
NK3022	Network Fusing Standard
NK3023	Underground Cable Specifications and Standards
NK3030	Design Requirements for Public Safety Standard
NK3040	Earthing – Unison Engineering Principles

Controlled Document Reference	Controlled Document Description
NK3041	Earthing Manual – Standard Earths
NK4015	Underground Cable Installation Standard
NK4020	Cable Testing Standard
NK5011	Inspection and Testing of Standard and SWER Earths Standard
NK5020	Feeder Survey and Condition Monitoring Standard
OS1004	Switching Plan Application and Approval Standard
OS1014	Process for Commissioning and Livening Equipment at Zone Substations
SC4022	Service Code – Cable Insulation Resistance Test
SC4023	Service Code – Cable Sheath Test
SC4024	Service Code – Cable VLF Test
SC4025	Service Code – Cable Tan Delta Test
SC4026	Service Code – New Cable Acceptance Test
SC4027	Service Code – Testing New Cables
SC4028	Service Code – Condition Monitoring In-Service Cables
SOP-101	SOP – Identifying Cables Prior to Spiking

Table 5-18: Controlled Documents: 33kV Underground Cables

5.9 Zone Substations: Asset Group Overview

Zone substations encompass a range of network assets including buildings, power transformers, 33kV and 11kV switchgear, load control plant and associated control, protection, and communications equipment. The key function of a zone substation is to house the required network assets to convert sub-transmission voltage (33kV) to distribution voltage (11kV), allowing the safe and efficient distribution of electricity to Centralines' customers. Centralines has four zone substations situated at Waipukurau, Waipawa, Takapau and Wilder Road as well as an 11kV switching station (four, pole mounted reclosers and two, ring main units) outside Transpower's Waipawa GXP.

5.10 Zone Substation: Power Transformers

5.10.1 Asset Description: Zone Substation Power Transformers

Power transformers convert the 33kV sub-transmission voltage to 11kV which is more suitable for network distribution. They are filled with mineral insulating oil which provides both insulation and cooling for the transformer. Transformer cooling is enhanced by cooling fans fitted to radiators and some transformers also have oil pumps to more effectively circulate the oil to increase the transformer's rating. All Centralines' substations incorporate bunded transformer foundations to mitigate failures which have the potential to result in significant oil spills.

Substation power transformers typically include an automatic on-load tap changer which maintains the output voltage within defined limits. Most of the older tap changers operate in a separate oil filled compartment within the transformer. As the tap changer operates to keep the output voltage constant, the contacts arc in the oil and therefore the oil and the contacts require frequent maintenance. Modern transformers are supplied with vacuum insulated tap changers which are virtually maintenance free.

Centralines has a total of seven three phase power transformers. The two power transformers installed at each of the Waipukurau, Waipawa and Takapau zone substations are all rated at 7.5MVA, with a single 2MVA transformer installed at the Wilder Road site.

5.10.2 Asset Condition and Performance: Zone Substation Power Transformers

Centralines' fleet of power transformers are relatively modern or have been fully refurbished. Both transformers at Waipukurau were manufactured in 2008. The transformers at Takapau were manufactured in 1977 and were fully refurbished in 2009. The Waipawa transformers were manufactured in 1966 and were fully refurbished in 2010, and the Wilder Road unit was manufactured and installed in 1994.

Effective condition monitoring, maintenance and load management practices over the years have ensured they all remain in good condition and are providing reliable performance.

5.10.3 Asset Condition Assessment: Zone Substation Power Transformers

Asset Category	Grade H1	Grade H2	Grade H3	Grade H4	Grade H5	Data Accuracy	% Forecast to be Replaced in next 5-Years
Zone Substation: Power Transformers			14.3%		85.7%	4	

Table 5-19: Asset Condition Assessment: Zone Substation Power Transformers

5.10.4 Asset Age Profile: Zone Substation Power Transformers

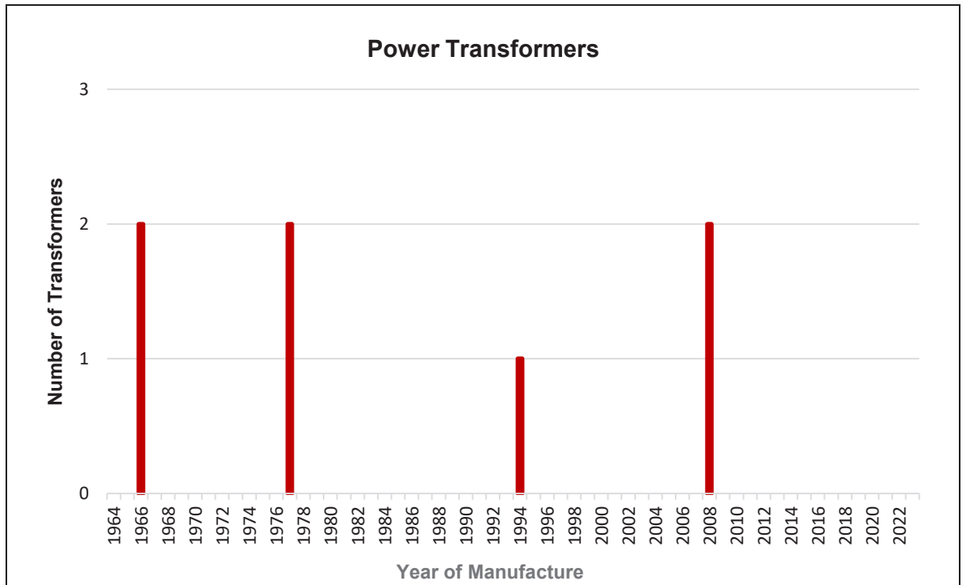


Figure 5-9: Asset Age Profile: Zone Substation Power Transformers

5.10.5 Maintenance Plan: Zone Substation Power Transformers

Due to the criticality of these assets, Centralines employs a range of inspection, testing, condition monitoring and maintenance programmes to ensure this asset fleet continues to perform reliably.

This includes dielectric frequency response testing which measures the amount of moisture in transformer winding paper insulation. If not remedied, high moisture levels can reduce the dielectric strength or accelerate the aging of the cellulose, and lead to eventual failure. In addition, dynamic resistance testing of selected tap changers is carried out to test for abnormal or high resistance connections.

Oil samples are taken from each transformer annually for analysis. Dissolved Gas Analysis (DGA) testing is providing information on any build-up of dissolved gases. Furan Analysis is also undertaken to enable an estimation of the degree of polymerisation (DP) of insulation paper in Centralines' transformers.

Table 5-20 details the maintenance activities currently undertaken on power transformers.

Condition Monitoring/Testing	Frequency
Detailed visual inspection looking for oil leaks or any unusual noises or vibration etc. This inspection also includes minor maintenance work including silica gel checks, tap changer operational checks and counts. This maintenance occurs weekly at the three major substations and monthly at Wilder Road.	Weekly
Preventative maintenance on power transformers and associated protective devices (Buchholz relays and temperature sensors) including insulation resistance and dielectric frequency response testing.	2-year cycle
Preventive maintenance is undertaken on all tap changers with frequency dependent on the make, type, age, switching insulation medium and OEM specifications. Turns ratio testing post maintenance.	2-10-year cycle
Detailed DGA and oil condition tests including moisture, acidity and dielectric breakdown is undertaken at least annually. More frequent sampling can be carried out subject to any suspected fault within a specific transformer.	As required but at least annually
Furan Analysis to estimate degree of polymerisation (DP) of paper insulation.	2-year cycle
Inspection of transformer and conductor terminations using thermo-vision, and corona cameras and partial discharge sensing technology.	Annually

Table 5-20: Maintenance Plan: Zone Substation Power Transformers

5.10.6 Asset Replacement and Refurbishment: Zone Substation Power Transformers

Given the age profile and based on the current condition of the Centralines' power transformers, there are no planned replacements in the current RAMP planning period. Current and future replacement and refurbishment drivers are outlined in Table 5-21.

Replacement/Refurbishment Drivers
• Transformer age, criticality and asset condition based on diagnostic test results and inspection data. • DGA oil results and outputs of Furan Analysis. • Historical transformer performance records and trend analysis. • DP test results. • The Condition Based Risk Management (CBRM) model to be introduced in future to inform and assist in the identification and prioritisation of transformer replacement programmes.

Table 5-21: Asset Replacement and Refurbishment Drivers: Zone Substation Power Transformers

5.10.7 Controlled Documents: Zone Substation Power Transformers

Controlled Document Reference	Controlled Document Description
NK1021	Using Calisto 2 and 9 Monitors
NK3030	Design Requirements for Public Safety Standard
NK3050	Zone Substation General Specifications
NK4013	Testing of Non-Cable Assets
NK4020	Cable Testing Standard
NK5012	Station Level 1 Inspections Standard
NK5013	Station Level 2 Inspections Standard
NK5035	Station Outdoor Instrument Transformer Maintenance Standard
NK5043	Insulating Oil Maintenance Standard
OS1013	Station Entry Procedure
OS1014	Process for Commissioning and Livening Equipment at Zone Substations
SC2050	Service Code – Dielectric Breakdown Voltage Test
SC2051	Service Code – Acidity Test
SC2052	Service Code – Dissolved Gas Analysis
SC2070	Service Code – Instrument Transformer Service Check Sheet
SOP-10	SOP – Establishing a Permit Area in a Zone Substation
SOP-42	SOP – Calisto 2 Online Transformer Oil Monitor

Table 5-22: Controlled Documents: Zone Substation Power Transformers

5.11 Zone Substation: 33kV Circuit Breakers

5.11.1 Asset Description: 33kV Circuit Breakers

Circuit breakers are automatically operated electrical switches. They are designed to interrupt electrical power circuits thus protecting upstream and downstream electrical assets from damage as a result of a shorted or overloaded circuit. Additionally, they ensure the safety of the public and utility employees and provide electrical discrimination on the network reducing the outage impact of faults.

Their basic function is to interrupt power by an initiated control command or automatically by protective sensing devices that detect abnormal or fault conditions. They are designed to interrupt circuits repeatedly and safely both under normal load and fault conditions. A circuit breaker can be reset manually or automatically (and remotely) to resume normal operation after a fault, and they can be programmed to auto-reclose under certain circumstances.

Centralines has standardised on 33kV circuit breakers that use sulphur hexafluoride (SF_6) gas as the contact arc quenching medium. Centralines has eleven in-service sub-transmission outdoor 33kV circuit breakers, all of which use SF_6 gas as the arc suppressing insulating medium.

5.11.2 Asset Condition and Performance: 33kV Circuit Breakers

Centralines' modern fleet of outdoor 33kV circuit breakers are in good condition with no systemic issues being identified.

5.11.3 Asset Condition Assessment: 33kV Circuit Breakers

Asset Category	Grade H1	Grade H2	Grade H3	Grade H4	Grade H5	Data Accuracy	% Forecast to be Replaced in next 5-Years
Zone substation: 33kV Outdoor CBs					100%	4	

Table 5-23: Asset Condition Assessment: 33kV Circuit Breakers

5.11.4 Asset Age Profile: 33kV Circuit Breakers

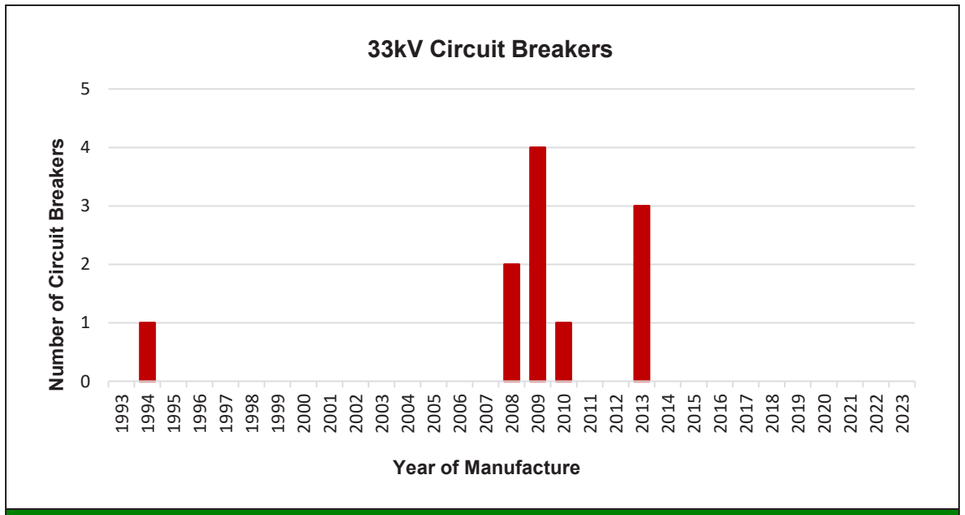


Figure 5-10: Asset Age Profile: 33kV Circuit Breakers

5.11.5 Maintenance Plan: 33kV Circuit Breakers

To ensure reliability, 33kV circuit breakers are subject to a cyclic maintenance programme based on OEM recommendations, industry practice and Centralines' own engineering judgement and operational experience.

Table 5-24 outlines Centralines' current maintenance programme for 33kV circuit breakers.

Condition Monitoring/Testing	Frequency
Visual inspection of all 33kV substation circuit breakers including operational counter checks and any required minor maintenance.	Weekly
Routine inspection, testing and servicing including diagnostic tests and functional operational checks. These encompass cleaning, Ductor™ testing, insulation resistance, circuit breaker timing tests and checking the contact erosion indicators.	Every 3-years
Thermo-vision, corona, and partial discharge testing of circuit breakers.	Annually

Table 5-24: Asset Replacement and Refurbishment Drivers: 33kV Circuit Breakers

5.11.6 Asset Replacement and Refurbishment: 33kV Circuit Breakers

Due to the age and condition of this asset fleet, there are no scheduled replacements for the current RAMP planning period. Future replacement and refurbishment drivers are outlined in Table 5-25.

Replacement/Refurbishment Drivers
• Circuit breaker, design, insulating medium, age, condition, and criticality. • Historical circuit breaker performance records and trend analysis. • Diagnostic circuit breaker testing. • Health and safety and environmental considerations. • The Condition Based Risk Management (CBRM) model will be introduced in future to inform and assist in the identification and prioritisation of replacement programmes.

Table 5-25: Asset Replacement and Refurbishment Drivers: 33kV Circuit Breakers

5.11.7 Controlled Documents: 33kV Circuit Breakers

Controlled Document Reference	Controlled Document Description
NK3001	Underground Design
NK3030	Design Requirements for Public Safety Standard
NK3040	Earthing – Unison Engineering Principles
NK3041	Earthing Manual – Standard Earths
NK3050	Zone Substation General Specifications
NK4013	Testing of Non-Cable Assets
NK5012	Station Level 1 Inspections Standard
NK5013	Station Level 2 Inspections Standard
NK5038	Metalclad Switchgear Maintenance Standard
NK5040	Outdoor Circuit Breaker Maintenance Standard
NK5043	Insulating Oil Maintenance Standard
NK5070	Sulphur Hexafluoride (SF_6) Use and Handling Standard
OS1013	Station Entry Procedure
SC2000	Service Code – Metalclad Switchgear – Minor Service of Oil Circuit Breakers
SC2001	Service Code – Metalclad Switchgear – Oil Circuit Breaker Service
SC2002	Service Code – Metalclad Switchgear – Oil Circuit Breaker Fault Service
SC2003	Service Code – Metalclad Switchgear – SF_6 Circuit Breaker Service
SC2004	Service Code – Metalclad Switchgear – Vacuum Circuit Breaker Service
SC2010	Service Code – Outdoor Circuit Breaker Minor Service
SC2011	Service Code – Outdoor Oil Circuit Breaker Service
SC2012	Service Code – Outdoor Oil Circuit Breaker Fault Service
SC2013	Service Code – Outdoor SF_6 Circuit Breaker Service
SC2014	Service Code – Outdoor Vacuum Circuit Breaker Service
SC2050	Service Code – Dielectric Breakdown Voltage Test
SC2051	Service Code – Acidity Test
SC2052	Service Code – Dissolved Gas Analysis
SOP-10	SOP – Establishing a Permit Area in a Zone Substation
SOP-28	SOP – Schneider Merlin Gerin 400/FG4 33kV Indoor Circuit Breaker
SOP-30	SOP – ABB UniSafe Indoor Circuit Breaker – Awatoto, Fernhill and Irongate Substations
SOP-31	SOP – Brown Boveri Indoor Circuit Breaker
SOP-32	SOP – Brown Boveri Outdoor Circuit Breaker
SOP-33	SOP – Areva GL107 Outdoor Circuit Breaker
SOP-34	SOP – AEI GEC JB424 Outdoor Circuit Breaker
SOP-35	SOP – Schneider Dog Box Outdoor Circuit Breaker
SOP-36	SOP – Takaoka Outdoor Circuit Breaker
SOP-63	SOP – ABB UniGear ZS2 Indoor Circuit Breaker

Table 5-26: Controlled Documents: 33kV Circuit Breakers

5.12 Zone Substation: 11kV Circuit Breakers and Switchboards

5.12.1 Asset Description: 11kV Circuit Breakers and Switchboards

Refer to the asset description for 33kV circuit breakers for details of the function of this asset class.

Centralines has a total of 27 indoor, ground mounted, 11kV circuit breakers installed in zone substations. In addition, there are two pole mounted outdoor units installed at the Wilder Road site. These circuit breakers use either oil or a vacuum as the contact breaking medium.

5.12.2 Asset Condition and Performance: 11kV Circuit Breakers and Switchboards

Centralines' fleet of 11kV substation circuit breakers is generally in good condition. The main condition and performance issues being experienced relate to the deterioration and wear of contacts and mechanical mechanisms and the ongoing requirement for oil treatment in older units.

There are no current systemic issues that have been identified with this asset class. However, it is acknowledged that older indoor oil circuit breakers:

- are maintenance intensive
- have lower fault current ratings, and
- present elevated risks due to the oil and lack of arc flash containment and protection.

Operationally the circuit breakers have been loaded well below their capacity limits and are maintained under a comprehensive maintenance programme. This has ensured ongoing, reliable performance.

5.12.3 Asset Condition Assessment: 11kV Circuit Breakers and Switchboards

Asset Category	Grade H1	Grade H2	Grade H3	Grade H4	Grade H5	Data Accuracy	% Forecast to be Replaced in next 5-Years
ZS: 11kV Ground Mounted CBs		3.7%	44.4%	18.5%	33.4%	4	33.3%
ZS: 11kV Pole Mounted CBs					100%	4	

Table 5-27: Asset Condition Assessment: 11kV Circuit Breakers and Switchboards

5.12.4 Asset Age Profile: 11kV Circuit Breakers and Switchboards

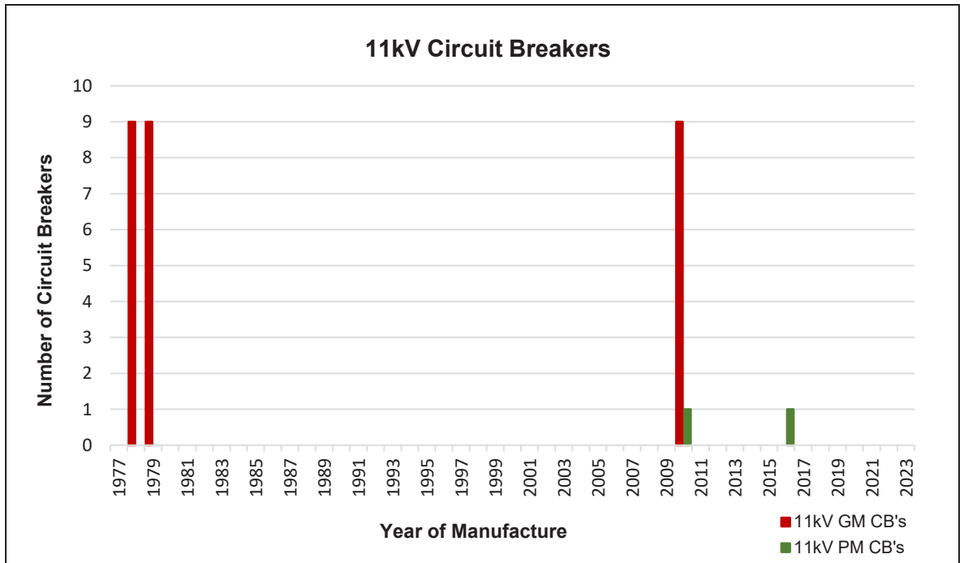


Figure 5-11: Asset Age Profile: 11kV Circuit Breakers and Switchboards

5.12.5 Maintenance Plan: 11kV Circuit Breakers and Switchboards

To ensure reliability, 11kV circuit breakers and switchboards are subject to a cyclic maintenance programme based primarily on the breaking medium (oil or vacuum), OEM recommendations, industry practice and Centralines' own engineering judgement and operational experience. The number of fault operations for oil-insulated circuit breakers, and the location and criticality of the circuit breaker, also influence maintenance practices.

Oil circuit breakers require more intensive maintenance than vacuum insulated circuit breakers because insulating oil in circuit breakers is at risk of contamination from carbon deposits as a result of breaking fault currents and from moisture ingress.

Table 5-28 outlines Centralines' current maintenance programme for 11kV circuit breakers.

Condition Monitoring/Testing	Frequency
Visual condition assessment and asset inspection of all substation circuit breakers including operational counter checks and minor maintenance.	Weekly
Routine inspection, testing and servicing including diagnostic tests and functional operational checks. These encompass cleaning, Ductor™ testing, insulation resistance and circuit breaker timing tests and oil voltage breakdown tests. Vacuum – including checking the contact erosion indicators. Oil – including oil testing and invasive maintenance to inspect the condition of contacts. Oil – fault service.	Every 3-years Every 2-years After every fault operation
Thermo-vision, corona, and partial discharge inspection of outdoor circuit breakers.	Annually
Non-invasive partial discharge testing of indoor circuit breakers.	1 – 2-year cycle depending on previous test results.

Table 5-28: Maintenance Plan: 11kV Circuit Breakers and Switchboards

5.12.6 Asset Replacement and Refurbishment: 11kV Circuit Breakers and Switchboards

Circuit breakers are critical assets and must be replaced if there is an unacceptable risk of an in-service failure due to any factors including deterioration in asset condition. While typically Centralines' 11kV circuit breakers are in good condition, it is currently planned to replace the Waipawa indoor 11kV switchboard and protection relays commencing in the 2025/26 financial year. Current replacement and refurbishment drivers are outlined in Table 5-29.

Replacement/Refurbishment Drivers
• Circuit breaker design, age, insulating medium, condition, and criticality. • Historical circuit breaker performance records and trend analysis. • Health and safety considerations. • Current and future maintenance requirements. • Protection considerations. • Availability of spare parts. • Diagnostic circuit breaker testing. • Functionality. • Synergies with other asset replacement or augmentation projects.

Replacement/Refurbishment Drivers
• Specific circuit breaker location and environmental considerations. • The Condition Based Risk Management (CBRM) model will be introduced in future to inform and assist in the identification and prioritisation of replacement programmes.

Table 5-29: Asset Replacement and Refurbishment Drivers: 11kV Circuit Breakers and Switchboards

5.12.7 Controlled Documents: 11kV Circuit Breakers and Switchboards

Controlled Document Reference	Controlled Document Description
NK3001	Underground Design
NK3030	Design Requirements for Public Safety Standard
NK3040	Earthing – Unison Engineering Principles
NK3041	Earthing Manual – Standard Earths
NK3050	Zone Substation General Specifications
NK4020	Cable Testing Standard
NK5012	Station Level 1 Inspections Standard
NK5013	Station Level 2 Inspections Standard
NK5038	Metalclad Switchgear Maintenance Standard
NK5040	Outdoor Circuit Breaker Maintenance Standard
NK5043	Insulating Oil Maintenance Standard
OS1013	Station Entry Procedure
SC2000	Service Code – Metalclad Switchgear – Minor Service of Oil Circuit Breakers
SC2001	Service Code – Metalclad Switchgear – Oil Circuit Breaker Service
SC2002	Service Code – Metalclad Switchgear – Oil Circuit Breaker Fault Service
SC2004	Service Code – Metalclad Switchgear – Vacuum Circuit Breaker Service
SC2010	Service Code – Outdoor Circuit Breaker Minor Service
SC2011	Service Code – Outdoor Oil Circuit Breaker Service
SC2012	Service Code – Outdoor Oil Circuit Breaker Fault Service
SC2014	Service Code – Outdoor Vacuum Circuit Breaker Service
SC2050	Service Code – Dielectric Breakdown Voltage Test
SC2051	Service Code – Acidity Test
SC2052	Service Code – Dissolved Gas Analysis
SOP-10	SOP – Establishing a Permit Area in a Zone Substation
SOP-23	SOP – Reyrolle Oil Indoor Circuit Breaker

Table 5-30: Controlled Documents: 11kV Circuit Breakers and Switchgear

5.13 Zone Substation: Buildings

5.13.1 Asset Description: Zone Substation Buildings

Zone substation 'buildings' include grounds and buildings utilised to securely house the range of electrical and non-electrical equipment required for a fully functional zone substation. Centralines has four zone substations situated at Waipukurau, Waipawa, Takapau and Wilder Road, and except for Wilder Road, all have buildings.

5.13.2 Asset Condition and Performance: Zone Substation Buildings

Following the Canterbury earthquakes and the learnings from this event, a substation building, seismic strengthening programme was completed to strengthen all Centralines' substation buildings to building importance level four of the new building standard. This category relates to structures with special post-disaster recovery functions.

5.13.3 Asset Condition Assessment: Zone Substation Buildings

Asset Category	Grade H1	Grade H2	Grade H3	Grade H4	Grade H5	Data Accuracy	% Forecast to be Replaced in next 5-Years
Zone Substation Buildings				33%	67%	3	

Table 5-31: Asset Condition Assessment: Zone Substation Buildings

5.13.4 Asset Age Profile: Zone Substation Buildings

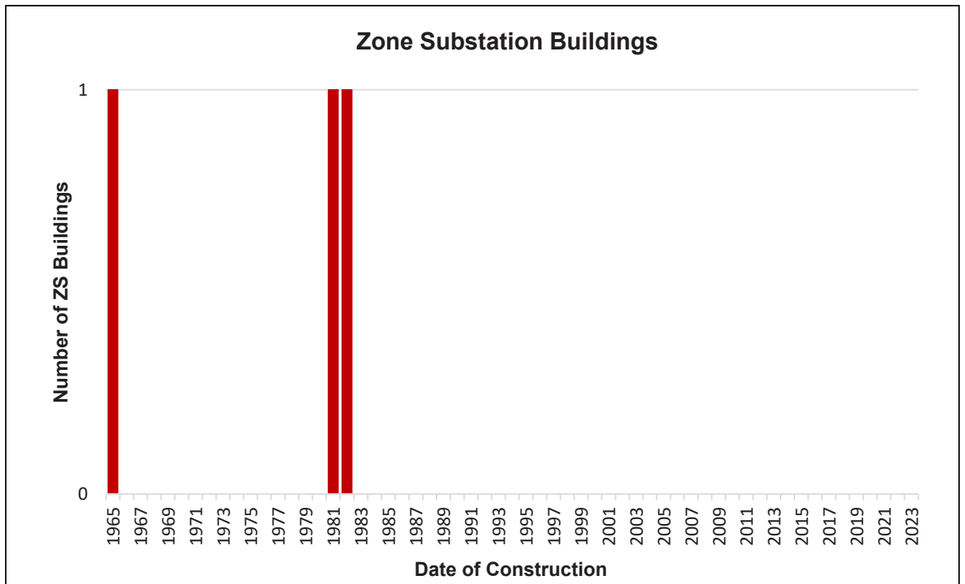


Figure 5-12: Asset Age Profile: Zone Substation Buildings

5.13.5 Maintenance Plan: Zone Substation Buildings

Buildings, fences, and grounds are regularly inspected to ensure they remain in good condition in order to maintain site security and asset integrity. Centralines' maintenance standards provide detailed requirements for substation inspections including buildings and other asset condition monitoring, and inspections as described in other sections. Regular maintenance is undertaken to ensure the integrity of Centralines' substation buildings.

Condition Monitoring/Testing	Frequency
A security and detailed visual inspection including any required minor maintenance and housekeeping is completed weekly at all substations (except Wilder Road which is done monthly) to ensure the integrity and security of the substation.	Weekly

Table 5-32: Maintenance Plan: Zone Substation Buildings

5.13.6 Asset Replacement and Refurbishment: Zone Substation Buildings

There are no substation building replacements scheduled during the current RAMP planning period. Current replacement drivers are detailed in Table 5-33.

Replacement/Refurbishment Drivers
• Seismic considerations. • Building code requirements. • Age, condition, and criticality. • Health and safety considerations. • Current and future maintenance requirements.

Table 5-33: Asset Replacement and Refurbishment Drivers: Zone Substation Buildings

5.13.7 Controlled Documents: Zone Substation Buildings

Controlled Document Reference	Controlled Document Description
NK1011	As-Built Recording Manual
NK1402	Zone Substation Drawings Management and Records
NK3030	Design Requirements for Public Safety Standard
NK3040	Earthing – Unison Engineering Principles
NK3050	Zone Substation General Specifications
NK5012	Station Level 1 Inspections Standard
NK5013	Station Level 2 Inspections Standard
NK5014	Substation Grounds Maintenance Standard
OS1013	Station Entry Procedure

Table 5-34: Controlled Documents: Zone Substation Buildings

5.14 Zone Substation: Ripple Injection / Load Control Plants

5.14.1 Asset Description: Ripple Injection / Load Control Plants

A load control ripple injection plant is used within the network to provide load control and management functions for various types of equipment. Load management allows utilities to reduce electricity demand during peak times, which can in turn defer asset capacity upgrades. Equipment controlled includes:

- customer hot water and heating systems
- Council owned security, street, and under-verandah lighting.

Centralines has one ripple injection plant operating on its network. This plant injects a high frequency signal which is superimposed over the high voltage network. This signal can be received by specially tuned relays in the low voltage network to provide specific control activities. The plant consists of:

- a solid state 400-volt frequency generator
- high voltage coupling equipment consisting of voltage transformers and capacitors to tune and inject the frequency signal into the network, and
- control and signal equipment that provides the controls and functions for the signals.

Across its network footprint, Centralines injects a frequency of 475 Hz onto the 33kV network.

Centralines own a number of network load control ripple relay receivers which predominantly control hot water pilot and street lighting. Centralines has limited ability to maintain the integrity of the overall system as the control receivers on customer switchboards are owned by the meter equipment providers.

5.14.2 Asset Condition and Performance: Ripple Injection / Load Control Plants

The plant was installed new in 2012/13 and is being regularly maintained. Its condition and performance are excellent.

5.14.3 Asset Condition Assessment: Ripple Injection / Load Control Plants

Asset Category	Grade H1	Grade H2	Grade H3	Grade H4	Grade H5	Data Accuracy	% Forecast to be Replaced in next 5-Years
Load Control Plant					100%	4	

Table 5-35: Asset Condition Assessment: Ripple Injection / Load Control Plants

5.14.4 Asset Age Profile: Ripple Injection / Load Control Plants

Centralines has only one ripple injection plant which is located at the Waipukurau Zone Substation and installed in the 2012/13 financial year.

5.14.5 Maintenance Plan: Ripple Injection / Load Control Plant

Centralines' ripple plant is subject to weekly and annual maintenance regimes. Routine inspection of the load control plant is scheduled in conjunction with weekly zone substation maintenance. Annual maintenance is sub-contracted to Landis+Gyr (L+G).

Load control relays in the field are subject to reactive maintenance only. Current ripple plant maintenance is outlined in Table 5-36.

Condition Monitoring	Frequency
A security and functional check of the ripple plant is undertaken as part of weekly substation inspections.	Weekly
Centralines' ripple plant is maintained annually as part of the Landis+Gyr maintenance contract and includes general maintenance and signal strength and capacitor testing.	Annually

Table 5-36: Maintenance Plan: Ripple Injection / Load Control Plant

5.14.6 Asset Replacement and Refurbishment: Ripple Injection / Load Control Plant

Due to this asset being reasonably new, there is no plan to replace it during the current RAMP planning period. Future replacement drivers for and influences on ripple injection and load control plan are outlined in Table 5-37.

Replacement/Refurbishment Drivers
• Asset condition based primarily on inspections and factoring in asset age, criticality, capacity, and functionality. • Historical performance. • Availability of spare parts. • Equipment obsolescence.

Table 5-37: Asset Replacement and Refurbishment Drivers: Ripple Injection / Load Control Plant

5.14.7 Controlled Documents: Ripple Injection / Load Control Plant

Controlled Document Reference	Controlled Document Description
NK3030	Design Requirements for Public Safety Standard
OS1014	Process for Commissioning and Livening Equipment at Zone Substations

Table 5-38: Controlled Documents: Ripple Control / Load Control Plant

5.15 Poles: All Voltages

5.15.1 Asset Description: Poles

Poles are physical structures used to keep overhead electrical conductors and ancillary equipment a safe distance from each other and from the ground. They are typically made of wood or concrete with a relatively small number manufactured from steel and composite materials. Poles are available in a range of sizes and strengths to cater for site specific requirements factoring in variables such as terrain, required electrical clearances, and the mechanical load (weight, angle, and tensions) of conductors and ancillary equipment they need to support.

Centralines has standardised on Busck concrete poles for use on its network. Centralines has approximately 20,000 network poles which are predominantly concrete.

Pole Type	Number
Wood	123
Concrete	19,850

Table 5-39: Pole Types and Numbers

5.15.2 Asset Condition and Performance: Poles

Concrete poles continue to perform reasonably well in the relatively dry Central Hawke's Bay environment. While there have been very few in-service failures, past inspections have identified approximately 150 poles, on two 11kV feeders, with various degrees of spalling. Approximately 50 of these have been replaced already with the balance scheduled over the next five years. These poles will be replaced in a risk prioritised manner and inspection regimes reviewed to ensure this risk is appropriately managed. Historical pole related information is also being examined to try and determine any factors which may be contributing to the accelerated deterioration of these poles concrete.

Systemic Issues	Mitigation
There have been some recent issues of concrete spalling on poles in coastal areas. This occurs when salt corrodes internal metal reinforcing causing the surrounding concrete to break away.	There is no mitigation for spalling. Poles are replaced once it is identified and prior to the structural integrity of the pole being compromised.

Table 5-40: Systemic Issues and Mitigations: Poles

5.15.3 Asset Condition Assessment: Poles

Asset Category	Grade H1	Grade H2	Grade H3	Grade H4	Grade H5	Data Accuracy	% Forecast to be Replaced in next 5-Years
Poles: Concrete and steel structures	0.5%	5%	28.25%	33.25%	33%	3	2%
Poles: Wooden		18%	38%	38%	6%	3	20%

Table 5-41: Asset Condition Assessment: Poles

5.15.4 Age Profile: Poles

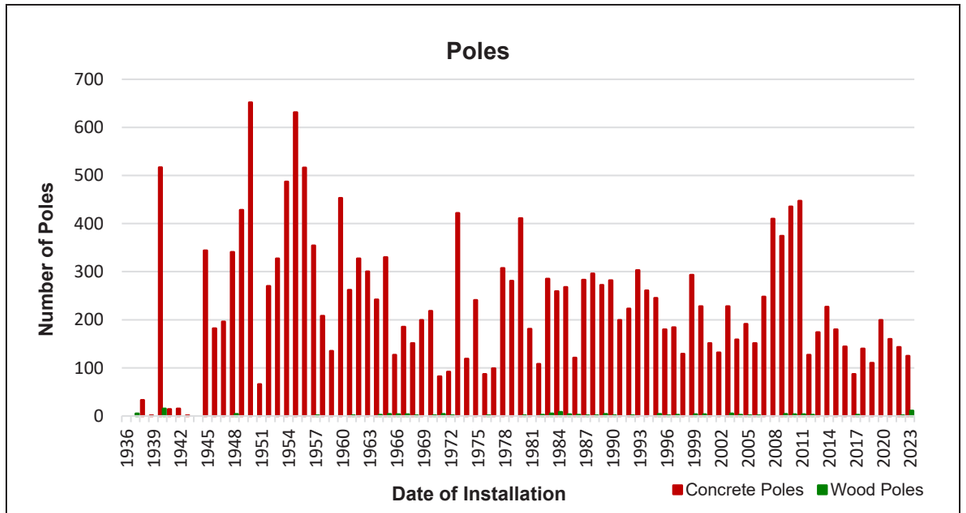


Figure 5-13: Age Profile: Poles

5.15.5 Maintenance Plan: Poles

Safety risks posed to the public and employees by pole failures are recognised by Centralines as significant. Therefore, pole assets are proactively inspected at regular intervals and their condition assessed.

Condition Monitoring/Testing	Frequency
Visual inspection of 33kV poles.	Annually
Feeder surveys cover all overhead network assets including all poles and are a combination of aerial and ground based visual inspections subject to accessibility.	5-year cycle

Table 5-42: Maintenance Plan: Poles

5.15.6 Asset Replacement and Refurbishment: Poles

Poles are replaced when their structural integrity is irrevocably compromised usually due to condition. Reactive replacements of poles are also required as a result of damage from storms, vegetation, motor vehicles, etc. Current pole replacement drivers and influences are outlined in Table 5-43.

Replacement/Refurbishment Drivers
• Asset age, condition, and criticality.
• Failures as a result of external damage, e.g., storms, trees, vehicles etc.
• Defects identified by visual inspections.
• Conductor upgrades or replacements that necessitate higher pole top loadings and therefore new poles.

Table 5-43: Asset Replacement and Refurbishment Drivers: Poles

5.15.7 Controlled Documents: Poles

Controlled Document Reference	Controlled Document Description
NK1011	As-Built Recording Manual
NK3005	Pole Blocking Calculator and Summary Sheet
NK3030	Design Requirements for Public Safety Standard
NK5020	Feeder Survey and Condition Monitoring Standard
NK5100	Re-stabilising In-Line Poles
NK6005	Crossarms Materials Standard
SOP-108	SOP – Pole Nailing of Defective Poles

Table 5-44: Controlled Documents: Poles

5.16 Distribution and Low Voltage Overhead Lines

5.16.1 Asset Description: Distribution and Low Voltage Overhead Lines

Centralines has 1,407 kilometres of 11kV distribution lines and approximately 202 kilometres of low voltage lines. Centralines' overhead network includes Copper, ACSR, AAC and galvanised steel conductor, ranging in size from No.8 (9mm^2) to Dingo (160mm^2).

5.16.2 Asset Condition and Performance: Distribution and Low Voltage Overhead Lines

The ACSR and AAC conductors are generally in good condition. Some of the older smaller copper and galvanised steel conductors are approaching end-of-life. The system is generally reliable, and current levels of maintenance are supporting satisfactory performance levels. No systemic issues have been identified regarding overhead lines.

5.16.3 Asset Condition Assessment: Distribution and Low Voltage Overhead Lines

Asset Category	Grade H1	Grade H2	Grade H3	Grade H4	Grade H5	Data Accuracy	% Forecast to be Replaced in next 5-Years
Distribution OH Open Wire Conductor	1%	3%	44.5%	47.5%	4%	2	1%
LV OH Conductor	0.5%	2%	42.75%	44.75%	10%	2	1%

Table 5-45: Asset Condition Assessment: Distribution and Low Voltage Lines

5.16.4 Asset Age Profile: Distribution and Low Voltage Overhead Lines

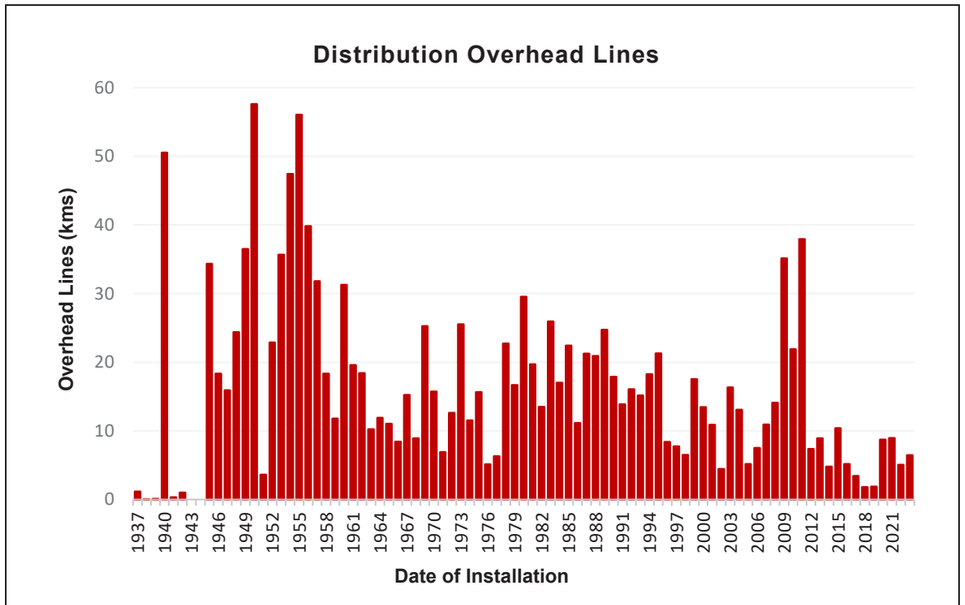


Figure 5-14: Asset Age Profile: Distribution Overhead Lines

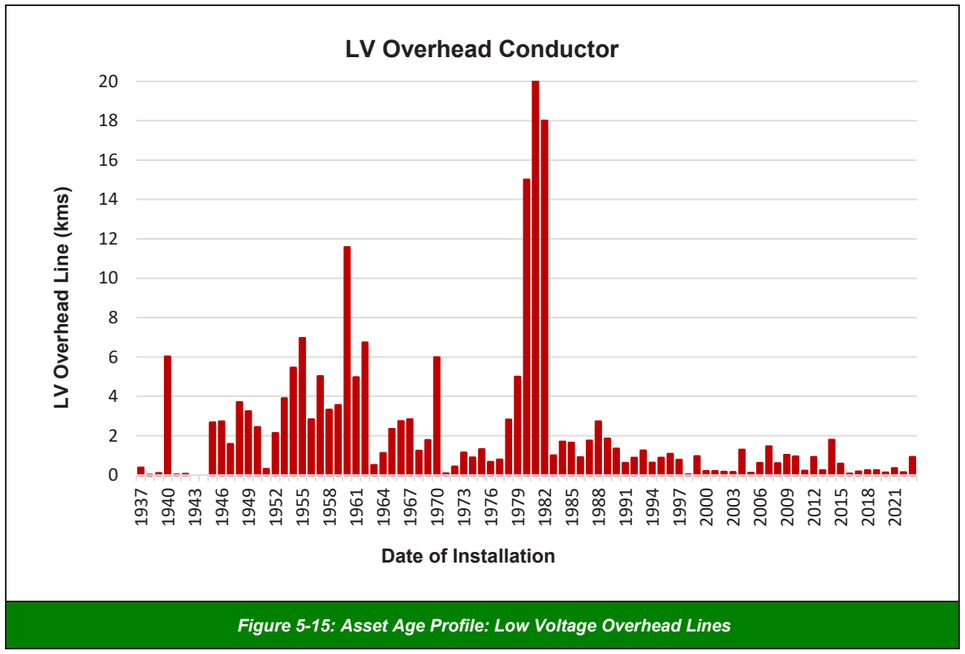


Figure 5-15: Asset Age Profile: Low Voltage Overhead Lines

5.16.5 Maintenance Plan: Distribution and Low Voltage Overhead Lines

The inspection and maintenance of Centralines' distribution and low voltage lines is governed by the Feeder Survey and Condition Monitoring Standard. Maintenance is scheduled based on inspection results. Table 5-46 outlines Centralines' current maintenance programme for this asset class.

Condition Monitoring/Testing	Frequency
Centralines' feeder surveys cover all overhead network assets and are a combination of aerial and ground based visual inspections depending on access and terrain.	5-year cycle

Table 5-46: Maintenance Plan: Distribution and Low Voltage Overhead Lines

5.16.6 Asset Replacement and Refurbishment: Distribution and Low Voltage Overhead Lines

Distribution and low voltage line renewals are primarily based on known asset condition from inspections. Current non-invasive technologies and methods to cost effectively and accurately determine the condition of overhead conductors are inconclusive and reasonably immature. Centralines will continue to work with the industry to develop and adopt best practice in this area. Current replacement drivers and influences are outlined in Table 5-47.

Replacement/Refurbishment Drivers
• Conductor type, design, composition, age, and criticality. • Historical conductor performance records and trend analysis. • Asset condition based primarily on feeder inspection data. • Upgrades resulting from system growth initiatives. • Results of specially commissioned laboratory analysis. • Specific conductor location and environmental considerations, i.e., coastal areas. • The Condition Based Risk Management (CBRM) model is used to inform and assist in the identification and prioritisation of future conductor replacement programmes.

Table 5-47: Asset Replacement and Refurbishment Drivers: Distribution and Low Voltage Overhead Lines

5.16.7 Controlled Documents: Distribution and Low Voltage Overhead Lines

Controlled Document Reference	Controlled Document Description
NK3002	Line Design Loadings Standard
NK3022	Network Fusing Standard
NK3030	Design Requirements for Public Safety Standard
NK3041	Earthing Manual – Standard Earths
NK4022	Manufactured LV Aerial Bundled Conductor Construction Standard
NK5020	Feeder Survey and Condition Monitoring Standard
NK5080	Thermo-Vision Inspection Standard
NK5115	Re-sagging Conductor Standard
OS1004	Switching Plan Application and Approval Standard
OS1006	Live Line Work Operational Practices Standard
OS1014	Process for Commissioning and Livening Equipment at Zone Substations
SOP-112	SOP – Testing Corrosion on Conductors

Table 5-48: Controlled Documents – Distribution and Low Voltage Overhead Lines

5.17 Distribution and Low Voltage Underground Cables

5.17.1 Asset Description: Distribution and Low Voltage Underground Cables

The 11kV distribution network consists of approximately 44 kilometres of XLPE (41km's) and PILC (3km's) cable. Both aluminium and copper conductors are used and are either single or three core. Conductors range in size from approximately 16mm² to 400mm².

The low voltage network consists of approximately 95 kilometres of cable. Cable sizes vary from 4mm² to 240mm².

5.17.2 Asset Condition and Performance: Distribution and Low Voltage Underground Cables

The condition of the distribution cabling is generally good with very few defects and in-service failures in recent years.

5.17.3 Asset Condition Assessment: Distribution and Low Voltage Underground Cables

Asset Category	Grade H1	Grade H2	Grade H3	Grade H4	Grade H5	Data Accuracy	% Forecast to be Replaced in next 5-Years
Distribution UG XLPE and PVC	1%	1%	22.5%	22.5%	53%	3	0.5%
Distribution UG PILC			2.5%	82.5%	15%	3	0.5%
LV UG Cable	0.5%	5.5%	23.5%	23.5%	47%	2	0.5%

Table 5-49: Asset Condition Assessment: Distribution and Low Voltage Underground Cable

5.17.4 Asset Age Profile: Distribution and Low Voltage Underground Cables

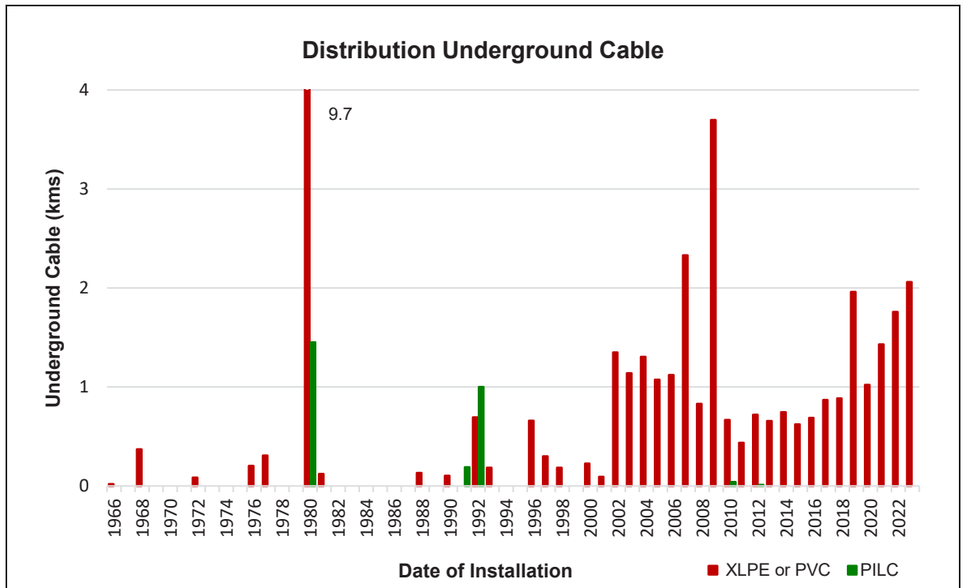


Figure 5-16: Asset Age Profile: Distribution Underground Cable

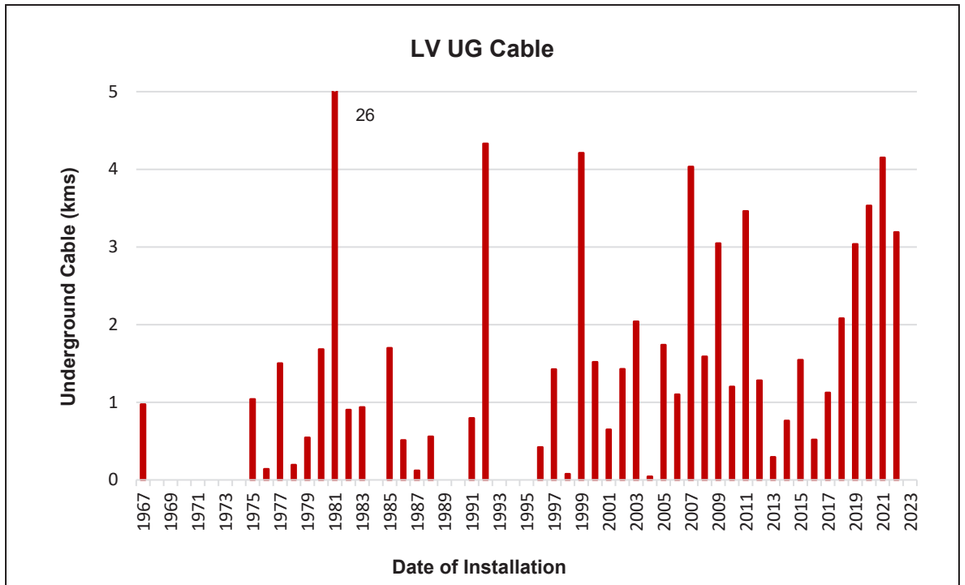


Figure 5-17: Asset Age Profile: Low Voltage Underground Cable

5.17.5 Maintenance Plan: Distribution and Low Voltage Underground Cable

Cable inspections are performed as part of the Ground Mounted Inspection (GMI) and Feeder Survey programmes. This is limited to exposed cable, terminations, and connections. Diagnostic cable testing is currently only undertaken as a result of a network fault and on substation incoming 11kV cables during transformer maintenance. Any maintenance requirements identified by inspections are managed by the defect process.

Condition Monitoring/Testing	Frequency
Distribution Cable	
Exposed cable, terminations and connections are inspected as part of the ground mounted distribution equipment inspection.	Annually
Exposed cable, terminations and connections are inspected as part of the overhead feeder survey and condition monitoring inspections.	5-year cycle
Diagnostic testing is undertaken as a result of any network incidents or faults and on 11kV incomer cables during transformer maintenance.	As required
Low Voltage Cabling	
Exposed cable, terminations and connections are inspected as part of the ground mounted distribution equipment inspection.	Annually
Exposed cable, terminations and connections are inspected as part of the overhead feeder survey and condition monitoring inspections.	5-year cycle
No proactive low voltage testing is currently undertaken.	

Table 5-50: Maintenance Plan: Distribution and Low Voltage Underground Cable

5.17.6 Asset Replacement and Refurbishment: Distribution and Low Voltage Underground Cable

Replacement of distribution and low voltage cable is largely condition-based but consideration is always given to future network development before any condition-based renewal project proceeds. Current replacement drivers and influences are outlined in Table 5-51.

Replacement/Refurbishment Drivers
• Cable type, design, composition, age, and criticality. • Historical cable performance records and trend analysis. • Results of diagnostic cable testing. • Cable failures. • Results of specially commissioned laboratory cable analysis. • Defects identified by visual inspections. • Specific cable location and environmental considerations. • The Condition Based Risk Management (CBRM) model will be introduced in future to inform and assist in the identification and prioritisation of future cable maintenance and replacement programmes.

Table 5-51: Asset Replacement and Refurbishment Drivers: Distribution Cable and Low Voltage Cable

5.17.7 Controlled Documents: Distribution and Low Voltage Cables

Controlled Document Reference	Controlled Document Description
NK3001	Underground Design
NK3022	Network Fusing Standard
NK3023	Underground Cable Specifications and Standards
NK3030	Design Requirements for Public Safety Standard
NK3040	Earthing – Unison Engineering Principles
NK3041	Earthing Manual – Standard Earths
NK4015	Underground Cable Installation Standard
NK4020	Cable Testing Standard
NK5011	Inspection and Testing of Standard and SWER Earths Standard
NK5020	Feeder Survey and Condition Monitoring Standard
NK6103	Material Specification – Polymeric Insulated HV Cable Standard
NK6105	Material Specification – Low Voltage Power Cables Standard
OS1004	Switching Plan Application and Approval Standard
OS1014	Process for Commissioning and Livening Equipment at Zone Substations
SC4022	Service Code – Cable Insulation Resistance Test
SC4023	Service Code – Cable Sheath Test
SC4024	Service Code – Cable VLF Test
SC4025	Service Code – Cable Tan Delta Test
SC4026	Service Code – New Cable Acceptance Test
SC4027	Service Code – Testing New Cables
SC4028	Service Code – Condition Monitoring In-Service Cables
SOP-101	SOP – Identifying Cables Prior to Spiking

Table 5-52: Controlled Documents: Distribution and Low Voltage Cables

5.18 Distribution Transformers

5.18.1 Asset Description: Distribution Transformers

Distribution transformers are used to convert the 11kV distribution voltage to the lower voltage level of 415/230 volts which is suitable for use by the customer. These transformers are installed across the entire network and are either pole or ground mounted. Transformer size is determined by the number of customers connected or their estimated after-diversity load. They range from small pole-mounted 5kVA single phase transformers up to large ground mounted 750kVA three phase units.

The Centralines' network incorporates approximately 2,321 pole mounted and 209 ground mounted distribution transformers.

5.18.2 Asset Condition and Performance: Distribution Transformers

Centralines' fleet of distribution transformers are in good condition and are providing a satisfactory level of performance.

Systemic Issues	Mitigation
In highly corrosive areas including coastal zones, rust in cooling fins has resulted in oil leaks. Rust can also impact the integrity and security of transformers if not detected and treated promptly.	Any rust is proactively remediated when found. Extra zinc coating is being applied to units in highly corrosive environments.

Table 5-53: Systemic Issues and Mitigations: Distribution Transformers

5.18.3 Asset Condition Assessment: Distribution Transformers

Asset Category	Grade H1	Grade H2	Grade H3	Grade H4	Grade H5	Data Accuracy	% Forecast to be Replaced in next 5-Years
Transformers: Pole Mounted	2.5%	10%	19%	32%	36. 5%	3	3%
Transformers: Ground Mounted	0.5%	2.5%	5%	26%	66%	3	2%

Table 5-54: Asset Condition Assessment: Distribution Transformers

5.18.4 Asset Age Profile: Distribution Transformers

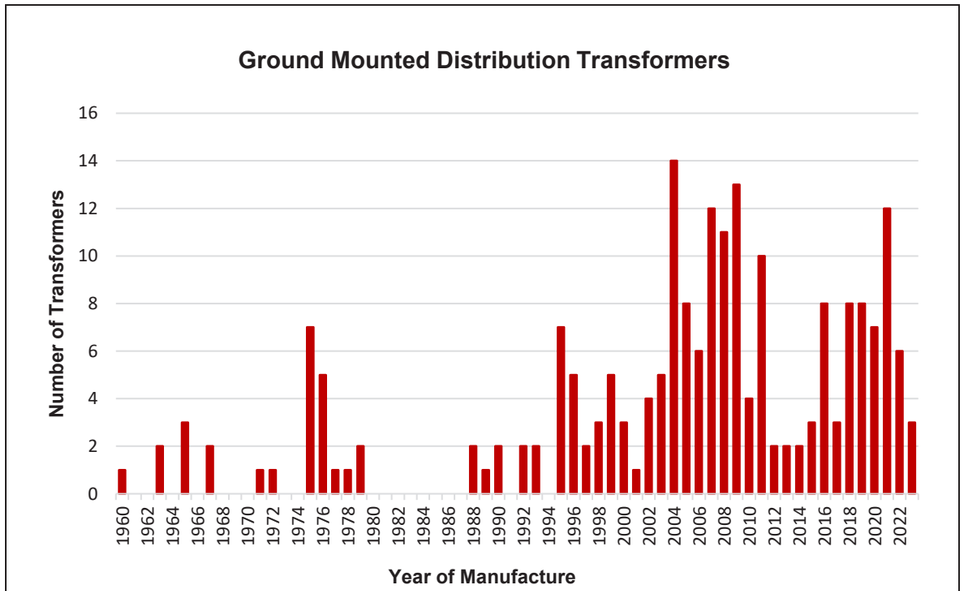


Figure 5-18: Asset Age Profile: Ground Mounted Distribution Transformers

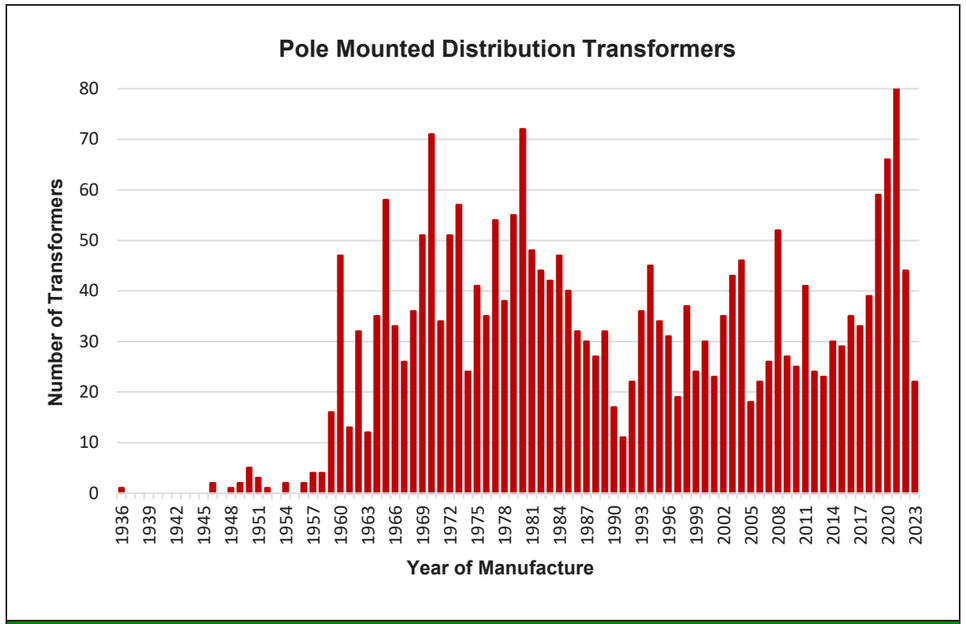


Figure 5-19: Asset Age Profile: Pole Mounted Distribution Transformers

5.18.5 Maintenance Plan: Distribution Transformers

Centralines has programmes in place to inspect its fleet of distribution transformers. Corrective maintenance is carried out on an ‘as required’ basis following condition-monitoring inspections or as a result of issues identified by the defect process.

Condition Monitoring/Testing: Ground Mounted Transformers	Frequency
All ground mounted transformers are visually inspected as part of Centralines’ ground mounted, distribution equipment inspections (GMIs).	Annually
Inspection and testing of all distribution transformer earthing including an earth site inspection and an earth resistance test. In addition, a visual inspection of all associated assets is undertaken while on site.	5-year cycle
A basic oil insulation test to measure dielectric (breakdown voltage) and moisture is carried out on all transformers on all large industrial sites.	5-year cycle

Table 5-55: Maintenance Plan: Ground Mounted Distribution Transformers

Condition Monitoring/Testing: Pole Mounted Transformers	Frequency
A visual inspection of all pole mounted transformers is undertaken as part of Centralines' feeder surveys which cover all overhead network assets and are a combination of aerial and ground-based inspections, depending on access and terrain.	5-year cycle
Inspection and testing of all distribution transformer earthing including an earth site inspection and an earth resistance test. In addition, a visual inspection of all associated assets is undertaken while on site.	5-year cycle

Table 5-56: Maintenance Plan: Pole Mounted Distribution Transformers

5.18.6 Asset Replacement and Refurbishment: Distribution Transformers

A number of distribution transformers are proactively replaced each year due to condition assessments and testing from the various inspection programmes. Additionally, some reactive replacements are undertaken as a result of in-service failures due to third party damage, lightning, storms, and age, etc.

The CBRM model is being used to better inform and assist in the identification and prioritisation of future pole and ground mounted transformer replacement programmes. Current replacement drivers are outlined in Table 5-57.

Replacement /Refurbishment Drivers
• Asset condition based primarily on GMI inspections for ground mounted units and feeder inspection data for pole mounted units and factoring in asset age, criticality, and any available oil test results for ground mounted transformers. • Replacements resulting from system growth or customer-driven upgrades and as a result of synergies with other renewal projects. • In-service transformer failures resulting from lightning, damage by third parties, other faults etc.

Table 5-57: Replacement and Refurbishment Drivers: Distribution Transformers

5.18.7 Controlled Documents: Distribution Transformers

Controlled Document Reference	Controlled Document Description
NK3001	Underground Design
NK3022	Network Fusing Standard
NK3030	Design Requirements for Public Safety Standard
NK3040	Earthing – Unison Engineering Principles
NK3041	Earthing Manual – Standard Earths
NK4015	Underground Cable Installation Standard
NK4020	Cable Testing Standard
NK5011	Inspection and Testing of Standard and SWER Earths Standard
NK5020	Feeder Survey and Condition Monitoring Standard
NK5043	Insulating Oil Maintenance Standard
NK6003	Concrete Manufactured Products Standard
OS1014	Process for Commissioning and Livening Equipment at Zone Substations
SC2050	Service Code – Dielectric Breakdown Voltage Test
SC2051	Service Code – Acidity Test
SC2052	Service Code – Dissolved Gas Analysis
SOP-39	SOP – Changing Taps in Distribution Transformers
SOP-50	SOP – Operating NX Fuses
SOP-56	SOP – Overhead Distribution Transformer Meter

Table 5-58: Controlled Documents: Distribution Transformers

5.19 Voltage Regulators

5.19.1 Asset Description: Voltage Regulators

Voltage regulators are electrical equipment designed to automatically maintain compliant voltages to customers irrespective of how much power is being drawn from the line. Typically, they are installed at a substation or on long distribution lines. The output voltage is constantly monitored, and the units automatically change tap settings to maintain the output voltage within an acceptable range. Centralines has five, three phase voltage regulators (fifteen regulators) installed permanently on the network plus an additional two-phase mobile regulator which is deployed as required across the network.

5.19.2 Asset Condition and Performance: Voltage Regulators

Centralines' fleet of voltage regulators are in good condition and are performing reliably with no systemic issues identified.

5.19.3 Asset Condition Assessment: Voltage Regulators

Asset Category	Grade H1	Grade H2	Grade H3	Grade H4	Grade H5	Data Accuracy	% Forecast to be Replaced in next 5-Years
Voltage Regulators				50%	50%	3	

Table 5-59: Asset Condition Assessment: Voltage Regulators

5.19.4 Asset Age Profile: Voltage Regulators

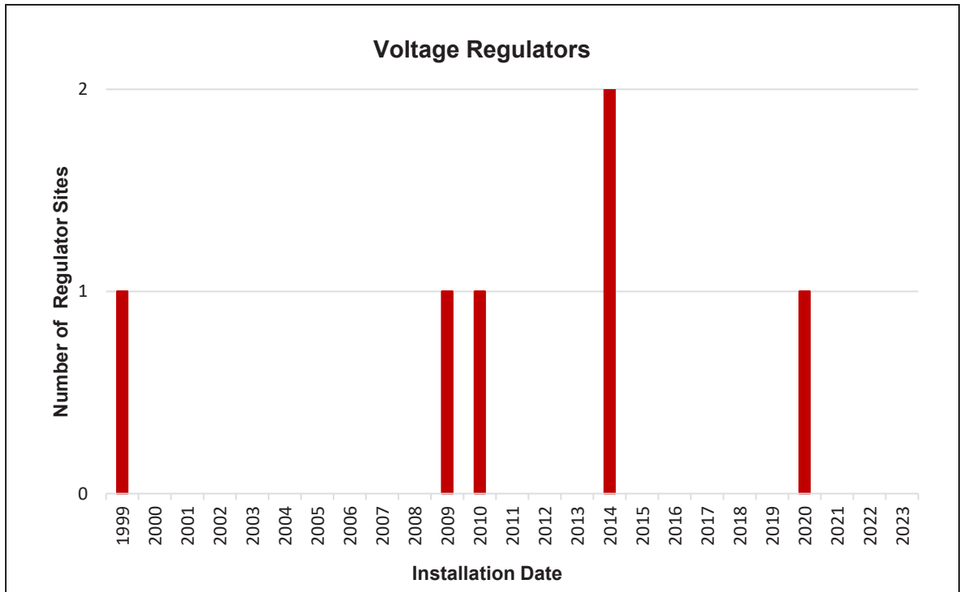


Figure 5-20: Asset Age Profile: Voltage Regulators

5.19.5 Maintenance Plan: Voltage Regulators

Regulators perform a critical operational function on the Centralines' network. To ensure reliable performance, Centralines has a tailored inspection and maintenance programme in place for this asset class. Table 5-60 defines current inspection and maintenance activities.

Condition Monitoring/Testing	Frequency
A visual inspection of all regulators is undertaken as part of Centralines' feeder surveys which cover all overhead network assets and are a combination of aerial and ground-based inspections, depending on access and terrain.	5-year cycle
Inspection and testing of all regulators' earthing including an earth site inspection and an earth resistance test. In addition, a visual inspection of all associated assets is undertaken while on site.	5-year cycle
Visual inspections to ensure the integrity and security of the site in addition to battery and operational checks to confirm the equipment is operating correctly.	Quarterly
Centralines plans to adopt tap changer activity signature analysis (TASA) oil testing for its fleet of regulators. This provides a one to four rating of the oil condition. The score attained will dictate required maintenance activities.	A minimum of a 2-yearly cycle after 10-years of operation. Tests will be carried out as part of the inspections above.

Table 5-60: Maintenance Plan: Voltage Regulators

5.19.6 Asset Replacement and Refurbishment: Voltage Regulators

Due to the age profile and good condition of this asset fleet, there are no planned regulator replacements during the current RAMP planning period. Future replacement drivers are outlined in Table 5-61.

Replacement/Refurbishment Drivers
• Asset condition based primarily on inspections and factoring in asset age, criticality capacity and functionality. • TASA oil test results. • Historical performance. • Availability of spare parts.

Table 5-61: Asset Replacement and Refurbishment Drivers: Voltage Regulators

5.19.7 Controlled Documents: Voltage Regulators

Controlled Document Reference	Controlled Document Description
NK5015	Voltage Regulator Inspection Standard
NK5020	Feeder Survey and Condition Monitoring Standard
NK5043	Insulating Oil Maintenance Standard
NK5075	Cooper Voltage Regulator Maintenance Standard
SOP-19	SOP – Magtech Voltage Booster Regulator

Table 5-62: Controlled Documents: Voltage Regulators

5.20 Overhead Distribution Switchgear

5.20.1 Asset Description: Overhead Distribution Switchgear

Overhead distribution switchgear includes all electrical switching equipment on the medium voltage overhead network. This switchgear is used to protect, isolate, and connect sections of the network for operational purposes.

5.20.2 Asset Description: Air Break Switches / Disconnectors

Air break switches (ABS) or disconnectors are manually operated switches used for connecting or disconnecting different sections of 11kV or 33kV circuits. All phases of the switch are mechanically linked so that they operate together. Early model ABS were primarily intended for no-load switching, but modern switches have flicker arc horns and/or load break attachments to allow limited on load switching capability. There are a small number of predominantly 33kV disconnectors installed in zone substations to enable the isolation of equipment. Centralines has approximately 300 ABSs on its network.

5.20.3 Asset Description: Isolation / Fuse Links

Single phase isolation / fuse links are used on the overhead network to provide isolation and or fusing functionality at specific points on the network. These links are manually operated with a ‘hot stick’ and can be either solid links or incorporate fuse elements. Centralines has approximately 3,000 links on its network, predominantly of the expulsion drop-out fuse type.

5.20.4 Asset Description: Reclosers

Reclosers are automatically operated electrical switches installed on the overhead network. They are designed to interrupt the supply to electrical power circuits thus protecting upstream and downstream electrical assets from damage as a result of a shorted or overloaded circuit. Additionally, they ensure the safety of the public and utility employees and provide electrical discrimination on the network reducing the outage impacts of faults.

Their basic function is to interrupt power by an initiated control command or automatically by protective sensing devices that detect abnormal or fault conditions. They are designed to interrupt circuits repeatedly and safely both under normal load and fault conditions.

A recloser can be reset manually or automatically (and remotely) to resume normal operation after a fault. They can be programmed to auto-reclose under certain circumstances until they lock out if the fault remains after a predetermined number of operations.

5.20.5 Asset Description: Sectionalisers / Load Break Switches

Sectionalisers are like reclosers in operation, but they are not designed to open immediately a fault is detected. Sectionalisers can be remotely operated and are able to switch load. Modern reclosers provide a wealth of network data including voltages, currents, and fault passage information.

Sectionalisers can be programmed to operate autonomously with a recloser and other sectionalisers to isolate a faulty section of line. This allows the recloser to auto reclose limiting the impact of the fault.

Centralines has 86 reclosers and sectionalisers on its network including both three phase and single-phase units.

5.20.6 Asset Condition and Performance: Overhead Distribution Switchgear

Overall, the condition of Centralines’ overhead distribution switchgear is good, with few in-service failures.

There have been some cracked insulators identified on a certain type of ABS with confirmation from other networks that they too have been experiencing similar issues. Acoustic testing has been used to condition assess these switches, and a prioritised programme to retrofit alternative insulators has been implemented. Centralines is now using an alternative ABS for all new installations.

More recently due to some failures of single phase 11kV reclosers (peanuts) a prioritised replacement programme has been developed and is being implemented.

5.20.7 Asset Condition Assessment: Overhead Distribution Switchgear

Asset Category	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Data Accuracy	% Forecast to be Replaced in next 5-Years
Pole Mounted 11kV Switches and Fuses	2%	11%	19%	21%	47%	2	2%
Reclosers and Sectionalisers		3%	22.5%	22.5%	52%	3	5%

Table 5-63: Asset Condition Assessment: Overhead Distribution Switchgear

5.20.8 Asset Age Profile: Overhead Distribution Switchgear

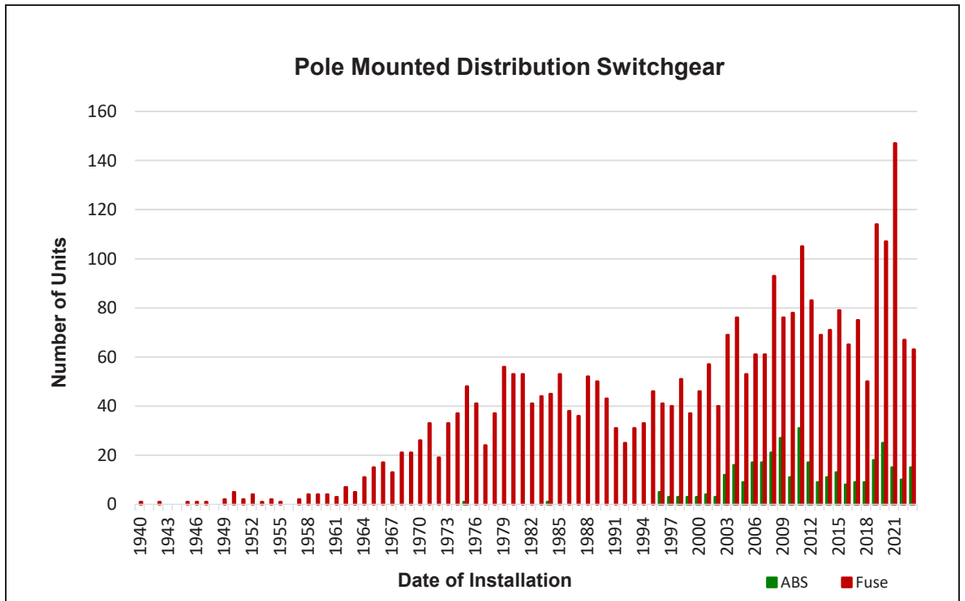


Figure 5-21: Asset Age Profile: Pole Mounted Distribution Switchgear

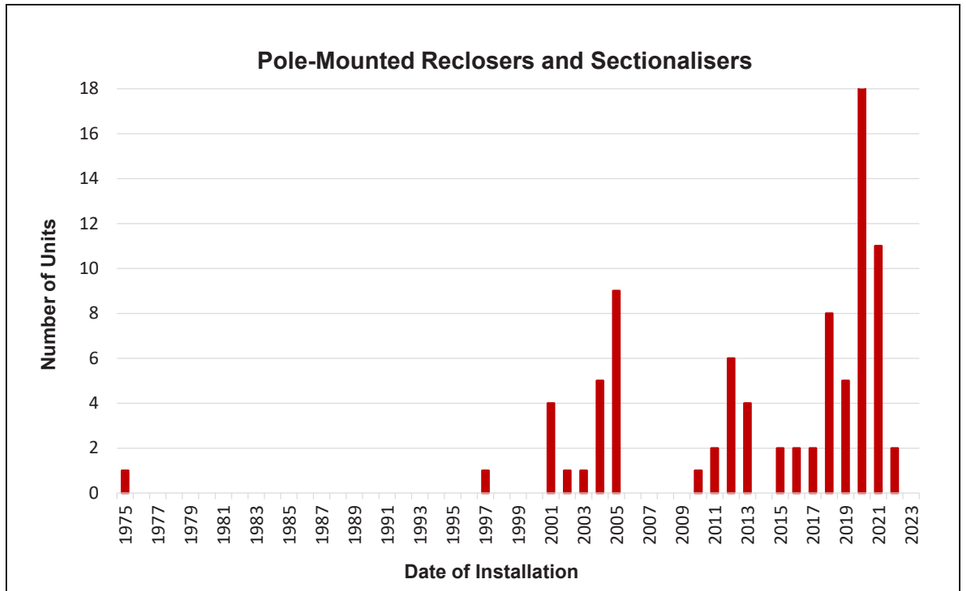


Figure 5-22: Age Profile: Pole Mounted Reclosers and Sectionalisers

5.20.9 Maintenance Plan: Overhead Distribution Switchgear

The following maintenance activities are undertaken on overhead distribution switchgear.

Condition Monitoring/Testing	Frequency
Centralines' feeder surveys cover all overhead network assets including overhead distribution switchgear and are a combination of aerial and ground based visual inspections, depending on access and terrain.	5-year cycle
Inspection and testing of all 11kV earthing installations include an earth site inspection and an earth resistance test. In addition, a visual inspection of all associated assets is undertaken while on site.	5-year cycle
In addition to the above, reclosers and sectionalisers are subject to an inspection and operational testing programme.	Annually with quarterly battery checks
Zone substation disconnectors (ABS) have been included in this section. The following inspections and maintenance are specific to these switches:	
Detailed visual inspection of all switch yard equipment. Included is a check of all insulators to ensure they are in good condition and free of audible discharges or signs of tracking etc.	Weekly
Thermo-vision, corona, and partial discharge inspection.	Annually
Complete shutdown with both visual and physical inspection of flexible connections, steel work, bolts, and earthing. Contacts, terminations, and insulators	10-year cycle

Condition Monitoring/Testing	Frequency
are all inspected and cleaned. The switches are opened and closed to ensure correct operation and alignment of all moving parts.	
Centralines carries out acoustic surveys on all 11kV ABS switches with cracked insulators	2-year cycle

Table 5-64: Maintenance Plan: Overhead Distribution Switchgear

5.20.10 Asset Replacement and Refurbishment: Overhead Distribution Switchgear

Current replacement and refurbishment drivers are essentially the same for all overhead distribution switchgear. These are outlined in Table 5-65.

Replacement/Refurbishment Drivers
• Asset condition based primarily on feeder inspection data, asset specific inspections and testing, factoring in asset age, functionality, capacity, and criticality. • In-service failures resulting from corrosion, lightning damage, and other faults, etc. • Upgrades resulting from system growth, power quality or customer projects. • Issues identified through the defect process. • Availability of spares.

Table 5-65: Asset Replacement and Refurbishment: Overhead Distribution Switchgear

5.20.11 Controlled Documents: Overhead Distribution Switchgear

Controlled Document Reference	Controlled Document Description
NK1011	As-Built Recording Manual
NK3022	Network Fusing Standard
NK3030	Design Requirements for Public Safety Standard
NK3040	Earthing – Unison Engineering Principles
NK3041	Earthing Manual – Standard Earths
NK5011	Inspection and Testing of Standard and SWER Earths Standard
NK5016	Line Recloser Inspections Standard
NK5020	Feeder Survey and Condition Monitoring Standard
NK5036	Disconnector, ABS and Earth Maintenance Standard

Controlled Document Reference	Controlled Document Description
OS1014	Process for Commissioning and Livening Equipment at Zone Substations
SOP-003	SOP – Operating Liquid Fuses
SOP-004	SOP – Operating Fuse Cut Outs
SOP-005	SOP – Operating Air Break Switches
SOP-006	SOP – Working beyond Sectos and ENTEC 11kV Switches
SOP-007	SOP – Operating ENTEC 630A 11kV Switches
SOP-008	SOP – Operating Sectos 630A 11kV Switches
SOP-14	SOP – Operating Capacitor Banks
SOP-15	SOP – Vacuum Capacitor Switch
SOP-16	SOP – McGraw Edison Recloser
SOP-17	SOP – Cooper Nova Recloser
SOP-40	SOP – Operating NX Arc Strangler Fuses

Table 5-66: Controlled Documents: Overhead Distribution Switchgear

5.21 Ground Mounted Distribution Switchgear

5.21.1 Asset Description: Ground Mounted Distribution Switchgear

This switchgear is used to protect, isolate, and connect sections of the 11kV network for operational purposes. Typically, ground mounted switchgear, including a combination of three or four 11kV switches and/or fused switches, contained within a standalone unit is referred to as a ring main unit (RMU). An RMU typically can have a maximum of two fused switches.

Ground mounted switchgear that encompasses a single switch or fused switch unit that can be connected to an RMU by way of an 11kV busbar or cable, or be a stand-alone unit is referred to as an 11kV switch.

RMUs and 11kV switches are designed to mechanically operate all three phases simultaneously. Most include earth switches which allow individual switches to be earthed. Centralines' older RMUs have switch contacts immersed in insulating oil to assist with arc suppression on opening. Centralines' has currently standardised on ABB Safelink arc-rated switches with SF_6 insulation with both manual and remote operating capability. Centralines' currently has 21 RMU and five 11kV switches on its network.

5.21.2 Asset Condition and Performance: Ground Mounted Distribution Switchgear

Centralines' fleet of ground mounted distribution switchgear is in good condition and performing reliably. No systemic issues have been identified.

5.21.3 Asset Condition Assessment: Ground Mounted Distribution Switchgear

Asset Category	Grade H1	Grade H2	Grade H3	Grade H4	Grade H5	Data Accuracy	% Forecast to be Replaced in next 5-Years
11kV Ring Main Units		5%	15%	37%	43%	4	
11kV Switches		5%	15%	70%	10%	4	

Table 5-67: Asset Condition Assessment: Ground Mounted Distribution Switchgear

5.21.4 Asset Age Profile: Ground Mounted Distribution Switchgear

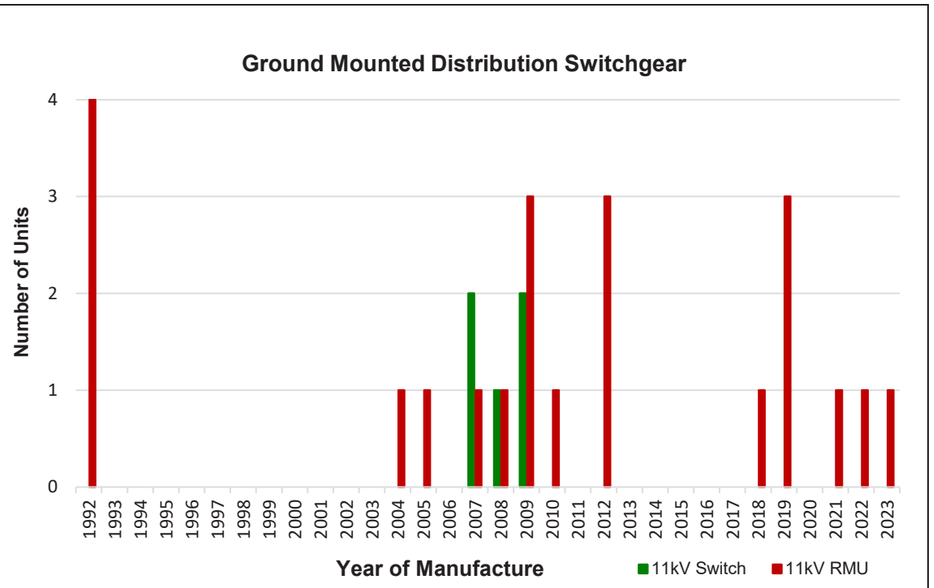


Figure 5-23: Asset Age Profile: Ground Mounted Distribution Switchgear

5.21.5 Maintenance Plan: Ground Mounted Distribution Switchgear

Centralines takes a proactive approach to inspecting and maintaining ground mounted distribution switchgear. Table 5-68 details the maintenance undertaken on this asset class.

Condition Monitoring/Testing	Frequency
All ground mounted distribution switchgear is visually inspected as part of Centralines' ground mounted, distribution equipment inspections (GMIs). These inspections include close visual examination and from this year, will utilise partial discharge, corona, and infrared sensing technologies to assist in the detection of potential defects and faults.	Annually
Inspection and testing of all ground mounted distribution switchgear earthing includes an earth site inspection and an earth resistance test. In addition, a visual inspection of all associated assets is undertaken while on site.	5-year cycle

Table 5-68: Maintenance Plan: Ground Mounted Distribution Switchgear

5.21.6 Asset Replacement and Refurbishment: Ground Mounted Distribution Switchgear

Due to the good condition and age profile of this asset class no renewals are planned during the RAMP planning period. Current and future replacement and refurbishment drivers are outlined in Table 5-69.

Replacement/Refurbishment Drivers
• Switch design, insulating medium, age, condition, and criticality. • Historical switch performance records and trend analysis. • Results of diagnostic testing and visual inspections. • Health and safety considerations. • Current and future maintenance requirements. • Availability of spare parts. • Specific switch location and environmental considerations. • Manufacturer recommendations. • The Condition Based Risk Management (CBRM) model is used to inform and assist in the identification and prioritisation of maintenance and replacement programmes.

Table 5-69: Asset Replacement and Refurbishment Drivers: Ground Mounted Distribution Switchgear

5.21.7 Controlled Documents: Ground Mounted Distribution Switchgear

Controlled Document Reference	Controlled Document Description
NK1011	As-Built Recording Manual
NK3001	Underground Design
NK3014	11kV Ring Main Switch Specifications
NK3022	Network Fusing Standard
NK3023	Underground Cable Specifications and Standards
NK3030	Design Requirements for Public Safety Standard
NK3040	Earthing – Unison Engineering Principles
NK3041	Earthing Manual – Standard Earths
NK4013	Testing of Non-cable Assets Standard
NK4015	Underground Cable Installation Standard
NK4020	Cable Testing Standard
NK5011	Inspection and Testing of Standard and SWER Earths Standard
NK5038	Metalclad Switchgear Maintenance Standard
NK5043	Insulating Oil Maintenance Standard
NK5070	Sulphur Hexafluoride (SF_6) Use and Handling Standard
NK6003	Concrete Manufactured Products Standard
OS1014	Process for Commissioning and Livening Equipment at Zone Substations
SC2050	Service Code – Dielectric Breakdown Voltage Test
SC2051	Service Code – Acidity Test
SC2052	Service Code – Dissolved Gas Analysis
SOP-09	SOP – Operating a Safelink 12kV – SF6 Insulated Ring Main Switch
SOP-11	SOP – Operating Small Dimension (SD) (ABB Andelect) Ring Main Switch
SOP-12	SOP – Long and Crawford Ring Main Switch

Table 5-70: Controlled Documents: Ground Mounted Distribution Switchgear

5.22 Overview of Secondary Assets

This section provides descriptions and high-level summaries of lifecycle asset management related information on Centralines' portfolio of secondary assets.

Information is provided on the asset categories detailed in Table 5-71.

Asset Class	Section Reference
Network Communications	5.23
Supervisory Control and Data Acquisition (SCADA)	5.24
Protection Relays	5.25
Zone Substation: Secondary Assets	5.26
Low Voltage Pedestals	5.27

Table 5-71: Asset Class Descriptions and Section References

5.23 Network Communications

5.23.1 Fibre Network (Primary Communication Network)

The primary or backbone medium for Centralines' electricity network communications is a carrier grade fibre optic cable network. This network is a mixture of leased and Centralines-owned circuits. The network links:

- the Centralines' Head Office in Waipukurau
- the Waipukurau and Waipawa Zone Substations
- Transpower's Waipawa GXP, and
- Centralines' service provider's, 24/7 Network Operations Centre in Hastings, from which, the Centralines' network is controlled.

The fibre link between Hastings and Waipukurau includes circuits leased from two service providers in the section between Hastings and OngaOnga, and the Centralines owned fibre between OngaOnga and Waipukurau. Redundancy for this communication network is by way of an alternative, leased communication link. In a contingency event, the Centralines' network can also be controlled from the Centralines' Waipukurau offices.

The fibre network between Centralines' Head Office, the Waipawa and Waipukurau Zone Substations and the Waipawa GXP are all radial feeds, and there is currently no redundancy. A break in any of these fibres would result in communications being lost and would require field staff to be dispatched to the zone substations to manually operate equipment.

Service and traffic separation across the SCADA network (via the fibre network) is maintained using industry recognised protocols to prioritise data and maintain system security.

The fibre network enables a range of network related functionality including:

- Supervisory Control and Data Acquisition (SCADA) which allows Centralines' entire electrical network to be monitored and operated from Centralines' Management service provider's head office in Hastings
- the monitoring and enabling of a 33kV sub-transmission ring circuit, differential protection scheme, and
- engineering access to Intelligent Electronic Devices (IEDs) and other equipment installed in substations including protection relays which can be interrogated remotely, including the downloading of fault logs to assist with post-fault analysis.

5.23.2 VHF Radio Communications

VHF is used for the transmission of voice communication between Centralines' Management service provider's NOC in Hastings and Centralines' field staff. Two VHF data channels are also utilised for SCADA functions to control the Wilder Road Substation, pole mounted reclosers, load break switches and some regulators.

5.24 Supervisory Control and Data Acquisition (SCADA)

SCADA is a generic term that covers the system that Centralines' Management service provider uses to monitor and control network operations, obtain system information, and create historical records of events.

Unison utilises an integrated, Advanced Distribution Management System (ADMS) developed and supplied by Schneider Electric.

The ADMS is a software platform that provides SCADA functionality across the distribution network. It includes:

- outage management
- call and dispatch
- automated fault location
- isolation and service restoration (self-healing) capability, and
- integrated network reliability reporting.

It also provides mobile crew management and network visibility to the workforce.

Additional modules within the ADMS enable network optimisation and analysis. This can provide Unison with the ability to optimise the state of the network by identifying the optimal configuration which will reduce the number of losses and ensure effective asset utilisation.

The ADMS incorporates a training simulator that is used to:

- test Centralines' systems and processes during simulated crisis events, and
- train new and existing operators to maintain required competency standards.

Unison uses the previously described communication platforms for the ADMS to communicate with Remote Terminal Units (RTUs) located in substations and field equipment. The RTUs provide the communication interface that allows for central control commands to be conveyed to appropriate equipment and for network data to be returned.

5.25 Protection Relays

5.25.1 Asset Description: Protection Relays

A protection relay is a device designed to trip a circuit breaker when a fault is detected. The first protection relays were electro-mechanical devices, relying on coils operating on moving parts to provide detection of abnormal operating conditions such as transformer differential, over-current, earth fault and over and under voltage, and frequency.

Modern numeric relays are far superior to these early electromechanical relays. They operate extremely quickly, offer increased functionality, and provide detailed information on faults that can be remotely downloaded.

Centralines has standardised on SEL manufactured protection relays due to their high quality, reliability, ten-year warranty period and after sales technical and training services. Standardising on one manufacturer also has some advantages for field technicians who only have to be familiar with one product range which speeds up and simplifies relay configuration, testing and commissioning and the downloading and interpretation of power system fault logs.

5.25.2 Asset Condition and Performance: Protection Relays

Centralines' relay protection assets have been performing reliably. A fibre enabled 33kV ring circuit differential protection scheme has been installed between the Waipawa and Waipukurau Zone Substations and Transpower's Waipawa GXP. In addition, five transformer differential schemes have been implemented at Waipawa and Waipukurau zone substations.

Centralines via its substation fibre communication network currently has engineering access to approximately 22 protection relays across its network. This allows protection engineers to remotely download and analyse power system events to gain an understanding of the nature and magnitude of any event.

5.25.3 Maintenance Plan: Protection Relays

Protection relays are regularly checked as part of Centralines' weekly substation maintenance regime. Operational checks are carried out every ten-years.

5.25.4 Fast Protection Benefits: Protection Relays

There are many benefits to the protection upgrades that have been undertaken at Centralines. Some of these benefits are outlined below.

- Health and safety outcomes have improved. Fast protection reduces the risk and potential consequences to employees and the public resulting from network faults.
- Network reliability and security has improved due to unitised protection that reduces fault propagation, eliminates cascade tripping, and mitigates loss of discrimination which sometimes occurs due to the slow operation of protection systems.
- Fast protection reduces the potential damage to network equipment as fault durations are significantly reduced.
- The quality of supply to Centralines' customers has been enhanced as fast operating protection significantly reduces voltage dips on Centralines' network.
- Remote engineering access is possible. This allows the remote interrogation of relays to analyse power system faults.
- Numeric relays enable SCADA serialisation which eliminates discreet hard copper connections between equipment.

5.26 Zone Substation: Secondary Assets

In addition to the main zone substation asset classes covered earlier in this section, there are also secondary assets within a zone substation that provide other critical functions. Table 5-72 provides a high-level overview of these assets.

Asset	Asset Description	Maintenance
Voltage Transformers	Voltage transformers (VTs) are used to transform high voltages to lower voltages that can be more safely used for protection, control, indication and metering. VTs may be located on both outdoor and indoor equipment and be either single phase or three phase units.	Visual inspection included in weekly substation inspections. Annual thermo-vision, corona, and partial discharge inspections. Six-yearly service including a clean, lubrication of moving parts, visual inspection, insulating oil maintenance, insulation test, and a check of all LV/HV and earth connections and holding down arrangements.
Current Transformers	Current transformers (CTs) are used to transform high currents to lower levels that can be used for protection, control, indication and metering. Outdoor CTs are generally stand-alone, single phase oil insulated units and usually form part of a circuit breaker. Indoor CTs are generally single phase, solid insulation and located on each phase of a circuit breaker.	Visual inspection included in weekly substation inspections. Annual thermo-vision, corona, and partial discharge inspections. 6-yearly service including a clean, visual inspection, insulation test (HT-E only), and a check of all LV/HV and earth connections and holding down arrangements.

Asset	Asset Description	Maintenance
Outdoor Structures	These consist of overhead support structures and conductive busbars constructed of either copper or aluminium. These busbars allow switchgear and power transformers to be connected together. Typically, these structures incorporate disconnectors to provide isolation for maintenance.	Visual inspection included in weekly substation inspections. Annual thermo-vision, corona, and partial discharge inspections.
Direct Current (DC) Systems	DC systems at zone substations are used to provide an independent stand-alone power supply that can function if the main AC supply fails. The general arrangement is to have battery banks on continuous charge connected to critical control, protection, and communication equipment.	Visual inspection included in weekly substation inspections. 5-yearly substation battery replacements.
Substation Earthing Systems	Because of the high voltages and currents encountered in zone substations, earthing systems are designed at the time of construction to ensure the safety of personnel and equipment. The earthing systems generally comprise bare copper cables laid in the ground in a grid formation. All substation equipment is bonded to these earth grids and the earth grids in turn are connected to earthing rods that are driven deep into the ground.	Visual inspection included in weekly substation inspections. Annual thermos-vision, corona, and partial discharge inspections. Substation earthing systems are independently tested every 5-years.
Oil Containment Systems	New substations are designed to include a bunded transformer foundation and oil containment system. Centralines has a programme to install bunding and oil containment systems at all older substation sites where they currently do not exist.	Visual inspection included in weekly substation inspections.

Table 5-72: Zone Substation: Secondary Asset Descriptions and Maintenance

5.27 Low Voltage Pedestals

5.27.1 Asset Description: Low Voltage Pedestals

Pedestals are enclosures for the termination of buried cables and the mounting of fuses, control relays and other electrical equipment. Typically, low voltage pedestals are the isolation/demarcation point between the distribution network and the customer's service main. They are also used as group breaks to enable back feeding capability on the low voltage network. Centralines has approximately 1,250 low voltage pedestals installed on its network.

5.27.2 Asset Condition and Performance: Low Voltage Pedestals

Pedestals are ubiquitous assets that form part of the urban landscape. As such they suffer from motor vehicle damage, vandalism, and occasionally unauthorised access.

Ultraviolet (UV) degradation, corrosion, burnt up fuses, voltage tracking and moisture build-up are all issues that impact on this asset class. Recent innovations to defer replacement have included painting fibreglass pedestals to reduce UV damage and prolong the assets' lives. The introduction of new PVC pedestals with replaceable covers has reduced the need to replace the entire asset when the cover alone is damaged.

5.27.3 Maintenance and Replacement Plan: Low Voltage Pedestals

Most pedestal maintenance and replacement are reactive and in response to faults, condition assessments, network upgrades and reported defects.

Pedestals are included in the five-yearly safety inspection programme for low voltage ground mounted assets. These inspections have a public safety emphasis and focus on asset security and guarding against unauthorised public access. Any minor repairs are carried out at the time by asset inspectors and other defects are logged for follow-up action.

5.28 Centralines' Assets installed on Bulk Electricity Supply Points

5.28.1 Transpower GXP

Centralines has a few assets installed at Transpower's GXP. These assets include 33kV sub-transmission and 11kV distribution lines and cables as well as communications equipment and protection relays. These assets are covered by Centralines' Access and Occupation Schedule Agreement which sets out the terms and conditions associated with Centralines' assets on Transpower sites.

5.29 Centralines' Owned Generators

5.29.1 Mobile Generation

Centralines owns a 50kVA mobile generator which is used to temporarily maintain or restore supply to Centralines' customers during both planned and unplanned outages. An external contractor is engaged to maintain this generator.

5.30 Other Generation Plant

5.30.1 Centralines' Head Office

Centralines owns a 65kVA on-site diesel generator that maintains supply to its head office. This generator ensures continuity of supply to Centralines' Head Office complex enabling business continuity when normal supply is lost to the site. Centralines engages an external contractor to maintain this generator.

5.31 Asset Maintenance Expenditure Projections

Centralines' maintenance expenditure projections for the RAMP planning period are presented by asset category in Table 5-73.

Asset Category	Asset Maintenance Expenditure Projections ($000)									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Overhead Lines	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
Underground Cables	112	112	112	112	112	112	112	112	112	112
Circuit Breakers	20	20	20	20	20	20	20	20	20	20
Zone Substation Buildings and Equipment	51	51	51	51	51	51	51	51	51	51
Power Transformers	36	36	36	36	36	36	36	36	36	36
Distribution Transformers and Regulators	52	52	52	52	52	52	52	52	52	52
Distribution Switchgear	50	50	50	50	50	50	50	50	50	50
Vegetation	792	792	792	792	792	792	792	792	792	792
SCADA and Communications	28	28	28	28	28	28	28	28	28	28

Table 5-73: Asset Maintenance Expenditure Projections for RAMP Planning Period

5.32 Asset Renewal Expenditure Projections

Centralines' renewal expenditure projections for the RAMP planning period are presented by asset category in Table 5-74.

Asset Category	Asset Renewal Expenditure Projections ($000)									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
11kV GM Circuit Breakers	50	-		-	-	-	-	-	-	-
Concrete Poles	1,225	1,200	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
11kV PM Reclosers and Sectionalisers	595	595	595	170	170	170	170	170	170	170
11kV PM Switches and Fuses	255	260	260	260	260	260	260	260	260	260
Distribution OH Open Wire Conductor	2,430	2,000	2,000	2,000	1,000	1,000	1,000	1,000	1,000	1,000
Pole Mounted Transformers	65	65	65	65	65	65	65	65	65	65
Zone Substation Transformers	1,500	500	1500	1500	500	-	-	-	-	-
Zone Substations	1,500	500	1500	1500	500	40	-	-	-	-
11kV RMU	-	-	-	-	-	-	-	-	-	-
Ground Mounted Distribution Transformers	350	300	300	300	300	300	300	300	300	300

Table 5-74: Asset Renewal Expenditure Projections for RAMP Planning Period

5.33 Renewal Project List 2024-2025

Renewal Project List 2024/25			
Project Number	Asset Category	Project Description	Project Budget ($000)
Allowance	Concrete Poles	Pole Replacements	500
203339	33kV Lines	Wilder Road 33kV Stage 7 refurbishment	1,080
203286	11kV Lines	Conductor replacement Feeder 46	200
209163	11kV CB Reclosers and Sectionalisers	Replace RCS 428	85
209164	11kV CB Reclosers and Sectionalisers	Replace RCS 546	85
208768	33kV Lines	Wilder Road 33kV Stage 8 refurbishment	1,350
208767	Pole Mounted Transformers	Replace Transformer C4/1 and associated 2 pole structure	60
Various	11kV CB Reclosers and Sectionalisers	RCS replacement program RCS's 57,58,63 & 68	255
Various	11kV Switches and Fuses (Pole Mounted)	Replace 15 Mahanga ABS's	200

Table 5-75: Renewal Project List 2024-2025

5.34 Renewal Project List 2025/26 to 2028/29

Renewal Project List 2025/26 to 2028/29		
Project Number	**Financial Year**	**Project Description**
10076	2026	Waipawa ZS 11kV switchboard and protection upgrade
	2026	Reconductor 7/0.064 11kV Copper Middleton Road
	2027	Reconductor 7/0.064 11kV Copper Tod Road
	2028	Reconductor 7/0.064 11kV Copper Porangahau Road

Table 5-76: Renewal Project List 2025/26-2028/29

5.35 Renewal Project List 2029/30 to 2033/34

Renewal Project List 2029/30 to 2033/34		
Project Number	**Financial Year**	**Project Description**
3027	2029	Waipukurau install inceptor tank at zone substation
3028	2029	Waipawa install inceptor tank at zone substation
	2029	Reconductor 7/0.064 11kV Copper Nelsons Road
	2030	Reconductor 7/0.064 11kV Copper Vaughan Road
	2031	Reconductor 7/0.064 11kV Copper Boundary Road

Table 5-77: Renewal Project List 2029/30-2033/34

5.36 Determination Reference Mapping Table

Section 5 Reference		Determination Reference
5.1 5.2	Introduction to this Section Overview of Lifecycle Asset Management Planning	12
5.3	Maintenance	12.1, 12.2
5.4	Renewal	12.3, including 12.3.1 and 12.3.2
5.5 5.6 5.7 5.8 5.9 5.10 5.11 5.12 5.13 5.14 5.15 5.16 5.17 5.18 5.19 5.20 5.21	Asset Lifecycle Management by Asset Category Sub-transmission: Asset Group Overview Sub–transmission: 33kV Overhead Lines Sub–transmission: 33kV Underground Cables Zone Substations: Asset Group Overview Zone Substation: Power Transformers Zone Substations: 33kV Circuit Breakers Zone Substation: 11kV Circuit Breakers and Switchboards Zone Substation: Buildings Zone Substation: Ripple Injection/Load Control Plants Poles: All Voltages Distribution and Low Voltage Overhead Lines Distribution and Low Voltage Underground Cable Distribution Transformers Voltage Regulators Overhead Distribution Switchgear Ground Mounted Distribution Switchgear	4.4, including 4.4.1, 4.4.2, 4.4.3 and 4.4.4 12.4, including 12.2.1 and 12.2.2 12.3, including 12.3.1 and 12.3.2
5.22 5.23 5.24 5.25 5.26 5.27	Overview of Secondary Assets Network Communications Supervisory Control and Data Acquisition (SCADA) Protection Relays Zone Substation Secondary Assets Low Voltage Pedestals	4.4 including 4.4.1, 4.4.2, 4.4.3 and 4.4.4 12.2, including 12.2.1 and 12.2.2 12.3, including 12.3.1 and 12.3.2
5.28	Centralines' Assets Installed on Bulk Electricity Supply Sites	4.5.2
5.29 5.30	Centralines' Owned Generators Other Generation Plant	4.5.2, 4.5.3, 12.2 and 12.3 4.5.4, 12.2 and 12.3
5.31	Asset Maintenance Expenditure Projections	12.2.3

SECTION 6 //// ONO

NON-NETWORK DEVELOPMENT MAINTENANCE & RENEWAL

CENTRALINES
LIMITED

2024-34 REGULATORY ASSET MANAGEMENT PLAN

CONTENTS

6. NON-NETWORK DEVELOPMENT, MAINTENANCE AND RENEWAL

6.1 Introduction to Section

This section summarises and outlines the lifecycle activities of material non-network assets, including policies covering the development, maintenance, and renewal of these assets. An overview is included of material capital expenditure, and maintenance and renewal projects proposed for the next five years.

Centralines' two categories of material non-network assets are property and vehicles. Each category is detailed separately below.

Centralines does not own any material information technology (IT) assets. Operational information systems are provided by Unison Networks Limited (UNL), under the provisions of the Management Services Agreement (MSA).

6.2 Property

For the purposes of this Regulatory Asset Management Plan (RAMP), property assets exclude substations as these are classified as 'network assets'.

6.2.1 *Description of Assets*

Centralines owns a depot in Coughlan Road, Waipukurau and their former depot site in Peel Street, Waipukurau.

6.2.2 *Development, Maintenance and Renewal Policies*

The development, renewal and maintenance of property assets are on an 'as required' basis. There is an ongoing strategic review of property requirements that identifies any changes which may be necessary to ensure the continued efficient operation of Centralines.

Maintenance contracts are in place for scheduled and reactive maintenance activities on grounds and buildings, including air conditioning units, fire alarms and security systems. This ensures Centralines remains compliant with building warrant of fitness requirements.

6.2.3 *Material Capital Expenditure Projects Planned for the Next Five Years*

Table 6-1 details proposed capital projects.

Project	Description
Solar Farm	Develop a solar farm on Centralines' Ongaonga property.

Table 6-1: Material Capital Expenditure Projects Planned for the Next Five-Years

6.2.4 *Material Maintenance Activities Planned for the Next Five Years*

Routine property maintenance is planned and budgeted on an annual basis. No material maintenance activities are currently planned.

6.3 Vehicles

6.3.1 *Description and Quantity of Vehicle Assets*

For the purposes of the RAMP, vehicle assets are divided into three classes. The number of vehicles owned by Centralines is detailed in Table 6-2.

Category	Description	Number
Heavy	All vehicles over 3.5 tonne excluding excavators, trailers, and generators.	14 vehicles
Light	All vehicles under 3.5 tonne excluding excavators, trailers, and generators.	29 vehicles
Other	Excavators, trailers, and generators, etc.	25 assets

Table 6-2: Description and Quantity of Vehicles

6.3.2 *Renewal Policy*

Centralines' CL-PE-16 Motor Vehicle Policy details renewal criteria as outlined in Table 6-3.

Vehicle Type	Replacement Criteria
Heavy	10 years or 300,000km
Light Commercial (Utes and Vans)	5 years or 150,000km
Light	3 years or 80,000km
Other	Specific to equipment type

Table 6-3: Vehicle Type and Replacement Criteria

6.3.3 *Material Capital Expenditure Projects Planned for the Next Five Years*

Centralines has an annual motor vehicle replacement plan based on its Motor Vehicle Policy. This has been revised to reflect a preference for purchase of electric vehicle options where performance and whole-of-life costs are competitive with non-electric options. Expenditure includes charging infrastructure as Centralines' EV fleet grows.

6.3.4 *Material Maintenance Activities Planned for the Next Five Years*

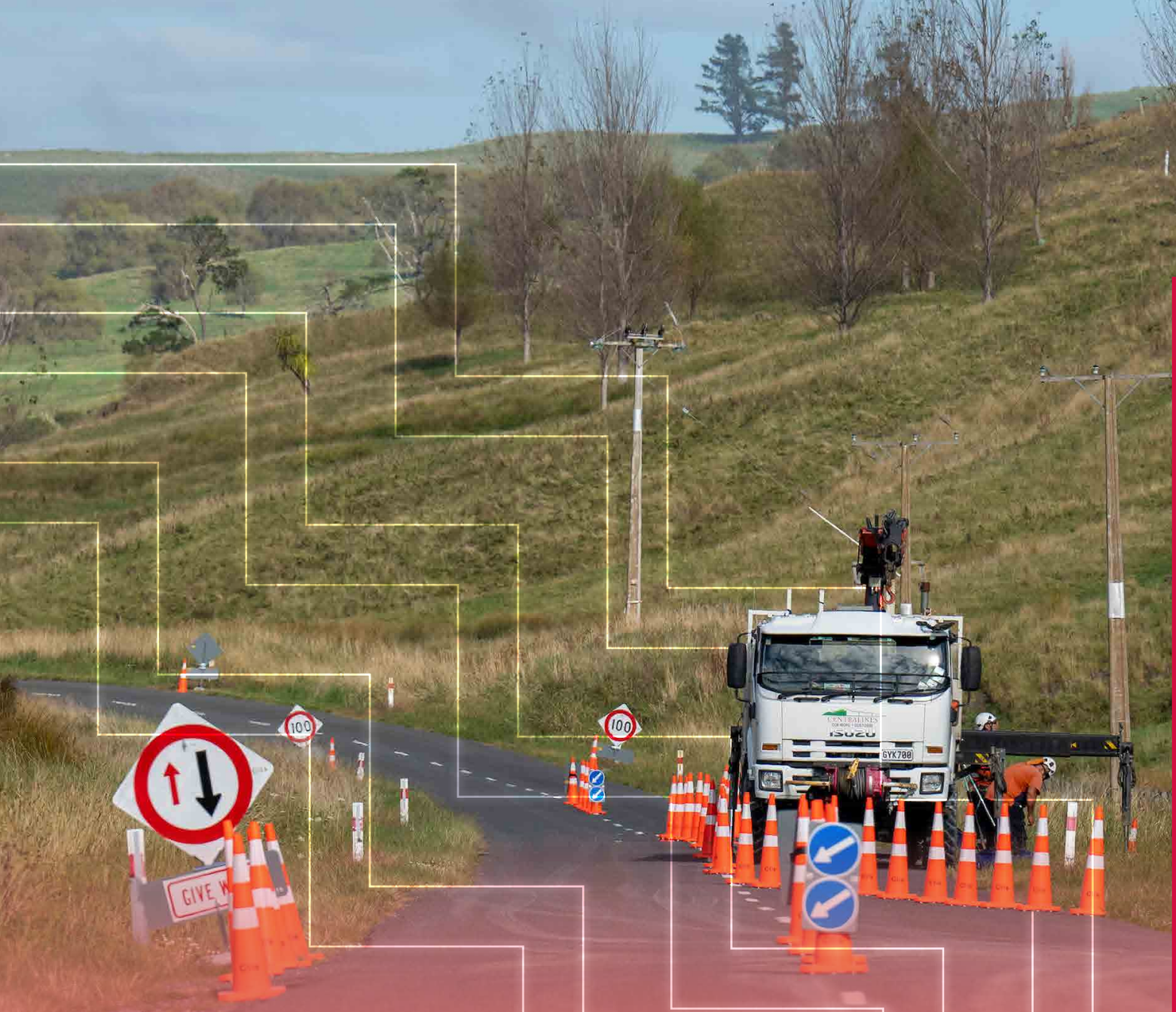
Maintenance plans for all vehicles are as per the manufacturer's recommendation.

One of the existing bucket trucks is scheduled for a rebuild in the upcoming planning period. No other material maintenance activities are planned for this period.

6.4 Determination Reference Mapping Table

Section 6 Reference	Determination Reference
6.1 Introduction to Section	13
6.2 Property 6.3 Vehicles	13 including 13.1-13.4

Table 6-4: Determination Reference Mapping Table



SECTION 7 //// WHITU

RISK MANAGEMENT

CENTRALINES
LIMITED

CONTENTS

7. RISK MANAGEMENT

7.1 Introduction to Risk Management at Centralines

Risk management is an integral part of Centralines' overall business philosophy and as such, plays a fundamental role in Centralines' asset management process.

Risk at Centralines is defined as '*the effect of uncertainty on its objectives'*, which may be positive or negative. Centralines' Risk Management Policy and processes provide a disciplined, structured, and systematic approach to identifying, prioritising, managing, and reporting on the risks to the business.

Centralines' risk vision is:

'To embed a risk culture and practices so all employees take personal ownership for identifying risks and limiting the impacts of unforeseen events".

Centralines' risk management approaches are clearly specified in corporate controlled documentation which includes a risk management policy, and risk management framework. Both documents are aligned with the principles provided in ISO 31000:2018 Risk Management – Guidelines.

Both the risk management policy and the risk management framework are Centralines Board approved documents. These documents require risks to be aggregated from across the business and then formally reported to the governing body. Enterprise risks are reported at least half yearly to the:

- Audit and Risk Committee (a sub-committee of the Centralines Board), and
- Centralines Executive Risk Committee (ERC).

The corporate risk management approaches are translated to become specific to asset management.

The risk management hierarchy illustrated in Figure 7-1 outlines how the risk management framework, and resultant processes, are integrated at all levels and into all functions of the organisation.

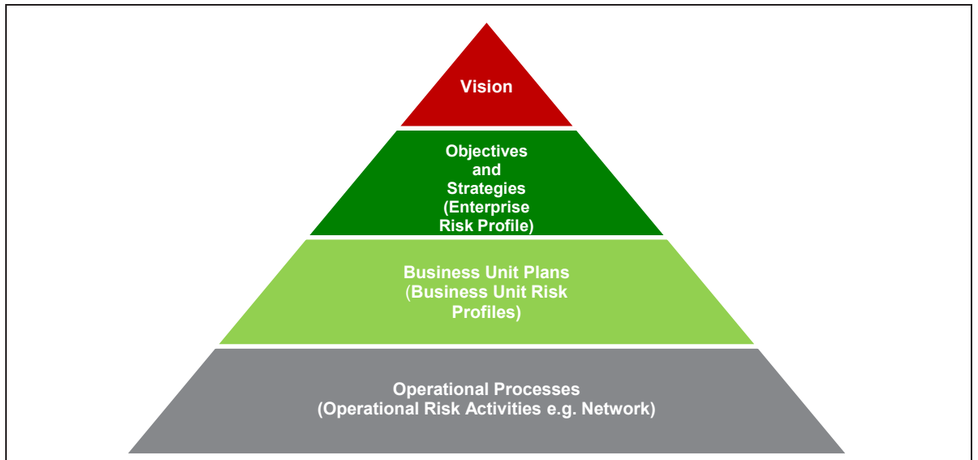


Figure 7-1: Risk Management Hierarchy

Risk management within asset management at Centralines is important to ensure:

- operational risks to assets are effectively identified and managed, and
- that, given the changing dynamics of the industry, strategic asset related risks are effectively identified and managed through commercially sound solutions for the benefit of all stakeholders.

7.1.1 *Risk Management Policy*

Centralines' Risk Management Policy aims to:

- ensure that risk management is an integral component in developing the company's strategies
- use business processes to systematically identify and assess risks to objectives including strategy, assets, and key stakeholders
- reduce, avoid, share, or accept identified risks, having regard to the company's Board-approved appetite and tolerance for risk
- contain and minimise the consequences in the event of an identified risk materialising, and
- provide for the continued provision of services through adequate and timely response, restoration, and recovery.

This policy uses a single framework for the management of risk as detailed in Centralines' risk management framework.

7.1.2 *Risk Management Governance Structure, Roles, and Responsibilities*

Governance can be summarised as the oversight of how risk management practices are conducted. The governance role for Centralines is performed by the Centralines Board of Directors.

The Board, with the assistance of the executive management team:

- provides the mandate for an effective risk management system
- sets boundaries for which risks are acceptable (risk appetite)
- sets the 'tone' and expectations throughout Centralines on the importance of risk management, and
- ensures Centralines' risk management framework and maturity is appropriate for the context of the organisation.

In addition, it is essential that everyone at Centralines understands:

- what risks they face
- how they are accountable for them, and
- what actions they must take to manage and mitigate those risks.

The following sections provide information about the designated risk management roles and responsibilities, and what is expected of all staff with regards to risk management.

7.1.2.1 Board and Audit and Risk Committee

The Centralines Board maintains overall responsibility for risk management including setting the mandate, appetite, and tolerances for acceptable expectations of risk. The Board delegates to its Audit and Risk Committee (ARC) the responsibility to closely scrutinise and oversee the application and output of Centralines' risk management policy.

7.1.2.2 Chief Executive Officer

The Chief Executive Officer is responsible for:

- promoting a culture of actively managing risks, aligned to the Board's risk appetite
- regularly reviewing key risks and reporting to the Audit and Risk Committee
- regularly attending the Executive Risk Committee and overseeing its activities, and
- monitoring the actions and risk mitigation plans for any risks with residual ratings outside of appetite.

7.1.2.3 Executive Risk Committee

The Centralines Executive Risk Committee (ERC) meet at least six-monthly to formally discuss and challenge Centralines' risks. To achieve this the Committee:

- monitors and manages risks
- escalates risks of material significance
- manages the progress of control remediation activities, and
- promotes a risk-awareness culture.

7.1.2.4 All Employees

All Centralines employees are responsible for the management of risks. Their responsibilities are to:

- consider risk as part of any decision-making process and part of their day-to-day activities
- carry out all mitigation activities as agreed, and
- take immediate action to report and escalate identified incidents or near-misses across any risk class that could have the potential to result in any loss (both quantitative and or qualitative).

7.1.2.5 *Group Risk and Sustainability Manager*

Unison Networks Limited (UNL) is the management services provider for Centralines. Unison's Group Risk and Sustainability Manager (RSM) is responsible for the development, coordination, and implementation of strategic risk maturity practices.

Unison's Group RSM updates the Enterprise Risk Register and prepares the relevant risk reports for Centralines' ERC, senior management, the ARC, and as appropriate, the Board of Directors. In addition, the RSM tracks and reports to the ARC progress in all control remediation activities impacting on the enterprise risks.

7.2 Risk Management Framework

7.2.1 *Purpose*

The risk management framework sets out Centralines' processes and procedures to enable the intent of the risk management policy to be carried out. It helps management and the Centralines Board meet their governance obligations with respect to risk management.

The purpose of the framework is to:

- provide clear guidance and instructions on how to identify and manage risks
- standardise and coordinate risk activities and risk practices across Centralines
- describe the components of Centralines' risk approach, including the hierarchy for risk recording and reporting
- provide assurance to the Board and other stakeholders that Centralines has appropriate arrangements and practices in place for the identification and management of risk
- inform Centralines employees of their individual and collective responsibilities for managing risk
- ensure consistent and standardised application of risk management across Centralines, and
- assist in ensuring risk management practices are integrated into normal business practices.

7.2.2 *Alignment to Risk Management Standard*

ISO 31000:2018 Risk Management – Guideline is widely recognised as the leading international standard in risk management. Centralines' risk management framework is aligned with *ISO 31000:2018.*

In addition, the risk management framework is extended to specifically include information security. This component of the risk framework is benchmarked against *ISO 27000:2013 – Information Security Management*. It contains additional steps in the risk identification process including identifying critical information assets and vulnerabilities.

The ISO 31000:2018 guidelines for managing risk are based on the principles, framework and process illustrated in Figure 7-2 below ('clauses' refers to the reference from the standard).

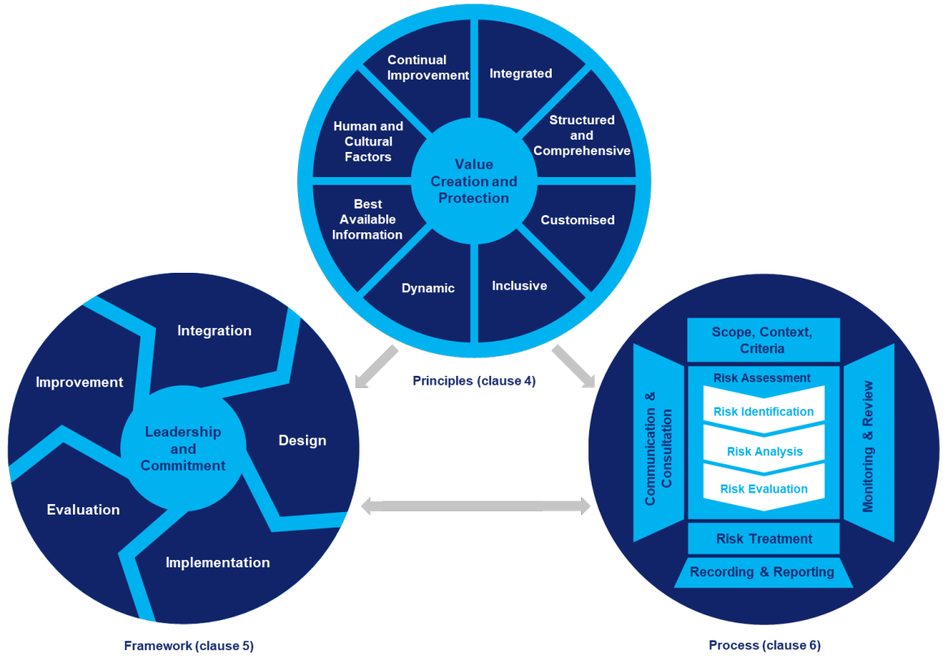


Figure 7-2: ISO 31000:2018 Guidelines for Managing Risk

7.3 Risk Management Process

ISO 31000:2018 provides guidance and a structure for the risk management process. Centralines has adopted this process as an integral part of its risk management framework. The process provides the practical tools and guidance on how to identify, consider, rank, and manage risks.

The diagram shown in Figure 7-3 illustrates, at a high-level, Centralines' risk management process.

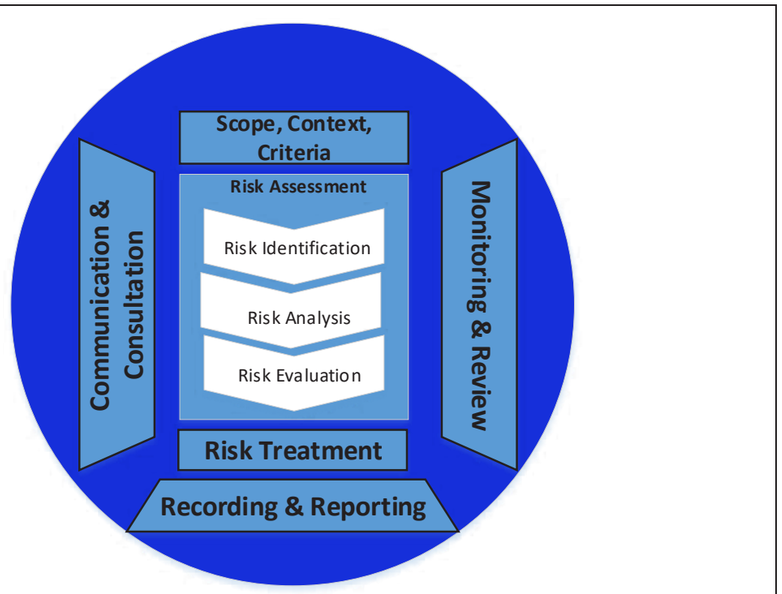


Figure 7-3: Centralines' Risk Management Process

7.3.1 *Stage 1 – Establish the Scope, Context and Criteria*

The first stage in the risk process is to establish the scope, context, and criteria.

7.3.1.1 Scope

Risk management practices can be applied at all levels of the organisation, e.g., strategic, operational, financial, and project. It is therefore important to be clear on the scope of the risk by understanding at what level of the organisation the risk process is being applied to. This will ensure that risks are associated to the relevant business objectives.

Objectives at all organisational levels should align to Centralines' strategic objectives. Therefore, as risk is defined as 'risk to objectives' it is possible to aggregate most risks into the enterprise risk profile. Through aggregation, every risk can be assessed to ensure the aggregated materiality of the risk is within the Board approved risk appetite statement.

7.3.1.2 Context

The risk process considers context in two areas:

1. Internal environment, and
2. External environment.

The internal environment represents features essentially within the direct control of Centralines. Risk management is aligned to Centralines' culture, processes, structure, and strategies.

The external environment represents features that are essentially outside the direct control of Centralines.

7.3.1.3 Criteria

Risk assessments should be undertaken consistently across the organisation and at all levels. Therefore, each risk is assessed by considering the:

- uncertainties which can affect the outcomes of objectives
- consequence and likelihood definitions
- time-related factors, i.e., speed at which the issue(s) are emerging
- risk capacity, as defined by the Board's risk appetite statement, and
- effect on other risks or the combinations of risks.

7.3.2 *Stage 2 – Identify Risks*

After establishing scope, context and criteria, the next stage of the process is to identify risks. The key to this stage is to:

- understand objectives, and
- develop a list of events or areas of uncertainty that could impact on Centralines achieving their objectives.

There are a number of methods and approaches that can be used to identify risks and controls. One approach Centralines has adopted is Bowtie Analysis, which is outlined in Figure 7-4 below.

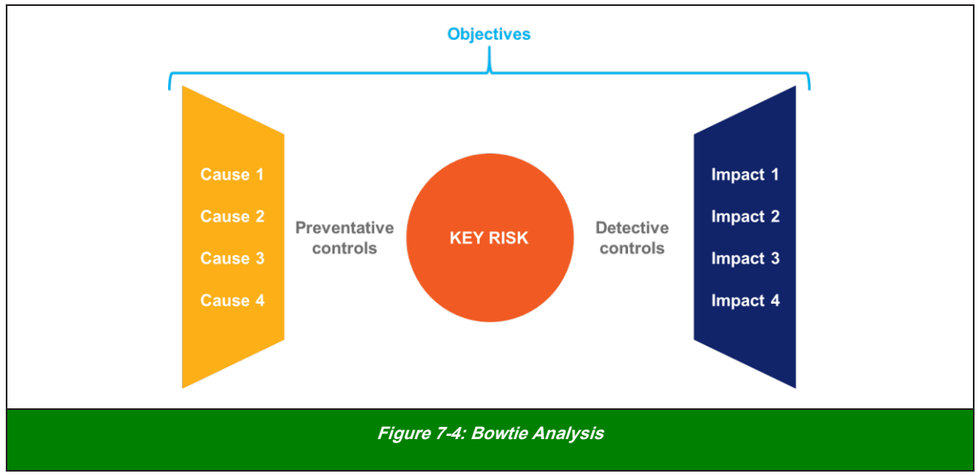


Figure 7-4: Bowtie Analysis

7.3.3 *Stage 3 – Analyse Risks*

The next step in the risk process is to analyse the risks that have been identified. The overall aim of risk analysis is to form a view of the risk rating based on the likelihood and consequence of the risk eventuating. The risk consequence considers both financial and non-financial impacts.

Centralines' risk management heat map is shown in Figure 7-5 below.

		Consequence				
		Negligible	Minor	Moderate	Major	Catastrophic
Likelihood	Almost Certain	Low	Medium	High	Extreme	Extreme
	Probable	Low	Medium	High	Extreme	Extreme
	Likely	Low	Medium	High	Extreme	Extreme
	Possible	Insignificant	Low	Medium	High	Extreme
	Rare	Insignificant	Low	Medium	High	Extreme

Figure 7-5: Risk Management Heat Map

7.3.4 *Stage 4 – Evaluate Risks*

Once risks have been analysed the next stage is to evaluate them. Risk evaluation involves determining whether a risk should be further treated or not. For those risks determined as needing further treatment, a broad order of priority is established through action plans.

Risk evaluation options include:

- do nothing further
- consider treatment options
- undertake further analysis
- maintain existing controls, and
- reconsider objectives.

Each risk is considered in context of the:

- Board approved risk appetite statement
- impact on Centralines' operations
- strategic impact, and
- importance to operational effectiveness and efficiency, i.e., cost of treatment relative to the benefits of risk reduction.

7.3.5 *Stage 5 – Treat Risks*

Risk treatment involves selecting and implementing the most appropriate options to manage risk. Selection of options involves balancing the potential benefit against the cost of implementation in the context of risk appetite, i.e., risk versus reward. The value is broader than economic considerations and should balance all key stakeholder values and views.

Risk treatment plans are recorded in Centralines' approved risk management software, which includes proposed milestones and who is responsible. Treatment actions are tracked and reported at the appropriate level until closed.

Agreed treatment plans are monitored and reviewed while being implemented. Once implemented risk treatment plans will form part of the risk controls which are regularly reviewed and monitored.

The options below provide the generic choices for managing/treating risk:

- *Avoid* – not starting or discontinuing the activity
- *Retain* – accept the risk at its current level through informed or conscious decision-making
- *Reduce* – changing the likelihood or consequence
- *Share/Transfer* – shift part of the risk to suitable and capable counterparties, e.g., insurance, joint ventures
- *Increased Exposure* – consciously take on more risk to pursue an opportunity, and
- *Remove* – the source of the risk.

7.3.6 *Stage 6 – Monitor and Review*

The risk process at Centralines is structured and iterative. There is a central risk function that oversees and monitors the application of the Board approved risk policy, framework, and processes.

7.3.7 *Stage 7 – Recording and Reporting*

A full formal review of risks is undertaken by Centralines' ERC business units at least bi-annually. The ARC is provided with the resulting enterprise risk report following this review.

Formal risk meetings include all aspects of the risk management process, with formal consideration given to:

- whether key controls are effective and efficient in design and operation
- business incidents (including near misses) within Centralines and the wider industry
- any changes to the internal and external environment, including proposed changes to regulations and legislation
- changes to strategy/objectives
- audit reports (internal and external) with medium or high findings, and
- any emerging risks and trends.

7.4 Risk Management in the Asset Management System (AMS)

7.4.1 *Purpose*

The purpose of risk management in the Asset Management System (AMS) is to support people to make effective decisions. These decisions enable cost, risk, and performance to be traded off appropriately so that the Asset Management Objectives (AMOs) may be achieved.

Risk management in asset management decision-making covers the:

- identification of assets where failure will have the most significant consequences for Centralines' business
- determination of the most valuable work in which to invest, and
- semi-quantification of the value of any work in terms of its mitigation of risk.

Work in asset management takes several forms, including:

- engineering investigations
- capital projects, and
- maintenance and operations support.

Decisions taken regarding the assets include:

- timing to renew
- response times to address defects, and
- requirements to provide contingency against failure.

7.4.2 *Nature of Risk*

Risk is a function of three parameters:

1. Consequence of failure
2. Likelihood of the failure being realised, and
3. Ability to recognise the risk.

The quantification of these parameters in specific instances provides a rational basis for selecting between different courses of action to:

- control risk, or
- prioritise improvement opportunities.

Quantification requires two types of analysis:

1. Monetisation of the consequence, and
2. Determination of a probability of failure which may be a normalised probability, or a time to failure from the current time.

Where possible, quantification is preferred to support the business case for investment. This allows direct comparison of the cost of the intervention and the risk:cost, i.e., the cost of doing nothing. The risk:cost is the product of the monetised consequence and the probability of failure. The risk:cost may be adjusted if:

- the investment is applied early, and
- there is residual value in the assets being disposed of as part of the overall system renewal.

7.4.3 *Principles of AMS Risk Management*

The key principles of risk management as they relate to the AMS are:

- the potential for high consequence failures needs to be recognised
- the assessed likelihood of assets failing or being unable to deliver their intended level of performance must be regularly revisited
- opportunities for investment and allocation of labour must be compared on a credible risk basis
- awareness of hidden risk which may lead to catastrophic outcomes must be incorporated into asset management strategies, and
- effective risk management depends on accurate information, and therefore data assurance must be implemented for risk related information.

7.4.4 *AMS Risk Management Activities*

There are six primary activities in the AMS where risk is determined and reported. These are set out in the Table 7-1 below.

Activity	Description
Asset Criticality Ranking	Identification of assets and asset systems where loss of capability or acceptable condition presents a significant risk to Centralines' business including network operations. High criticality assets may be justified for earlier intervention or renewal over competing demands for investment from lower criticality assets.
Asset Health	The state of assets in terms of their condition and likelihood to deliver requisite capability at any point in time. Assets in a deteriorated state are candidates for renewal. Assets that are underrated or not appropriate for the application will be upgraded. The renewal may be brought forward for assets subject to: • harsh operations, e.g., frequent operation, or • operation in a harsh environment, e.g., corrosive.
Project Investment Analysis	Each proposal for expenditure should be ranked according to risk, which describes the state where no investment is made, and the asset progresses to a forecast state of deterioration or unacceptable level of capability. Consideration should be given to the certainty of the assessment which typically improves closer to the time of work commencing.
Project Works Delivery	Project risk is a function of deviation from schedule, budget and agreed quality of work. The progress of each project should include reporting of the risks and how they are being managed. Project completion should be accompanied by a risk assessment focussed on the residual risk to: • operations • ongoing maintenance as a function of the build quality, and • commissioning.
Works Scheduling	The timing of work should be a function of the risk which it will address. The backlog of work should represent the lowest practicable risk to Centralines' operations and business compliance, as well as customer response. This considers the cost of addressing the risk. It is preferred that the timing is scheduled so intervention is required well before the risk has advanced to a state which is not acceptable.
Continual Improvement	Each continual improvement opportunity should be ranked according to: • risk, which describes the state where no investment is made, and • performance against the relevant AMO progressing to a forecast state which is unacceptable.

Table 7-1: Risk Management Activities in the AMS

7.4.5 *Assessing Consequence Level*

The consequences of risk are the extreme states when an undesirable occurrence has taken place, i.e., an incident. In the asset management context, this often equates to an asset not being able to deliver its desired level of performance. This may be due to:

- an external event, such as a storm or traffic accident
- natural deterioration over time. i.e., fair wear and tear, or
- accelerated deterioration due to how the asset has been used, or its working environment.

Typical consequences experienced in the asset management domain are specified in Table 7-2 below.

Consequence Category from Risk Management Framework	Asset Management Consequence	Description
Financial	Asset loss	The capital value destroyed with the failure of an asset or its significant impairment. The cost of returning the asset back to an acceptable condition.
	Revenue loss	The revenue lost when an asset fails or requires significant work over and above that budgeted in the maintenance budget.
Regulatory/Legal/ Contractual	Environment	Costs, penalties, and restrictions imposed because of significant breaches to the operation of the assets in their environment. This can also consider the impact on the local community and its welfare.
Reputation/Customer	Reputation	The loss of confidence in the organisation by both the community and important external stakeholders.
Business Disruption/Operational	Mission	The inability of the organisation to fulfil its mission, such as the safe supply of power owing to the loss of capability of assets.
People / Workers	Safety and health	Any human who could be impacted by the failure of an asset to perform its intended function or through working on an asset.

Table 7-2: Consequence Categories

For any given incident, it is likely that multiple asset management consequences will apply. For example, in a major outage there may be consequences to the mission, reputation and finances of the organisation.

Table 7-3 shows the level of severity of each of these consequences.

Level of Severity	Consideration
Negligible	Event(s) brought to the attention of management - managed within existing resource capability. Does not affect 'business as usual'. Impact dealt with at an operational level.
Minor	Event(s) require limited management attention with priority generally limited to one business unit. Does not affect 'business as usual'.
Moderate	Event(s) do not destabilise core operations or strategic direction. Consequences can be managed under existing structures (existing budgets, insurance coverage and management oversight).
Major	Event(s) require significant Board/Chief Executive/senior management to stabilise the core business and reset strategic priorities. Event(s) shape Centralines' focus over multiple financial periods. Potential for Government/Regulator appointed oversight.
Catastrophic	Event(s) would make it difficult if not impossible for Centralines to fully recover - permanent impact or long sustained period of instability and rebuild may result. Potential for Government intervention. Affects all facets of Centralines.

Table 7-3: Consequence Levels

7.4.6 *Assessing Likelihood Level*

Likelihood is the chance that a risk may be realised. It is preferable to stay away from generic terms such as likely or impossible. The use of these terms is subjective and varies depending on the person undertaking the assessment.

The definitions of likelihood, with an asset management descriptor are shown in Table 7-4 below.

Level	Time Based Descriptor	Asset Management Descriptor	Consideration
Rare	Unlikely to occur within a ten-year timeframe	Not heard of in the industry, but has occurred in other industries	A catch all for low probability events where even high impact low probability events (refer 7-5) may be considered unlikely or for which additional investment is not warranted may be considered unlikely or for which additional investment is not warranted.
Possible	May occur within a ten-year timeframe	Has occurred in the industry	The hazard is unusual and dependent on several factors (design, utilisation, working environment) all combining. This type of hazard indicates that there should be multiple safeguards in place to prevent the hazard from being realised.
Likely	Likely to occur at least within a five-year timeframe	Has occurred in the organisation	The hazard is known to have infrequently occurred but is probably a slow growth issue that will take time to reach a measurable level of deterioration.

Level	Time Based Descriptor	Asset Management Descriptor	Consideration
Probable	Likely to occur within a one-year timeframe	Has occurred at the local site	The site is known to have these hazards and is consistent with the modes of deterioration, utilisation and working environment. In such a case, evidence of deterioration should be measurable.
Almost Certain	Likely to occur immediately or within a short period of time	Is highly likely given the current level of deterioration	This assessment considers that the condition of the asset is so poor that imminent failure or loss of capability is not a question of if, but rather, when.

Table 7-4: Likelihood Levels

7.4.7 *Risk Assessment and Risk Treatment in the AMS*

As discussed earlier, there are six key risk management activities in the AMS:

1. Asset Criticality Ranking
2. Asset Health Reporting
3. Project Investment Analysis
4. Project Works Delivery
5. Works Scheduling, and
6. Continual Improvement.

These activities are represented in the context of Centralines' risk management process in Figure 7-6 below.

Note:
Continual improvement is not shown in Figure 7-6 below, as continual improvement can relate to any part of the AMS and may not result in work being done on assets.

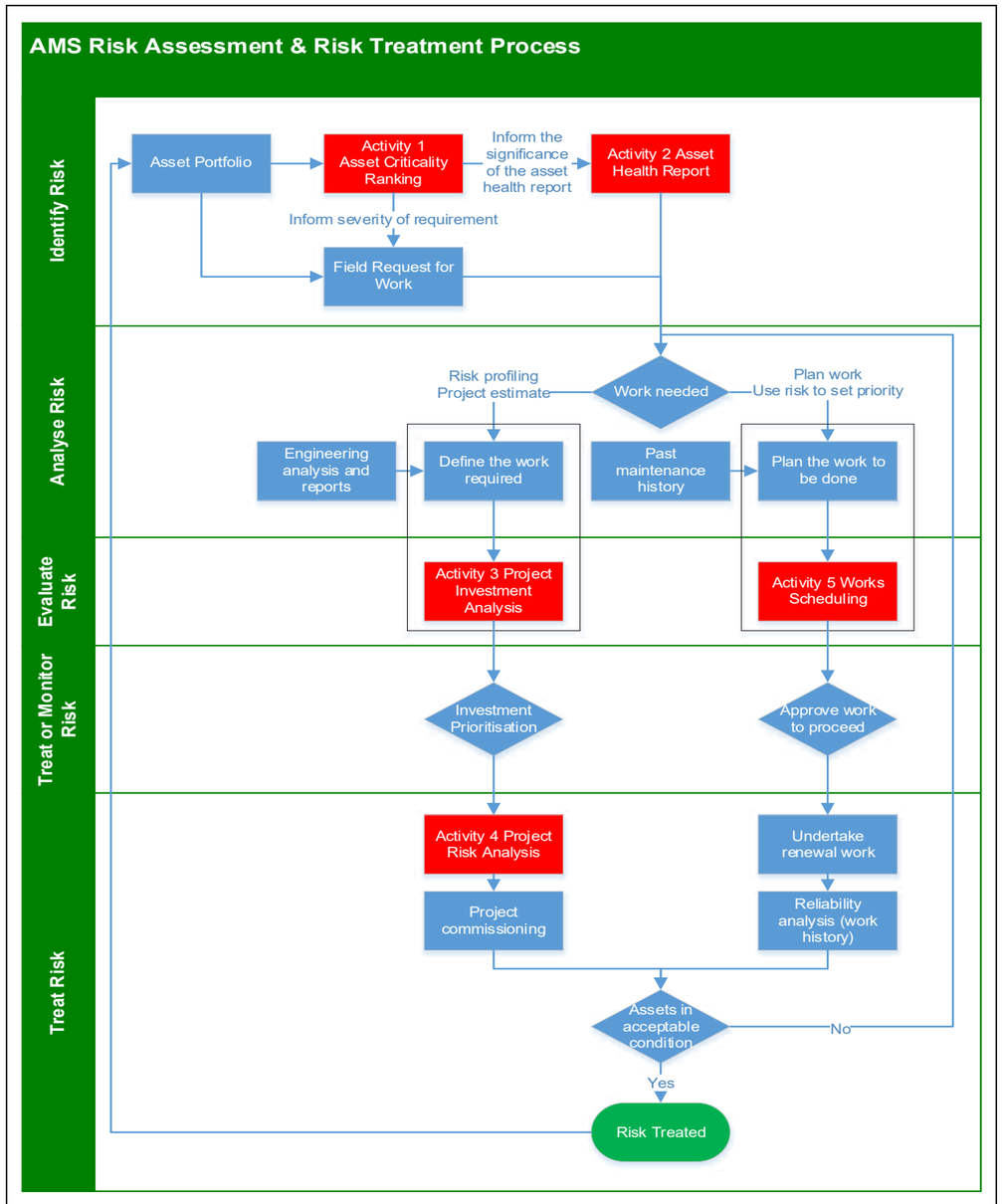


Figure 7-6: AMS Risk Assessment and Risk Treatment Process

The ranking of asset criticalities will influence risk assessments associated with proposed work on assets. For example, proposed work on high criticality assets is often more prudent for investment, than work on lower criticality assets.

Fundamental to effective asset related risk management is the detailed knowledge of asset health. Both project and maintenance work should rely on credible and current information related to the health of the assets.

The treatment of risk should result in a reassessment of the condition of the assets. In the case of new or refurbished assets, this means good feedback at commissioning to confirm assets in place are safe and fit to operate. Where there are legacy issues associated with asset condition or their installation, feedback is needed to inform the organisation of residual risks which need to be followed up.

After evaluation of the risk, a decision may be made to do nothing, if the risk is within acceptable risk tolerance. For example, a continual improvement that represents a risk may be evaluated and deemed an acceptable risk. In this situation, the decision to do nothing should be recorded, along with the reasons why.

7.4.8 *Control of Risk Assessment*

The outcomes of risk assessment are controlled in three ways:

1. Proposed risks are validated as being true and then verified as to level of severity
2. Various reports are issued which communicate risk in the assets and what is being done about them, and
3. Internal audit is utilised to ensure processes are properly managed and to propose improved methods and/or work to better manage risks.

7.4.9 *Validation and Verification*

Verification activities which inform Centralines of risk in the asset portfolio include:

- asset condition monitoring processes, including online methods such as those implemented under the:
  - standard condition assessment check sheets, and
  - maintenance feedback
- network performance monitoring and reporting, including on standard measures such as SAIDI and SAIFI, and
- asset failure history and trends, including analysis of high priority, short lead-time work (even where no network outage resulted).

Validation of risk assessment undertaken for the five key activities are set out in Table 7-5 below.

Note:
Continual improvement is not included in Table 7-5 below, as continual improvement can relate to any part of the AMS and may not be a risk in the asset portfolio.

Activity	Validation Process
Asset Criticality Ranking	• Comparison of mean asset criticalities between fleets of assets. • Assets with high criticalities as an exception to the typical value for their class. For example, based on high numbers of connected customers.
Asset Health Reporting	• Audit of asset inspections and their results. • Early failures of assets recently inspected. • Validation of asset health as part of the project business case development, e.g., is the project worthwhile?
Project Investment Analysis	• Review of project risk profiling in follow up workshops. • Comparison of project estimates with past project history of similar projects.
Project Works Delivery	• Auditing of projects. • Quality assurance in the project closeout.
Works Scheduling	• Effectiveness of the contracting team in achieving schedule compliance.

Table 7-5: Risk Validation and Verification

7.4.10 *Performance Assessment*

The effectiveness of risk management is considered based on whether desired business outcomes are being realised. The outcomes desired for the activities considered in this document are specified in Table 7-6 below.

Activity	Validation Process
Asset Criticality Ranking	• Risk profile of assets with high levels of criticality. • High criticality assets with no preventive maintenance or rigorous inspection programmes applied.
Asset Health Reporting	• Recent measurements approaching alert levels which require intervention. • Gaps in the measurement coverage where scheduled measurements have not been taken. • Trend analysis indicating a rate of deterioration.
Project Investment Analysis	• Risk profile of the investment portfolio – risks are being addressed in a timely manner. • Risk profile of work to be done in specific areas – measure of the risk in these areas, and the need to defend the budget.
Project Works Delivery	• Project delivery on time and on budget. • Number of variations within the project. • Quality non-conformances on the project.
Works Scheduling	• Risk associated with work backlog. • High risk work tasks remaining in backlog.
Continual Improvement	• Performance against AMOs as measured through Centralines' Performance Evaluation process.

Table 7-6: Performance Measures to Confirm Risk Estimates

7.4.11 *Continual Improvement*

Centralines is committed to consistent processes for the continual improvement of its assets and systems, and the work undertaken to maintain them. It is intended that all work utilises knowledge of the health of the assets to propose optimal future work, and the improvement of service delivery.

Continual improvement in the application set out in this document will be achieved through two processes:

1. Major project review sessions, and
2. Performance audits.

7.4.12 *Condition Based Risk Management (CBRM)*

The Condition Based Risk Management (CBRM) framework has been implemented for many of Centralines' major asset classes to support asset engineers to make asset renewal decisions. The CBRM models systemise risk management decision-making by providing an assessment of asset health and consequence based on available asset information.

CBRM is an asset management decision support tool. This tool allows risk-based asset management plans for specific asset classes to be developed. The outcome of this is the minimisation of deterioration leading to forced corrective maintenance and unplanned interruptions.

The utilisation of the CBRM tool requires:

- efficient presentation of asset data to the tool
- use of the tool to deliver decision-support for the replacement of nominated asset types, e.g., ring main units (RMUs), and
- assessment of the results to validate that work to ensure decision-support is credible, and the investment can be justified.

Approximately 85% of the data presented to the CBRM tool is automated from corporate systems such as the Enterprise Asset Management System. These data flows need to be tested to ensure they are consistently correct and lead to the right inputs. A further 15% of the data is manually uploaded and efficiencies are continually sought in this process.

Analysis is required to interpret the CBRM outputs as technical proposals for work. This analysis must be adequate to allow an asset engineer to build an Asset Management Plan that can then be actioned. This means that a consistent template for the outputs is available to each engineer. Such stakeholders require that the output can be acted on to lead to a statement of work.

7.4.13 *Asset Management Plan (AMP) Risk Schema*

Centralines takes a risk-based quality systems approach to asset management, and is committed to implement asset management plans which:

- propose efficient levels of investment
- manage risk in the asset portfolio, and
- ensure customer service levels will be met consistently over the long term.

A key means of achieving this goal is to ensure all project proposals are registered in the AMP and prioritised according to risk in a consistent manner. The prioritisation methodology is referred to as the AMP Risk Schema.

The AMP Risk Schema prioritises project proposals using four key drivers:

1. Consequence Integer Ranking – the impact of asset failure or functional failure
2. Likelihood Integer Ranking – the likelihood of asset failure or functional failure
3. Mitigation Multiplier – the proportion of initial risk that will be reduced through the proposed work, and
4. Cost of the Work – the estimate of the cost to complete the work, used to create a cost of risk mitigated value to prioritise projects based on cost efficiency.

All work proposed in the AMP must be assessed according to these factors, as shown in Table 7-7.

Information Required	Description
Consequence integer ranking (1-5)	Specify the consequence of the issue being addressed and ensure that this consequence level is reconciled to the Risk Management Framework.
Likelihood integer ranking (1-5)	Specify the likelihood of the issue being addressed and ensure that this likelihood level is reconciled to the Risk Management Framework.
Mitigation multiplier (%)	Specify the degree to which the proposed work will mitigate the risk in the assets.
Budget	Budget estimates are required for all projects.

Table 7-7: AMP Data Requirements

7.4.13.1 Likelihood

The Likelihood Integer Ranking schema is specified in Table 7-8.

AMP Likelihood	Health Index (CBRM)	Probability of Failure	Likelihood Descriptor
1	1-3	<5%	Rare – type of problem has not occurred previously in the industry.
2	4-5	>5% to 40%	Possible – type of problem has not occurred in Centralines but has occurred in industry.
3	6-7	>40% to 60%	Likely – type of problem has occurred in Centralines previously.
4	8-9	>60% to 95%	Probable – has occurred at that location previously or a comparable location, i.e., similar environment, utilisation, make and model of equipment, etc.
5	10	>95% to 99%	Almost Certain – almost assured to occur at that location.

Table 7-8: AMP Likelihood

7.4.13.2 Consequence

The Consequence Integer Ranking schema is specified in Table 7-9, and is for issues where CBRM models can be utilised. This schema is mapped to the Consequence Matrix specified in Centralines' Risk Management Framework to ensure consistency.

Consequence Level		Consequence of Failure (CoF) ($000)	Notes
1	Negligible	0-25	Considerations other than CoF will lead to this work being approved. Otherwise, the issue will be addressed as an OpEx transaction.
2		25-50	Proposals in this range are high risk and should proceed.
3	Minor	50-100	
4		100-250	
5	Moderate	250+	All work with this level of CoF will receive AMP Consequence 5.

Table 7-9: Consequence Integer Ranking Schema with CBRM

7.4.14 *Asset Criticality Ranking Overview*

Asset criticality ranking involves prioritising assets in terms of:

- potential customer impact, and
- operational losses if they fail and considering safety and environmental issues.

High criticality assets may be justified for earlier intervention or renewal over competing demands for investment from lower criticality assets.

Centralines employs an Asset Criticality Schema (ACS) to enable each asset to be assigned a criticality score. This score can then be utilised by engineers, contracting teams, and other stakeholders to support their decision-making.

7.4.15 *Asset Criticality Schema*

The ACS is specified in the following tables for:

- customer disruption, and
- safety and environmental respectively.

Each asset is assessed against each table, with scores summed to provide a total score of between two (2) and ten (10).

7.4.15.1 Customer Disruption

Criticality	Score	Descriptor
Very High	5	• 33kV sub-transmissions including normally de-energised circuits • Zone substations including 33kV and 11kV assets • Network Operations Centre and associated hardware, software, and communications systems • 33kV and 11kV dedicated assets supplying customers with total installed capacity of more than 1MVA.
High	4	• Backbone of 11kV feeders, including RMUs (includes unprotected spurs) • All protection and control systems not already included in zone substations, e.g., reclosers and sectionalisers.
Moderate	3	• 11kV assets not part of the backbone of the feeder, e.g., fused spurs • 11kV/400V distribution transformers.
Low	2	• LV circuits and other assets supporting LV infrastructure - all equipment beyond the distribution transformer.

Criticality	Score	Descriptor
Very Low	1	• Pedestals • Sensors and logging equipment not used in the real-time control of the network.

Table 7-10: Customer Disruption Score

7.4.15.2 Safety and Environmental

Criticality	Score	Descriptor
Very High	5	• 11kV three (3) or four (4) way RMUs • 11kV ground mounted single switches • Overhead sections of high fire risk feeders.

High	4	• Oil-filled circuit breakers:
		  ○ 33kV CB (outdoor)
		  ○ 11kV CB (ground mounted), and
		  ○ 11kV CB (pole mounted)
		• High risk circuit breakers
		• Pole mounted transformers on high fire risk feeders
		• Urban overhead circuits
		• Ground mounted transformers in road reserve.

Moderate	3	• Unbunded power transformers • 11kV overhead switchgear, e.g., air break switches, disconnectors, links, fuses • Voltage regulators • LV OH/UG streetlight circuits • SCADA and communications equipment operating as a single system • Ground mounted transformers • Pole mounted transformers • Rural overhead circuits.

Low	2	• Power transformers
		• Vacuum circuit breakers:
		  ○ 33kV CB (outdoor)
		  ○ 11kV CB (ground mounted), and
		  ○ 11kV CB (pole mounted)
		• 33kV indoor circuit breakers

Criticality	Score	Descriptor
		• Capacitors including controls • 11kV reclosers, load break switches or sectionalisers (not ABS) • 11kV indoor switchgear • Load controls – centralised plant • Protection relays (electromechanical, solid state and numeric).
Very Low	1	• OH/UG consumer service connections • Distribution UG XLPE or PVC • Distribution UG PILC • Distribution submarine cables • Ground mounted substation housings • Relays • LV UG cables • 33kV cables (PILC, XLPE, oil pressurised or submarine) • Zone substation buildings.

Table 7-11: Safety and Environmental Score

7.5 High Impact Low Probability / Extreme Events

An understanding of Centralines' network vulnerability to High Impact Low Probability (HILP) or extreme events is very important. It enables the organisation to plan, and where possible undertake mitigations to reduce the likely consequences and allow an effective response and expedited recovery. HILP associated risks are typically "High to Extreme", in alignment with Centralines' risk management framework. The outcomes of an effective understanding of HILP events include:

- the identification and evaluation of HILP related risks including:
  - the evaluation and incorporation of the latest available science and data on creditable events
  - an understanding of the susceptibility and resulting vulnerability of Centralines' network to specific HILP events based on the above
  - current asset locations and condition information
  - network configuration and contingency options
  - interdependencies with other critical infrastructure entities
  - the availability of specific HILP response plans
  - the likely consequences based on the above vulnerability and associated factors
- proposals for investment to mitigate HILP events risks which are considered unacceptable, and which, if they occurred, would represent a significant risk to Centralines' ability to supply its communities and meet its legal obligations.

While any mitigation investment proposal will need to be tested against other investments with lower consequence and more likelihood, it is recognised that Centralines needs to prepare appropriately for HILP events both from natural hazards and other incidents that could lead to major asset system failures resulting in prolonged outages as recently experienced in the aftermath of Cyclone Gabrielle.

As Centralines manages a significant number of network assets, and as its network is exposed and susceptible to a wide range of extreme events, Centralines' service provider has initiated a capability project to better understand Centralines' network vulnerability. This project aims to develop a sustainable, dynamic, and effective model, that based on various scenarios, can estimate the damage to infrastructure and subsequent likely impact on the supply of electricity to its customers and the communities it serves.

Once fully developed, the model will allow Centralines to identify, evaluate, and prioritise associated risks and enable mitigation strategies to be developed. This would facilitate the development and implementation of more comprehensive and effective readiness, reduction, response, and recovery plans where appropriate and viable.

7.5.1 *Natural Hazards*

Greater Hawke's Bay is one of the most seismically active regions in New Zealand. Its location above the subduction boundary between the Pacific and Australian plates results in many earthquakes. Since written records began in 1840, there have been 16 earthquakes with a magnitude greater than M6.0 which have impacted the region. Of these, five have caused significant damage to buildings and infrastructure, with one resulting in fatalities.

Consequently, the following factors add to the vulnerability of the electricity network:

- ground-shaking amplification due to underlying geology
- surface faulting
- liquefaction and lateral spread
- landslide and slope instability
- volcanic ashfall from the Taupo Volcanic Zone, and
- tsunami impacting the coastal network.

There is a significant risk of inundation from either a near-source or distant-sourced tsunami that would impact Centralines' coastal network. Due to the nature of a tsunami and the possible level of inundation, mitigating action plans focus on reducing potential risks to employees and the public through evacuation of staff and the making safe of electrical equipment.

As the Central Hawke's Bay region is reasonably distant from any active volcano, the most serious threat is from a Taupo-style eruption originating from the Taupo Volcanic Zone. Ash from this type of eruption can fall in significant thicknesses at large distances from the active vent.

Other natural hazard events experienced in Central Hawke's Bay which have the potential to cause significant network impacts include:

- major storm events including cyclones
- flooding
- major snowstorms
- windstorms
- wildfires, and
- landslips.

The significant impacts of Cyclone Gabrielle and other well documented events on infrastructure and local communities, both domestically and overseas, is testament to an increasing threat of extreme weather events. There is acknowledgement that the impacts of climate change are likely to affect the future frequency and severity of these type of events. Consequently, Centralines asset management service provider Unison, is engaging with a number of national working groups to better understand the implications of climate change, and what mitigations or adaption strategies will be required to lessen the impact on the business. This includes the longer-term impacts of sea level rise on the asset portfolio. It is expected most of the outputs will be of relevance to Centralines.

7.5.2 *Network Resilience to HILP / Extreme Events*

7.5.2.1 GXP Substations

Transpower who own and operate New Zealand's transmission network, has exclusive responsibility for Grid Exit Points (GXPs). However, any event that leads to a GXP outage has the potential to impact significantly on the supply of electricity to Centralines' customers. Unison Networks Limited (Centralines' Management services provider) has quarterly relationship meetings with Transpower where security and quality of supply issues are discussed. Any outage of supply to a GXP is investigated to identify the root cause and corrective measures agreed, to reduce the likelihood of, or impact from, future GXP outages.

Centralines has agreed with Transpower that they will replace the aging outdoor 33kV assets at the Onga Onga GXP with a fit for purpose indoor switchroom and switchboard. This upgrade will improve safety, reliability and provide Centralines with greater flexibility in the planning and operation of its network. Project design is currently under way with construction scheduled to commence in 24/25 and completion expected in the 25/26 financial year.

7.5.2.2 Zone Substations

Part of Centralines' security criteria (refer Section 4 Network Development Plan) includes options for mitigating the loss of supply from a zone substation or zone substations.

Due to differing levels of zone substation security, substations supplying critical load areas, such as CBDs and major customers, have a higher level of redundancy than substations which supply remote rural areas, with:

- multiple sub-transmission supply options, and
- effective 11kV interconnectivity to ensure sufficient capacity from neighbouring substations.

A detailed operational management plan exists for each of the Centralines' zone substations.

The only zone substation in the Centralines' network where this is not achieved currently is the Takapau Zone Substation. This is considered a critical site as it supplies a large industrial customer. Options to mitigate this are being considered and discussed with the customer

A review of the structural integrity of Centralines' zone substation buildings has been undertaken and subsequently seismic strengthening of all zone substation buildings has been completed.

7.5.2.3 Alternative Operation Centre (AOC)

Centralines' service provider has constructed a purpose built, level four compliant AOC in Havelock North. This building provides a comprehensive disaster response facility capable of housing all network operational functions, if for any reason access to Unison's main Omahu Road headquarters is compromised. This AOC is equipped with one main and three alternative low voltage supplies, including supply from two 140kVA backup generators. The building is supplied with fibre communication infrastructure with redundancy and hot standby SCADA for its Advanced Distribution Management System (ADMS). The building is sited on geologically stable ground and above potential tsunami and flood inundation levels. The building also incorporates a base isolation foundation capable of withstanding earthquakes of a significant magnitude.

7.6 Lifeline Obligations Overview

As a lifeline utility, Centralines has certain obligations under the Civil Defence and Emergency Management Act 2002 (the Act). These obligations are set out in Section 60 of the Act. Every lifeline utility must:

- ensure that it is able to function to the fullest possible extent, even though this may be at a reduced level, during and after an emergency
- make available to the Director in writing, on request, its plan for functioning during and after an emergency
- participate in the development of the National Civil Defence Emergency Management Strategy and civil defence emergency management plans
- provide, free of charge, any technical advice to any Civil Defence Emergency Management Group or the Director that may be reasonably required by that Group or the Director, and
- ensure that any information that is disclosed to the lifeline utility is used by the lifeline utility, or disclosed to another person, only for the purposes of this Act.

Centralines is responsible for notifying the CDEM Group Coordinator of the status of the network:

- following any disaster, such as major storms, flooding, snowstorms, earthquakes, etc., and
- throughout any declared or non-declared emergency in the region.

As part of its Civil Defence and Emergency Management (CDEM) obligations Centralines participates as required in regional lifeline group meetings as well as regional civil defence exercises.

7.7 Business Continuity Management (Emergency Response and Contingency Plans)

7.7.1 *Business Continuity Management (BCM)*

Business continuity can be described as the capability of an organisation to continue delivery of products or services at acceptable pre-defined levels following a disruptive incident or event.

BCM is the process that identifies critical processes, potential threats to those processes, and the impact on the business operation if threats are realised. Systems of prevention and recovery in response to those identified threats and business impacts are created, which aim to, when threats are realised:

- minimise business impact, and
- enable the business to resume to business as usual in the shortest practical time-period.

It provides a framework for building organisational resilience and includes response capability to safeguard the interests of Centralines' key stakeholders, reputation, brand, and value-creating activities.

Centralines Business Continuity Management System (BCMS) has at its core the following objectives:

- ensuring the safe supply of electricity services
- satisfying Centralines' legislative and community responsibilities
- preserving Centralines' reputation, and
- ensuring the continued operation of Centralines.

The BCMS Framework is available to:

- guide Centralines through the process that will enable the meeting of these commitments, and
- ensure Centralines has a plan that is documented, ensuring the continued operation of Centralines.

It is communicated, regularly reviewed, and tested to ensure its continuing suitability.

Centralines has developed a suite of controlled documents and associated plans and processes to ensure it is prepared and able to provide an effective and efficient response should an event materialise and guide its recovery.

Figure 7-7 below shows the key components of Centralines' BCMS, which includes the following plans (described in further detail in Table 7-12):

- Business Continuity Policy
- Incident Management Response Plan and Slim Pack
- Business Continuity Plan
- Information Management Systems Disaster Recovery Plan
- Pandemic / Epidemic Management Plan
- Participant Rolling Outage Plan (PROP)
- Alternative Operations Centre Activation and Emergency Evacuation Plan, and
- Evacuation Plans / Emergency Procedures.

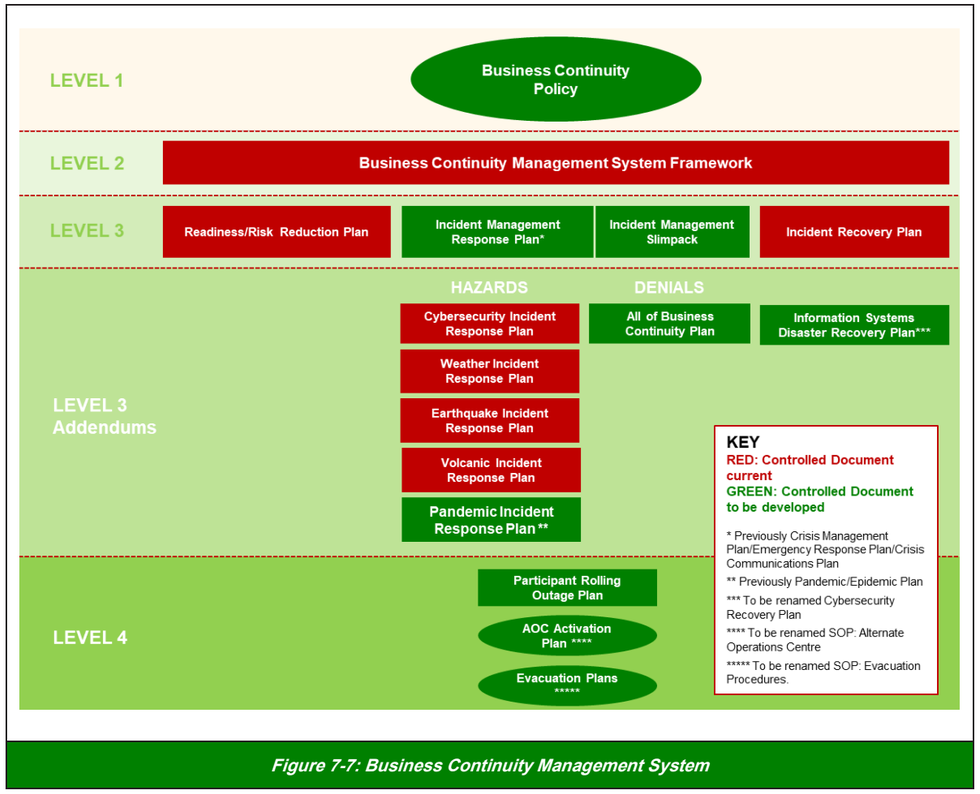


Figure 7-7: Business Continuity Management System

Document / Plan	Overview
Business Continuity Policy	The Business Continuity Policy (FC0033) outlines Centralines' business continuity objectives, and associated responsibilities and accountabilities for Business Continuity Management (BCM).
Incident Management Response Plan and Slim Pack	The Crisis Incident Management Response Plan (FC9007) provides a plan to manage any incident that may impact Centralines. It enables business operations to continue during, and immediately following, an incident. The Incident Management Response Plan is aligned to CIMS and is intended to provide structure to Centralines' strategic response to, and recovery from, an event of significant magnitude. The Incident Management Response Plan Slim Pack (FC9020) is a condensed version of FC9007, containing essential information for those within the IMT to reference during an incident.
Business Continuity Plan (BCP)	BCPs are formalised, templated, inter-referenced and uncontrolled documents. They outline the critical processes undertaken, as well as workarounds to perform the critical processes in the event of a denial of people and / or facilities and / or systems and / or supply resulting from an incident. They also outline key dependencies to perform each critical process.

Document / Plan	Overview
Information Management Systems Disaster Recovery (DR) Plan	Centralines' Information Management Systems Disaster Recovery Plan is designed to manage information management incidents. It includes a prioritised and time-bound schedule of critical system resumption objectives. These objectives are based on key business processes.
Pandemic / Epidemic Management Plan	The purpose of the Pandemic / Epidemic Plan is to provide structure to Centralines' response to, and manage impacts from, a pandemic or epidemic.
Participant Rolling Outage Plan (PROP)	This Participant Rolling Outage Plan (PROP) is written to comply with: • Part 9 of the Electricity Industry Participation Code 2010 (the Code), and • the System Operator Rolling Outage Plan (SOROP). The procedures described are in response to major generation shortages and / or significant transmission constraints. Typical scenarios include: • unusually low inflows into hydro-generation facilities • loss of multiple thermal generating stations, or • multiple transmission failures.
Alternate Operations Centre (AOC) Activation and Evacuation Plan	Centralines' Management services provider's, Alternate Operations Centre Activation Plan: • identifies the location and layout of the AOC • provides a checklist of actions to be followed by the Network Operations Centre (NOC) staff when operations are transferred, and • identifies tasks required to close the alternate site on resumption of operations at the Omahu Road NOC.
Site-Specific Emergency Evacuation Plans	Site-Specific Emergency Evacuation Plans detail how, during an emergency, Centralines staff and any visitors will evacuate safely and quickly from Centralines' premises. The plans cover: • roles and responsibilities during an emergency • key personnel • signage • escape routes • assembly areas, and • the location of emergency equipment.

Table 7-12: BCMS Documents

7.7.2 *Continual Improvement*

In recognising the BCMS is an evolutionary process, Centralines undertakes to:

- make ongoing efforts to review and improve the effectiveness of the Business Continuity Management Programme. Improvements may be the result of:
  - post event reviews
  - reflection and feedback
  - structural change
  - process efficiency gains or new knowledge

  - legislative changes
  - changes to industry regulations
  - engagement with external stakeholders, and / or
  - testing and benchmarking.
- ensure any improvements are aligned, and consistent with, the organisational goals and the wider business strategy.

7.7.3 *Coordinated Incident Management System (CIMS)*

In alignment with the EEA's Resilience Guideline, Centralines utilises the Coordinated Incident Management System (CIMS) to manage incidents including HILP or extreme events. CIMS was first developed in New Zealand in 1998 with the objective of providing emergency management agencies with a framework for effective coordination and cooperation in response to a major event. It is based on similar international systems used in North America and Australia.

The purpose of CIMS is to achieve effective coordinated incident management across responding agencies by:

- establishing common structures, functions and terminology used by agencies in incident management, within a framework that is flexible, modular, and scalable so that it can be tailored to the specific circumstances of any incident regardless of type or level; and
- enabling agencies to develop their own processes, procedures, and training for the execution of CIMS.

CIMS is required to be used by emergency services in New Zealand such as NEMA, Police and Fire and Emergency. It is employed at various levels of Civil Defence Emergency Management agencies and is increasingly being adopted by lifeline organisations, including EDBs as a structure for emergency response plans and the development of emergency response frameworks. CIMS was used very effectively to manage the impacts of Cyclone Gabrielle in 2023.

7.8 Health and Safety Risk Management

Safety is the first of Centralines' five core values and is always a key focus for all of Centralines' employees and its governance structure. Given the nature of the electrical distribution industry, the health and safety of Centralines' people, and the public is paramount. There is a dedicated health and safety team that continually assesses, monitors, and reviews workplace health and safety risks, practices, processes, and associated management systems.

Centralines has several systemised management practices in place to work towards its goal of 'Zero Harm' to staff, third party contractors and the public.

The workplace health and safety system is monitored biennially against the Accident Compensation Commission's (ACC) Workplace Safety Management Practices (WSMP) Programme, of which Centralines is at the tertiary level. This ensures policies, procedures and processes are in place and being followed.

Monthly board reporting collates all incidents, accidents, and near-miss events to ensure: the Centralines Board is fully informed of workplace health and safety performance, and

- current initiatives allow continual improvement within this core value area of the company.

Public safety is another area of critical importance and focus at Centralines, as most Centralines assets are installed in publicly accessible areas. Centralines has a Public Safety Management System (PSMS) in place which is accredited to NZS 7901:2008 Electricity and Gas Industries – Safety Management Systems for Public Safety. Public safety performance and risks are reported monthly to the Board in a similar format to workplace health and safety performance and risks.

7.9 Legislative Compliance Programme

Centralines is required to comply with numerous regulations and legislative requirements. To ensure employees are aware of specific requirements, Centralines executes a six-monthly Legislative Compliance Programme (LCP). Relevant legislative obligations are periodically reviewed by an external legal compliance adviser specialising in the electricity industry to ensure new obligations are included, and changes to existing obligations are updated. Each obligation is assigned to a relevant "owner" or "owners". The obligation owners are required to assess the level of compliance with the obligation and report any non-compliances. Areas of non-compliance are required to have remediation plans which are tracked until full implementation. A summary of the responses and remediation plans are reported on a six-monthly basis to the Centralines' ARC.

7.10 Centralines' Insurance Programme

The role of Centralines' Insurance Programme is to provide a financial recovery capability in the event of a significant loss. Policy coverage is included for significant risks which, should they occur, would have a major impact on the company's ability to continue to operate as a going concern. The programme is assessed for suitability on an on-going basis and is renewed annually.

7.11 Determination Reference Mapping Table

Section 7 Reference		Determination Reference
7.1	Introduction to Risk Management at Centralines	14.1, 14.3
7.2	Risk Management Framework	
7.3	Risk Management Process	14.1, 14.2, 14.3
7.4	Risk Management in the Asset Management System	
7.5	High Impact Low Probability / Extreme Events	14.2, 14.3
7.6	Lifeline Obligations Overview	14.3
7.7	Business Continuity Management (Emergency Response and Contingency Plans)	14.3, 14.4
7.8	Health & Safety Management	14.1
7.9	Legislative Compliance Programme	
7.10	Centralines' Insurance Programme	14.1, 14.3

Table 7-13: Determination Reference Mapping Table

SECTION 8 //// WARU

EVALUATION OF PERFORMANCE

CENTRALINES LIMITED

CONTENTS

8. EVALUATION OF PERFORMANCE

8.1 Introduction to this Section

Section 8: Evaluation of Performance provides information to enable stakeholders to understand how well Centralines is performing as an asset management organisation. The key performance dimensions covered are:

- physical and financial progress against the plans set out in the last disclosed Regulatory Asset Management Plan (RAMP)
- performance against service level targets
- summary and assessment of network performance, and
- assessment under the Asset Management Maturity Assessment Tool (AMMAT).

Evaluation of performance in respect of the 2023/24 financial year is undertaken using year-end forecast information where this is available.

8.2 Review of Progress Against Plan

In this section, Centralines' performance in delivering the plans set out in the RAMP disclosed in June 2023 is reviewed in terms of physical progress (commissioning of works) and financial progress (cost and performance). This evaluation is undertaken for the 2022/23 and 2023/24 financial years, for both capital and maintenance programmes.

8.2.1 Planned CapEx

Capital projects proposed for each financial year as published in Centralines' 2023/24 RAMP are detailed below and include the status of each project as at 31 January 2024.

An update is provided for all 2023/24 projects and previous years not completed at the time of publishing of the 2023/24 RAMP.

8.2.1.1 CapEx Programme of Works 2019/20 and 2020/21

Project Number	Constraints and Projects	Category	Status	AMP Budget ($000)	Actual Spend ($)	Comments
42269	Harris Street Rationalisation, underground existing Overhead LV (sub to 41858)	Quality of Supply	Completed	50	58.5	
42847	Feeder 45 11kV Porangahau/Wallingford - MAPT CapEx	Other Reliability Safety and Environment	Completed	178	168	
42848	Feeder 46 11kV Porangahau/Wallingford - MAPT CapEx	Other Reliability Safety and Environment	Completed	178	455	Budget estimate was prepared prior to feeder inspection data being avaliable

Table 8-1: Physical Progress of Planned Network CapEx Projects – 2019/20 & 2020/21

8.2.1.2 CapEx Programme of Works 2021/22

Project Number	Constraints and Projects	Category	Status	AMP Budget ($000)	Actual Spend ($)	Comments
43663	Wilder Road Stage 7 of 8	Asset Replacement and Renewal	Deferred to 2024/25	150		Due to alignment with council works
43664	Working at Heights - Waipukurau T1	Zone Substation Transformers	Deferred	27		Due to Silver Fern Farms future load requirements resulting in power transformer replacements
43666	Waipukurau ZS Security Fence Upgrade	Zone substations up to 66kV	Completed	125	131	

Project Number	Constraints and Projects	Category	Status	AMP Budget ($000)	Actual Spend ($)	Comments
43667	Recloser Replacement. R24 River Road South, Centralines	11kV CB (pole mounted) - reclosers and sectionalisers	Completed	65	72	
43672	Replace 2 Pole Mounted 100kVA Transformer C4/108 with a New Pole Mounted 200kVA transformer structure in Svenson Road, Feeder 15	Pole Mounted Transformer	Completed	128	105	

Table 8-2: Physical Progress of Planned CapEx Projects – 2021/22

8.2.1.3 CapEx Programme of Works 2023/24

Project Number	Constraints and Projects	Category	Status	AMP Budget ($000)	Actual Spend ($)	Comments
10596	Replace 7/0.064 copper 11kV conductor in Blackburn Road, 5km of Feeder 1	Distribution OH Open Wire Conductor	Completed	1,200	1,000	
	RCS replacement program. Five per year. Centralines. RCS 59 Wakarara Road RCS 96 Wakarara Road RCS 34 Otawhao Road RCS 37 Ormondville Road RCS 58 Porangahau Road / Ugly Hill Road	11kV CB (pole mounted) - reclosers and sectionalisers	Completed	400	360	
	Replace 15 Mahanga ABSs	11kV Switches and Fuses (Pole Mounted)	Work in progress	225		Last switches will be completed in March 2024
3032	Takapau seismic strengthening of transformer mounts	Zone Substation Transformers	Deferred	25		Due to Silver Fern Farms future load requirements resulting in power transformer replacements

Project Number	Constraints and Projects	Category	Status	AMP Budget ($000)	Actual Spend ($)	Comments
204512	Replace corroded ACSR conductor Tautane Road	Distribution OH Open Wire Conductor	Work in progress	700		Will be completed by March 31 2024
203380	Waipawa GXP ODID	System Growth	Work in progress	1,500	1,100	Target completion date of November 2025
201565	Feeder 18 - Establish a new 200kVA Ground Mount transformer in Porangahau Road	System Growth	Completed	95	109	
206165	Otane mid-town switch	Security of Supply	Completed	80	70	
201371	Feeder 46 - Replace ABS 647 with RCS on Pole 913074	Security of Supply	Work in progress	80		Will be completed by March 31 2024
205193	Feeder 46 - Install Sectionaliser on Pole 913936	Security of Supply	Work in progress	80		Will be completed by March 31 2024
205200	Feeder 83 - Convert the Kairakau Temporary Regulator site to a Sectionaliser	Security of Supply	Work in progress	80		Will be completed by March 31 2024
201386	Feeder 83 - Replace ABS 646 with a Remote-Control Switch	Security of Supply	Work in progress	80		Will be completed by March 31 2024
201445	Feeder 83 - Replace ABS 464 with RCS on Pole 906315	Security of Supply	Completed	80	50	
201497	Feeder 83 - Replace ABS 466 with Sectionaliser on Pole 919754	Security of Supply	Work in progress	80		Will be completed by March 31 2024

Project Number	Constraints and Projects	Category	Status	AMP Budget ($000)	Actual Spend ($)	Comments
201562	Feeder 46 - Replace ABS 506 with RCS on Pole 913301	Security of Supply	Work in progress	80		Will be completed by March 31 2024
201728	Feeder 4 - Replace ABS 550 with RCS on Pole 910190	Security of Supply	Completed	80	72	
205343	Feeder 1 - Replace ABS 545 with RCS on Pole 910166	Security of Supply	Completed	80	60	
205386	Feeder 1 - Replace ABS 542 with a Remote-Control Switch (RCS) on Pole 923701	Security of Supply	Completed	80	62	
205395	Feeder 91 - Replace ABS 498 with a Remote-Control Switch (RCS) on Pole 906009	Security of Supply	Completed	80	66	

Table 8-3: Physical Progress of Planned CapEx Projects – 2023/24

8.2.2 Planned OpEx

Maintenance programmes described in Section 5 – Lifecycle Asset Management are detailed in Table 8-4 and include the status of the programme as at the end of each financial year.

The programmes have remained reasonably consistent so progress for each year is presented in one table to allow a comparison to easily be made between the financial years.

8.2.2.1 Planned Maintenance 2022/23 and 2023/24

Asset Inspection/Condition Assessment	Progress 2022/23	Progress 2023/24
Annual 33kV Line Visual Inspection	Complete	Complete
5-Yearly Overhead Line Feeder Inspections	Complete	Complete
33kV Annual Aerial Inspection	Complete	Complete
Annual Ground Mounted Inspection	Complete	Complete

Asset Inspection/Condition Assessment	Progress 2022/23	Progress 2023/24
Level 1: Fortnightly Substation Visual Inspections	Complete	Complete
Level 2: 3-monthly Substation Detailed Inspections	Complete	Complete
Zone Substation Earth Tests — 5-yearly	Complete	Complete
Zone Substation Thermo-vision — Annually	Complete	Complete
Power Transformer — Annual DGA Oil Tests	Complete	Complete
Partial Discharge — 2-yearly test for Circuit Breakers	Was scheduled for February 2023, however cyclone caused this to be postponed until Q1 23/24	Complete
2-monthly Detailed Inspections of Voltage Regulators	Complete	Complete
Recloser and Remote-Control Switch — 2-yearly Detailed Inspection and Operational Tests	Complete	Complete
Distribution Equipment Earth Tests — 5-yearly	Complete	Complete
5-yearly Inspection of Ground-Mounted Low Voltage Distribution Equipment (including Minor Repairs)	Complete	Complete

Table 8-4: Physical Progress of Asset Inspection/Condition Assessment

Routine and Corrective Maintenance	Progress 2022/23	Progress 2023/24
Vegetation Control	On schedule	On schedule
Transformer — 2-yearly Service	Not Due	4 Overdue
Tap Changers — 2-yearly or 6-yearly Service, depending on Tap Changer Type	Not Due	Not Due
Station Regulators — 2-yearly, 5-yearly, or 10-yearly Service. depending on Make and Model	Complete	Not due
Circuit Breaker SF6 — 3-yearly Service	Not Due	10 Overdue
Circuit Breaker Vacuum — 3-yearly Service	Not Due	Complete
Circuit Breaker Oil — 2-yearly Service	Not Due	Complete
Circuit Breaker Oil — Fault Service after every Fault Operation	Complete	Complete
Disconnectors and Earth Switches — 10-yearly	Not Due	10 Overdue

Routine and Corrective Maintenance	Progress 2022/23	Progress 2023/24
Annual Ripple Plant Service	Complete	Complete
Zone Substation Batteries — 3-monthly General Service, 6-monthly Discharge Tests	Complete	Complete
Zone Substation – Electro-Mechanical (4-yearly), Electronic (6-yearly) and Microprocessor (6-yearly)	Complete	8 Overdue
Voltage Regulators, Reclosers and Sectionalisers – 2-yearly or 5-yearly Service	Complete	Not complete

Table 8-5: Physical Progress of Routine and Corrective Maintenance

8.3 Review of Financial Progress Against Plan

In this section, Centralines' performance in delivering the plans set out in the 2023/24 RAMP is reviewed in terms of financial progress (cost performance). This evaluation is undertaken for the 2022/23 and 2023/24 financial years for both capital and maintenance programmes. Explanations are provided in respect of works programmes with a variance of greater than 10%.

8.3.1 Network Spend Financial Summary 2022/23

Category	Forecasted Expenditure from 2023/24 RAMP ($'000s)	Actual Expenditure ($'000s)	Variance %
CapEx			
Consumer Connection	2,492	2,151	-13.7%
System Growth	481	543	12.9%
Asset Replacement and Renewal	4,115	4,492	9.2%
Asset Relocations	191	11	-94.2
Reliability, Safety and Environment	0	0	-
Total Network CapEx	**7,279**	**7,197**	**-1.1%**
OpEx			
Service Interruptions and Emergencies	721	721	-
Vegetation Management	793	792	-
Routine and Corrective Maintenance and Inspections	40	40	-
Asset Replacement and Renewal	1,117	1,118	-
Total Network OpEx	**2,671**	**2,671**	**-**

Table 8-6: Financial Progress CapEx and OpEx 2022/23

8.3.1.1 Variance Explanation Consumer Connections

The local economy began to slow down in line with the rest of New Zealand resulting in lower than expected spend.

8.3.1.2 *Variance Explanation System Growth*

The variance in this category is due to a project that was undertaken in the Waipawa CBD. This project was scoped and priced several years prior to it being constructed and price increases inflated project costs. Additionally, once the project had commenced, the Central Hawke's Bay District Council requested additional load for their site which necessitated a redesign and the installation of additional network assets which also increased project costs.

8.3.1.3 *Variance Explanation Asset Relocations*

No asset relocations were originally planned or budgeted for however, a commercial development arose during the year requiring Centralines to move two 33kV overhead circuits to maintain regulatory clearances.

8.3.2 Network Spend Financial Progress 2023/24

Category	Budgeted Expenditure from 2023/24 RAMP ($'000s)	Forecasted Year End Expenditure ($'000s)	Variance
CapEx			
Consumer Connection	2,397	1,900	20.73%
System Growth	1,745	1,210	-21%
Asset Replacement and Renewal	4,746	4,801	1%
Asset Relocations	0	61	
Reliability, Safety and Environment	1,214	1,049	-14%
Total Network CapEx	**10,102**	**9,021**	**-10.7%**
Category	**Budgeted Expenditure from 2023/24 RAMP ($'000s)**	**Forecasted Year End Expenditure ($'000s)**	**Variance**
OpEx			
Service Interruptions and Emergencies	432	548	26.9%
Vegetation Management	825	632	-23.4%

Category	Budgeted Expenditure from 2023/24 RAMP ($'000s)	Forecasted Year End Expenditure ($'000s)	Variance
OpEx			
Routine and Corrective Maintenance and Inspections	126	87	-31%
Asset Replacement and Renewal	1,475	771	-47.7%
Total Network OpEx	**2,859**	**2,038**	**-28.7%**

Table 8-7: Financial Progress OpEx and CapEx 2023/24

8.3.2.1 *Variance Explanation Consumer Connection*

Customer initiated work experienced a definite slowdown over the period due to the harsh economic conditions and the general election in November 2023. Centralines expects this trend to continue through the 2024/25 period and beyond.

8.3.2.2 *Variance Explanation System Growth*

The main reason for the underspend in this category is delays associated with the detailed design of the OngaOnga ODID project. The proposed November 2025 commissioning and completion of this major project is still considered achievable.

8.3.2.3 *Variance Explanation Asset Relocations*

No expenditure was budgeted for this category. However, it was identified post Cyclone Gabrielle that a riverbank had been washed away during heavy post cyclone putting several Centralines assets at risk. This cost is associated with that realignment of assets away from the new path of the river.

8.3.2.4 *Variance Reliability Safety and Environment*

Several programmed switch automation projects came in under budget due to not requiring the replacement of poles that the recloser or switch were to be mounted on.

8.3.2.5 *Variance Explanation Service Interruptions and Emergencies*

Unfortunately, Centralines experienced numerous weather and vegetation related events during the reporting period. These events were higher than anticipated and required additional expenditure.

8.3.2.6 *Variance Explanation Vegetation Management*

Centralines vegetation contractor withdrew services to Centralines for a number of months during the year to undertake emergency cyclone clearance tasks for local authorities. This required Centralines to refocus internal vegetation resources priorities and work tasks to ensure high risk vegetation sites were being addressed. Centralines has since increased its own vegetation capabilities and staff numbers and are confident service levels in this area of the business have not been affected.

8.3.2.7 *Variance Explanation Routine and Corrective Maintenance and Inspections*

Centralines has made the decision to cease aerial inspections of 11kV overhead lines and focus more efforts on ground-based inspections to gather more detailed condition assessments rather than just defect identifications that are generally identified by helicopter surveys.

8.3.2.8 *Variance Explanation Asset Replacement and Renewal*

The amount of maintenance tasks required after feeder inspection data was analysed was less than anticipated. Budgets for these types of tasks are estimated approximately six months prior to any inspection data being available.

8.4 Review of Service Level Performance

In this section, an evaluation of performance against the Service Levels published in Section 3 – Service Levels will be provided.

In all cases, explanations will be provided in respect of material unfavourable variances against targeted performance.

8.4.1 Service Level Performance 2022/23

The table below shows the 2022 service level framework and the forecasted information as per the 2022/23 RAMP compared to actual results for the 2022/23 Financial Year.

Key Result Area	Strategic Asset Management Objective	Measurement	Forecast 2022 / 2023	Actual 2022 / 23	Comments
Health and Safety	Ensure people are safe around Centralines' assets.	Asset failures resulting in serious harm or fatality to a member of the public.	0	0	
		Number of severity 1, field crew, health, and safety internal audit findings.	0	0	
		Percentage of priority 1, 2, and 3 asset defects completed within required timeframes.			Unable to be measured currently due to system limitations
Network Reliability	Deliver a reliable and compliant electricity supply to customers.	Unplanned SAIDI, less than SCI Target (minutes).	72.81	72.81	
		Unplanned SAIFI, less than SCI Target (interruptions).	2.20	2.20	
		Number of annual, verified power quality complaints.	Met	Met	
Customer Service	Improve customers' experience in relation to asset management services.	Percentage of planned shutdowns finishing outside notified outage windows.			There is currently no process in place to measure this objective
		Centralines responses not completed within Utilities Disputes (UDL) time limits.	0	0	
		Timeframe to complete standard low voltage customer connection	Not Met	Not Met	
		Timeframe to complete investigation of power quality issue	Met	Met	

Key Result Area	Strategic Asset Management Objective	Measurement	Forecast 2022 / 2023	Actual 2022 / 23	Comments
Financial	Improve the financial performance of the asset management plan without compromising network performance and asset integrity.	Total annual network CapEx is within ±10% of total budget.	-19.7	-19.7%	
		Total annual network OpEx is within ±10% of total budget.	3.9%	3.9%	
Service Delivery	Improve delivery performance of the Annual Works Plan.	Delivery of the annual network capital works programme.	Not met	Not met	
		Delivery of the annual planned network maintenance programme.	Not Met	Not Met	
		Delivery of non-standard customer projects outside of agreed scheduled date.	0	0	
		Number of severity 1 and 2 work practice and quality outcomes from internal field audits.	2	2	
Innovation and Continual Improvement	Improve the asset management capability to support the development and implementation of the asset management strategies and plans.	Delivery of Asset Management Capability Plan.	100%	100%	
		Centralines' asset management service provider (Unison) maintains ISO 55001 certification.	ISO 55001 Certification	ISO 55001 Certification	
	Improve the communication of the asset management strategy to all Centralines' teams.	Percentage of new Centralines' staff who received an asset management induction within three months of commencing employment.	Not Met	Not Met	
		Percentage of Centralines' staff receiving an annual asset management briefing.	Not Met	Not Met	

Key Result Area	Strategic Asset Management Objective	Measurement	Forecast 2022 / 2023	Actual 2022 / 23	Comments
	Improve the environmental sustainability performance and resilience of the asset management activities.	Number of environmental breaches resulting in environmental contamination due to the failure or an asset, asset system or associated containment.	0	0	
		Centralines' network resilience maturity is assessed on an annual basis through the EEA's Resilience Management Maturity Assessment Tool (RMMAT).	Not met	Not met	
Assurance	Maintain compliance with all applicable requirements.	Percentage of non-compliances identified through Legislative Compliance Programme in relation to Asset Management have a corrective plan in place.	100%	100%	
		Number of instances of unanticipated legal challenge or government investigation.	0	0	

Table 8-8: Service Level Performance 2022/23

8.4.2 *Forecasted Service Level Performance 2023/24*

Table 8-9 shows the 2023/2024 service level framework, targets as per Section 3 of the 2023/24 RAMP, and the year-end forecasted values as at 31 January 2024.

Key Result Area	Strategic Asset Management Objective	Measurement	Targets 2023 / 2024	Forecasted 2023 / 24	Comments
Health and Safety	Ensure people are safe around Centralines' assets.	Asset failures resulting in serious harm or fatality to a member of the public.	0	0	
		Number of severity 1, field crew, health, and safety internal audit findings.	0	0	
		Percentage of priority 1, 2, and 3 asset defects completed within required timeframes.	100%		Unable to be measured currently due to system limitations
Network Reliability	Deliver a reliable and compliant electricity supply to customers.	Unplanned SAIDI, less than SCI Target (minutes).	<62.83	84.16	Refer to section 8.5 for further detail
		Unplanned SAIFI, less than SCI Target (interruptions).	<3.16	1.99	Refer to section 8.5 for further detail
		Number of annual, verified power quality complaints.	≤ 5	1	
Customer Service	Improve customers' experience in relation to asset management services.	Percentage of planned shutdowns finishing outside notified outage windows.	< 15%		There is currently no process in place to measure this objectiv.
		Centralines responses not completed within Utilities Disputes (UDL) time limits.	0	0	
		Timeframe to complete standard low voltage customer connection	<15 business days	100%	

Key Result Area	Strategic Asset Management Objective	Measurement	Targets 2023 / 2024	Forecasted 2023 / 24	Comments
		Timeframe to complete investigation of power quality issue	<20 business days	100%	
Financial	Improve the financial performance of the asset management plan without compromising network performance and asset integrity.	Total annual network CapEx is within ±10% of total budget.	< ± 10%	-10.7%	Refer to Section 8.3.2
		Total annual network OpEx is within ±10% of total budget.	< ± 10%	-28.7%	Refer to Section 8.3.2
Service Delivery	Improve delivery performance of the Annual Works Plan.	Delivery of the annual network capital works programme.	Programme completed in full.	100%	
		Delivery of the annual planned network maintenance programme.	Programme completed in full.	100%	
		Delivery of non-standard customer projects outside of agreed scheduled date.	0	0	
		Number of severity 1 and 2 work practice and quality outcomes from internal field audits.	0	0	
Innovation and Continual Improvement	Improve the asset management capability to support the development and implementation of the asset management strategies and plans.	Delivery of Asset Management Capability Plan.	100%	100%	
		Centralines' asset management service provider (Unison) maintains ISO 55001 certification.	ISO 55001 Certification	ISO 55001 Certification	
	Improve the communication of the asset management strategy to all Centralines' teams.	Percentage of new Centralines' staff who received an asset management induction within three months of commencing employment.	100%	100%	Delivered on March 4 2024

Key Result Area	Strategic Asset Management Objective	Measurement	Targets 2023 / 2024	Forecasted 2023 / 24	Comments
		Percentage of Centralines' staff receiving an annual asset management briefing.	100%	100%	Delivered on March 4 2024
	Improve the environmental sustainability performance and resilience of the asset management activities.	Number of environmental breaches resulting in environmental contamination due to the failure or an asset, asset system or associated containment.	0	0	
		Centralines' network resilience maturity is assessed on an annual basis through the EEA's Resilience Management Maturity Assessment Tool (RMMAT).	Completed	Completed	
Assurance	Maintain compliance with all applicable requirements.	Percentage of non-compliances identified through Legislative Compliance Programme in relation to Asset Management have a corrective plan in place.	100%	100%	
		Number of instances of unanticipated legal challenge or government investigation.	0	0	

Table 8-9: Forecasted Service Level Performance 2023/24

8.5 Evaluation of Network Performance

8.5.1 Network Performance Summary

Though Centralines has been exempt from the Commerce Commission's price-quality path since the 2021/22 financial year, network performance is still measured and reported on internally to maintain consistency with previous years and facilitate comparisons between other EDBs.

It should be noted that the figures presented in this section are provisional and subject to review and audit at the end of the disclosure period.

8.5.1.1 Unplanned Network Performance

Network performance for the 2023/24 year has been comparable to the previous two years, although metrics have exceeded Statement of Corporate Intent (SCI) targets.

The eight-year trend of unplanned System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI) against current internal and legacy regulatory metrics is provided in Figure 8-1 below. The red dotted line on the SAIDI graph depicts what would have been the current DPP3 regulatory limit of 83.61 minutes if Centralines was still subject to price / quality regulation, and the orange line is Centralines' 2023/24 SCI target of 62.83 minutes. The orange dotted line on the SAIFI graph depicts Centralines' 2023/24 SCI target of 3.16 interruptions.

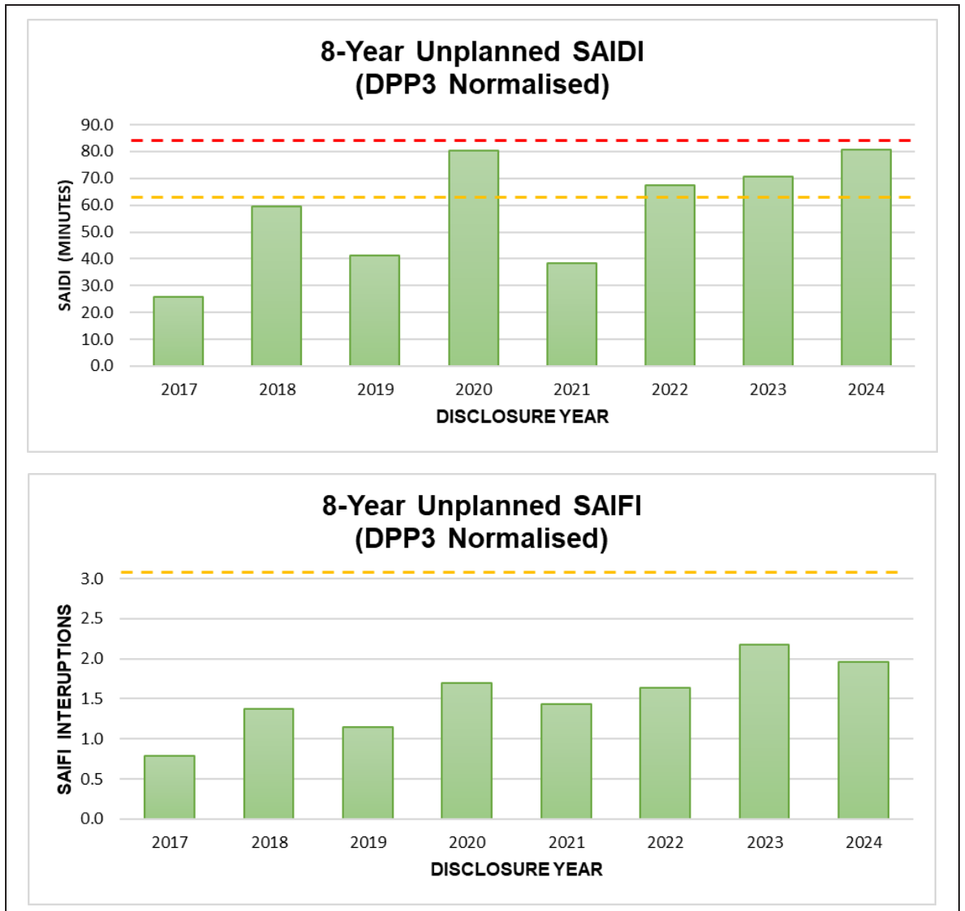


Figure 8-1: Eight Year Network Performance Comparison

The key factors in network performance exceeding internal targets, when compared to previous periods were, the elevated impacts from unknown, vegetation and equipment failure faults as shown in Figure 8-2 below.

Additionally, a recent upgrade to the Advanced Distribution Management System that controls Centralines' network resulted in inflated SAIDI impacts on some faults due to challenges interfacing with some legacy automated field devices. This necessitated additional manual onsite operations until the issues were resolved.

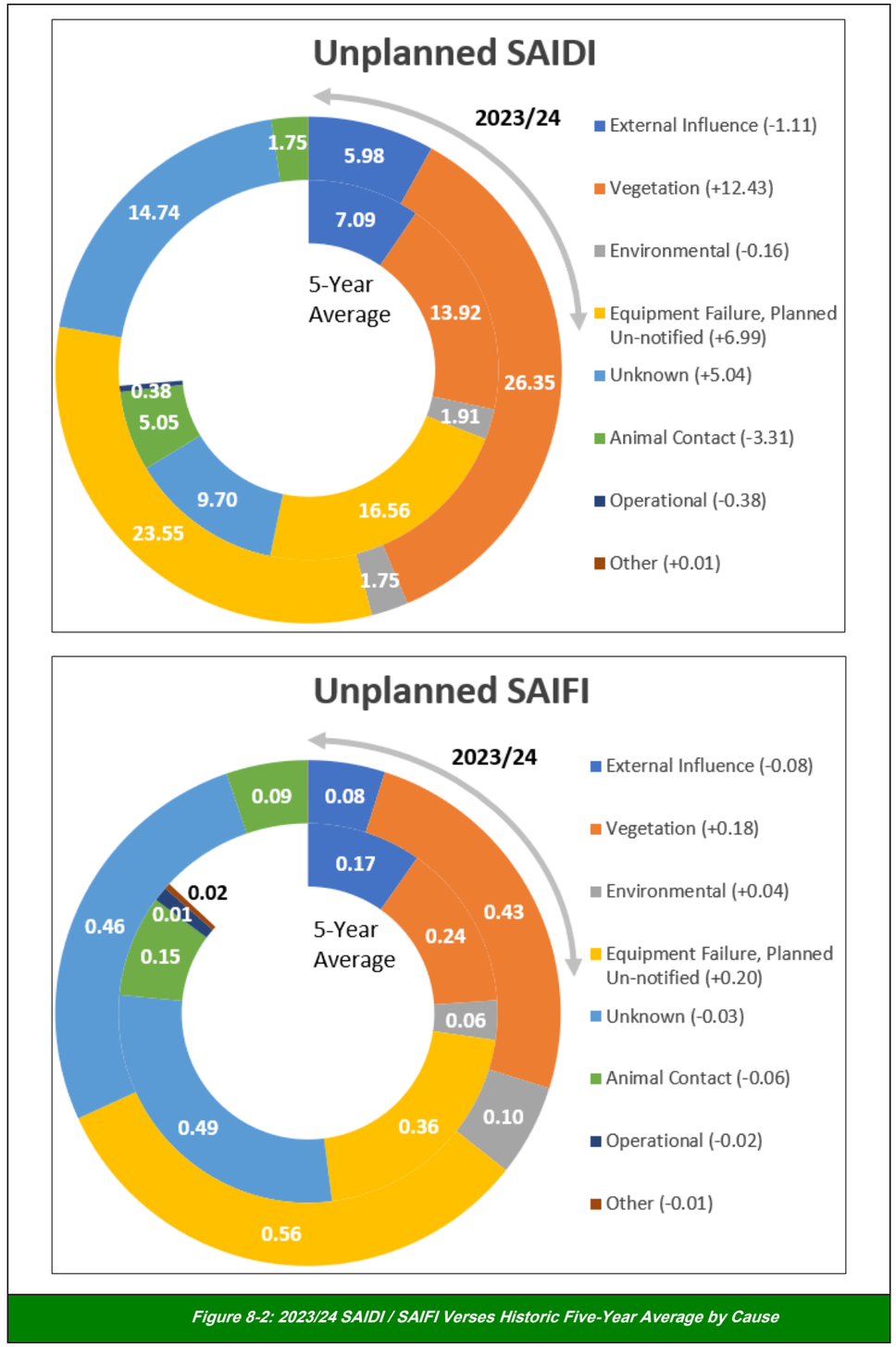


Figure 8-2: 2023/24 SAIDI / SAIFI Verses Historic Five-Year Average by Cause

Unplanned SAIDI metrics from unknown events for the 2023/24 disclosure year have surpassed levels seen in any of the last eight years which is presented in Figure 8-3 below. Faults caused by vegetation and equipment failures were also higher than historical averages.

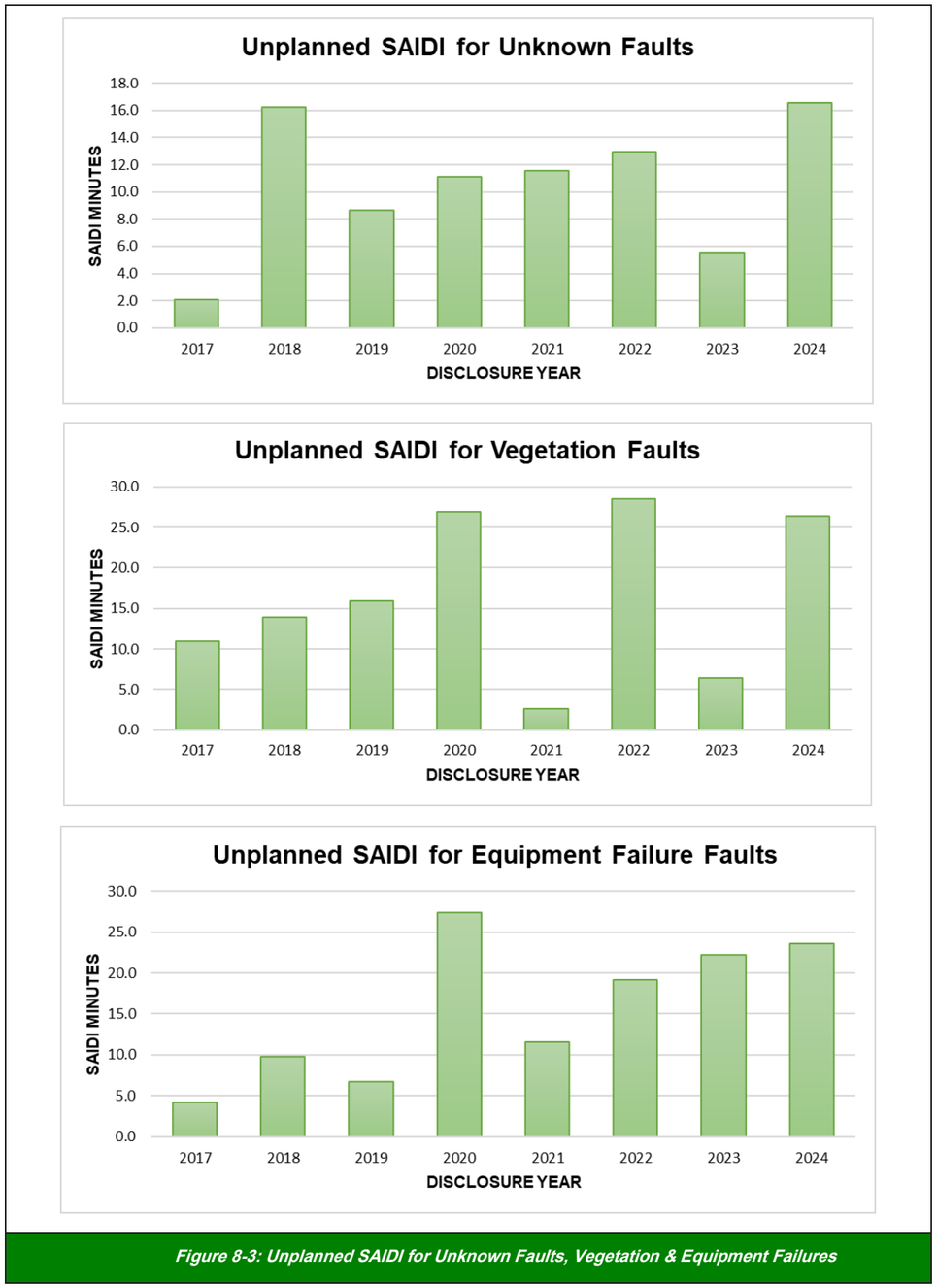


Figure 8-3: Unplanned SAIDI for Unknown Faults, Vegetation & Equipment Failures

While SAIDI was up, the count of unknown faults for the year was lower than previous years, as depicted in Figure 8-4. This means that on average, each fault has had a higher impact. The largest four unknown faults for 2023/24 accumulated over 2.1 SAIDI minutes each, equating to more than fifty percent of the year's total SAIDI. The SAIDI impact of these faults was influenced by remote devices not operating and lengthy travel times. The SAIFI impacts of unknown faults are comparable to previous periods implying faults from in 2023/24 lasted longer or occurred in higher density areas.

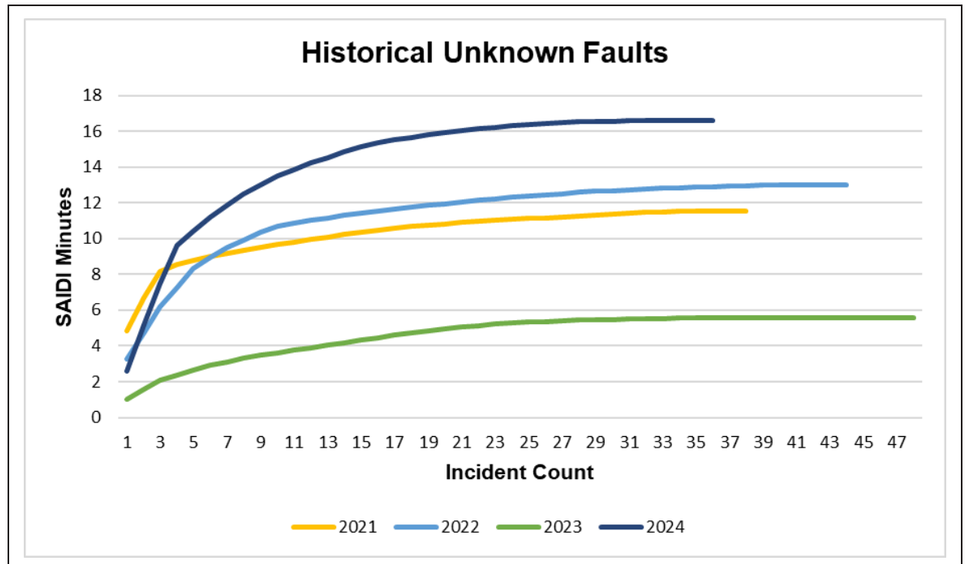


Figure 8-4: Comparison of Unknown Fault Counts & SAIDI for the Last Four Years

The top ten percent of vegetation faults resulted in approximately fifty percent of the entire years vegetation SAIDI impacts, as shown in Figure 8-5. The three highest impact events were all caused by fall distance zone trees and occurred on rural feeders with over 350 customers. Automation is planned for the feeder which experienced the highest impact vegetation event of the year. This is expected to improve reliability for any future events.

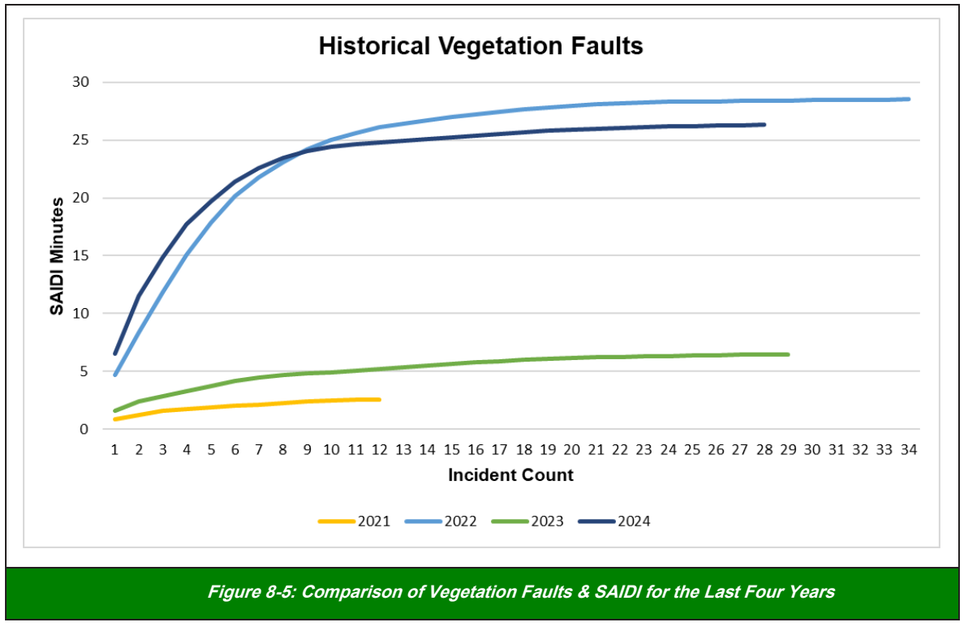


Figure 8-5: Comparison of Vegetation Faults & SAIDI for the Last Four Years

Unplanned SAIDI incurred from equipment failures from the 2023/24 year was approximately five minutes less than the five-year historical average. This historical average includes the 2020/21 year which saw abnormally positive network performance in all facets. If this year was excluded from historical averages the equipment failure performance observed this year would be similar with previous periods. The 2024 performance relative to previous years is shown in Figure 6 which also demonstrates the abnormally good 2021 performance.

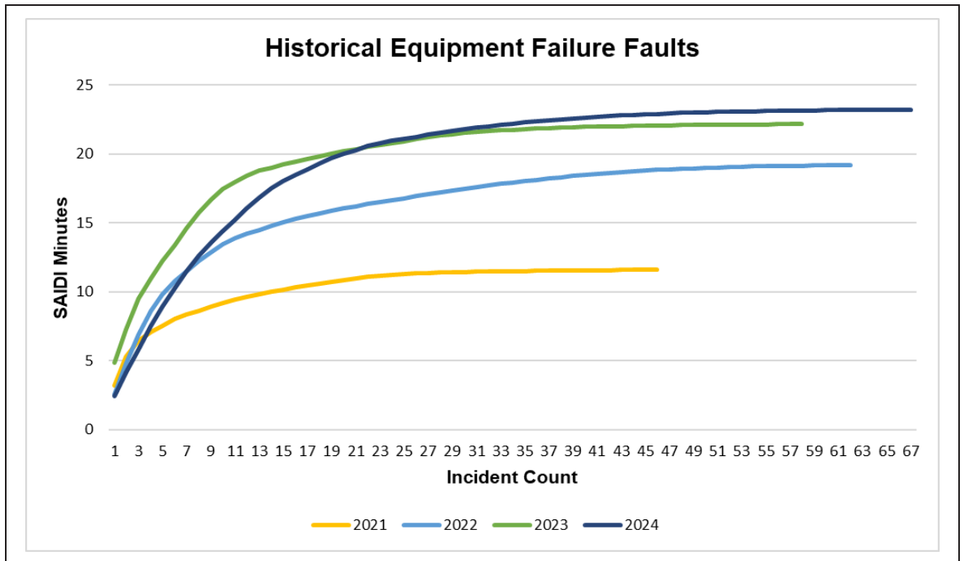


Figure 8-6: Comparison of Equipment Failure Faults & SAIDI for the Last Four Years

8.5.2 Major Events

The Centralines network experienced eight major events during the 2023/24 financial year as summarised below:

- In June 2023 a windstorm caused numerous vegetation related faults which were exacerbated by a car versus pole incident during the storm. These faults resulted in SAIDI and SAIFI major events.
- In August 2023 a storm caused three incidents where trees fell through overhead lines, damaging conductors and jumpers. These incidents resulted in a SAIDI major event.
- A storm occurred in September 2023 resulting in trees and debris falling onto overhead lines on five different feeders, breaking conductors and causing outages. This resulted in a SAIDI major event.
- The Wilder Road Feeder tripped in October 2023, resulting in both a SAIDI and SAIFI major event. The cause was a bird strike where the bird became wedged between a jumper and insulator causing a line drop and outage.
- In December 2023 a lightning storm passed over the network resulting in many faults. Additionally, there was another car versus pole incident which contributed to both a SAIDI and SAIFI major event.
- An initial fault in February 2024 on a Waipawa urban feeder, followed by a broken jumper, caused two cascading faults affecting large numbers of customers and resulted in a SAIDI and SAIFI major event.

The impact of these events, and the effect of normalisation is provided in Table 8-10 below.

Date	Event	SAIDI		SAIFI	
		Raw	Normalised	Raw	Normalised
02/07/2023	Storm and Car versus Pole	10.5	2.91	0.17	0.13
02/08/2023	August Storm	15.5	0.42	0.05	N/A
18/09/2023	September Storm	17.9	0.99	0.20	N/A
30/10/2023	Wilder Road Bird Stike	9.9	0.28	0.18	0.006
25/12/2023	Lightning Storm and Car Versus Pole	10.5	0.42	0.21	0.007
29/02/2024	Broken Jumper Waipawa Urban	8.1	0.28	0.17	0.006

Table 8-10: Major Events on the Centralines Network in 2023/24

8.5.3 *Recommended Targets for 2024/25*

Internal SCI targets have been set for Centralines' unplanned SAIDI and SAIFI performance metrics. Although exemption from price quality regulation means regulatory targets and limits no longer apply, the internal targets below are based on the Commerce Commission's DPP3 methodology to maintain alignment with industry and to support comparison. These targets demonstrate Centralines' ambition for continual improvement in network performance in the medium term. The proposed network performance targets are outlined in Table 8-11.

Index	Unplanned SAIDI	Unplanned SAIFI
2024/25 SCI Target	62.83	3.1616

Table 8-11: SCI Network Performance Targets

8.6 Evaluation of Asset Management Maturity

8.6.1 *Background*

In 2012, the Commerce Commission included an Asset Management Maturity Assessment Tool (AMMAT) as part of the information Electricity Distribution Businesses (EDBs) are required to disclose in their annual information disclosures. The AMMAT consists of a self-assessment questionnaire containing 31 questions and accompanying guidance notes. The maturity assessment questions are designed to cover the full range of asset management system components and activities while having regard to information that is already disclosed in RAMPs.

The following figure details the maturity scales upon which the AMMAT scoring is based.

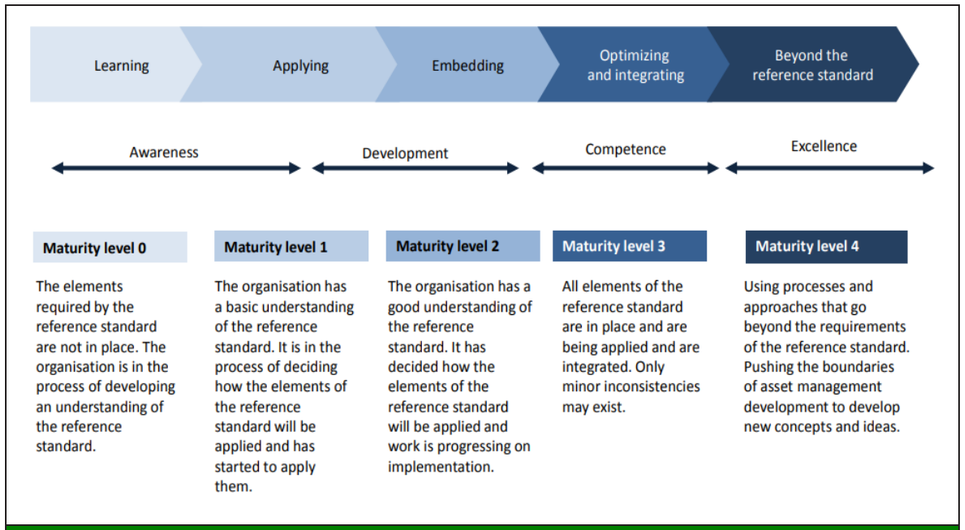


Figure 8-7: PAS55 Maturity Levels

8.6.2 *2023/24 AMMAT Results*

Centralines is committed to continually improving its asset management capabilities. Unison, Centralines' Asset Management service provider, is ISO 55001 certified. Many of Unison's certified asset management processes and practices have been adopted and implemented at Centralines. This has resulted in an increase in maturity levels across some areas over recent years.

For the 2023/24 year, Centralines' AMMAT was self-assessed. However, where key Unison asset management processes have been fully adopted by Centralines, maturity levels from Unison's externally assessed AMMAT have been used.

Maturity scoring for individual AMMAT questions is provided in Figure 8-8.

Figure 8-8: 2024 Centralines' AMMAT Results

These AMMAT functions, including Unison's scores, can be further consolidated into six main capability areas. These grouped capability areas, scoring for individual questions and a rounded summary score for each area, is provided in Table 8-12.

Capability Area	Question	Asset Management Capability Sub-Area	Score	Average Score
Asset Strategy and Delivery	10	Asset Management Strategy Alignment	2	2.6
	11	Asset Management Strategy – Asset Lifecycle	2	
	26	Asset Management Plan	3	
	33	Contingency Planning	3	
	69	Lifecycle Management of Risks	3	
	91	Corrective and Preventative Action	2	
	109	Asset Maintenance and In-service Support	3	
Documentation, Controls and Review	45	Outsourcing	3	2.7
	59	Asset Management System Documentation	2	
	82	Legal/Regulatory/Statutory Compliance	3	
	88	Asset Creation and Refurbishment	3	
	95	Performance and Condition Monitoring	2	
	105	Auditing	3	
	113	Continuous Improvement	3	
Systems, Integration, and Information Management	31	Issue of Work from the Asset Management Plan	2	2.75
	62	Effectiveness of Asset Information Systems	3	
	63	Currency of Asset Information	3	
	64	Asset Information System Relevance	3	
Communication and Participation	3	Asset Management Policy	2	2
	27	Communicating the Asset Management Plan	2	
	42	Asset Management Awareness and Leadership	2	
	53	Communication of Asset Management Information	2	
Structure, Capability and Authority	29	Responsibilities to Act on the Asset Management Plan	3	3
	37	Management Delivering Asset Management	3	
	99	Defect Investigation	3	
	115	Advanced Technology and Practices	3	
Competency and Training	40	Resourcing Asset Management	2	2.6
	48	Development of Human Resources in Asset Management	3	
	49	Competency Development in Asset Management	3	
	50	Training	3	
	79	Risk Based Improvement of Teams	2	

Table 8-12: AMMAT Scoring per Asset Management Capability Area

8.6.3 Assessment of Asset Management Practices 2016-2024

An overview of the scores in 2016 and 2024 for each asset management function is provided in Figure 8.9.

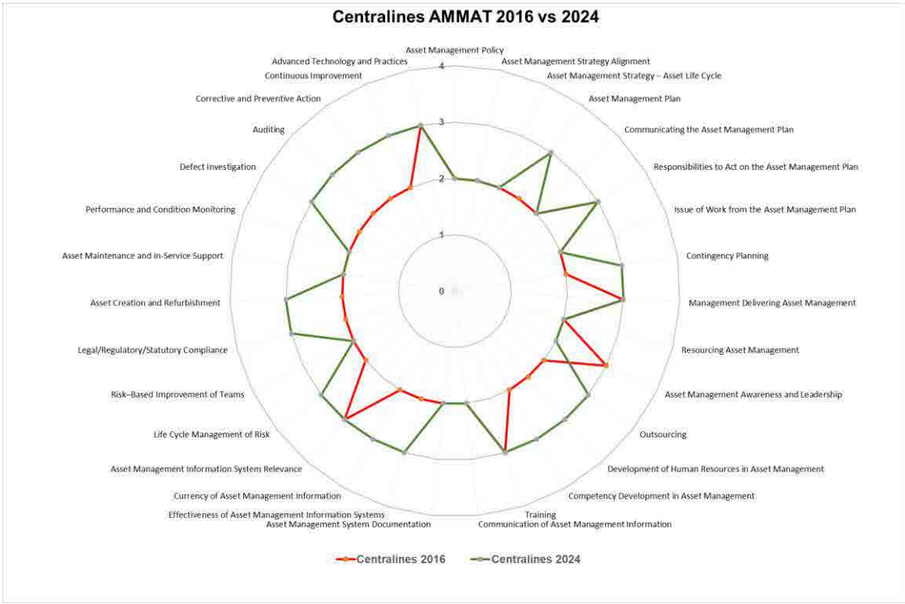


Figure 8-9: 2016 and 2024 Centralines AMMAT Results Comparison

8.6.3.1 Improvement 2016-2024

Consistent improvement from 2016 to 2024 can be seen in Risk and Information Management functions. This is consistent with the effort Centralines, and its management service provider Unison has put in over recent years to improve these functions.

As a result, Centralines has seen improvement in the asset management functions that were not previously meeting acceptable standards. These are:

- risk management processes
- information management, and
- asset management plans.

While improvement has been seen in these areas, Centralines recognises that there is still room for improvement and remains committed to achieving this through Continual Improvement processes.

SECTION 9 //// IWA

CAPABILITY TO DELIVER

CENTRALINES LIMITED

CONTENTS

9. CAPABILITY TO DELIVER

9.1 Introduction to this Section

Centralines' Asset Management Plan (AMP) is developed to ensure that Centralines can build, maintain, renew, and operate the network in the most efficient and effective manner possible, while delivering sustainable, reliable services to customers and managing risks in alignment with Centralines' risk appetite.

The following section outlines how Centralines ensures its AMP is realistic, and the objectives are achievable. The organisational structure, processes for authorisation and business capability also support how the AMP is delivered.

9.2 Achieving the Objectives of the Plan

The requirements for the Regulatory Asset Management Plan (RAMP) include descriptions of processes used by the EDB to ensure that:

- the RAMP is realistic, and the objectives set out in the plan can be achieved, and
- the organisation structure and the processes for authorisation and business capabilities will support the implementation of the RAMP plans.

Centralines interprets these requirements as providing information on how Centralines ensures the plan is reasonable, i.e., is efficient and effective at building, maintaining and operating networks optimally and sustainably to deliver reliable services to consumers, and that Centralines has business processes and capabilities to deliver the plan.

As noted in Section Two of the RAMP, Centralines operates a mixed model consisting of maintaining capability in-house (field-staff) but outsourcing management services, and some capital works, to third parties as well as insourcing contracting resource to support programme delivery through competitive tenders and negotiation.

9.3 Ensuring the Plan is Realistic

In this context, Centralines defines realistic as having a high level of accuracy as well as being achievable. The ISO 55001 certified processes, systems and associated inputs used to develop the AMP are tested to confirm the outputs are robust and repeatable and the optimal balance between cost, risk and performance is maintained.

Centralines' Asset Management System (AMS) governs the development and execution of the AMP. The main processes that contribute to the AMP and the subsequent achievement of Centralines' Asset Management Objectives (AMOs) are:

- Network Development Planning
- Asset Renewal Planning
- Works Planning and Consolidation
- Annual Works Plan Development, and
- Resource availability.

9.3.1 Network Development Planning

Section Four of this RAMP details Centralines' network development planning processes and the subsequent outputs. The accuracy of this planning depends on the quality of the inputs, such as the demand and capacity components. Centralines draws on external sources of information such as the long-term development plan from the local council to ensure assumptions used within NDP processes are consistent with independent sources.

The tools, processes, and associated network models, which use this data as inputs to establish the investment priorities are also outlined in Section Four. These tools have been developed in-house by Centralines' management service provider and go through rigorous testing, along with reviews, continual improvement, and enhancements on an annual basis.

9.3.2 Asset Renewal Planning (ARP)

Centralines' approach and processes associated with Asset Renewal Planning (ARP) are detailed in Section Five. The adoption of a risk-based approach to ARP and continual improvement is integral and fundamental within Centralines' AMS. Decision support tools such as condition-based risk management (CBRM) are used to inform maintenance and renewal programmes and ensure the right work is carried out on the right assets at the right time.

This approach, in conjunction with the holistic risk-based approach to all programmes of work, ensures the plan is realistic, achievable and will lead to Centralines meeting its AMOs.

9.3.3 Works Planning and Consolidation (WPC)

The purpose of the Works Planning and Consolidation (WPC) process within Centralines' AMS is to establish and maintain a prudent and efficient AMP, from submitted NDP and ARP work proposals.

The key requirements of WPC are:

- that quality proposals entering the AMP will support the achievement of Centralines' AMOs
- the AMP supports effective prioritisation of competing work proposals
- high integrity of the critical information maintained within the AMP
- stakeholders being aware of their requirements in relation to the WPC process and being able to access the information they require, and
- that work completed on the Asset Portfolio is verified and closed out of the AMP in a timely manner.

WPC draws together proposals of work from various sources which are risk-prioritised and organised into a plan that can be delivered by the organisation, at the lowest overall cost, subject to external constraints. The AMP is updated on a six-monthly basis to provide an accurate up-to-date view to the business. The aim of this is to bring about efficiency gains through:

- identification of project synergies, to minimise customer interruptions and increase field staff efficiency
- improved visibility for the organisation on where recruitment or attrition may need to be applied

- improved visibility for field staff capacity to enable forward planning for subcontracting requirements, which may enable refinement of rates and costs
- alignment of business units to this plan — Asset Management, Network Development, Field Resources, Procurement and Logistics, Network Operations Centre, and other support functions
- improved financial benefits which include:
  - better cost and cashflow forecasting
  - ability to organise exchange hedging for large material procurement
  - revenue and cost implications, and
  - analysis of regulatory variations, and
- the ability to respond fast and be agile.

9.3.4 Annual Works Plan Development

The Annual Works Plan (AWP) development process produces a one-year network investment plan. This plan addresses the issues identified on network assets through ARP and NDP, as well as required maintenance activities.

To obtain the AWP, the proposed projects identified in the AMP are strategically prioritised as per the risk schema, and financial and resource constraints are applied. Included within the project proposals are provisional allowances for minor capital work that are identified during the financial year.

All defined projects that are confirmed as part of the AWP have a scope of work developed. This scope includes an estimated cost of completion.

9.3.5 Delivery of the AWP

Centralines has a Management Services Agreement (MSA) with Unison Networks Limited (UNL) to provide a broad suite of management services. These services include:

- leadership
- management
- operational control of the network
- commercial
- financial
- regulatory compliance, and
- management of the development, renewal, and maintenance of the network.

Using decision support tools and processes (outlined in Sections Four and Five), a risk-based, prioritised 24-month, capital, and maintenance investment plan is developed by Centralines' management service provider's engineers and asset management specialists, in collaboration with Centralines. This plan is refined in collaboration with Centralines to align with resource availability. This refinement includes understanding what external support may be required and the phasing of the works programme to smooth any peaks or troughs. Throughout the year, Centralines has the flexibility to re-prioritise the timing of individual projects to meet resource and network requirements.

9.4 Organisation Structure, Processes for Authorisation and Business Capabilities

9.4.1 Organisation Structure

Figure 9-1 outlines the organisation structure employed by Centralines. The relatively simple structure reflects the services outsourced to Centralines' management service provider.

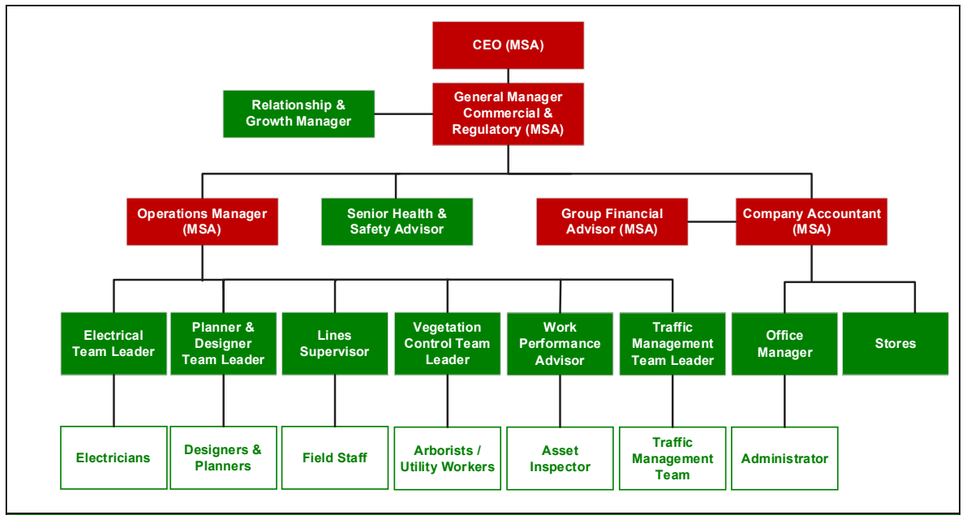


Figure 9-1: Centralines' High Level Organisational Structure

9.4.2 Processes for Authorisation

Various levels of financial authorisation exist in Centralines. The Centralines Delegations Policy is in place which outlines the level of delegated financial authority from the Board to named roles within Centralines and Centralines' management service provider. Centralines' financial system, coupled with controls and audits ensure that the process for authorisation is adhered to, or should the case arise, detect where non-compliance occurs.

The Centralines' Board approves the overall Centralines' Business Plan, including the AMP, which sets out capital and operating expenditure forecasts.

Should an individual approval be required over the highest level of delegation, a business case is prepared and submitted to the Board for approval.

When there are variations to agreed works contracts, a variation process is followed to authorise changes due to unforeseen circumstances.

9.4.3 *Business Capabilities*

As a small regional network, Centralines seeks to ensure that there is an efficient and effective business structure in place which ensures that community ownership of the network is not compromised by its small scale.

As stated previously, Centralines seeks to strike a balance between outsourcing specialised functions that would be otherwise unaffordable or provided inefficiently internally, with maintaining an internal capability to ensure resources remain in the region to provide field services.

Outsourcing risks are managed through the method of contracting and exit arrangements, which would provide for an orderly transition if Centralines wished to change their asset management service provider.

Figure 9-2 illustrates the business process that Centralines uses to deliver its asset management activities. Each of these activities can be mapped to a required business capability.

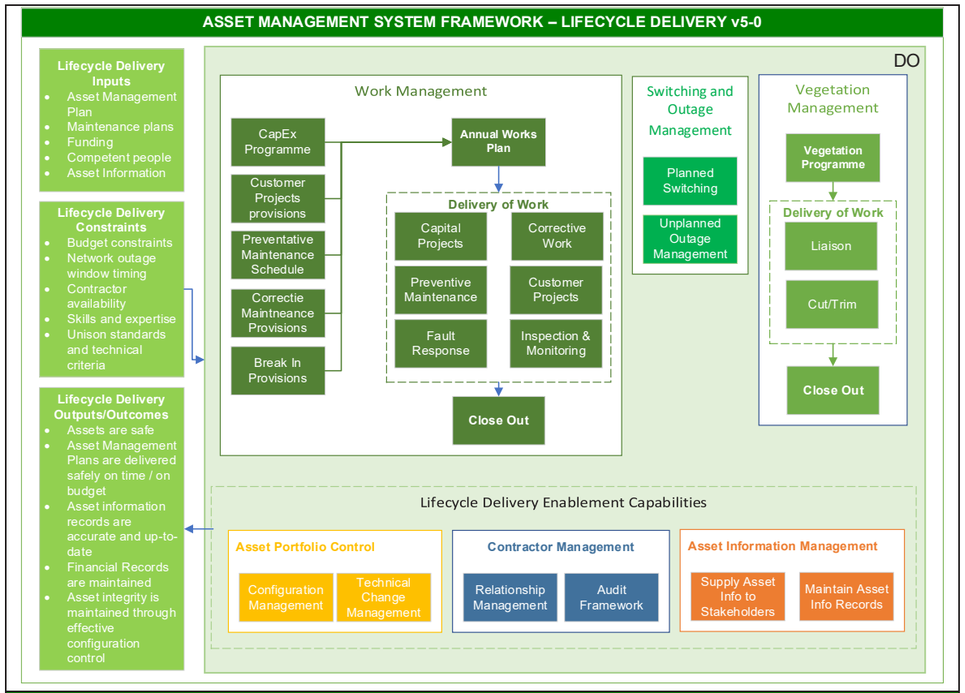


Figure 9-2: Asset Lifecycle Delivery Processes

Table 9-1: Lifecycle Delivery Processes below specifies each of the lifecycle processes in the diagram above.

Process	Description
Work Management	• The process by which project and maintenance is undertaken across the network. It assists the field service teams to be productive and effective in maximising equipment, safety, and reliability.
Vegetation Management	• Identify vegetation issues and securing of landowner consent for cutting work through the liaison process. • Vegetation is cut and trimmed to ensure line corridors are clear.
Field Resource Management	• Schedule work throughout year. • Issue projects and work to field resources. • Engage appropriately competent and cost-effective outsourced contracting service providers to undertake any work on assets not being done by Centralines resources. • Monitor and measure performance of internal resources and external service providers.
Switching and Outage Management	• Develop switching plans to enable work on the network to proceed. • Identify the occurrence of unplanned outages and coordinate the response, including the dispatch of the first responder.
Asset Portfolio Control	• Maintenance of the configuration of the Asset Portfolio to ensure integrity. • Technical Change Management processes to ensure that risk of change in the Asset Portfolio is effectively managed.
Asset Information Management	• Record asset information generated from Lifecycle Delivery activities within asset information systems. • Respond to requests for asset information from Centralines teams, contracting service providers, and third parties such as other utilities.

Table 9-1: Lifecycle Delivery Processes

9.5 Customer Service Overview

Centralines' customer service ethos is based on its vision and the principles of its core values including:

Safety: *We look out for ourselves, each other, and the community.*

Teamwork: *We show respect and support for all team members, including contractors and the community.*

Integrity: *We take pride in the quality of work we do for our customers and community.*

Openness: *We keep each other, our customers and community well informed.*

Passion: *We have pride and respect for our community and the work we do for our* ***customers****.*

Centralines strives to create great customer experiences by understanding and meeting customers' needs and is committed to keeping costs down for its customers, through the careful use of resources and continuous improvement.

The following sections provide an overview of Centralines' core customer service interactions and related processes.

9.5.1 Outage Communication

The following section outlines how Centralines communicates with its customers regarding planned and unplanned outages.

9.5.1.1 Planned Outages:

Network repair, maintenance or upgrade projects are scoped by Centralines asset management service provider. Unison's Network Operation Centre (NOC) is involved at the scoping stage to provide relevant input into any required outages. Potential constraints or timing requirements are identified as well as any key or critical customers who are engaged with if it is necessary to schedule shutdowns during maintenance periods or to discuss potential generation options. Any requirements are included in the project scope.

Scopes are forwarded to Centralines who design and plan projects. As project methodologies are developed, further collaboration with NOC occurs which culminates in the submission to NOC of a network release request. These are processed and switching plans are produced in Unison's Advanced Distribution Management System (ADMS). Switching plan outputs include an outage report detailing which customers will be affected.

For planned outages, affected customers are identified as part of the outage planning process. Outage notification letters are produced and hand delivered to customers by Centralines. Once advertised, the system automatically includes the upcoming outage onto Centralines' website enabling these to be accessed and viewed by the public.

9.5.1.2 Unplanned Outages

In the event of an unplanned outage, Unison's ADMS automatically creates an incident referencing outputs from SCADA and or the statuses of manual devices. Unplanned outage incidents are automatically added to Centralines' outage website page displaying details of the outage including:

- number of affected customers
- location, and
- estimated restoration time which can be refreshed as the outage progresses and information from the field is updated.

Large outages are also included in Centralines' 0800 fault number. Known outages are included, so when a customer calls to report an outage, the systems interactive voice response (IVR) advises customers if they are part of any known outage. If their location is different, they are then sent through

to a customer representative to log a fault. Faults can also be logged on Centralines' website or via the customers' energy retailer.

During significant unplanned outage events such as those experienced following Cyclone Gabrielle, the Public Information Management (PIM) function of the Coordinated Incident Management System (CIMS) is activated. Information and updates will be provided via a range of mediums including:

- Centralines' website
- local and national radio
- local print media
- television
- a range of social media channels and
- local in person community meetings.

The amount, frequency, and detail of the information provided is scalable and can be tailored based on the size, type, complexity, and duration of the event.

9.5.2 Voltage Quality Processes

The following section outlines Centralines' practices and processes for monitoring network voltages and any undertaking any required noncompliance mitigations including how it communicates with its customers and stakeholders.

9.5.2.1 Low Voltage Quality Monitoring and Mitigation.

The network is modelled with assumed voltage regulation schemes and distribution transformer tap settings. Growth projections allow Centralines to therefore model and predict voltage issues. These models are checked against known voltage measurements for assurance. Where a voltage constraint is identified a constraint is issued as part of the Network Development Plan outlined in Section Four. It is planned to integrate Smart Meter data into this process as voltage data is made available to Centralines.

9.5.2.2 Responding and Reporting on Low Voltage Non-Compliances

When Centralines receives an external voltage quality query or complaint from a customer or stakeholder, acknowledgement will generally occur within 24 hours but always before 48 hours. The customer will be provided with an explanation of the process Centralines will follow to manage and resolve the query. The acknowledgement advises that Centralines will investigate and respond to the query within seven working days and provides details of the Utility Disputes Resolution Service, noting that it is a free independent service, should Centralines not be able to resolve the query to their satisfaction.

Centralines will generate and forward a work request to its technicians who undertake an initial assessment of the voltage quality query. This assessment involves testing on site, including connection testing and voltage measurements at the transformer and the customer's point of supply.

If the issue can be rectified easily, work will be scheduled or undertaken while the technician is on site.

If there is no immediate issue identified, a data logger will be installed for a seven-day period, the results of which are forwarded onto the Future Networks Team for assessment. This triggers an extension letter being sent to the customer advising that due to the nature of the voltage complaint, monitoring of the network for a seven-day period is required and consequently Centralines requires an extension to manage and resolve the complaint.

Once the Future Networks Team has reviewed the logger data, an accurate view of any non-compliant voltages will be available. Generally, the results will provide clarity on whether the issue is on Centralines' network or related to the customer's connection in which case Centralines provide a report back to the customer to forward on to their electrician. At this point, there can be some further discussion between the customer and Centralines relating to the findings of the report.

If the results shows that Centralines' network needs remedial work, a work order is created and issued to mitigate the non-compliant voltage.

If Centralines identifies a voltage related issue on the network, the same process described above is repeated but without any 'how we will handle your query' correspondence. The query is sent to the Future Networks Team to investigate and remedy the voltage quality issue.

9.5.3 Continuous Improvement

In 2022 in conjunction with Unison, Centralines developed a Customer Experience Programme to acknowledge and support evolving customer expectations and provide an improved customer experience. Embedded in this programme is an underlying focus on process and continuous improvement.

One of the key objectives of the programme is to build best practice sustainable business processes and practices that are adaptable to improvements, growth, and customer change. Considering this, improvements have already been made to streamline the application process and thereby reduce communication timeframes with customers.

9.5.3.1 Customer Engagement

Centralines engages its customers in numerous direct and indirect ways including the following:

- inviting people to notify Centralines of problems or damage to its network that might be affecting them
- encouraging customers to share compliments or complaints
- direct engagement through Centralines' field teams when they are out in the field or on-site doing maintenance, repairs or constructing new network assets
- communicating planned and unplanned outages through multiple channels
- engagement with hundreds of consumers and their families through Centralines' many sponsorship programmes
- information sharing and interaction with consumers and communities via Centralines' website and social media account, i.e., Facebook

- directly through customer requests for specific services like new connections, upgrades in site capacity, or safety services including cable locations and close approach permits, and
- feedback directly from customer satisfaction surveys, with the results reported monthly to the Centralines Board of Directors and a target of >95% satisfaction.

All these interactions provide Centralines with the opportunity to engage with its customers and understand their needs, concerns, and to identify any operational issues. Additionally, Centralines actively encourages staff to pass on any information, requests, or feedback to management. These may be opportunities to improve operational outcomes or to inform Centralines' long-term strategy.

9.5.3.2 Customer Complaint Resolution

Centralines has Customer Experience representatives who manage the customer complaint resolution process. Centralines' approach to planning and managing customer complaint resolution is in accordance with the general and scheme rules for the Energy Complaints Scheme operated by Utilities Disputes Ltd (UDL).

When a customer complaint is received, the team load the details into Centralines' CRM system (Gentrack) before an acknowledgement letter or email is sent to the customer. This letter is sent within two days of receiving the complaint and states the process which will be followed for the management and resolution of the complaint. Centralines also provides information on the customer's ability to contact UDL if the complaint is not resolved to their satisfaction.

On receipt of a complaint, the Customer Team evaluates and categorises it into a low, medium, or high-risk classification, based on a variety of factors. This classification assists in determining the urgency required and who needs to be advised and or involved in resolving the complaint.

Regardless of risk level, the complaint is assessed against the Consumers Guarantee Act (CGA) rules and regulations. The CGA only permits the complainant to claim for 'reasonably foreseeable' losses and the team review this against any permitted exclusions that may apply and if the complainant's expectations are reasonable.

Centralines provides an initial response to the complaint as soon as possible and appropriate to the urgency of the complaint, but within seven working days of receipt of the complaint.

If Centralines is unable to resolve the complaint within seven working days, a 20-day extension letter or email is sent to the customer advising an extension is required. Should the matter fail to be resolved within 20 days, a further extension to 40 days may be necessary.

If Centralines is still unable to resolve the complaint within this 40-day period, and it is unlikely a resolution can be found, information on how to contact UDL is provided should they wish to pursue external guidance or complaint resolution options.

9.5.4 New Connection and Alteration / Upgrade Practices

Centralines has a dedicated section on its website providing specific information on getting a new connection or alteration. Information is provided to customers on the processes to follow for both new connections and alterations to existing connections. Centralines also has a web page providing information for connecting distributed generation.

9.5.4.1 *Planning and Management of New Connections*

Centralines' Network Connection Standard sets out the technical and operational requirements for connecting to the Centralines network.

For all new requests to connect to the Centralines network, an application form is completed by the customer and submitted to Centralines and a nominated retailer. Application forms and further information is available:

- on Centralines' website, or
- by contacting Centralines directly or the nominated retailer.

On receipt of the connection request form, Centralines will advise the proposed retailer of the request for connection and request the retailer's approval for Centralines to create a new point of supply (ICP).

As part of the connection process the customer is requested to specify their required maximum demand. Centralines will assess the availability of network capacity to accommodate the customer's proposed load. Should the existing network capacity be insufficient, Centralines will assess the options available to facilitate the connection. This includes identifying network investment options to provide additional capacity. Centralines may require the customer to fund these investments, in part or in full, as a capital contribution. The level of capital contribution is determined by Centralines' Capital Contribution Policy CL-FN004. Depending on the complexity of the job, the request may need to go through a detailed design process. Centralines will complete an assessment of the application, determining any costs to establish the supply and any easement requirements, and provide a quote to the customer including the level of capital contribution required.

Once the quote is accepted and the work is subsequently completed, an ICP number is issued and 'Approval to Liven' sent to the customer's chosen retailer.

9.5.4.2 *Commonly Encountered Issues*

Delays can occur on both the network and customer side of the new connection process. Network-related delays are typically related to contractor resourcing caused by the variability of work volumes, as well as long lead time materials such as transformers.

Delays can also be caused by incomplete information being provided regarding the connection as well as the installation not being ready to be connected on the agreed date, and essential documents such as the installation's certificate of compliance not being completed or provided.

9.5.4.3 *Planning and Management of Alterations to Existing Connections*

The process for alterations to existing connections is managed in a similar way to that of new connections. Similarly, Centralines' Network Connection Standard sets out the requirements and principles of upgrading, downgrading, or disconnecting from the network.

It is a Centralines requirement that customers consult with their electrician and Centralines when adding additional load as this can overload network assets such as transformers and cables resulting in power quality issues, asset failures and risks damage to both property and persons.

9.5.4.4 *Optimising Customer Costs for New or Altered Connections*

Capital contributions required from customers for new or altered connections are calculated in different ways depending on the type of connection (either standard or complex). Customer capital contributions are as per Centralines' Capital Contribution Policy CL-FN004. Standard connections which meet predetermined criteria are charged a fixed contribution amount based on the connection type, i.e., residential, general, commercial and factors in the location, i.e., urban, or rural. These fixed prices are calculated based on a net present value (NPV) approach for the pool of projects of each type projected to be completed across the coming year. Expected costs and future revenue streams are also factored in. This helps smooth out costs of individual projects and creates a simpler more consistent pricing regime for customers.

For more complex projects, Centralines applies a similar NPV approach to each individual project, so individual customers are paying based on the scale and cost of the connection or upgrade and expected current and future needs. This ensures a more equitable approach which does not unduly burden Centralines' customer base. A contribution floor is applied to most projects to help lower the risks associated with assets becoming stranded.

One perceived limitation of Centralines' current approach is that the NPV calculation only considers assets directly involved in the project and does not factor in the increased burden on upstream assets. The cumulative impact over time of connecting additional smaller loads is that there is the potential this will trigger an upstream capacity constraint requiring a network upgrade. Currently Centralines is considering how this could impact on the current capital contribution policy and is investigating alternative approaches. This may result in changes in the future to how Centralines charges for larger, complex customer connections and upgrades.

Materials and labour make up the bulk of costs for new customer connections and alterations. To ensure customers receive the best possible value for money, Centralines leverages Unison's buying power. Most materials used on Centralines' network are sourced from Unison resulting in a better "buy price" than Centralines would get if it went directly to suppliers. Labour costs are charged at a recovery cost rate only.

9.5.4.5 *Communicating with Customers About New or Altered Connections*

Information about new connections and alterations to existing connections is published and is easily accessible on Centralines' website. Enquiries from customers, electricians and developers are managed by Centralines' Customer Team. Key parts of the process are outlined below:

- response provided to the applicant confirming the application form has been received
- Centralines provide approval to the applicant with confirmation of costs. If the application is not approved, a detailed response is provided to the applicant including a detailed diagram and an estimate of costs should an upgrade be required
- once approved by Centralines, the application is sent to the retailer to obtain their approval
- once the retailer approval has been received, Centralines issues an ICP and redirects the customer to their retailer to request a works order to establish metering, and
- the retailer creates a works order with the relevant Meter Equipment Provider (MEP), which can take up to a week to process, subject to demand.

A key element of communication with customers is setting clear expectations early in the connection process of timeframes and of the customer's responsibilities. These expectations are managed by Centralines' Customer Team.

9.5.4.6 Timeframes and Delays for Different Connections

Centralines acknowledges and communicates that there are two types of connections which determine the potential timeframes for connection, these being standard and complex connections. Centralines provides estimated timeframes for customers for both connections upon receipt of a connection. Centralines will always endeavour to provide timely and detailed information throughout the process.

Common delays could include long lead times for items required for the connection, e.g., distribution transformers. Other delays may be due to the complexity of the connection request and the requirement to consider upstream network capacity constraints.

In the event of a significant external event such as the recent Cyclone Gabrielle, Centralines provides updates to its customers through their website and directly to the customer to provide updates on any potential delays or impact for their connection project.

9.6 Determination Reference Mapping Table

Section 9 Reference	Determination Reference
9.1 Introduction to this Section 9.2 Achieving the Objectives of the Plan	16.1
9.3 Organisation Structure, Process for Authorisation and Business Capabilities	16.2
9.4 Customer Service Overview	17.1, 17.2, 17.3,17.4

Table 9-2: Determination Reference Mapping Table

SECTION 10 //// TEKAU

SCHEDULES

CENTRALINES
LIMITED

CONTENTS

11a: Report on Forecast Capital Expenditure

This schedule requires a breakdown of forecast expenditure on assets for the current disclosure year and a 10 year planning period. The forecasts should be consistent with the supporting information set out in the AMP. The forecast is to be expressed in both constant price and nominal dollar terms. Also required is a forecast of the value of commissioned assets (i.e., the value of RAB additions)

EDBs must provide explanatory comment on the difference between constant price and nominal dollar forecasts of expenditure on assets in Schedule 14a (Mandatory Explanatory Notes). EDBs must express the information in this schedule (11a) as a specific value rather than ranges. Any supporting information about these values may be disclosed in Schedule 15 (Voluntary Explanatory Notes).

This information is not part of audited disclosure information.

11a(i): Expenditure on Assets Forecast		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
for year ended		31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27	31 Mar 28	31 Mar 29	31 Mar 30	31 Mar 31	31 Mar 32	31 Mar 33	31 Mar 34
		$000 (in nominal dollars)										
Consumer connection		1,900	1,500	1,570	1,601	1,633	1,666	1,699	1,733	1,767	1,803	1,839
System growth		1,210	4,675	1,240	213	-	44	419	427	436	445	454
Asset replacement and renewal		4,801	4,229	5,233	5,336	6,532	6,107	6,795	6,931	7,659	7,812	7,969
Asset relocations		61	-	-	-	-	-	-	-	-	-	-
Reliability, safety and environment:												
Quality of supply		-	105	733	1,121	-	-	3,398	3,466	-	-	-
Legislative and regulatory		-	-	-	-	-	-	-	-	-	-	-
Other reliability, safety and environment		1,049	935	738	1,873	278	283	289	295	300	306	313
Total reliability, safety and environment		**1,049**	**1,040**	**1,471**	**2,994**	**278**	**283**	**3,687**	**3,760**	**300**	**306**	**313**
Expenditure on network assets		**9,021**	**11,444**	**9,514**	**10,144**	**8,442**	**8,100**	**12,600**	**12,852**	**10,163**	**10,366**	**10,574**
Expenditure on non-network assets		900	1,756	564	693	536	749	781	811	845	879	919
Expenditure on assets		**9,921**	**13,200**	**10,078**	**10,837**	**8,978**	**8,850**	**13,381**	**13,663**	**11,008**	**11,245**	**11,493**
plus	Cost of financing	35	175	317	-	-	-	-	200	-	-	-
less	Value of capital contributions	889	1,000	1,047	1,067	1,089	1,110	1,133	1,155	1,178	1,202	1,226
plus	Value of vested assets	-	-	-	-	-	-	-	-	-	-	-
Capital expenditure forecast		**9,067**	**12,375**	**9,349**	**9,770**	**7,889**	**7,739**	**12,249**	**12,708**	**9,830**	**10,043**	**10,267**
Assets commissioned												
		$000 (in constant prices)										
Consumer connection		1,500	1,462	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
System growth		1,210	4,556	1,185	200	-	40	370	370	370	370	370
Asset replacement and renewal		4,801	4,121	5,000	5,000	6,000	5,500	6,000	6,000	6,500	6,500	6,500
Asset relocations		61	-	-	-	-	-	-	-	-	-	-
Reliability, safety and environment:												
Quality of supply		-	102	700	1,050	-	-	3,000	3,000	-	-	-
Legislative and regulatory		-	-	-	-	-	-	-	-	-	-	-
Other reliability, safety and environment		1,049	911	705	1,755	255	255	255	255	255	255	255
Total reliability, safety and environment		**1,049**	**1,014**	**1,405**	**2,805**	**255**	**255**	**3,255**	**3,255**	**255**	**255**	**255**
Expenditure on network assets		**8,621**	**11,153**	**9,090**	**9,505**	**7,755**	**7,295**	**11,125**	**11,125**	**8,625**	**8,625**	**8,625**
Non-network assets		900	1,711	539	649	492	675	690	702	717	731	750
Expenditure on assets		**9,521**	**12,864**	**9,629**	**10,154**	**8,247**	**7,970**	**11,815**	**11,827**	**9,342**	**9,356**	**9,375**
Subcomponents of expenditure on assets (where known)												
Energy efficiency and demand side management, reduction of energy losses		-	-	-	-	-	-	-	-	-	-	-
Overhead to underground conversion		-	-	-	-	-	-	-	-	-	-	-
Research and development		-	-	-	-	-	-	-	-	-	-	-

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
for year ended	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27	31 Mar 28	31 Mar 29	31 Mar 30	31 Mar 31	31 Mar 32	31 Mar 33	31 Mar 34
Difference between nominal and constant price forecasts	$000										
Consumer connection	400	38	70	101	133	166	199	233	267	303	339
System growth	-	119	55	13	-	4	49	57	66	75	84
Asset replacement and renewal	-	108	233	336	532	607	795	931	1,159	1,312	1,469
Asset relocations	-	-	-	-	-	-	-	-	-	-	-
Reliability, safety and environment:											
Quality of supply	-	3	33	71	-	-	398	466	-	-	-
Legislative and regulatory	-	-	-	-	-	-	-	-	-	-	-
Other reliability, safety and environment	-	24	33	118	23	28	34	40	45	51	58
Total reliability, safety and environment	**-**	**26**	**66**	**189**	**23**	**28**	**432**	**505**	**45**	**51**	**58**
Expenditure on network assets	**400**	**291**	**424**	**639**	**687**	**805**	**1,475**	**1,727**	**1,538**	**1,741**	**1,949**
Expenditure on non-network assets	-	45	25	44	44	74	91	109	128	148	169
Expenditure on assets	**400**	**335.85**	**449**	**683**	**731**	**880**	**1,566**	**1,836**	**1,666**	**1,889**	**2,118**

11a(ii): Consumer Connection

	Current Year	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27	31 Mar 28	31 Mar 29
Consumer types defined by EDB*	$000 (in constant prices)					
All Customers	1,500	1,462	1,500	1,500	1,500	1,500
Consumer connection expenditure	**1,500**	**1,462**	**1,500**	**1,500**	**1,500**	**1,500**
less Capital contributions funding consumer connection	889	975	1,000	1,000	1,000	1,000
Consumer connection less capital contributions	**611**	**487**	**500**	**500**	**500**	**500**

11a(iii): System Growth

Sub-transmission						
Zone substations	1,035	2,972				
Distribution and LV lines		707	600	200		40
Distribution and LV cables		195	285			
Distribution substations and transformers	95	390	200			
Distribution switchgear	80	292	100			
Other network assets					-	
System growth expenditure	**1,210**	**4,556**	**1,185**	**200**	**-**	**40**
less Capital contributions funding system growth						
System growth less capital contributions	**1,210**	**4,556**	**1,185**	**200**	**-**	**40**

11a(iv): Asset Replacement and Renewal

Subtransmission		2,368		600	1,000	500
Zone substations			200			
Distribution and LV lines	4,801	1,188	4,300	4,000	5,000	5,000
Distribution and LV cables		244	300	200		
Distribution substations and transformers		146	100	200		
Distribution switchgear		175	100			
Other network assets						
Asset replacement and renewal expenditure	**4,801**	**4,121**	**5,000**	**5,000**	**6,000**	**5,500**
less Capital contributions funding asset replacement and renewal						
Asset replacement and renewal less capital contributions	**4,801**	**4,121**	**5,000**	**5,000**	**6,000**	**5,500**

11a(v):Asset Relocations

	for year end	Current Year CY 31 Mar 24	CY+1 31 Mar 25	CY+2 31 Mar 26	CY+3 31 Mar 27	CY+4 31 Mar 28	CY+5 31 Mar 29
	Project or programme*	$000 (in constant prices)					
	All other asset relocations projects or programmes	61					
	Asset relocations expenditure	**61**	**-**	**-**	**-**	**-**	**-**
less	Capital contributions funding asset relocations						
	Asset relocations less capital contributions	**61**	**-**	**-**	**-**	**-**	**-**

11a(vi):Quality of Supply

	Project or programme*						
		-	-	-	-	-	-
	All other quality of supply projects or programmes	-	102	700	1,050	-	-
	Quality of supply expenditure	**-**	**102**	**700**	**1,050**	**-**	**-**
less	Capital contributions funding quality of supply						
	Quality of supply less capital contributions	**-**	**102**	**700**	**1,050**	**-**	**-**

11a(vii): Legislative and Regulatory

	Project or programme*						
		-	-	-	-	-	-
	All other legislative and regulatory projects or programmes	-	-	-	-	-	-
	Legislative and regulatory expenditure	**-**	**-**	**-**	**-**	**-**	**-**
less	Capital contributions funding legislative and regulatory	-	-	-	-	-	-
	Legislative and regulatory less capital contributions	**-**	**-**	**-**	**-**	**-**	**-**

11a(viii): Other Reliability, Safety and Environment

	Project or programme*						
		-	-	-	-	-	-
	All other reliability, safety and environment projects or programmes	1,049	911	705	1,755	255	255
	Other reliability, safety and environment expenditure	**1,049**	**911**	**705**	**1,755**	**255**	**255**
less	Capital contributions funding other reliability, safety and environment						
	Other reliability, safety and environment less capital contributions	**1,049**	**911**	**705**	**1,755**	**255**	**255**

11a(ix): Non-Network Assets

Routine expenditure	for year end	Current Year CY 31 Mar 24	CY+1 31 Mar 25	CY+2 31 Mar 26	CY+3 31 Mar 27	CY+4 31 Mar 28	CY+5 31 Mar 29
*Project or programme**		$000 (in constant prices)					
Motor Vehicles		278	670	454	564	407	590
Plant, Equipment and Tools		361	34	70	70	70	70
Office Furniture and Equipment		19	33	15	15	15	15
Land and Buildings		242	975				
All other routine expenditure projects or programmes							
Routine expenditure		**900**	**1,711**	**539**	**649**	**492**	**675**
Atypical expenditure							
*Project or programme**							
		-	-	-	-	-	-
All other atypical projects or programmes							
Atypical expenditure		**-**	**-**	**-**	**-**	**-**	**-**
Expenditure on non-network assets		**900**	**1,711**	**539**	**649**	**492**	**675**

11b: Report on Forecast Operational Expenditure

This schedule requires a breakdown of forecast operational expenditure for the disclosure year and a 10 year planning period. The forecasts should be consistent with the supporting information set out in the AMP. The forecast is to be expressed in both constant price and nominal dollar terms.

EDBs must provide explanatory comment on the difference between constant price and nominal dollar operational expenditure forecasts in Schedule 14a (Mandatory Explanatory Notes). EDBs must express the information in this schedule (11b) as a specific value rather than ranges. If EDBs wish to provide any supporting information about these values, this may be disclosed in Schedule 15 (Voluntary Explanatory Notes).

This information is not part of audited disclosure information.

for year ended	*Current Year CY* 31 Mar 24	*CY+1* 31 Mar 25	*CY+2* 31 Mar 26	*CY+3* 31 Mar 27	*CY+4* 31 Mar 28	*CY+5* 31 Mar 29	*CY+6* 31 Mar 30	*CY+7* 31 Mar 31	*CY+8* 31 Mar 32	*CY+9* 31 Mar 33	*CY+10* 31 Mar 34
Operational Expenditure Forecast	**$000 (in nominal dollars)**										
Service interruptions and emergencies	548	500	463	472	481	491	501	511	521	531	542
Vegetation management	632	792	836	853	870	887	905	923	941	960	980
Routine and corrective maintenance and inspection	87	84	221	225	230	234	239	244	249	254	259
Asset replacement and renewal	771	1,627	933	951	970	989	1,009	1,029	1,050	1,071	1,092
Network OpEx	**2,038**	**3,003**	**2,452**	**2,501**	**2,551**	**2,602**	**2,654**	**2,707**	**2,761**	**2,816**	**2,872**
System operations and network support	333	341	357	364	371	379	386	394	402	410	418
Business support	3,832	3,841	4,020	4,099	4,181	4,265	4,350	4,437	4,526	4,616	4,709
Non-network OpEx	**4,165**	**4,182**	**4,377**	**4,463**	**4,552**	**4,644**	**4,736**	**4,831**	**4,928**	**5,026**	**5,127**
Operational expenditure	**6,203**	**7,185**	**6,830**	**6,964**	**7,103**	**7,245**	**7,390**	**7,538**	**7,689**	**7,842**	**7,999**
	$000 (in constant prices)										
Service interruptions and emergencies	548	487	442	442	442	442	442	442	442	442	442
Vegetation management	632	772	799	799	799	799	799	799	799	799	799
Routine and corrective maintenance and inspection	87	82	211	211	211	211	211	211	211	211	211
Asset replacement and renewal	771	1,586	891	891	891	891	891	891	891	891	891
Network OpEx	**2,038**	**2,927**	**2,343**	**2,343**	**2,343**	**2,343**	**2,343**	**2,343**	**2,343**	**2,343**	**2,343**
System operations and network support	333	332	341	341	341	341	341	341	341	341	341
Business support	3,832	3,743	3,841	3,841	3,841	3,841	3,841	3,841	3,841	3,841	3,841
Non-network OpEx	**4,165**	**4,076**	**4,182**	**4,182**	**4,182**	**4,182**	**4,182**	**4,182**	**4,182**	**4,182**	**4,182**
Operational expenditure	**6,203**	**7,002**	**6,525**	**6,525**	**6,525**	**6,525**	**6,525**	**6,525**	**6,525**	**6,525**	**6,525**
Subcomponents of operational expenditure (where known)											
Energy efficiency and demand side management, reduction of energy losses	-	-	-	-	-	-	-	-	-	-	-
Direct billing*	-	-	-	-	-	-	-	-	-	-	-
Research and Development	-	-	-	-	-	-	-	-	-	-	-
Insurance	338	370	387	395	403	411	419	427	436	445	454
Cybersecurity (Commission only)	-	-	-	-	-	-	-	-	-	-	-
Difference between nominal and real forecasts	**$000**										
Service interruptions and emergencies	-	13	21	30	39	49	59	69	79	89	100
Vegetation management	-	20	37	54	71	88	106	124	142	161	181
Routine and corrective maintenance and inspection	-	2	10	14	19	23	28	33	38	43	48
Asset replacement and renewal	-	41	42	60	79	98	118	138	159	180	201
Network OpEx	**-**	**76**	**109**	**158**	**208**	**259**	**311**	**364**	**418**	**473**	**529**
System operations and network support	-	9	16	23	30	38	45	53	61	69	77
Business support	-	98	179	258	340	424	509	596	685	775	868
Non-network OpEx	**-**	**106**	**195**	**281**	**370**	**462**	**554**	**649**	**746**	**844**	**945**
Operational expenditure	**-**	**183**	**305**	**439**	**578**	**720**	**865**	**1,013**	**1,164**	**1,317**	**1,474**

Direct billing expenditure by suppliers that direct bill the majority of their consumers

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12a: Report on Asset Condition

This schedule requires a breakdown of asset condition by asset class as at the start of the forecast year. The data accuracy assessment relates to the percentage values disclosed in the asset condition columns. Also required is a forecast of the percentage of units to be replaced in the next 5 years. All information should be consistent with the information provided in the AMP and the expenditure on assets forecast in Schedule 11a. All units relating to cable and line assets, that are expressed in km, refer to circuit lengths.

				Asset condition at start of planning period (percentage of units by grade)							
Voltage	Asset category	Asset class	Units	H1	H2	H3	H4	H5	Grade unknown	Data accuracy (1–4)	% of asset forecast to be replaced in next 5-years
All	Overhead Line	Concrete poles / steel structure	No.	-	-	14.30%		85.70%	-	4	-
All	Overhead Line	Wood poles	No.	1.00%	3.00%	44.50%	47.50%	4.00%	-	2	1.00%
HV	Subtransmission Line	Subtransmission OH up to 66kV conductor	km	1.00%	1.00%	22.50%	22.50%	53.00%	-	3	0.50%
HV	Subtransmission Cable	Subtransmission UG up to 66kV (XLPE)	km	-	-	2.50%	82.50%	15.00%	-	3	0.50%
HV	Zone substation Buildings	Zone substations up to 66kV	No.	-	3.00%	22.50%	22.50%	52.00%	-	3	5.00%
HV	Zone substation switchgear	22/33kV CB (Outdoor)	No.	2.00%	11.00%	19.00%	21.00%	47.00%	-	2	2.00%
HV	Zone substation switchgear	33kV Switch (Pole Mounted)	No.	-	5.00%	15.00%	70.00%	10.00%	-	4	-
HV	Zone substation switchgear	3.3/6.6/11/22kV CB (ground mounted)	No.	-	5.00%	14.81%	37.04%	43.15%	-	3	-
HV	Zone substation switchgear	3.3/6.6/11/22kV CB (pole mounted)	No.	2.65%	10.03%	19.03%	31.84%	36.45%	-	3	3.00%
HV	Zone Substation Transformer	Zone Substation Transformers	No.	0.48%	2.40%	5.29%	25.96%	65.87%	-	3	2.00%
HV	Distribution Line	Distribution OH Open Wire Conductor	km	-			50.00%	50.00%	-	3	
HV	Distribution Cable	Distribution UG XLPE or PVC	km	-	-	-	-	100.00%	-	2	-
HV	Distribution Cable	Distribution UG PILC	km	0.50%	2.00%	42.75%	44.75%	10.00%	-	2	1.00%
HV	Distribution switchgear	3.3/6.6/11/22kV CB (pole mounted) - reclosers and sectionalisers	No.	0.50%	5.50%	23.50%	23.50%	47.00%	-	2	0.50%
HV	Distribution switchgear	3.3/6.6/11/22kV Switches and fuses (pole mounted)	No.	-	-	13.50%	13.50%	73.00%	-	2	0.50%
HV	Distribution switchgear	3.3/6.6/11/22kV Switch (ground mounted) - except RMU	No.	0.15%	-	-	-	99.85%	-	2	0.50%
HV	Distribution switchgear	3.3/6.6/11/22kV RMU	No.	-	-	16.67%	16.67%	66.67%	-	2	5.00%
HV	Distribution Transformer	Pole Mounted Transformer	No.	-	-	-	-	100.00%	-	2	-
HV	Distribution Transformer	Ground Mounted Transformer	No.	-	-	-	-	100.00%	-	4	-
HV	Distribution Transformer	Voltage regulators	No.	-	-	-	-	100.00%	-	4	-
HV	Distribution Substations	Ground Mounted Substation Housing	No.	-	-	50.00%	50.00%	-	-	1	-
LV	LV Line	LV OH Conductor	km	0.50%	2.00%	42.75%	44.75%	10.00%	-	2	1.00%
LV	LV Cable	LV UG Cable	km	0.50%	5.50%	23.50%	23.50%	47.00%	-	2	0.50%
LV	LV Streetlighting	LV OH/UG Streetlight circuit	km	-	-	13.50%	13.50%	73.00%	-	2	0.50%
LV	Connections	OH/UG consumer service connections	No.	0.15%	-	-	-	99.85%	-	2	0.50%
All	Protection	Protection relays (electromechanical, solid state and numeric)	No.	-	-	16.67%	16.67%	66.67%	-	2	5.00%
All	SCADA and communications	SCADA and communications equipment operating as a single system	Lot	-	-	-	-	100.00%	-	2	-
All	Capacitor Banks	Capacitors including controls	No.	-	-	-	-	100.00%	-	4	-
All	Load Control	Centralised plant	Lot	-	-	-	-	100.00%	-	4	-
All	Load Control	Relays	No.	-	-	50.00%	50.00%	-	-	1	-

12b: Report on Forecast Capacity

This schedule requires a breakdown of current and forecast capacity and utilisation for each zone substation and current distribution transformer capacity. The data provided should be consistent with the information provided in the AMP. Information provided in this table should relate to the operation of the network in its normal steady state configuration.

12b(i): System Growth - Zone Substations

Existing Zone Substations	Current Peak Load (MVA)	Installed Firm Capacity (MVA)	Security of Supply Classification (type)	Transfer Capacity (MVA)	Utilisation of Installed Firm Capacity %			Installed Firm Capacity +5-years (MVA)	Utilisation of Installed Firm Capacity + 5yrs %	Installed Firm Capacity Constraint +5-years (cause)	Explanation
Waipukurau	10	10	N-1		95%			10	95%	Transformer	Permanent Offload will be used to deffer transformer investment.
Waipawa	5	8	N-1		61%			8	61%	No constraint within +5 years	
Takapau	6	8	N	2	81%			8	81%	No constraint within +5 years	Two transformer sites supplied by single 33kV line.
OngaOnga	5	-	N-1 Switched	10	-			-	-	No constraint within +5 years	Load transfer from adjacent substations available using remote switches.
Wilder Road	1	-	N-1 Switched	2	-			-	-	No constraint within +5 years	Load transfer from adjacent substations available using remote switches.

[1] *Extend forecast capacity table as necessary to disclose all capacity by each zone substation*

12c: Report on Forecast Network Demand

This schedule requires a forecast of new connections (by consumer type), peak demand and energy volumes for the disclosure year and a 5 year planning period. The forecasts should be consistent with the supporting information set out in the AMP as well as the assumptions used in developing the expenditure forecasts in Schedule 11a and Schedule 11b and the capacity and utilisation forecasts in Schedule 12b.

12c(i): Consumer Connections

Number of ICPs connected in year by consumer type

	for year ended	*Current Year CY* 31 Mar 24	*CY+1* 31 Mar 25	*CY+2* 31 Mar 26	*CY+3* 31 Mar 27	*CY+4* 31 Mar 28	*CY+5* 31 Mar 29
Consumer types defined by EDB*		Number of connections		Number of connections			
Residential		112	90	92	94	96	97
Commercial		9	11	12	13	14	14
Connections total		**121**	**101**	**104**	**107**	**110**	**111**

***include additional rows if needed**

Distributed generation

Number of connections		49	25	26	27	28	29
Installed connection capacity of distributed generation (MVA)		1	1	1	1	1	1

12c(ii) System Demand

Maximum coincident system demand (MW)	for year ended	Number of connections		Number of connections			
GXP demand		21	23	24	26	28	29
plus Distributed generation output at HV and above							
Maximum coincident system demand		**21**	**23**	**24**	**26**	**28**	**29**
less Net transfers to (from) other EDBs at HV and above							
Demand on system for supply to consumers' connection points		**21**	**23**	**24**	**26**	**28**	**29**
Electricity volumes carried (GWh)							
Electricity supplied from GXPs		117	125	130	132	134	136
less Electricity exports to GXPs		-	-	-	-	-	-
plus Electricity supplied from distributed generation		1	1	1	1	1	1
less Net electricity supplied to (from) other EDBs		-	-	-	-	-	-
Electricity entering system for supply to ICPs		**118**	**126**	**131**	**133**	**135**	**137**
less Total energy delivered to ICPs		111	120	124	126	128	130
Losses		**7**	**6**	**7**	**7**	**7**	**7**
Load factor		**64%**	**63%**	**63%**	**59%**	**55%**	**55%**
Loss ratio		**5.9%**	**5.0%**	**5.0%**	**5.0%**	**5.0%**	**5.0%**

12d: Report Forecast Interruptions and Duration

This schedule requires a forecast of SAIFI and SAIDI for disclosure and a 5 year planning period. The forecasts should be consistent with the supporting information set out in the AMP as well as the assumed impact of planned and unplanned SAIFI and SAIDI on the expenditures forecast provided in Schedule 11a and Schedule 11b.

	Current Year *CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
for year ended	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**	**31 Mar 28**	**31 Mar 29**
SAIDI						
Class B (planned interruptions on the network)	117.0	85.5	85.5	85.5	85.5	85.5
Class C (unplanned interruptions on the network)	151.6	144.3	144.3	144.3	144.3	144.3
SAIFI						
Class B (planned interruptions on the network)	0.47	0.39	0.39	0.39	0.39	0.39
Class C (unplanned interruptions on the network)	2.88	2.09	2.09	2.09	2.09	2.09

13: Report on Asset Management Maturity

This schedule requires information on the EDB'S self-assessment of the maturity of its asset management practices.

Question No.	Function	Question	Score	Evidence—Summary	Why	Who	Record/documented Information	Maturity narrative for assessed score
3	Asset management policy	To what extent has an asset management policy been documented, authorised and communicated?	2	Centralines has an Asset Management Policy which is detailed in controlled document CL-AMS0001. The Asset Management Policy has been approved by the Centralines General Manager, Chief Executive and Board of Directors and is reviewed every two years to enure it aligns with Centralines corporate objectives.	Widely used AM practice standards require an organisation to document, authorise and communicate its asset management policy (e.g. as required in PAS 55 para 4.2 i). A key pre-requisite of any robust policy is that the organisation's top management must be seen to endorse and fully support it. Also vital to the effective implementation of the policy, is to tell the appropriate people of its content and their obligations under it. Where an organisation outsources some of its asset-related activities, then these people and their organisations must equally be made aware of the policy's content. Also, there may be other stakeholders, such as regulatory authorities and shareholders who should be made aware of it.	Top management. The management team that has overall responsibility for asset management.	The organisation's asset management policy, its organisational strategic plan, documents indicating how the asset management policy was based upon the needs of the organisation and evidence of communication.	The organisation has an asset management policy, which has been authorised by top management, but it has had limited circulation. It may be in use to influence development of strategy and planning but its effect is limited.
10	Asset management strategy	What has the organisation done to ensure that its asset management strategy is consistent with other appropriate organisational policies and strategies, and the needs of stakeholders?	2	Centralines is in the process of implementing the strategies developed at Unison tailored for Centralines. Some of the linkages between the long-term asset management strategy and other organisational policies, strategies and stakeholder requirements are defined. The work is fairly well advanced but still incomplete.	In setting an organisation's asset management strategy, it is important that it is consistent with any other policies and strategies that the organisation has and has taken into account the requirements of relevant stakeholders. This question examines to what extent the asset management strategy is consistent with other organisational policies and strategies (e.g. as required by PAS 55 para 4.3.1b) and has taken account of stakeholder requirements as required by PAS 55 para 4.3.1 c). Generally, this will take into account the same polices, strategies and stakeholder requirements as covered in drafting the asset management policy but at a greater level of detail.	Top management. The organisation's strategic planning team. The management team that has overall responsibility for asset management.	The organisation's asset management strategy document and other related organisational policies and strategies. Other than the organisation's strategic plan, these could include those relating to health and safety, environmental, etc. Results of stakeholder consultation.	Some of the linkages between the long-term asset management strategy and other organisational policies, strategies and stakeholder requirements are defined but the work is fairly well advanced but still incomplete.
11	Asset management strategy	In what way does the organisation's asset management strategy take account of the lifecycle of the assets, asset types and asset systems over which the organisation has stewardship?	2	As part of the Management Services Agreement with Unison, Centralines will be implementing the strategies introduced at Unison at a level appropriate to Centralines. The long-term asset management strategy takes account of the lifecycle of some, but not all, of its assets, asset types and asset systems.	Good asset stewardship is the hallmark of an organisation compliant with widely used AM standards. A key component of this is the need to take account of the lifecycle of the assets, asset types and asset systems. (For example, this requirement is recognised in 4.3.1d of PAS 55). This question explores what an organisation has done to take lifecycle into account in its asset management strategy.	Top management. People in the organisation with expert knowledge of the assets, asset types, asset systems and their associated life-cycles. The management team that has overall responsibility for asset management. Those responsible for developing and adopting methods and processes used in asset management.	The organisation's documented asset management strategy and supporting working documents.	The long-term asset management strategy takes account of the lifecycle of some, but not all, of its assets, asset types and asset systems.
26	Asset management plan(s)	How does the organisation establish and document its asset management plan(s) across the life cycle activities of its assets and asset systems?	3	Centralines produces a Regulatory Asset Management Plan (RAMP) document that contains an overview of its ten-year asset management plans for external stakeholders. Asset management plans for network developments and asset renewals are registered within an internal database and include a consistent risk assessment on all issues, an overview of project options, recommended timing and estimated cost. The capital plan is updated six-monthly. AMS-1001 Asset Management Planning Framework specifies the key asset planning standards, AMS-0003 AMS Risk Management Guidelines specifies how risk management is to be utilised in asset planning.	The asset management strategy needs to be translated into practical plan(s) so that all parties know how the objectives will be achieved. The development of plan(s) will need to identify the specific tasks and activities required to optimise costs, risks and performance of the assets and/or asset system(s), when they are to be carried out and the resources required.	The management team with overall responsibility for the asset management system. Operations, maintenance and engineering managers.	The organisation's asset management plan(s).	Asset management plan(s) are established, documented, implemented and maintained for asset systems and critical assets to achieve the asset management strategy and asset management objectives across all life cycle phases.

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Question No.	Function	Question	Score	Evidence—Summary	Why	Who	Record/documented Information	Maturity narrative for assessed score
27	Asset management plan(s)	How has the organisation communicated its plan(s) to all relevant parties to a level of detail appropriate to the receiver's role in their delivery?	2	The asset management plans at Centralines are communicated to its field services team responsible for the delivery of the plans through its Enterprise Asset Management System and other supporting software systems.	Plans will be ineffective unless they are communicated to all those, including contracted suppliers and those who undertake enabling function(s). The plan(s) needs to be communicated in a way that is relevant to those who need to use them.	The management team with overall responsibility for the asset management system. Delivery functions and suppliers.	Distribution lists for plan(s). Documents derived from plan(s) which detail the receiver's role in plan delivery. Evidence of communication.	The plan(s) are communicated to most of those responsible for delivery but there are weaknesses in identifying relevant parties resulting in incomplete or inappropriate communication. The organisation recognises improvement is needed and is working towards resolution.
29	Asset management plan(s)	How are designated responsibilities for delivery of asset plan actions documented?	3	Centralines has appropriate documentation in place defining the responsibility for delivery of Capital and Maintenance Plans. For capital projects, project scope documents are established in alignment with Centralines field services information requirements. The annual works plan which contains all work for the forthcoming financial year is issued to field services to enable programming of work and issuing to relevant teams.	The implementation of asset management plan(s) relies on (1) actions being clearly identified, (2) an owner allocated, and (3) that owner having sufficient delegated responsibility and authority to carry out the work required. It also requires alignment of actions across the organisation. This question explores how well the plan(s) set out responsibility for delivery of asset plan actions.	The management team with overall responsibility for the asset management system. Operations, maintenance and engineering managers. If appropriate, the performance management team.	The organisation's asset management plan(s). Documentation defining roles and responsibilities of individuals and organisational departments.	Asset management plan(s) consistently document responsibilities for the delivery actions and there is adequate detail to enable delivery of actions. Designated responsibility and authority for achievement of asset plan actions is appropriate.
31	Asset management plan(s)	"What has the organisation done to ensure that appropriate arrangements are made available for the efficient and cost effective implementation of the plan(s)? (Note this is about resources and enabling support)"	2	A number of tools have been developed to prioritise and schedule works, which then leads to resource requirement assessments, including identifying gaps to be filled to meet the planned programme of works. More work is required to adequately meet these gaps.	It is essential that the plan(s) are realistic and can be implemented, which requires appropriate resources to be available and enabling mechanisms in place. This question explores how well this is achieved. The plan(s) not only needs to consider the resources directly required and timescales, but also the enabling activities, including for example, training requirements, supply chain capability and procurement timescales.	The management team with overall responsibility for the asset management system. Operations, maintenance and engineering managers. If appropriate, the performance management team. If appropriate, the performance management team. Where appropriate the procurement team and service providers working on the organisation's asset-related activities.	The organisation's asset management plan(s). Documented processes and procedures for the delivery of the asset management plan.	The organisation has arrangements in place for the implementation of asset management plan(s) but the arrangements are not yet adequately efficient and/or effective. The organisation is working to resolve existing weaknesses.
33	Contingency planning	What plan(s) and procedure(s) does the organisation have for identifying and responding to incidents and emergency situations and ensuring continuity of critical asset management activities?	3	Centralines has established a crisis and emergency management framework that includes contingency planning for HILP events, network emergencies, major weather events, and other impacts to business continuity. Centralines is collaborating with regional Lifelines groups, local councils, universities, and other stakeholders to develop credible HILP event scenarios and identify assets at risk to address in asset management plans. Centralines is in the process of aligning its crisis management framework with CIMS. Regular crisis event simulations are undertaken internally, and Centralines will participate in upcoming regional Lifelines exercises.	Widely used AM practice standards require that an organisation has a plan(s) to identify and respond to emergency situations. Emergency plan(s) should outline the actions to be taken to respond to specified emergency situations and ensure continuity of critical asset management activities including the communication to, and involvement of, external agencies. This question assesses if, and how well, these plan(s) triggered, implemented and resolved in the event of an incident. The plan(s) should be appropriate to the level of risk as determined by the organisation's risk assessment methodology. It is also a requirement that relevant personnel are competent and trained.	The manager with responsibility for developing emergency plan(s). The organisation's risk assessment team. People with designated duties within the plan(s) and procedure(s) for dealing with incidents and emergency situations.	The organisation's plan(s) and procedure(s) for dealing with emergencies. The organisation's risk assessments and risk registers.	Appropriate emergency plan(s) and procedure(s) are in place to respond to credible incidents and manage continuity of critical asset management activities consistent with policies and asset management objectives. Training and external agency alignment is in place.

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37	Structure, authority and responsibilities	What has the organisation done to appoint member(s) of its management team to be responsible for ensuring that the organisation's assets deliver the requirements of the asset management strategy, objectives and plan(s)?	3	Centralines has a Management Services Agreement with Unison. The Centralines General Manager is responsible to ensure that assets deliver the requirements of the asset management strategy, objectives and plans. Further support is provided through Unison's Networks and Operations Team lead by the General Manager Networks and Operations who is a member of the Executive Management Team.	In order to ensure that the organisation's assets and asset systems deliver the requirements of the asset management policy, strategy and objectives responsibilities need to be allocated to appropriate people who have the necessary authority to fulfil their responsibilities. (This question, relates to the organisation's assets, e.g. para b), s 4.4.1 of PAS 55, making it therefore distinct from the requirement contained in para a), s 4.4.1 of PAS 55).	Top management. People with management responsibility for the delivery of asset management policy, strategy, objectives and plan(s). People working on asset-related activities.	Evidence that managers with responsibility for the delivery of asset management policy, strategy, objectives and plan(s) have been appointed and have assumed their responsibilities. Evidence may include the organisation's documents relating to its asset management system, organisational charts, job descriptions of post-holders, annual targets/objectives and personal development plan(s) of post-holders as appropriate.	The appointed person or persons have full responsibility for ensuring that the organisation's assets deliver the requirements of the asset management strategy, objectives and plan(s). They have been given the necessary authority to achieve this.
40	Structure, authority and responsibilities	What evidence can the organisation's top management provide to demonstrate that sufficient resources are available for asset management?	2	Centralines uses a basic scheduling tool to evaluate and plan works over time, which links to resource availability and requirements. When work is out-sourced to Unison contracting a software-based scheduling tool is used to evaluate and plan works over time, which links to resource availability and requirements. The tool enables an evaluation of resource gaps, so that priorities can be re-evaluated or additional resources sought.	Optimal asset management requires top management to ensure sufficient resources are available. In this context the term 'resources' includes manpower, materials, funding and service provider support.	Top management. The management team that has overall responsibility for asset management. Risk management team. The organisation's managers involved in day-to-day supervision of asset-related activities, such as frontline managers, engineers, foremen and chargehands as appropriate.	Evidence demonstrating that asset management plan(s) and/or the process(es) for asset management plan implementation consider the provision of adequate resources in both the short and long term. Resources include funding, materials, equipment, services provided by third parties and personnel (internal and service providers) with appropriate skills competencies and knowledge.	A process exists for determining what resources are required for its asset management activities and in most cases these are available but in some instances resources remain insufficient.
42	Structure, authority and responsibilities	To what degree does the organisation's top management communicate the importance of meeting its asset management requirements?	2	The importance of meeting asset management requirements is communicated to select parts of the organisation. Centralines' business plan and RAMP approved by Directors specifies asset management goals and objectives. The plan is annually presented to the business by the Unison Group Chief Executive. The asset management objectives are documented in the asset management strategy and performance against the objectives are reported monthly to some stakeholders.	Widely used AM practice standards require an organisation to communicate the importance of meeting its asset management requirements such that personnel fully understand, take ownership of, and are fully engaged in the delivery of the asset management requirements (e.g. PAS 55 s 4.4.1 g).	Top management. The management team that has overall responsibility for asset management. People involved in the delivery of the asset management requirements.	Evidence of such activities as road shows, written bulletins, workshops, team talks and management walk-abouts would assist an organisation to demonstrate it is meeting this requirement of PAS 55.	Top management communicates the importance of meeting its asset management requirements but only to parts of the organisation.

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45	Outsourcing of asset management activities	Where the organisation has outsourced some of its asset management activities, how has it ensured that appropriate controls are in place to ensure the compliant delivery of its organisational strategic plan, and its asset management policy and strategy?	3	Centralines outsources the majority of its asset management activities to Unison under a Management Services Agreement apart from project delivery. Project delivery is predominantly undertaken by Centralines staff. Centralines ""outsources"" some network projects to external contractors. Regular auditing of work takes place. There is some collaboration over scheduling of works in order to deliver the planned programme.	Where an organisation chooses to outsource some of its asset management activities, the organisation must ensure that these outsourced process(es) are under appropriate control to ensure that all the requirements of widely used AM standards (e.g. PAS 55) are in place, and the asset management policy, strategy objectives and plan(s) are delivered. This includes ensuring capabilities and resources across a time span aligned to life cycle management. The organisation must put arrangements in place to control the outsourced activities, whether it be to external providers or to other in-house departments. This question explores what the organisation does in this regard.	Top management. The management team that has overall responsibility for asset management. The manager(s) responsible for the monitoring and management of the outsourced activities. People involved with the procurement of outsourced activities. The people within the organisations that are performing the outsourced activities. The people impacted by the outsourced activity.	The organisation's arrangements that detail the compliance required of the outsourced activities. For example, this could form part of a contract or service level agreement between the organisation and the suppliers of its outsourced activities. Evidence that the organisation has demonstrated to itself that it has assurance of compliance of outsourced activities.	Evidence exists to demonstrate that outsourced activities are appropriately controlled to provide for the compliant delivery of the organisational strategic plan, asset management policy and strategy, and that these controls are integrated into the asset management system.
48	Training, awareness and competence	How does the organisation develop plan(s) for the human resources required to undertake asset management activities - including the development and delivery of asset management strategy, process(es), objectives and plan(s)?	3	Centralines' service provider has established a technical competency framework that covers all asset management roles and considers qualifications, work and industry experience, industry recognition, asset management role competencies (aligned with Institute of Asset Management competency framework) and role specific technical competencies. All staff are assessed against requirements and a development plan is established based upon this.	There is a need for an organisation to demonstrate that it has considered what resources are required to develop and implement its asset management system. There is also a need for the organisation to demonstrate that it has assessed what development plan(s) are required to provide its human resources with the skills and competencies to develop and implement its asset management systems. The timescales over which the plan(s) are relevant should be commensurate with the planning horizons within the asset management strategy considers, e.g. if the asset management strategy considers 5, 10 and 15 year time scales then the human resources development plan(s) should align with these. Resources include both 'in house' and external resources who undertake asset management activities.	Senior management responsible for agreement of plan(s). Managers responsible for developing asset management strategy and plan(s). Managers with responsibility for development and recruitment of staff (including HR functions). Staff responsible for training. Procurement officers. Contracted service providers.	Evidence of analysis of future work load plan(s) in terms of human resources. Document(s) containing analysis of the organisation's own direct resources and contractors resource capability over suitable timescales. Evidence, such as minutes of meetings, that suitable management forums are monitoring human resource development plan(s). Training plan(s), personal development plan(s), contract and service level agreements.	The organisation can demonstrate that plan(s) are in place and effective in matching competencies and capabilities to the asset management system including the plan for both internal and contracted activities. Plans are reviewed integral to asset management system process(es).
49	Training, awareness and competence	How does the organisation identify competency requirements and then plan, provide and record the training necessary to achieve the competencies?	3	Competency requirements are defined in the Network Competency Standard (SD0001) and the necessary training and refreshers are undertaken and tracked within controlled information systems. Competency requirements associated with new equipment and technical change are identified as part of NK1004-New Technology and Product Evaluation Procedure.	Widely used AM standards require that organisations to undertake a systematic identification of the asset management awareness and competencies required at each level and function within the organisation. Once identified the training required to provide the necessary competencies should be planned for delivery in a timely and systematic way. Any training provided must be recorded and maintained in a suitable format. Where an organisation has contracted service providers in place then it should have a means to demonstrate that this requirement is being met for their employees. (e.g. PAS 55 refers to frameworks suitable for identifying competency requirements).	Senior management responsible for agreement of plan(s). Managers responsible for developing asset management strategy and plan(s). Managers with responsibility for development and recruitment of staff (including HR functions). Staff responsible for training. Procurement officers. Contracted service providers.	Evidence of an established and applied competency requirements assessment process and plan(s) in place to deliver the required training. Evidence that the training programme is part of a wider, co-ordinated asset management activities training and competency programme. Evidence that training activities are recorded and that records are readily available (for both direct and contracted service provider staff) e.g., via organisation wide information system or local records database.	Competency requirements are in place and aligned with asset management plan(s). Plans are in place and effective in providing the training necessary to achieve the competencies. A structured means of recording the competencies achieved is in place.

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50	Training, awareness and competence	How does the organisation ensure that persons under its direct control undertaking asset management related activities have an appropriate level of competence in terms of education, training or experience?	3	Centralines identifies and assesses competency requirements through its technical competency framework and AMS-0009 AMS Competency Policy. Competency requirements are also defined in position descriptions and these requirements are used as part of recruitment processes. Field crew competencies are managed under SD-0001 Network Competency Standard. Evidence/records of training/refreshers is maintained within a software package called ""Vault"".	A critical success factor for the effective development and implementation of an asset management system is the competence of persons undertaking these activities. Organisations should have effective means in place for ensuring the competence of employees to carry out their designated asset management function(s). Where an organisation has contracted service providers undertaking elements of its asset management system then the organisation shall assure itself that the outsourced service provider also has suitable arrangements in place to manage the competencies of its employees. The organisation should ensure that the individual and corporate competencies it requires are in place and actively monitor, develop and maintain an appropriate balance of these competencies.	Managers, supervisors, persons responsible for developing training programmes. Staff responsible for procurement and service agreements. HR staff and those responsible for recruitment.	Evidence of a competency assessment framework that aligns with established frameworks such as the asset management Competencies Requirements Framework (Version 2.0); National Occupational Standards for Management and Leadership; UK Standard for Professional Engineering Competence, Engineering Council, 2005.	Competency requirements are identified and assessed for all persons carrying out asset management related activities - internal and contracted. Requirements are reviewed and staff reassessed at appropriate intervals aligned to asset management requirements.
53	Communica-tion, participation and consultation	How does the organisation ensure that pertinent asset management information is effectively communicated to and from employees and other stakeholders, including contracted service providers?	2	Given the small size of the business, communication at Centralines is generally effective at most levels of the organisation.	Widely used AM practice standards require that pertinent asset management information is effectively communicated to and from employees and other stakeholders including contracted service providers. Pertinent information refers to information required in order to effectively and efficiently comply with and deliver asset management strategy, plan(s) and objectives. This will include for example the communication of the asset management policy, asset performance information, and planning information as appropriate to contractors.	Top management and senior management representative(s), employees' representative(s), employee's trade union representative(s); contracted service provider management and employee representative(s); representative(s) from the organisation's Health, Safety and Environmental team. Key stakeholder representative(s).	Asset management policy statement prominently displayed on notice boards, intranet and internet; use of organisation's website for displaying asset performance data; evidence of formal briefings to employees, stakeholders and contracted service providers; evidence of inclusion of asset management issues in team meetings and contracted service provider contract meetings; newsletters, etc.	The organisation has determined pertinent information and relevant parties. Some effective two way communication is in place but as yet not all relevant parties are clear on their roles and responsibilities with respect to asset management information.
59	Asset Management System documentation	What documentation has the organisation established to describe the main elements of its asset management system and interactions between them?	2	Some of the main elements of the Asset Management System are documented in the Asset Management Policy, the Regulatory Asset Management Plan, Standards, and are reviewed at prescribed intervals. Gaps still exist.	Widely used AM practice standards require an organisation maintain up to date documentation that ensures that its asset management systems (i.e. the systems the organisation has in place to meet the standards) can be understood, communicated and operated (e.g. s4.5 of PAS 55 requires the maintenance of up to date documentation of the asset management system requirements specified throughout s4 of PAS 55).	The management team that has overall responsibility for asset management. Managers engaged in asset management activities.	The documented information describing the main elements of the asset management system (process(es)) and their interaction.	The organisation is in the process of documenting its asset management system and has documentation in place that describes some, but not all, of the main elements of its asset management system and their interaction.

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62	Information management	What has the organisation done to determine what its asset management information system(s) should contain in order to support its asset management system?	3	Centralines has defined and documented information requirements for most of its asset management processes. As new requirements emerge the defined information requirements are augmented. A framework is in place to monitor the extent to which information requirements are currently addressed to enable planning for gaps to be closed. As part of planning for new asset information systems, a full external review of business requirements for asset information was undertaken. Asset information guide documents have been developed that set out what information is stored in which information systems for the benefit of stakeholders.	Effective asset management requires appropriate information to be available. Widely used AM standards therefore require the organisation to identify the asset management information it requires in order to support its asset management system. Some of the information required may be held by suppliers. The maintenance and development of asset management information systems is a poorly understood specialist activity that is akin to IT management but different from IT management. This group of questions provides some indications as to whether the capability is available and applied. Note: To be effective, an asset information management system requires the mobilisation of technology, people and process(es) that create, secure, make available and destroy the information required to support the asset management system.	The organisation's strategic planning team. The management team that has overall responsibility for asset management. Information management team. Operations, maintenance and engineering managers.	Details of the process the organisation has employed to determine what its asset information system should contain in order to support its asset management system. Evidence that this has been effectively implemented.	The organisation has determined what its asset information system should contain in order to support its asset management system. The requirements relate to the whole life cycle and cover information originating from both internal and external sources.
63	Information management	How does the organisation maintain its asset management information system(s) and ensure that the data held within it (them) is of the requisite quality and accuracy and is consistent?	3	Centralines service provider has established a data quality dashboard that enables stakeholders to understand the current state of data quality, as measured against defined asset information requirements. Data collection standards have been established for the key processes that result in new data being registered in information systems. Automated daily data quality checks have been implemented. Critical issues are flagged to asset information managers to address. Asset information technicians provide a final check on data entering asset information systems.	The response to the questions is progressive. A higher scale cannot be awarded without achieving the requirements of the lower scale. This question explores how the organisation ensures that information management meets widely used AM practice requirements (e.g. s 4.4.6 (a), (c) and (d) of PAS 55).	The management team that has overall responsibility for asset management. Users of the organisational information systems.	The asset management information system, together with the policies, procedure(s), improvement initiatives and audits regarding information controls.	The organisation has effective controls in place that ensure the data held is of the requisite quality and accuracy and is consistent. The controls are regularly reviewed and improved where necessary.
64	Information management	How has the organisation ensured its asset management information system is relevant to its needs?	3	There is an Asset Information Governance Group (AIGG) is responsible for ensuring asset management information systems are fit for purpose. AIGG commissioned external review of information systems which identified that the current enterprise system (ACTIVA) was becoming incompatible with its asset management strategy. As a result, a new information system solution was selected and is currently in the process of being implemented. The new system will be better integrated across business functions, offer improved user friendliness and enhanced mobility support.	Widely used AM standards need not be prescriptive about the form of the asset management information system, but simply require that the asset management information system is appropriate to the organisations needs, can be effectively used and can supply information which is consistent and of the requisite quality and accuracy.	The organisation's strategic planning team. The management team that has overall responsibility for asset management. Information management team. Users of the organisational information systems.	The documented process the organisation employs to ensure its asset management information system aligns with its asset management requirements. Minutes of information systems review meetings involving users.	The organisation's asset management information system aligns with its asset management requirements. Users can confirm that it is relevant to their needs.
69	Risk management process(es)	How has the organisation documented process(es) and/or procedure(s) for the identification and assessment of asset and asset management related risks throughout the asset life cycle?	3	Centralines has a corporate risk management framework that has been effectively implemented. AMS-0003 AMS Risk Management Guidelines translates corporate risk management requirements for use within the asset management system and documents how risk management must be applied to the various asset management processes and asset lifecycle stages, including asset criticality, asset condition risk, defect prioritisation, assessment of issues in the asset management plan, and prioritisation of the asset management improvement plan.	Risk management is an important foundation for proactive asset management. Its overall purpose is to understand the cause, effect and likelihood of adverse events occurring, to optimally manage such risks to an acceptable level, and to provide an audit trail for the management of risks. Widely used standards require the organisation to have process(es) and/or procedure(s) in place that set out how the organisation identifies and assesses asset and asset management related risks. The risks have to be considered across the four phases of the asset lifecycle (e.g. para 4.3.3 of PAS 55).	The top management team in conjunction with the organisation's senior risk management representatives. There may also be input from the organisation's Safety, Health and Environment team. Staff who carry out risk identification and assessment.	The organisation's risk management framework and/or evidence of specific process(es) and/ or procedure(s) that deal with risk control mechanisms. Evidence that the process(es) and/or procedure(s) are implemented across the business and maintained. Evidence of agendas and minutes from risk management meetings. Evidence of feedback in to process(es) and/or procedure(s) as a result of incident investigation(s). Risk registers and assessments.	Identification and assessment of asset related risk across the asset lifecycle is fully documented. The organisation can demonstrate that appropriate documented mechanisms are integrated across life cycle phases and are being consistently applied.

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79	Use and maintenance of asset risk information	How does the organisation ensure that the results of risk assessments provide input into the identification of adequate resources and training and competency needs?	2	Centralines maintains various risk registers in alignment with requirements specified in corporate risk management system documentation. Where appropriate, assessed risks may lead to new resources, training, and competency requirements. Inconsistencies do exist and are in the process of being addressed.	Widely used AM standards require that the output from risk assessments are considered and that adequate resource (including staff) and training is identified to match the requirements. It is a further requirement that the effects of the control measures are considered, as there may be implications in resources and training required to achieve other objectives.	Staff responsible for risk assessment and those responsible for developing and approving resource and training plan(s). There may also be input from the organisation's Safety, Health and Environment team.	The organisations risk management framework. The organisation's resourcing plan(s) and training and competency plan(s). The organisation should be able to demonstrate appropriate linkages between the content of resource plan(s) and training and competency plan(s) to the risk assessments and risk control measures that have been developed.	The organisation is in the process ensuring that outputs of risk assessment are included in developing requirements for resources and training. The implementation is incomplete and there are gaps and inconsistencies.
82	Legal and other requirements	What procedure does the organisation have to identify and provide access to its legal, regulatory, statutory and other asset management requirements, and how is requirements incorporated into the asset management system?	3	Centralines has a corporate legislative compliance process that identifies relevant requirements and assigns an owner to each of these to review compliance annually. FC1007 Legislative Compliance Handbook has been established to document corporate compliance requirements. An asset management objective that considers legal compliance has been established and associated performance evaluation processes track breaches. NK1004-New Technology and Product Evaluation Procedure includes a check on legal requirements before any technical change is approved. Draft Fleet Strategy documents record compliance requirements by asset class.	In order for an organisation to comply with its legal, regulatory, statutory and other asset management requirements, the organisation first needs to ensure that it knows what they are (e.g. PAS 55 specifies this in s 4.4.8). It is necessary to have systematic and auditable mechanisms in place to identify new and changing requirements. Widely used AM standards also require that requirements are incorporated into the asset management system (e.g. procedure(s) and process(es)).	Top management. The organisations regulatory team. The organisation's legal team or advisors. The management team with overall responsibility for the asset management system. The organisation's health and safety team or advisors. The organisation's policy making team.	The organisational processes and procedures for ensuring information of this type is identified, made accessible to those requiring the information and is incorporated into asset management strategy and objectives.	Evidence exists to demonstrate that the organisation's legal, regulatory, statutory and other asset management requirements are identified and kept up to date. Systematic mechanisms for identifying relevant legal and statutory requirements.
88	Life Cycle Activities	How does the organisation establish implement and maintain process(es) for the implementation of its asset management plan(s) and control of activities across the creation, acquisition or enhancement of assets. This includes design, modification, procurement, construction and commissioning activities?	3	Centralines service provider has established a range of design and construction standards and procedures to control the creation and upgrade of assets which have been adopted by Centralines. Detailed designs completed by outsourced service providers are reviewed internally prior to projects progressing. Audits are conducted on capital projects. Commissioning procedures have been developed and specialist project engineers are assigned to the commissioning of high criticality plant. Asset information capture processes are effective and error rates and timeliness issues are being controlled through improved systems and processes and performance measurement and feedback.	Life cycle activities are about the implementation of asset management plan(s) i.e. they are the "doing" phase. They need to be done effectively and well in order for asset management to have any practical meaning. As a consequence, widely used standards (e.g. PAS 55 s 4.5.1) require organisations to have in place appropriate process(es) and procedure(s) for the implementation of asset management plan(s) and control of lifecycle activities. This question explores those aspects relevant to asset creation.	Asset managers, design staff, construction staff and project managers from other impacted areas of the business, e.g. Procurement.	Documented process(es) and procedure(s) which are relevant to demonstrating the effective management and control of life cycle activities during asset creation, acquisition, enhancement including design, modification, procurement, construction and commissioning.	Effective process(es) and procedure(s) are in place to manage and control the implementation of asset management plan(s) during activities related to asset creation including design, modification, procurement, construction and commissioning.
91	Life Cycle Activities	How does the organisation ensure that process(es) and/or procedure(s) for the implementation of asset management plan(s) and control of activities during maintenance (and inspection) of assets are sufficient to ensure activities are carried out under specified conditions, are consistent with asset management strategy and control cost, risk and performance?	2	Processes and procedures to manage and control the implementation of asset management plans during this life cycle phase are mostly in place. However, systems and processes for the scheduling and tracking of maintenance are currently not fit for purpose, which is a key driver for the asset information system upgrade currently underway. These improvements are ongoing but yet to be implemented.	Having documented process(es) which ensure the asset management plan(s) are implemented in accordance with any specified conditions, in a manner consistent with the asset management policy, strategy and objectives and in such a way that cost, risk and asset system performance are appropriately controlled is critical. They are an essential part of turning intention into action (e.g. as required by PAS 55 s 4.5.1).	Asset managers, operations managers, maintenance managers and project managers from other impacted areas of the business.	Documented procedure for review. Documented procedure for audit of process delivery. Records of previous audits, improvement actions and documented confirmation that actions have been carried out.	The organisation is in the process of putting in place process(es) and procedure(s) to manage and control the implementation of asset management plan(s) during this life cycle phase. They include a process for confirming the process(es)/ procedure(s) are effective and if necessary carrying out modifications.

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95	Performance and condition monitoring	How does the organisation measure the performance and condition of its assets?	2	Some of Centralines asset management objectives consider asset performance from the perspectives of SAIDI and SAIFI. This information is recorded, analysed, and reviewed in various regular management review meetings. A range of asset condition monitoring programmes are in place with varying levels of sophistication. Current work to improve condition monitoring is prioritised by risk and recent focus has been on overhead conductor and underground cables.	Widely used AM standards require that organisations establish implement and maintain procedure(s) to monitor and measure the performance and/or condition of assets and asset systems. They further set out requirements in some detail for reactive and proactive monitoring, and leading/lagging performance indicators together with the monitoring or results to provide input to corrective actions and continual improvement. There is an expectation that performance and condition monitoring will provide input to improving asset management strategy, objectives and plan(s).	A broad cross-section of the people involved in the organisation's asset-related activities from data input to decision-makers, i.e., an end-to end assessment. This should include contactors and other relevant third parties as appropriate.	Functional policy and/ or strategy documents for performance or condition monitoring and measurement. The organisation's performance monitoring frameworks, balanced scorecards etc. Evidence of the reviews of any appropriate performance indicators and the action lists resulting from these reviews. Reports and trend analysis using performance and condition information. Evidence of the use of performance and condition information shaping improvements and supporting asset management strategy, objectives and plan(s).	The organisation is developing coherent asset performance monitoring linked to asset management objectives. Reactive and proactive measures are in place. Use is being made of leading indicators and analysis. Gaps and inconsistencies remain.
99	Investigation of asset-related failures, incidents and non-conformities	How does the organisation ensure responsibility and the authority for the handling, investigation and mitigation of asset-related failures, incidents and emergency situations and non conformances is clear, unambiguous, understood and communicated?	3	A defect management process has been established for identification, registration, prioritisation, and rectification of asset defects identified through inspections and monitoring programmes or other feedback. The defects backlog is monitored through dashboard reporting. Continual Improvement process has been established to enable corrective and preventive actions to be registered and prioritised. Sources for such actions include audit programmes, assessments and reviews, incident investigations and post-project reviews.	Widely used AM standards require that the organisation establishes implements and maintains process(es) for the handling and investigation of failures incidents and non-conformities for assets and sets down a number of expectations. Specifically this question examines the requirement to define clearly responsibilities and authorities for these activities, and communicate these unambiguously to relevant people including external stakeholders if appropriate.	The organisation's safety and environment management team. The team with overall responsibility for the management of the assets. People who have appointed roles within the asset-related investigation procedure, from those who carry out the investigations to senior management who review the recommendations. Operational controllers responsible for managing the asset base under fault conditions and maintaining services to consumers. Contractors and other third parties as appropriate.	Process(es) and procedure(s) for the handling, investigation and mitigation of asset-related failures, incidents and emergency situations and non conformances. Documentation of assigned responsibilities and authority to employees. Job Descriptions, Audit reports. Common communication systems, i.e,. all Job Descriptions on Internet etc.	The organisation have defined the appropriate responsibilities and authorities and evidence is available to show that these are applied across the business and kept up to date.
105	Audit	What has the organisation done to establish procedure(s) for the audit of its asset management system (process(es))?	3	Centralines service provider has established an internal audit programme covering all asset management processes. A consistent audit template and framework is utilised. Audit frequency is risk-based. All auditors have received quality systems auditor training. Audits lead to corrective actions and opportunities for improvement being registered in a Continual Improvement Register. The audit programme is on schedule.	This question seeks to explore what the organisation has done to comply with the standard practice AM audit requirements (e.g. the associated requirements of PAS 55 s 4.6.4 and its linkages to s 4.7).	The management team responsible for its asset management procedure(s). The team with overall responsibility for the management of the assets. Audit teams, together with key staff responsible for asset management. For example, Asset Management Director, Engineering Director. People with responsibility for carrying out risk assessments.	The organisation's asset-related audit procedure(s). The organisation's methodology(s) by which it determined the scope and frequency of the audits and the criteria by which it identified the appropriate audit personnel. Audit schedules, reports etc. Evidence of the procedure(s) by which the audit results are presented, together with any subsequent communications. The risk assessment schedule or risk registers.	The organisation can demonstrate that its audit procedure(s) cover all the appropriate asset-related activities and the associated reporting of audit results. Audits are to an appropriate level of detail and consistently managed.

Question No.	Function	Question	Score	Evidence—Summary	Why	Who	Record/documented Information	Maturity narrative for assessed score
109	Corrective & Preventative action	How does the organisation instigate appropriate corrective and/or preventive actions to eliminate or prevent the causes of identified poor performance and non conformance?	3	A defect management process has been established for identification, registration, prioritisation, and rectification of asset defects identified through inspections and monitoring programmes or other feedback. The defects backlog is monitored through dashboard reporting. Continual Improvement process has been established to enable corrective and preventive actions to be registered and prioritised. Sources for such actions include audit programmes, assessments and reviews, incident investigations and post-project reviews.	Having investigated asset related failures, incidents and non-conformances, and taken action to mitigate their consequences, an organisation is required to implement preventative and corrective actions to address root causes. Incident and failure investigations are only useful if appropriate actions are taken as a result to assess changes to a businesses risk profile and ensure that appropriate arrangements are in place should a recurrence of the incident happen. Widely used AM standards also require that necessary changes arising from preventive or corrective action are made to the asset management system.	The management team responsible for its asset management procedure(s). The team with overall responsibility for the management of the assets. Audit and incident investigation teams. Staff responsible for planning and managing corrective and preventive actions.	Analysis records, meeting notes and minutes, modification records. Asset management plan(s), investigation reports, audit reports, improvement programmes and projects. Recorded changes to asset management procedure(s) and process(es). Condition and performance reviews. Maintenance reviews.	Mechanisms are consistently in place and effective for the systematic instigation of preventive and corrective actions to address root causes of non compliance or incidents identified by investigations, compliance evaluation or audit.
113	Continual Improvement	How does the organisation achieve continual improvement in the optimal combination of costs, asset related risks and the performance and condition of assets and asset systems across the whole life cycle?	3	Centralines asset manager service provider achieves continual improvement through two plans, the Continual Improvement Plan and the Asset Management Capability Plan. The continual improvement plan enables all staff to raise improvement opportunities associated with assets and the asset management system. All opportunities are prioritised based upon their alignment with performance against asset management objectives. Rate of opportunities raised and closed out is tracked. Completed improvements are verified based upon benefits realised. Teams delivering best improvements are recognised by management. Asset Management Capability Plan is a programme of strategic improvements aligned with asset management strategy.	Widely used AM standards have requirements to establish, implement and maintain process(es)/ procedure(s) for identifying, assessing, prioritising and implementing actions to achieve continual improvement. Specifically there is a requirement to demonstrate continual improvement in optimisation of cost risk and performance/condition of assets across the life cycle. This question explores an organisation's capabilities in this area—looking for systematic improvement mechanisms rather that reviews and audit (which are separately examined).	The top management of the organisation. The manager/ team responsible for managing the organisation's asset management system, including its continual improvement. Managers responsible for policy development and implementation.	Records showing systematic exploration of improvement. Evidence of new techniques being explored and implemented. Changes in procedure(s) and process(es) reflecting improved use of optimisation tools/ techniques and available information. Evidence of working parties and research.	There is evidence to show that continuous improvement process(es) which include consideration of cost risk, performance and condition for assets managed across the whole life cycle are being systematically applied.
115	Continual Improvement	How does the organisation seek and acquire knowledge about new asset management related technology and practices, and evaluate their potential benefit to the organisation?	3	Centralines asset manager service provider's staff are involved in a wide range of industry working groups, including on future technology trends such as the Smart Technology Working Group. They attend conferences and seminars, e.g. Electricity Engineers Association and Electricity Authority events. Senior managers have strong contacts with large utilities abroad, e.g. in the United Kingdom. They have established their own capabilities in research and development and are implementing a Conductor Condition Recognition technology enabling machine vision condition assessment of older conductor types on its network. They are also implementing Fault Anticipation and Avoidance schemes using disturbances to electrical waveform to infer incipient asset failure.	One important aspect of continual improvement is where an organisation looks beyond its existing boundaries and knowledge base to look at what 'new things are on the market'. These new things can include equipment, process(es), tools, etc. An organisation which does this (e.g. by the PAS 55 s 4.6 standards) will be able to demonstrate that it continually seeks to expand its knowledge of all things affecting its asset management approach and capabilities. The organisation will be able to demonstrate that it identifies any such opportunities to improve, evaluates them for suitability to its own organisation and implements them as appropriate. This question explores an organisation's approach to this activity.	The top management of the organisation. The manager/ team responsible for managing the organisation's asset management system, including its continual improvement. People who monitor the various items that require monitoring for 'change'. People that implement changes to the organisation's policy, strategy, etc. People within an organisation with responsibility for investigating, evaluating, recommending and implementing new tools and techniques, etc.	Research and development projects and records, benchmarking and participation knowledge exchange professional forums. Evidence of correspondence relating to knowledge acquisition. Examples of change implementation and evaluation of new tools, and techniques linked to asset management strategy and objectives.	The organisation actively engages internally and externally with other asset management practitioners, professional bodies and relevant conferences. Actively investigates and evaluates new practices and evolves its asset management activities using appropriate developments.

14a: Mandatory Explanatory Notes on Forecast Information

Company Name Centralines Limited

For Year Ended 31 March 2024

Schedule 14a Mandatory Explanatory Notes on Forecast Information

(In this Schedule, clause references are to the Electricity Distribution Information Disclosure Determination 2012 – as amended and consolidated 3 April 2018.)

1. This Schedule requires EDBs to provide explanatory notes to reports prepared in accordance with clause 2.6.6.

2. This Schedule is mandatory—EDBs must provide the explanatory comment specified below, in accordance with clause 2.7.2. This information is not part of the audited disclosure information, and so is not subject to the assurance requirements specified in section 2.8.

Commentary on difference between nominal and constant price capital expenditure forecasts (Schedule 11a)

3. In the box below, comment on the difference between nominal and constant price capital expenditure for the current disclosure year and 10 year planning period, as disclosed in Schedule 11a.

Box 1: Commentary on difference between nominal and constant price capital expenditure forecasts
There is no difference between constant and nominal values in the current disclosure year ended 31 March 2024.

The difference from 2024/25 to 2033/34 represents inflation. Inflation is based on the Reserve Bank February 2024 Monetary Policy Statement Forecast (CPI Headline).

2025	2026	2027 onwards
2.6%	2.0%	2.0%

Commentary on difference between nominal and constant price operational expenditure forecasts (Schedule 11b)

4. In the box below, comment on the difference between nominal and constant price operational expenditure for the current disclosure year and 10 year planning period, as disclosed in Schedule 11b.

Box 2: Commentary on difference between nominal and constant price operational expenditure forecasts
There is no difference between constant and nominal values in the current disclosure year ended 31 March 2024.

The difference from 2024/25 to 2033/34 represents inflation. Inflation is based on the Reserve Bank February 2024 Monetary Policy Statement Forecast (CPI Headline).

2025	2026	2027 onwards
2.6%	2.0%	2.0%

APPENDIX

GLOSSARY OF TERMS

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2024-34 REGULATORY ASSET MANAGEMENT PLAN

APPENDIX **GLOSSARY OF TERMS**

CONTENTS

A. GLOSSARY OF TERMS

A	Amperes	**CI**	Continual Improvement
AAAC	All Aluminium Alloy Conductor	**CoC**	Certificate of Competency
AAC	All Aluminium Conductor	**CorMon**	Corrosion Monitoring
ABB	Supplier	**CPI**	Consumer Price Index
ABC	Aerial Bundled Cable	**CRM**	Customer Relationship Management
ABS	Air Break Switch	**CT**	Current Transformer
AC	Alternating Current	**DA**	Distribution Automation
ACC	Accident Compensation Corporation	**DC**	Direct Current
ACSR	Aluminium Conductor Steel Reinforced	**DDO**	Dominion Drop Out
ACS	Asset Criticality Schema	**DER**	Distributed Energy Resources
ACTIVA	Software Package	**Deuar**	Deuar Mechanical Partial Load Deflection Testing
ADMS	Advanced Distribution Management System	**DFA**	Delegated Financial Authority
AE	Augmentation Envelope	**DG**	Distributed Generation
AEI	Associated Electrical Industries	**DGA**	Dissolved Gas Analysis
AIGG	Asset Information Governance Group	**DMAIC**	Define, Measure, Analyse, Improve, Control
AMMAT	Asset Management Maturity Assessment Tool	**DNO**	Distribution Network Operator
AMO	Asset Management Objective	**DNP-3**	Distributed Network Protocol
AMP	Asset Management Plan	**DPP**	Commerce Commission's Default Price Path
AMS	Asset Management System	**DQD**	Data Quality Dashboard
AMSF	Asset Management System Framework	**DR**	Disaster Recovery
AOC	Alternative Operations Centre	**DSO**	Distribution System Operator
ARC	Audit and Risk Committee	**EAMS**	Enterprise Asset Management System
ARP	Asset Renewal Planning	**EDB**	Electricity Distribution Business
ASEA	Merged with Brown Boveri to create ABB	**EDSS**	Expert Decision Support System
BCP	Business Continuity Planning	**EEA**	Electricity Engineers' Association
BMSF	Business Management Framework	**EMT**	Executive Management Team
BSI	British Standards Institute	**ENTEC**	Supplier
CAD	Computer-Aided Design	**ERC**	Executive Risk Committee
CAPEX	Capital Expenditure	**EVA**	Ethylene Vinyl Acetate
CAR	Corridor Access Request	**FAIDI**	Feeder Average Interruption Duration Index
CB	Circuit Breaker	**FAIFI**	Feeder Average Interruption Frequency Index
CBD	Central Business District	**FRS-3**	Financial Reporting Standards
CBRM	Condition Based Risk Management	**GEC**	The General Electric Company
CDEM	Civil Defence Emergency Management	**GIS**	Geo-spatial Information System
CHBCPT	Central Hawke's Bay Consumers Power Trust	**GMI**	Annual Invasive Inspection
CF	Constraint Forecasting	**GPS**	Global Positioning System

GSP	Great Safety Performance	**NIT**	Network Investment Toolbox
GWh	Giga Watt-hours	**NOC**	Network Operations Centre
GXP	Grid Exit Point	**NPS**	Net Promoter Score
H&S	Health and Safety	**NPV**	Net Present Value
HILP	High Impact Low Probability	**NZ**	New Zealand
HP	Hewlett Packard	**NZIER**	New Zealand Institute for Economic Research
HR	Human Relations	**NZOQ**	New Zealand Organisation for Quality
HV	High Voltage	**OH**	Overhead
IAM	Institute of Asset Management	**OHUG**	Overhead to Underground
ICP	Installation Control Point	**OPEX**	Operational Expenditure
IMG	Information Management Group	**PA**	Partial Achievement
IMP	Insulator Pollution Monitoring	**PCP**	Pentachlorophenol
IMS	Integrated Management System	**PD**	Partial Discharge
IP	Internet Protocol	**PDCA**	Plan, Do, Check, Act
IPAG	Innovation & Participation Advisory Group	**Peanut**	Vacuum Capacitor Switch
IPT	Investment Prioritisation Tool	**PIF**	Performance Indicator Framework
IT	Information Technology	**PILC**	Paper Insulated, Lead Covered
k	Thousand	**PLC**	Programmable Logic Controller
kV	kilovolt	**POS**	Point of Supply
kVA	kilovolt amps	**PSMS**	Public Safety Management System
L+G	Landis + Gyr	**PV**	Solar Photovoltaic
LCAM	Lifecycle Asset Management	**PVC**	Polyvinyl Chloride
LCP	Legislative Compliance Programme	**R:P**	Reactive to Preventative Cost
LED	Light Emitting Diode	**RAMP**	Regulatory Asset Management Plan
LFT	Load Forecast Tool	**RC**	Replacement Cost
LMVP	Model of Reyrolle Pacific Switchgear	**RCS**	Remote Controlled Switch
LTOS	Live Tank Oil Sampling	**RE**	Renewal Envelope
LV	Low Voltage	**REG D**	A Eberle Voltage Regulating Relay
M	Million	**RFP**	Request for Proposal
MAGTECH	Supplier	**RLE**	Residual Life Expectancy
MCR	Maximum Continuous Rating	**RSP**	Retail Service Provider
MD	Maximum Demand	**RMS**	Ring Main Switchgear
MDS	Master Data Services	**RMU**	Ring Main Unit
MED	Major Event Day	**RPS**	Reyrolle Pacific
MIND	Mineral Insulated Non-Draining	**RTU**	Remote Terminal Unit
MPT40	Deuar Mechanical Partial Load Deflection Testing	**S/S**	Substation
MV	Medium Voltage	**SAIDI**	System Average Interruption Duration Index
MVA	Mega Volt-Amps	**SAIFI**	System Average Interruption Frequency Index
MW	Megawatt	**SAMP**	Strategic Asset Management Plan

APPENDIX GLOSSARY OF TERMS

SAP	Software Package	**SAN**	Storage Area Network
SCADA	Supervisory Control and Data Acquisition	**Triple-R**	Repair, Refurbish, Replace
SCI	Statement of Corporate Intent	**UCSL**	Unison Contracting Services Limited
SF6	Sulphur Hexafluoride	**UC**	University of Canterbury
SH	State Highway	**UG**	Underground
SI	Serviceability Index	**VoIP**	Voice over Internet Protocol
SLA	Service Level Agreement	**VPT**	Vegetation Prioritisation Tool
SMART	Specific, Measurable, Achievable, Relevant, Timebound	**VRR**	Voltage Regulating Relay
SO2	Sulphur Dioxide	**VT**	Voltage Transformer
SOP	Standard Operating Procedure	**WPC**	Works Planning and Consolidation
Stn	Station	**UHF**	Ultra-High Frequency
SWER	Single Wire Earth Return	**UNISAFE**	A model of ABB switchgear
TCP	Transmission Control Protocol	**UNL**	Unison Networks Limited
TEC	Technical Evaluation Committee	**Var**	Volt Ampere Reactive
TELARCC	Supplier	**VHF**	Very High Frequency

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CERTIFICATION FOR YEAR BEGINNING DISCLOSURES

Pursuant to Schedule 17, Clause 2.9.1

We, Fenton Wilson and Anthony Gray, being directors of Centralines Limited certify that, having made all reasonable enquiry, to the best of our knowledge:

a. the following attached information of Centralines Limited prepared for the purposes of clauses 2.4.1, 2.6.1, 2.6.3, 2.6.6 and 2.7.2 of the Electricity Distribution Information Disclosure Determination 2012 in all material respects complies with that determination.

b. The prospective financial or non-financial information included in the attached information has been measured on a basis consistent with regulatory requirements or recognised industry standards.

c. The forecasts in Schedules 11a, 11b, 12a, 12b, 12c and 12d are based on objective and reasonable assumptions which both align with Centralines Limited's corporate vision and strategy and are documented in retained records.

Fenton David Wilson

Director Date: 28 March 2024

Anthony Trevor Gray

Director Date: 28 March 2024

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