
vector
2025—2035
gas distribution asset management plan

Contents

Foreword

This Asset Management Plan (AMP) is a document which aims to communicate how Vector Limited (Vector) intends to manage its gas network assets for the benefit of Auckland energy consumers, for the period 1 July 2025 to 30 June 2035.

The investments we plan to make, set out in this 2025 edition, will assist us to deliver a safe and reliable gas network for Aucklanders, and are aligned with Vector's Symphony strategy, which is how Vector is delivering its vision of creating a new energy future.

This AMP provides the context and details of our investments and asset management strategies for our gas network. It explains how we will maintain our assets and provide services to customers safely and reliably, while being responsive to potential future technological, environmental and consumer-behavioural changes. We note however that, particularly given the uncertainty over future demand for natural gas, we are not bound to follow the investments described in this AMP as we update our views on how to best deliver for our customers.

The objectives of our AMP are to:

- Be transparent with our customers and stakeholders about our plans and investments for the network;
- Detail the projects and improvements underway for our network and how they will benefit our customers;
- Foster understanding of how our asset management approach works, by providing details about our assets, Vector's plans for them, and the company's objectives; and
- Explain how these plans align with our Symphony strategy and vision to bring about a new energy future.

This AMP was certified and approved by our Board of Directors on 13 June 2025.

AMP planning period

This AMP covers a 10-year planning period, from 1 July 2025 to 30 June 2035, as prescribed by the Commerce Commission's Information Disclosure Determination to meet our obligations as a regulated gas distribution business.

Company overview

Vector is an innovative New Zealand energy and digital solutions company delivering energy, technology and communication services to more than 628,000 residential and commercial customers across New Zealand. Vector has a leading role in creating a new energy future through its Symphony strategy which puts customers at the heart of the energy system. Vector is listed on the New Zealand Stock Exchange with ticker symbol VCT. Our majority shareholder, with voting rights of 75.1%, is Entrust. For further information, visit https://www.vector.co.nz/

Vector's gas distribution network is described in Section 6.1.

AMP structure

This AMP has been developed in accordance with good asset management principles. There are ten primary sections with supporting details in the appendices that contribute to our asset management story. As described in the following table, the primary sections of the AMP include:

SECTION	OVERVIEW
1 – Introduction	• Provides the executive summary for AMP, considering the purpose, objectives and the operating environment that shapes the AMP.
2 – Customers and stakeholders	• Identifies Vector's primary customer and stakeholder's interest; and • Details how we engage with our customers.
3 – Our service levels	• Presents the service level metrics and sets our performance targets to meet their interests; and • Discusses the performance of our network against these service level metrics, along with the primary causes of performance deviation from the service level targets.
4 – Asset management at Vector	• Provides insight into Vector's asset management practices; • Presents the asset management objectives, scope and governance; and • Discusses how Vector intends to improve its asset management practices over time.
5 – Governance, risk management and information management	• Provides an overview of Vector's governance and organisational structure, accountable for delivering effective and fit for purpose asset management planning; • Includes an overview of our enterprise risk management framework, key risk practices and event management documentation; and

SECTION	OVERVIEW
	• Discusses our data and privacy management practices.
6 – Our assets	• Presents an overview of our gas distribution assets and the lifecycle management strategies for them; • Provides insights into the types, volumes and functional role of assets we manage in the network; and • Summarises our primary asset management strategies that inform and/or drive our expenditure.
7 – Managing our asset's lifecycle	• Provides an overview by asset category, of the plans we have to manage our distribution network assets over the planning horizon.
8 – Delivering our plan	• Outlines how we deliver Capital Expenditure (capex) and Operational Expenditure (opex) projects and programmes required to deliver our gas distribution network AMP.
9 – Expenditure forecast	• Presents a summary of the capex and opex required to deliver our gas distribution network AMP.
10 – Appendices	• Contains supporting and supplementary information for sections 1 to 9; • Lists the key standards that inform our asset management practices; and • Presents a compliance table showing how our AMP meets the Commerce Commission's Information Disclosure requirements.

Executive summary

The following executive summary is provided for ease of reference only and is not a substitute for reading this AMP in full.

Vector's gas distribution network operates in an environment of unprecedented uncertainty around the future of natural gas, driven in the near term by significant market uncertainty, scarcity of gas and rising costs, and in the long term by uncertainty over how gas distribution businesses will be impacted by New Zealand's 2050 net zero emissions targets.

Our updated modelling sees new connections stopping in FY29 and an increase in disconnections, resulting in a decline in net connections to the network in FY26, and the overall gas volume continuing to decline, but at a faster rate. This modelling of negative growth increases the stranding risk of the gas network which will impact customer's and Vector's gas assets. We therefore must take prudent steps to optimise our asset management strategies to maintain network safety and reliability, while reducing asset stranding risk.

One of the ways we're doing this is by reducing capital expenditure on asset replacements (which is recovered over the life of the asset) and replacing this with increased operational expenditure on maintenance (which is recovered during a single financial year).

There are other benefits of this approach, which are that it:

- Enables more targeted, risk-based maintenance strategies;
- Helps financial capital management in an environment of high uncertainty; and
- Allows flexibility to adapt to changing market conditions.

In making this switch from a replacement to maintain and repair strategy, we've had to consider several significant factors.

One is, that the risk of asset failure is mitigated rather than removed, since assets are repaired rather than replaced. Our change in asset management strategy addresses known vulnerabilities that may result from the change, and increases the frequency of leak detection surveys, to continue to maintain a safe and reliable network.

Another factor is that the technology which enables increased maintenance and inspection, specifically the introduction of a new camera-based inspection technique, needs to be managed in a staged approach where operator training, and detection accuracy can be validated and then rolled out more widely. If the camera technology proves ineffective or unreliable, we may need to revert to full replacement strategies, incurring cost and time delays.

This approach carries the risk that regulatory allowances may be insufficient to ensure success of our asset management strategy. The Commerce Commission's methodology for determining operating expenditure allowances is primarily based on historical spending levels. Should this calculation method be applied, our analysis indicates that there would be a shortfall in the DPP4 operating expenditure allowance compared to our AMP forecast. It is crucial for the Commission's allowance-setting process to recognise this and adjust the methodology by incorporating the most recent AMP forecasts. Setting operating expenditure allowances too low, coupled with significantly reduced incentives to invest in capital assets due to prevailing uncertainties, could result in a stranded asset risk.

CASE STUDY: PRUDENT ASSET MANAGEMENT IN AN ENVIRONMENT OF DECLINING DEMAND

In the context of uncertainty over future gas demand, network operators must take prudent steps to ensure their asset management strategy remains effective in delivering safe and reliable services, while reducing exposure to asset stranding risk.

In FY26, Vector plans to purchase "advanced inline camera equipment" specifically for inspecting and identifying squeeze off and butt-welded joints in pre-1985 polyethylene pipelines. This inline camera inspection technique allows identification and reinforcement of potential failure points without having to replace entire pipeline lengths.

This camera inspection approach aligns with practices used by other gas distribution businesses in New Zealand and Australia and helps reduce future replacement costs while achieving similar risk reduction outcomes.

Adopting this new camera-based inspection technique will lead to an increase in planned and corrective maintenance expenditure, since issues identified through camera inspection will need to be addressed, along with a corresponding decrease in capital expenditure, through avoiding the need for full replacement.

It's a new initiative that allows Vector to take a more targeted approach to maintaining aging polyethylene pipelines rather than wholesale replacement, while still effectively managing safety risks. The camera inspection programme will be introduced in a staged approach, including developing inspection protocols, operator training, and validation of detection accuracy.

This approach represents a prudent, risk-based strategy that allows us to maintain safety standards while adapting to significant industry challenges and uncertainties around the future of natural gas networks, by reducing asset stranding risk.

SECTION 01

Introduction

1 – Introduction

This AMP sets out our view of the investments we believe represent prudent and optimised asset management, particularly given the uncertainty over future demand for natural gas. We note that we are not bound to follow the investments described here as we update our views on how to best deliver for our customers, and further optimise our investments. Each investment we make goes through appropriate governance processes to ensure it is delivering against our Asset Management Objectives.

1.1 Future of gas

There is significant uncertainty over the future operating environment for gas distribution businesses in New Zealand. This is driven in the long term by New Zealand's targets for net-zero carbon emissions by 2050, and in the shorter term by a shortage of upstream gas supply. Over the DPP3 period, we've observed declining gas volumes, combined with a slowing down of net connections.

Our updated modelling for the gas network over the 10-year period of this AMP reflects the continued growth in uncertainty in and within the gas industry, as well as the continued loss of heavy manufacturing and large industrial processes within the Auckland region. Therefore, this AMP is aligned to the "disorderly decarbonisation" scenario in Vector's climate related disclosure[1]. This scenario sees net connections to the network projected to grow at a slower rate initially and then begin to decline – which can be attributed primarily to market uncertainty, scarcity of gas and rising costs. Gas volumes continue to decline but at a faster rate, primarily as a result of reduced commercial and industrial users, but also as a result of a longer term consumer decline in gas consumption.

To ensure we're optimising our asset management strategies, we've made a number of changes to account for the future uncertainty, and updated modelling projections. These include:

- Reducing system growth expenditure, reflecting the forecast decline in connections;
- Where possible, optimising and shifting capital expenditure to operational expenditure, utilising risk-based asset replacement strategies and additional maintenance activities to defer some asset replacements; and
- Preserving our ability to facilitate the adoption of new technologies.

Overall, this AMP sets out lower capital expenditure, and higher operational expenditure. This is a prudent and effective approach, consistent with the context of declining demand and provides optimised investment to assist us in having a safe, reliable, resilient network for our customers throughout this AMP period and beyond.

1.2 Climate change

Climate scenario modelling, such as that included in Vector's FY24 Climate-related disclosure report[2], shows that gas infrastructure companies and their connected consumers are currently exposed to material transition costs and gas-asset stranding risk. This risk is driven through uncertainty over the future of gas infrastructure, gas supply shortages, increase in wholesale gas prices, changes in consumer sentiment towards gas, and a lack of consistent policy direction to adequately manage this transition.

Managing asset stranding risk in the context of declining demand therefore remains a key task for the upcoming DPP4 period. Vector is managing its part of the risk by reducing capital expenditure where safely possible to reduce exposure to further asset stranding risk.

In November 2023, Vector published a submission to the government with a set of potential pathways for a managed gas transition. This includes clear policy direction to drive certainty, regulatory intervention to accelerate and preserve cost recovery, and risk-abating commercial decisions from gas infrastructure businesses[3]. Even though the paper is 18 months old, its principles on the importance of financial capital maintenance and the certainty of regulated cost recovery remain relevant today.

1.2.1 CUSTOMER ENGAGEMENT

Unlike electricity networks, gas networks do not receive connected gas users' contact details from retailers. This limitation, coupled with reduced timely visibility of customer events (such as disconnections), presents challenges in implementing large-scale engagement and Voice of Customer (VoC) programmes, and in understanding customer sentiment and intent towards gas.

While VoC initiatives are successfully integrated within our new connections and gas fault processes (where customers or developers engage with Vector directly), there is no equivalent mechanism for routine engagement with existing customers at scale.

1 https://www.vector.co.nz/investors/reports

2 https://blob-static.vector.co.nz/blob/vector/media/vector-2024/6-vector-fy24-climate-related-disclosures.pdf

3 https://blob-static.vector.co.nz/blob/vector/media/vector-2024/vector-2023-managing-the-gas-transition.pdf

To address this gap, Vector has undertaken several direct engagement initiatives with end users. These include:

- Large customer initiative in 2023 where DETA was commissioned to engage 83 commercial and industrial sites to understand their current and future energy needs, including intentions to decarbonise;
- Vector's one-on-one engagement with large commercial users and business associations in 2024; and
- A collaborative project with Clarus and Powerco in 2025 targeting residential and small gas users via a series of focus groups and interviews.

These efforts are all aimed at enhancing Vector's customer engagement and ensuring that the perspectives and needs of gas users are better understood and incorporated into network operations and planning.

1.2.2 END OF LIFE TREATMENT

Vector will have obligations to decommission assets and safely disconnect customers when these assets are at the end of life. We consider it is appropriate that generally accepted accounting principles (GAAP) treatment is followed for legitimate decommissioning costs. This will ensure that gas distribution businesses are compensated for those decommissioning costs before they are required to be incurred. Due to the uncertainty, we are looking to have an allowance in the future which would be appropriate as at the end of network life there is likely to be insufficient customers from whom to recover those costs. If gas distribution businesses are not appropriately compensated for decommissioning costs this is likely to bring forward significantly the ceasing of gas distribution services. This is due to the gas distribution business being in a negative cashflow position a lot earlier than if decommissioning costs were compensated. While there is a broader conversation involving the role of government in decommissioning, it is necessary to get a clear view from the Commerce Commission on how these costs should be treated under the current regulatory framework.

1.2.3 RENEWABLE GASES

There is interest from some commercial customers to utilise alternative renewable combustion sources, such as biomethane. Vector continues to monitor the progress to introduce the potential blending of renewable gases into natural gas networks. There remains considerable uncertainty about the availability, pricing, and commercial viability of renewable gas, making it difficult to predict whether it will mitigate the risk of stranding natural gas pipelines. For example, renewable fuels required to produce sustainable aviation fuel alone are projected to match total biomass supply in 2037[4].

Fortunately, the mitigation of stranded assets through accelerated cash-flow recovery, and the research and development into renewable gases are complimentary strategies. In the event of a technological breakthrough allowing for sustained pipeline injection of renewable gases in sufficient quantities, the Commerce Commission can continue to manage regulated recovery. As capital on the gas network may have been significantly recovered (from mechanisms such as accelerated depreciation), the network tariff would be lower than the status-quo to achieve the NPV=0 principle. Essentially increased tariffs on fossil-gas now, supports the potential uptake of renewable gases in the future.

Vector would welcome an innovation allowance for gas distribution businesses to trial new technologies, such as the pipeline injection of renewable gases.

1.2.4 CLIMATE CHANGE RESILIENCE

Vector's natural gas network demonstrated a high degree of reliability and resilience to the impacts of climate change, which was observed during the 27 January 2023 Auckland flooding event and Cyclone Gabrielle in February 2023. The gas network was able to maintain supply to most customers during the two events. Landslip susceptibility modelling conducted in 2024 revealed that only 0.033% of mains pipes sit in very high-risk zones. Vector however notes that an increase in hot dry weather may increase wildfire exposure in the Auckland region. Our fire risk analysis highlights only a few locations where gas assets are in close proximity to trees, and an operational event guide has been created to isolate parts of the gas network if required.

1.2.5 GAS FUGITIVE EMISSIONS

Vector has achieved a 49% reduction in fugitive gas emissions in FY24 compared to its baseline. This is largely a result of increased gas pipeline surveying, along with efforts to increase public engagement to prevent third party damages. The overall programme, when complete, is estimated to reduce 9,000tCO2e at a marginal carbon cost of $48/tCO2e. This is lower than the current ETS price of $62 and therefore considered to be carbon cost effective. Reducing gas leaks also has additional public safety benefits. The results are highlighted in greater detail in section 3.4.

1.3 Regulatory update

Vector's Gas Distribution Business (GDB) is subject to both Price-Quality and Information Disclosure regulation under sub-part 10 of Part 4 of the Commerce Act.

Part 4 is intended to guarantee the long-term interests of customers by balancing the need for service providers to invest in their service and the interest of customers to have fair prices. Both Price-Quality and Information Disclosure Regulation are administered by the New Zealand Commerce Commission (the Commission). A key element of the Commission's approach to administering Price-Quality regulation is to set prices consistent with a commitment to financial capital maintenance (FCM) also referred to as the Net Present Value = zero principle (NPV=0). The NPV=0 principle ensures an asset owner is able

4 https://www.climatecommission.govt.nz/our-work/advice-to-government-topic/preparing-advice-on-emissions-budgets/advice-on-the-fourth-emissions-budget/draft-advice-emissions-budget-4/

to recover its invested capital and earn a return on investment (consistent with alternative equivalent uses of capital) over the life of the investment.

Investments for both gas transmission and gas distribution pipelines are now occurring at a time of increased uncertainty as New Zealand transitions to Net Zero 2050. The Climate Change Commission (CCC) recommendations for natural gas networks are a significant departure from the historical environment these businesses have operated in. The Commission has recognised this uncertainty in its decision on the third default price-quality path (DPP3) for GDBs from 1 October 2022 by introducing a mechanism to bring cashflows forward by accelerating depreciation to mitigate heightened asset stranding risk. Vector supports this; however, we consider that the Commission took a conservative approach.

In our view, recent market developments suggest a more aggressive approach to managing stranding risk is needed in DPP4. This is essential to preserve incentives to invest and ensure remaining consumers are not burdened with exponential price rises in later years. MBIE forecasts that gas production will not meet demand for at least the next three years based on the most recent (July 2024) reserves data; and the existing gas shortage has impacted all areas of the supply chain (e.g. fewer retailers accepting new gas customers and reduction in business operations). This is consistent with recent experience on Vector's network. Wholesale gas price volatility has moved the business case for electrification forward and has resulted in business closures and reduction in production – resulting in reduced gas consumption. For DPP4 we recommend that the Commission:

- Apply a larger adjustment factor: Shorter asset lives are needed in DPP4 to reflect increased stranding risk;
- Un-index the RAB from inflation: Indexing the RAB to inflation serves to inflate the scale of the stranding risk and undermines the intent behind accelerating depreciation;
- Implement a tilted accelerated depreciation profile, rather than a straight-line accelerated depreciation: Tilted depreciation profiles enable greater recovery over the current larger customer base with declining depreciation rates over time;
- Amend the WACC determination to provide a higher risk premium: The higher stranding risk should be reflected in the WACC, otherwise investors will look to assets with similar return but less risk; and
- Change its approach to setting operating expenditure allowances. The current base, step, and trend approach is no longer suitable as it may set operating expenditure allowances below the necessary levels. Given the uncertainty over future gas demand, network operators must take prudent measures to ensure their asset management strategies continue to deliver safe and reliable services while mitigating the risk of asset stranding. For Vector this shift in asset management strategies results in reduced capital expenditure and increased operational expenditure. It is crucial that the Commission's allowance-setting process acknowledges this. Setting operating expenditure allowances too low, combined with significantly dampened incentives to invest in capital assets due to prevailing uncertainties, could result in a stranded asset risk.

Recent market developments resulting in gas distribution volume volatility also calls into question the form of control over gas distribution businesses. The current form of control by way of a weighted average price cap requires accurate volume forecasts. Any variation in the actual volumes vs. forecast results in a cost impact on either the gas distribution business or the consumer. Given the uncertainty, the risk that demand differs from forecast is a significant concern. Over the course of DPP3 our real revenue growth rate has been lower than the Commission's assumptions in setting the price path.

This risk needs to be addressed in DPP4 to avoid compromising incentives to invest and ensure the notional gas distribution business remains financeable. Accordingly, we strongly recommend the Commission amend the Input Methodologies to introduce:

- A revenue cap: We recognise that the Commission maintained the price cap in the 2023 IM review. However, we consider that there is now more evidence about ongoing gas volatility and its impact which makes it appropriate for the Commission to revisit this decision;
- A volume wash-up: If the Commission maintains a price cap, it is critical that other mechanisms to wash-up volumes are introduced. Recent regulatory precedents in Australia support this approach[5] and
- A volumes re-opener (least preferred): This is also supported by Australian regulatory precedent where gas networks can apply to re-open their price path where volumes are materially different from the forecast used to set the price path. The inherent uncertainty and administrative burden involved in the re-opener process makes this option less effective than implementing a revenue cap or volume wash-up. However, we consider it better than the status quo.

As New Zealand transitions to a net carbon zero economy, it is essential that the transition is orderly. We encourage the Commission to make sure regulatory frameworks are adapted for the continued support of FCM. We are prepared, willing and have offered to work with the sector including the Commission to develop what is required for this orderly transition. This will in turn ensure the continued investment by pipeline owners in gas infrastructure enabling an orderly transition away from natural gas. An orderly transition is clearly in the long-term interests of consumers.

5 https://www.climatecommission.govt.nz/our-work/advice-to-government-topic/preparing-advice-on-emissions-budgets/advice-on-the-fourth-emissions-budget/draft-advice-emissions-budget-4/

SECTION 02

Customers and stakeholders

2 – Customers and stakeholders

2.1 Knowing and delivering for our customers

While Vector is responsible for connecting new consumers to the network, maintaining supply to consumers and, in particular, restoring supply after interruptions, we do not contract directly with end users. except a for handful of commercial and industrial consumers that have dedicated capacity or non-standard supplies. Despite this, Vector treats all consumers as 'customers' and has a range of programmes and initiatives in place to understand their behaviours and needs. In this AMP the term 'customer' is used in this broader context.

It is also important to note that unlike electricity distribution businesses, gas distribution companies do not receive customer data from retailers. Customer contact details and business / industry identifiers are unavailable to us, meaning we have significantly less information than our electricity counterparts do on end users. This means that we cannot easily undertake engagement with customers at the market level. Given that having a deep understanding of evolving customer needs and preferences is becoming more important as we move through the energy transition, this gap in data is unhelpful and potentially costly to resolve.

At the aggregate level Vector's gas network extends from Wellsford to Tuakau. More than 6,800kms of underground pipelines deliver gas to over 116,000 Installation Control Points (ICP). Our customers at each of those ICPs are hugely diverse with varying needs.

For 2025, our focus is on looking to undertake initiatives that build up our understanding and engagement with customers, noting the inherent challenges brought by not having customer data. Of note is the joint project between Vector, Clarus and Powerco focused on understanding how residential and SME customers view gas now and in the next 10 years as well as what a fair energy transition looks like. This engagement will involve 8 online focus groups with piped gas residential customers, each lasting around 2 hours and with 6 to 8 participants, and 18 online interviews with small business piped gas consumers, each lasting 60 minutes. Feedback gained from customers will be included in Vector's planning as well as public submissions to the Commerce Commission and other stakeholders (e.g. the Ministry of Business, Innovation and Employment, and the Gas Industry Company). Building on these findings, Vector will implement targeted engagement initiatives to deepen our understanding of customer needs and expectations across our customer base.

An illustrative summary of some of the key customer and stakeholder groups we engage with are shown in Table 2-1.

GROUP	INTEREST AND PRIORITIES	HOW WE ENGAGE
Residential customers (114,498 ICPs)	• Safe, reliable and affordable network	• Contact Centre manages phone calls for gas leaks, social media interactions and emails for outages and general enquiries • Regular customer surveys to those that experience gas faults or for whom Vector completed new connections
Corporate and commercial	• Larger commercial entities make individual decisions around network resilience and configuration to manage their unique requirements	• Key account team manage the large gas conveyance contracts with large customers on our network
Developers of large commercial projects	• New commercial connections often require bespoke connection plans • Increasing interest in products to displace traditional natural gas such as renewable gases	• Dedicated team providing individual management of their engagement with Vector quote, design, and contract
Developers of residential sub-divisions	• Ease, process and cost of new connections to the network • Coordination with other utilities • Transparency and availability of job progress	• Two streams for engagement, including (for projects larger than ten lots) a dedicated team arranges the gas design, commercial terms and pricing for residential subdivisions and developments
Retailers	• Maintain strong relationships and ensure ease of doing business • Promote customer service • Industry development & coordination	• Range of senior managers work with retailers directly as well as participating in engagement with industry groups Commercial activities managed through dedicated senior manager • Commercial activities managed through dedicated senior manager
Infrastructure providers (e.g. road, rail, water)	• Ensuring large infrastructure projects have the greatest possible synergies and cause the least possible disruption for the public (e.g. City Rail Link)	• Key account team and stakeholder engagement lead have direct account management relationships with all major infrastructure operators in the region

GROUP	INTEREST AND PRIORITIES	HOW WE ENGAGE
Community groups and business associations	• Public safety and fault response activities • Community resilience planning, and investment and affordability	• Dedicated Community Engagement Manager
Iwi	• Create and maintain strong working relationships with iwi across Auckland	• Dedicated Community Engagement Manager, Resource management and planning lead
Auckland Council and CCOs	• Creating enabling infrastructure, coordination of operational and investment activities • Civil defence and emergency management • Sharing of asset location information • Climate adaptation	• Dedicated Key Account managers; range of senior managers across specific areas such as risk/emergency management, operations, forecasting etc
Clarus	• Ensure transmission network interface is well maintained • Technical performance and compliance • Network planning (gate stations)	• Dedicated Key Account managers; range of senior managers across specific areas such as risk/emergency management, operations, forecasting etc
Regulatory Bodies	• Foster open and trusting relationships with policy makers and regulatory decision makers, engaging in targeted decision-making processes where required, to advocate for robust and sustainable policy and regulation in the long-term interests of consumers	• Senior managers engage across specific functions including Policy and Regulatory; Pricing; Future Networks; as well as a range of senior subject matter experts as required

TABLE 2-1: GROUPS AND ENGAGEMENT METHODS

2.2 Managing conflicting interests

With numerous customer segments and stakeholders with diverse interests, it may happen that not all stakeholder interests can be accommodated, or that conflicting interests exist. From an asset management perspective, these are managed by:

- Clearly identifying and analysing any conflicts (existing or potential);
- Seeking an acceptable alternative or commercial solution based on a set of fundamental, consistent and transparent principles;
- Engaging directly with interested groups or more widely if appropriate; and
- Effective communication with affected parties to assist them to understand Vector's position, as well as that of other parties or groups that may have different requirements.

In developing solutions where conflicting interests exist, Vector strives to achieve consistency, transparency and fairness.

SECTION 03

Our service levels

3 – Our service levels

The service levels that Vector uses to assess performance of the network against the asset management objectives are described in this section. The service levels include those that are required for regulatory purposes through the Information Disclosure requirements[6]. Further service levels are also measured that inform Vector's asset management practices.

The following sections detail each service level, the methodology of measurement, target level and performance. In addition, Vector also uses a wide range of asset management metrics (refer section 10.3) that inform our asset experts about the detailed behaviour and performance of various types of network equipment or monitoring customer performance outcomes. The asset management metrics are regularly reviewed via performance dashboards, monthly reports or Vector's service providers.

3.1 Customer and stakeholder experience

3.1.1 UNPLANNED INTERRUPTIONS RATE

DEFINITION

The unplanned interruption rate is an indicator of network reliability and measures the number of times the network supply is interrupted, resulting in an unplanned customer outage, including third party events. This measure includes all customer types.

MEASUREMENT

The unplanned interruption rate is calculated by dividing the total unplanned interruptions on the network and third-party damage events in the relevant year by the total customers and dividing by 1,000.

TARGET

Vector's overall target level performance is less than 1.8 interruptions per 1,000 customers per annum. This target is based on the historical average for reference period RY18-RY21.

PERFORMANCE

Table 3-1 shows the comparison of unplanned interruptions per 1,000 customers for the previous five years against Vector's target.

SERVICE LEVEL	RY20	RY21	RY22	RY23	RY24	TARGET	PERFORMANCE AGAINST TARGET
Unplanned interruptions per 1,000 customers	1.6	1.5	1.6	1.3	1.2	< 1.8	●

TABLE 3-1 UNPLANNED INTERRUPTION RATE PER 1,000 CUSTOMERS

For the period ending 30 June 2024, Vector's unplanned interruption rate of 1.2 was below (favourable) compared to our target of less than 1.8 interruptions per 1,000 customers. As mentioned in section 3.2.3, TPD events have increased in RY24 resulting in more unplanned interruptions from third parties. However, equipment failures resulting in unplanned outages continue to decline across the previous four years. This trend demonstrates that Vector's current asset management practices are appropriate to achieve ongoing network performance improvements.

3.1.2 NUMBER OF POOR PRESSURE EVENTS

DEFINITION

Poor pressure events are a count of the number of unplanned incidents where delivery pressure drops below contracted delivery requirements. Vector uses this measure as an indicator of network capacity to meet customer demand.

MEASUREMENT

Poor pressure events are recorded where the cause of the poor pressure is related to Vector's assets upstream of, and including, the customer isolation valve (CIV). Vector's Quality of Supply (QoS) criteria for system pressure is described in section 4.7.8.

6 Gas Distribution Information Disclosure Determination 2012.

TARGET

Vector's overall target level performance is four poor pressure events or less per annum. This target is based on the industry average for reference period RY22.

PERFORMANCE

Table 3-2 shows the comparison of poor pressure events due to network causes for the previous five years against Vector's target.

SERVICE LEVEL	RY20	RY21	RY22	RY23	RY24	TARGET	PERFORMANCE AGAINST TARGET
Poor pressure due to network causes	2	3	4	7	2	4	

TABLE 3-2 NUMBER OF POOR PRESSURE EVENTS

For the period ending 30 June 2024, there have been two poor pressure events compared to our target of four events or less per annum. The two events were related to a service pipe fault and a damage on a service pipe due to third parties. None of the events related to poor supply pressure on the mains network.

The absence of poor supply pressure events on the mains network can be attributed to the level of permanent telemetry monitoring currently installed on the network, and the annual pressure monitoring and network analysis programmes that Vector undertakes to identify constraints on the network.

3.1.3 CUSTOMER SATISFACTION SCORE (CSAT) – FAULTS

DEFINITION

Customer Satisfaction (CSAT) is a key performance indicator used to track how satisfied customer are with Vector's products and/or services. This measure includes all customer types.

MEASUREMENT

The CSAT question is asked on a scale of 0-10 where 0 means very dissatisfied and 10 means very satisfied. The score is based on the customers overall satisfaction with their experience when dealing with Vector regarding their recent fault.

TARGET

Vector's target level CSAT performance is greater than 8.7. The target is based on the historical average for reference period RY18-RY21.

PERFORMANCE

Table 3-3 shows the comparison of CSAT for the previous five years. The primary drivers of CSAT are Vector's prompt fault resolution and the professionalism and efficiency of both field and call centre staff.

SERVICE LEVEL	RY20	RY21	RY22	RY23	RY24	TARGET	PERFORMANCE AGAINST TARGET
Customer Satisfaction Score (CSAT)	8.9	8.9	9.2	9.1	9.0	> 8.7	

TABLE 3-3 CUSTOMER SATISFACTION SCORE – FAULTS (0-10 POINT SCALE)

3.2 Safety

3.2.1 RESPONSE TIME TO EMERGENCIES

DEFINITION

Response time to emergencies (RTE) is a measure of the time elapsed from when an emergency is reported to Vector to the time Vector's personnel arrives at the location of the emergency.

MEASUREMENT

The RTE is calculated by adding the number of emergencies responded to within one hour or three hours and dividing this number into the total number of emergencies.

TARGET

The RTE target is set by the Commerce Commission's regulatory determination. The process for setting this target is specified in the DPP[7]. For the Regulatory Period (1 October 2022 to 30 September 2026) Vector's RTE targets have been set at the following limits:

- 80% of RTE are responded to within one hour; and
- 100% of RTE are responded to within three hours.

PERFORMANCE

For the period ending 30 June 2024, Vector's RTE targets were met or exceeded. This demonstrates that Vector's current reactive response strategies are effective at ensuring that response times to faults and emergencies are appropriate.

Table 3-4 shows the comparison of RTE for the previous five years against the DPP target.

SERVICE LEVEL	RY20	RY21	RY22	RY23	RY24	TARGET	PERFORMANCE AGAINST TARGET
Proportion of RTE within one hour	95.1%	100%	96.2%	97.7%	97.3%	>80%	●
Proportion of RTE within three hours	100%	100%	100%	100%	100%	100%	●

TABLE 3-4 RESPONSE TIME TO EMERGENCIES

3.2.2 PUBLIC REPORTED ESCAPES

DEFINITION

Vector uses public reported escapes (PRE) as its primary technical network service quality measure for operational purposes. It is a critical safety measure and a reliable indicator of the condition of the network. This measure is impacted by a number of factors, including the effectiveness of renewal strategies, the condition and composition of assets, the level of odorant added (which increases the likelihood of PREs), third party meter replacement activities, and the extent and effectiveness of leakage surveys.

MEASUREMENT

PRE is calculated by dividing the total number of confirmed PRE on the network (including mains, service pipes, valves, and pressure stations) in the relevant year by the total length of network (mains and services) and further dividing by 1,000. The measurement of PRE excludes third party damage events, leaks detected by routine survey and no trace events, and is limited to Vector's assets upstream of, and including, the CIV.

TARGET

Vector's overall target level performance is <38 PRE or less per 1,000km of distribution network. Vector's AMP target has been adjusted from <20 to <38 to reflect the new reporting methodology where all reported metering faults are classified as a public reported event.

PERFORMANCE

Table 3-5 shows the comparison of PRE for the previous five years against Vector's target.

SERVICE LEVEL	RY20	RY21	RY22	RY23	RY24	TARGET	PERFORMANCE AGAINST TARGET
PRE per 1000km	19	17	19	18	39	<38	●

TABLE 3-5 NUMBER OF PRE PER 1,000 KM OF DISTRIBUTION SYSTEM

For the period ending 30 June 2024, Vector's PRE performance was 39 compared to our target of less than 38 PRE per 1000km. The increase in PRE in RY24 was due to a change in reporting methodology which reclassified all Vector reported metering faults to a public reported event. As a result, 66% of all PREs were detected and reported by gas fitters carrying out metering activities. Further analysis has highlighted a significant factor to the increase can be attributed to a smart meter replacement programme undertaken by the metering company.

Vector's planned and corrective maintenance and replacement programmes e.g., increased proactive leakage surveys and asset renewal programmes such as the pre-85 polyethylene (PE) pipelines and riser valve replacements are continuously reviewed with the intention to achieve network performance improvements.

7 Gas Distribution Services Default Price-Quality Path Determination 2022 dated 31 May 2022.

3.2.3 THIRD PARTY DAMAGES

DEFINITION

Third-party damage (TPD) events to networks are a significant cause of gas escapes and customer supply interruptions. The levels of TPD provide some indication of the network operator's level of success in communicating awareness to those who control and / or are directly engaged in any activities that put gas networks at risk.

MEASUREMENT

TPD events are calculated by dividing the total number of TPD events on the network in the relevant year by the total length of network (mains and services) and further dividing by 1,000.

TARGET

Vector's overall target level performance is 45 TPD or less per 1,000km of distribution network. The target is based on the historical average for reference period RY18-RY21.

PERFORMANCE

Table 3-6 shows the comparison of TPD for the previous five years against Vector's target.

SERVICE LEVEL	RY20	RY21	RY22	RY23	RY24	TARGET	PERFORMANCE AGAINST TARGET
TPD per 1000km	41	45	47	36	38	<45	●

TABLE 3-6 NUMBER OF TPD PER 1,000 KM OF DISTRIBUTION SYSTEM

For the period ending 30 June 2024, Vector's TPD event performance was 38 events per 1000km (favourable) compared to our target of less than 45 events per 1000km. During RY24, 80% of TPDs occurred on service pipes and further analysis shows that the majority of these damages occurred within private property. Vector continues to implement a number of proactive communication strategies including Facebook, Tik Toc, newspaper articles, magazines and beforeUdig campaigns which focus on improving the awareness of the presence of underground assets.

3.3 Asset management maturity

DEFINITION

The Asset Management Maturity Assessment Tool (AMMAT) set out in Schedule 13 of the Commerce Commission's Information Disclosure Determination is a series of questions against which a business has to assess its asset management maturity level. For full details on the AMMAT self-assessment framework and definitions of maturity levels refer to Schedule 13 of the Commerce Commission's gas distribution information disclosure requirements[8].

MEASUREMENT

The full assessment criteria for the individual questions and how Vector has self-scored against each criterion are included in section in 10.16.

TARGET

Vector's overall goal is to achieve a minimum of "3" rating on each criterion by RY30.

PERFORMANCE

At an overall level, our asset management maturity compares well with generally accepted New Zealand gas asset management practices to ensure the ongoing safe and efficient operation of the gas network. Our approach has matured progressively with our self-assessment improving year-on-year from an overall AMMAT score of 2.7 in RY18 to 2.9 in RY25.

Table 3-7 shows Vector's self-assessment score and progress towards its target.

SERVICE LEVEL	RY18	RY20	RY22	RY24	RY25	TARGET	PERFORMANCE AGAINST TARGET
AMMAT score	2.7	2.7	2.8	2.8	2.9	3	●

TABLE 3-7 AMMAT SCORE

8 Refer to https://comcom.govt.nz/regulated-industries/gas-pipelines/information-disclosure-requirements-for-gas-pipelines

3.4 Natural gas fugitive emissions (scope 1)

DEFINITION

Natural gas fugitive emissions (Scope 1) refer to the release of methane (CH_4) and other greenhouse gases directly from the gas distribution network during routine operations and/or unexpected incidents. These emissions occur as a result of leaks, equipment failures, and operational activities, such as maintenance, commissioning, and decommissioning of network assets. This data forms the foundation for developing effective emission reduction strategies.

MEASUREMENT

In 2020, Vector established a comprehensive methane emission reporting methodology based on a bottom-up approach. This approach identifies and quantifies all methane emission sources within Vector's gas network. The methodology adheres to the guidelines of the Technical Association for the European Gas Industry (Marcogaz), which has been determined to be the most comprehensive and relevant framework for Vector's operations. The robustness of this reporting methodology has been validated through audits conducted by external auditors and third-party subject matter experts.

By adopting this methodology, Vector is able to identify and calculate opportunities for emission reductions and set practical targets to decrease overall emissions. Additionally, Vector is actively supporting the broader gas industry in implementing similar methodologies to ensure consistent emission reporting across other GDBs.

TARGET

Vector has set a science-aligned emissions reduction target of reducing Scope 1 and 2 emissions (excluding electricity line losses) by 53.5% by RY30, using an FY20 baseline. As Vector's natural gas fugitive emissions account for the largest share of these group wide emissions (73% of emissions in the baseline year RY20), significant attention is given to fugitive gas emission reduction

In RY24, Vector updated the methane emission factor to a Global Warming Potential (GWP) of 28, up from 25, as per the Ministry for the Environment's guidance. This change increased the baseline emissions for RY20 from 16,368 tCO_2e, as previously reported in earlier AMPs, to 18,313 tCO_2e.

PERFORMANCE

For the period ending 30 June 2024, Vector's Scope 1 fugitive emissions on the gas distribution network were 9,379 tCO_2e, a reduction of 3,944 tCO_2e or 29.6% compared to RY23. Performance is tracking well towards Vector's RY30 target of 8,515 tCO_2e.

The key initiatives implemented in RY24 that achieved this result include:

- A reduction of 3,560 tCO_2e due to increasing leakage survey cycles from annually to 6-monthly resulting in a reduction in the number of leaks reported from system survey of 30 in RY23 to 19 in RY24; and
- A reduction of 395 tCO_2e due to a reduction in response time to TPD damage events.

Table 3-73-8 shows the comparison of CO_2 equivalent emissions for the previous five years against Vector's target.

SERVICE LEVEL	RY20	RY21	RY22	RY23	RY24	RY30 TARGET	PROGRESS TOWARDS TARGET
Scope 1 emissions in tonnes of carbon dioxide equivalent (tCO_2e)	18,313	13,507	16,217	13,323	9,379	8,515	●

TABLE 3-8 NATURAL GAS FUGITIVE EMISSIONS (TONNES OF CO2 EQUIVALENT)

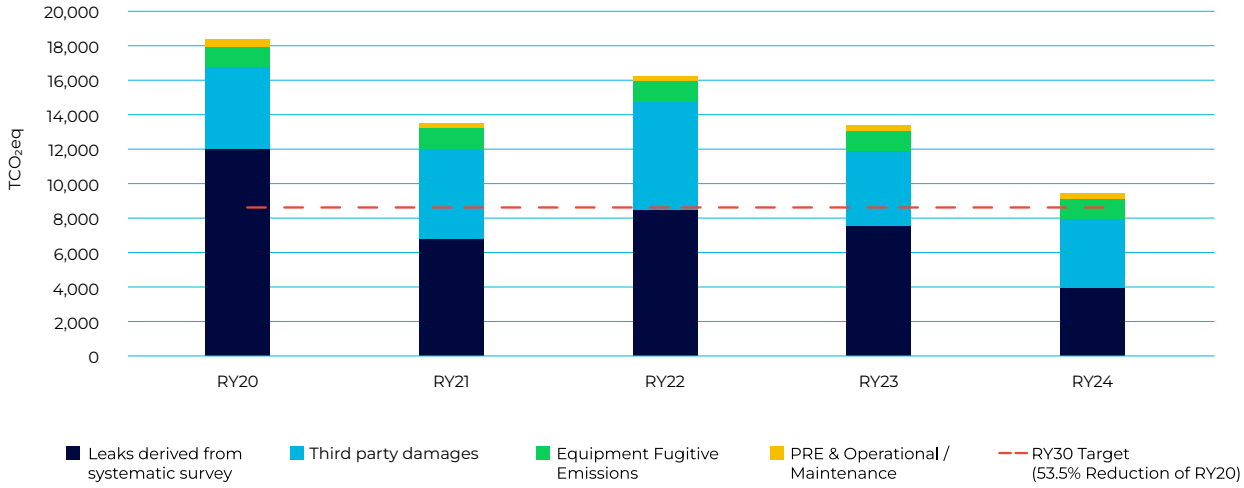


FIGURE 3-1 ESTIMATED FUGITIVE EMISSIONS – ACTUAL AND FORECAST

Note: Operational / maintenance category includes all associated fugitive emissions from operating and maintaining assets i.e., all planned maintenance, commissioning and decommissioning activities. Equipment fugitive emissions include all asset specific emission factors including tightness failure factors, pipeline permeation and service regulator relief valve emissions.

PATHWAY TO OUR EMISSIONS TARGET

To achieve our emission reduction targets, Vector has identified several key initiatives including:

- Increased leakage surveying;
- Reduction of third-party damages through public engagement;
- Improving emergency response times;
- Reduction / limitation of operational venting, and
- Reduction of operating pressures for underutilised networks.

Increasing the leakage surveying frequency across the gas network was found to be the most effective. The new leakage surveying initiative includes the deployment of a new surveying system and doubling the frequency of leakage survey in FY27 from 6 monthly to 3 monthly.

This initiative will also improve network performance and reduce the risk of potential incidents, by earlier detection of any minor leaks. This approach also aligns with Vector's asset management policy, in particular our commitment to prevent harm to the public through the management of our assets over their entire lifecycle.

3.5 Process for recording reactive fault information

Vector's Field Service Provider (FSP) undertakes data capture activities within the gas distribution network. The FSP manages data in accordance with Vector's requirements as defined in the Vector Gas Network Standard (GNS) GSD004 (standard for Gas Distribution Network Reliability, Integrity and Consumer Service).

Gas distribution network performance and consumer service data is captured using two methods:

- Electronically via hand-held tablets in the field. Data from the hand-held tablets is automatically uploaded into Vector's Customer Management System (CMS); and
- Remotely entered (external to Vector) directly into Vector's CMS, with hard copy paper records scanned and entered as an attachment. This approach is used only if the electronic data capture systems are not available.

Data entered in Vector's CMS by one of the above methods is then quality checked by the FSP for accuracy, prior to undergoing additional quality assurance checks by Vector personnel. Data is then extracted from Vector's CMS and the required information is generated for reporting purposes.

The following system integrity and reliability metrics are extracted from the CMS database for disclosure reporting:

- RTEs;
- SAIDI unplanned;
- SAIDI planned;
- SAIFI unplanned;
- SAIFI planned;
- Customer average interruption duration index (CAIDI) unplanned;

- CAIDI planned;
- Interruptions by class;
- Outage events;
- Outage events caused by third party damage;
- PREs;
- Third party damage events;
- Leakage survey;
- Poor pressure due to network causes;
- Emergency telephone calls answered within 30 seconds;
- Product control – non-compliance odour tests; and
- Number of complaints.

Figure 3-2 shows how the reactive fault information is recorded and checked for completeness.

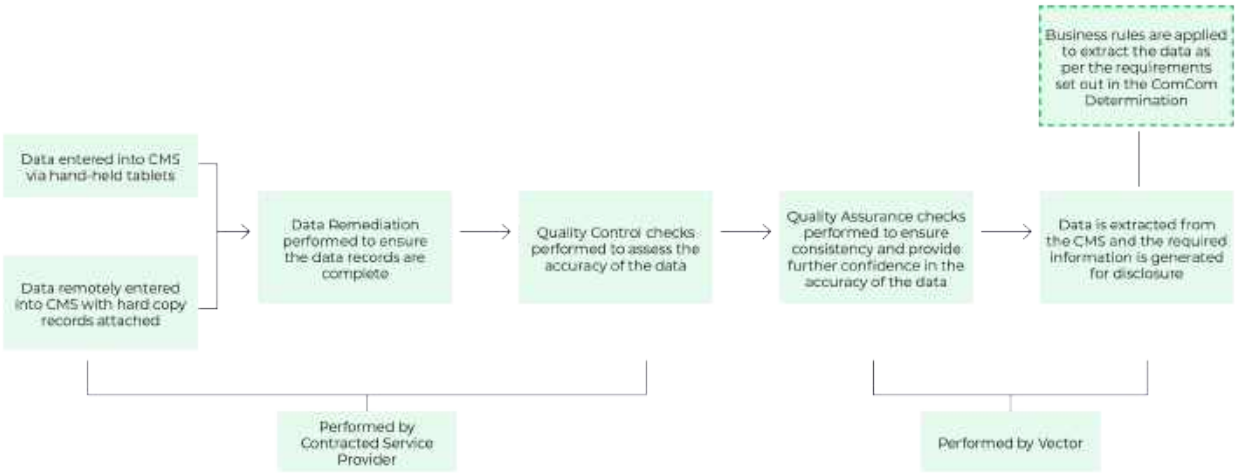
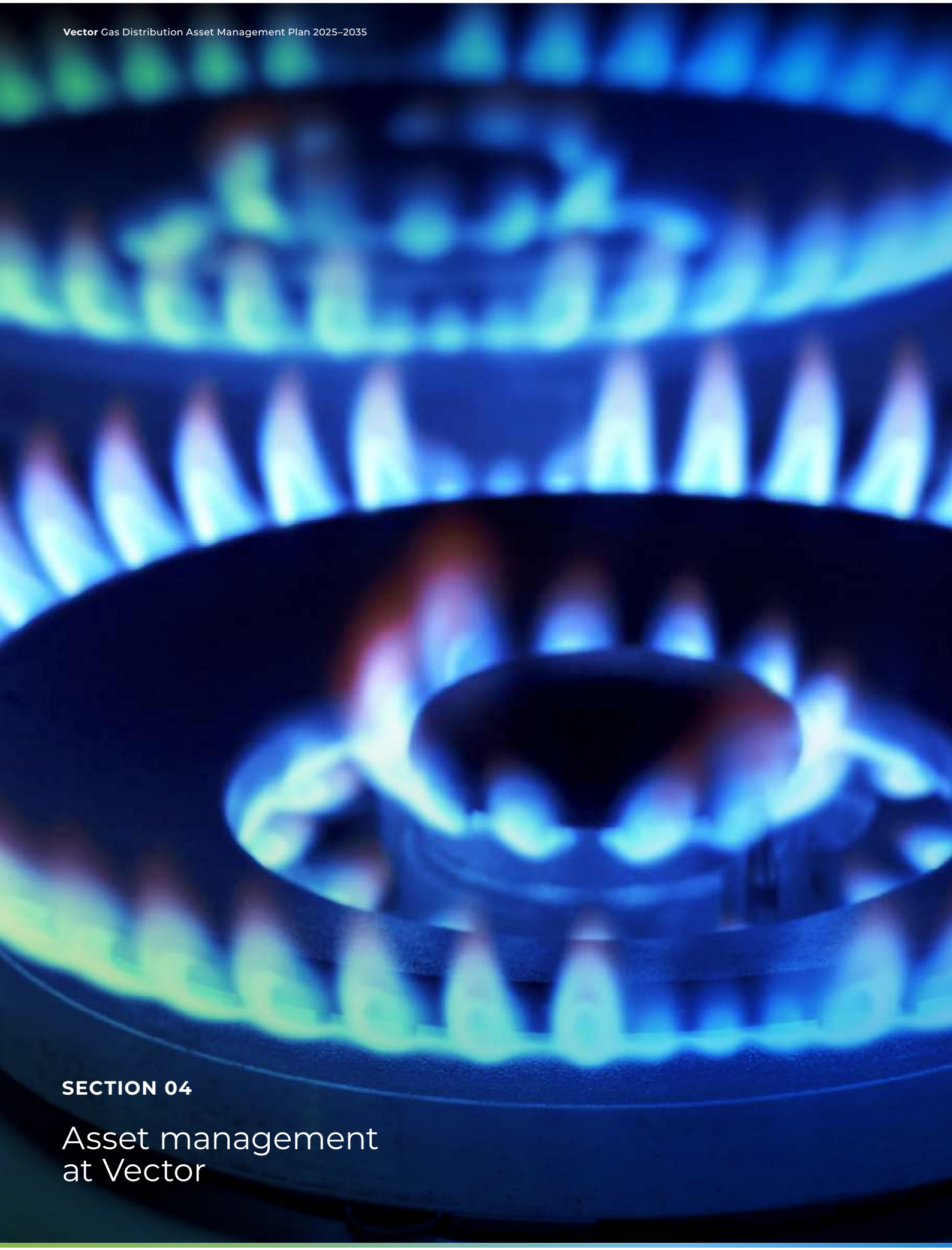


FIGURE 3-2: VECTOR'S REACTIVE FAULT INFORMATION FRAMEWORK



SECTION 04

Asset management at Vector

4 – Asset management at Vector

This section describes the framework that supports and enables Vector's asset management practice.

Vector's asset management practice is a multi-utility practice that includes electricity, gas and fibre communications assets. Much of the enabling framework applies equally to each of those utility networks, however where a practice at Vector relates specifically to its gas distribution network it is called out in this section.

4.1 Electricity, gas and fibre strategy

At Vector, we want all our customers to have access to clean, reliable, safe and affordable energy. The electricity, gas and fibre (EGF) strategy demonstrates how it contributes to Vector's vision of "*creating a new energy future*". The strategy defines the purpose of the EGF business and how it will:

"Create an affordable, reliable & safe energy system that meets customer needs & efficiently manages network demand".

By collaborating across Vector, the industry and through strategic partnerships we will:

ELECTRICITY, GAS AND FIBRE STRATEGY

1. Operate safely as one team.
2. Step change in our service to customers.
3. Invest in our networks wisely and efficiently.
4. Modernise, systemise & automate processes.
5. Enable Auckland's growth & electrification.
6. Enable the new energy future.

4.2 Asset management policy and principles

Our asset management (AM) policy supports our vision of creating a new energy future by setting clear principles (detailed below) to guide the development of Vector's AM objectives and plans. Our policy principles represent Vector's values, commitments and strategic pillars which apply to all employees and partners (field services providers, contractors, and suppliers), involved in the management of Vector's gas network assets.

ASSET MANAGEMENT PRINCIPLES

1. Safety is our highest priority, and we strive to achieve zero harm to employees, contractors, and the public through the management of our assets over their entire lifecycle.
2. We strive to optimise the total lifecycle costs of our assets in ensuring the safe, reliable, resilient, efficient, and affordable provision of energy related services.
3. We comply with internal policies, processes, and established frameworks as well as applicable statutory and regulatory obligations.
4. We use risk models, data, analytics, and market driven insights to make decisions that are in the long-term interests of our customers.
5. We use innovation to accelerate the convergence of traditional and digital assets to manage and meet our customers' evolving expectations.
6. We manage the impact of our assets on the environment while supporting both Vector and our customers' decarbonisation objectives.
7. We engage commercially but collaboratively with our partners by encouraging open and clear communication to leverage diversity of thinking and experience.
8. We align our Asset Management System with industry recognised asset management practices including ISO 55001.
9. We manage risk effectively and continuously adjust our approaches to manage new and emerging risks such as cybersecurity, privacy, and climate change.
10. We measure the effectiveness of our efforts to ensure we continuously improve our asset management capabilities in delivering our vision.

4.3 Asset management objectives

Our AM objectives have been developed in alignment with the principles set out in our AM policy. The AM objectives further consider our operating environment and represent specific stakeholder requirements. These are considered at a more

detailed and defined level, enabling appropriate asset management plans and activities to be developed and set (refer to Table 4-1 below).

FOCUS AREA	OBJECTIVES	AM PRINCIPLES	STRATEGY ELEMENT
Safety, environment and network security	• Preventing harm to workers, contractors and the public through our work practices and assets. • Ensuring health and 'safety always' is at the forefront of decision making for the business. • Complying with relevant safety and environmental legislation, regulation and planning requirements. • All staff are competent and trained in their applicable roles with the right equipment available to work safely and effectively. • Asset management activities align with environmentally responsible and sustainable behaviours, in line with industry best practice, enabling wider emissions reductions. • Minimise the impact on the environment with regards to our assets and work practices. • Proactively manage network security, which includes adequacy, reliability and resilience (including managing the growing impact of climate change).	1, 6	1
Customers and stakeholders	• Enable customers' future energy and technology choices. • Provide a high-quality customer service experience across all interactions. • Listen to and learn from our customers to ensure our service offering aligns with customer expectations. • Consider the impact of our operational decisions on customers and minimise the disruption of planned outages and unplanned outage response times. • Ensure the long-term interest of our customers by providing an affordable and equitable network.	2, 4, 5, 6, 7, 9	3, 4, 5, 6
Network performance & operations	• Comply with regulatory quality standards set out in the Information Disclosure requirements[9]. • Maintain accurate and comprehensive information management systems to drive continuous improvement of our asset health database and information records and meet regulatory reporting obligations. • Continual improvement of our asset management system and alignment to ISO 55001. • Strive to optimise asset lifecycle performance through increased asset standardisation, clear maintenance regimes and the development of fact-based investment profiling. • Utilise clear business cases processes, integrate risk management and complete post investment reviews to inform our decision making and analysis. • Maintain compliance with Security of Supply Standards through risk identification and mitigation. • Expand our asset strategies to both incorporate new technologies and optimise the use of existing technologies to enable future resilience and customer choice. • Collaborate with teams throughout Vector to leverage different thinking, skillsets and asset management capabilities. • Ensure continuous improvement by reviewing and investigating performance and embedding learnings. • Manage performance of field service providers through effective commercial arrangements and regular review.	2, 3, 4, 5, 7, 8, 9, 10	3, 4, 5, 6

9 Gas Distribution Information Disclosure Determination 2012.

FOCUS AREA	OBJECTIVES	AM PRINCIPLES	STRATEGY ELEMENT
Future energy network	• Prepare the network for future changes that will be driven by climate change including decarbonisation of the economy. • Prioritise network flexibility to meet changing customer needs and facilitate an affordable transition to a decarbonised economy. • Facilitate customer adoption of new technology while ensuring a resilient and efficient network. • Treat data as an asset, protect it appropriately and manage its use in accordance with its criticality to customers and the network. • Collaborate with industry, partners, thought leaders and subject matter experts to ensure Vector remains at the leading edge of future energy solutions.	2, 4, 5, 6, 7, 9, 10	2, 3, 4, 5, 6

TABLE 4-1: VECTOR ASSET MANAGEMENT OBJECTIVES

4.4 Asset management framework

Vector's AM framework links the organisational AM objectives to the tactical AM practice. The AM framework creates a clear link between Vector's vision, strategic objectives, and AMPs. The AM framework is shown in Figure 4-1.

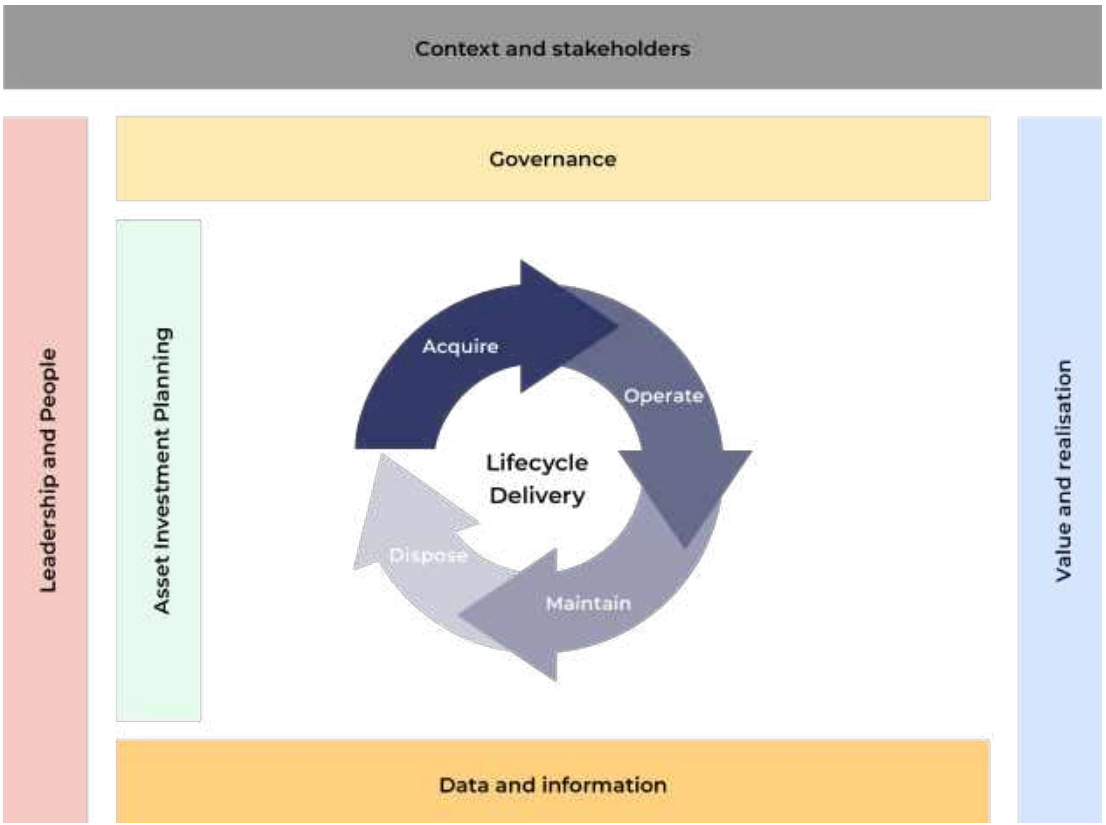


FIGURE 4-1: VECTOR'S ASSET MANAGEMENT FRAMEWORK

Continuous improvements in our practices, with supporting cost, risk and performance monitoring, as well as data driven reporting, ensure a full "line of sight" throughout the asset management governance structure, from AM objectives to individual asset level performance.

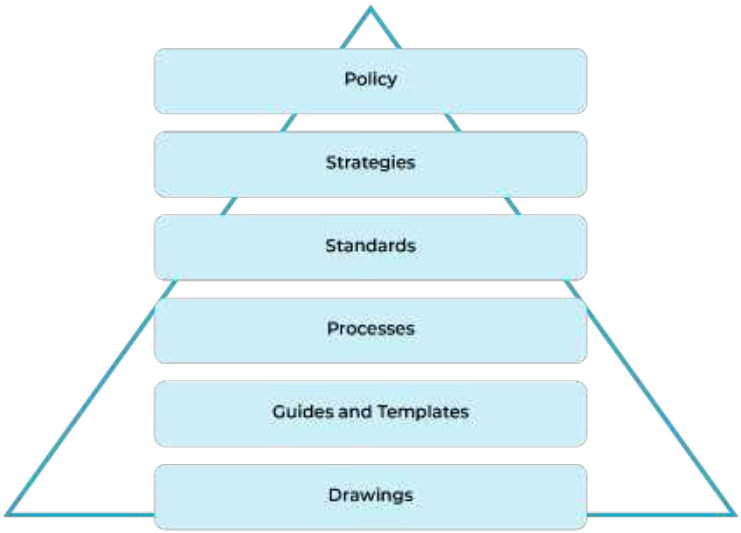
Vector is continually advancing its AM practices (refer section 3.3) to best position ourselves to achieve its objectives and ultimately its vision of a new energy future. This journey includes aligning our AM framework with ISO 55001. TABLE 4-2 describes Vector's asset management standards (AMS) and key elements.

ASSET MANAGEMENT STANDARD[10]	DESCRIPTION	KEY ELEMENTS
AMS 01: Context and stakeholders	Sets the boundary conditions that inform the approach to asset management organization.	• Organisational purpose and context • Stakeholder management • Asset costing and valuation
AMS 02: Governance	Relates to governance and management of AM within an organization. Including the AM system approach taken by the organization.	• AM policy • AM system • Asset management assurance and audit • Technical standards and regulations • Management of change • Risk
AMS 03: Asset management planning	The subjects relating to the AM planning and approach taken by the organization. AM planning specifies the detailed activities and resources, responsibilities, time horizon, and risks for the achievement of Asset Management objectives.	• AM strategy and objectives • Demand analysis • Sustainable development • Planning • Decision-making • Lifecycle value realisation • Resourcing strategy and management • Shutdown and outage strategy management • Contingency planning and resilience
AMS 04: Leadership and people	The people-related subjects, including AM leadership, resourcing, and competence, that inform an organization's culture.	• AM leadership • Organizational arrangements • Organizational culture • Competence management • Organisational change management • Knowledge management
AMS 05: Data and information	The information related subjects applicable to AM. Including the way information is managed as an asset and the importance to AM decision making.	• AM data and information strategy • Asset data and information standards • AM data and information management • AM data and information systems • Configuration management
AMS 06: Delivery	The subjects relating to Life cycle delivery of AM. An interdisciplinary, collaborative approach to derive, evolve, and verify a whole life cycle balanced system solution which satisfies stakeholder expectations and meets organizational outcomes and targets.	• Systems engineering • Asset creation and acquisition • Integrated reliability • Asset operations • Maintenance delivery • Incident management and response • Asset repurposing and disposal • Supply chain management
AMS 07: Value realisation	Subject related to measuring outcomes and continual improvement, not just performance of assets.	• Outcomes and impacts • Monitoring • Continuous improvement

TABLE 4-2: VECTOR'S ASSET MANAGEMENT STANDARDS

10 Source: Global Forum on Maintenance and Asset Management (GFMAM)

4.5 Asset management key documents



Vector uses a range of document types to stipulate and control requirements. Each document type is represented in a hierarchy structure to ensure all information is aligned. This approach creates a "system of control" in relation to technical and business risks. Figure 4-2 represents Vector's document hierarchy.

FIGURE 4-2: VECTOR DOCUMENT HIERARCHY

4.5.1 LEGISLATIVE REQUIREMENTS

Vector's gas distribution assets are designed, constructed and operated in accordance with the following principal Acts, Regulations and industry codes:

- Gas Act 1992 and Gas Amendment Act;
- Health and Safety in Employment Act;
- Gas (Safety and Measurement) Regulations;
- Civil Defence and Emergency Management Act;
- Hazardous Substances and New Organisms Act;
- New Zealand Standard (NZS) 7901 Electricity and Gas Industries – Safety Management Systems for Public Safety;
- AS/NZS 4645.1 Gas Network Management;
- AS/NZS 2885 Pipelines – Gas and liquid petroleum; and
- NZS 5263 Gas detection and odorisation.

These Acts, Regulations and industry codes include both prescriptive and performance-based requirements which have been embedded into Vector's suite of asset management documentation. Vector uses ComplyWith to assist in documenting our risk assessments, monitoring and reporting on our legal compliance obligations. Any changes or impacts on our AM processes are recorded through our change control process.

4.5.2 STRATEGIC DOCUMENTS

Table 4-3 sets out the key strategic documents relating to Vector's AM framework. Our strategic documents are subject to change control. The change control process obtains feedback and approval of the controlled documents and related change impacts prior to publication.

DOCUMENT	ROLE IN ASSET MANAGEMENT PRACTICE
Asset management policy	This policy is Vector's formative asset management document. It defines the principles that guide all aspects of our asset management practice including the development of objectives and plans.
Delegated Authority (DA) framework	The purpose of this DA framework is to empower Vector employees to create shareholder value by enabling and encouraging business decisions to be made at the right level of the organisation, by people with the appropriate expertise and experience, and within an efficient, transparent and auditable set of rules that are clear to all.

DOCUMENT	ROLE IN ASSET MANAGEMENT PRACTICE
Risk management policy	The purpose of the risk management policy is to outline Vector's approach to risk and risk management. It is designed to: a) Outline our key risk key management principles and objectives whilst drawing on principles and guidance from relevant standards; b) Demonstrate Vector's commitment to promoting a highly engaged and positive risk culture; c) Provide a consistent and enterprise-wide method of identifying, assessing, controlling, monitoring and reporting risks faced by the Vector Group; d) Establish clear responsibilities for risk management at all levels of the Group; and e) Meet best practices for risk management and governance.
Health and safety policy	This policy sets out Vector's commitments and requirements for health and safety. Vector will conduct its business activities in such a way as to protect the health and safety of all workers of Vector Limited, its related companies including contractors ("Vector People"), the public and visitors in its work environment. Furthermore, as Vector recognises that high consequence, low probability events may present materially significant risks and require specialist knowledge and controls, this policy also encompasses Vector's commitments and expectations for the management of process safety.
Sustainability policy	Our sustainability approach recognises the interests of all Vector's stakeholders including our customers, people, shareholders, and communities. We are using our position as a leading New Zealand business and energy sector participant to have a positive impact, with a particular focus on increasing the availability and access of affordable clean energy for our consumers, improving resilience, and helping New Zealand transition to a zero-carbon society.
Procurement policy	The purpose of this policy is to establish principles and minimum requirements to ensure goods and services are procured in a consistent, effective, sustainable and ethical manner. Ensuring Vector is obtaining the best value for money proposition.
Group data and information policy	The purpose of this policy is to govern and guide Vector's key data and information management principles, applicable to all employees and contractors of Vector.
Asset class strategies	These strategy documents facilitate the annual development of the AMP through formally recording asset strategies at the asset header class level for our different asset classes.

TABLE 4-3: VECTOR ASSET MANAGEMENT STRATEGIC DOCUMENTS

4.5.3 STANDARDS

Standards and specifications are an integral part of our AM framework. These state the levels of service and performance targets and define intervention levels and minimum performance criteria. Table 4-4 lists the major standards that support the procurement, supply, commissioning, operation and maintenance of existing, new or replacement assets.

Our technical specifications and engineering and maintenance standards are listed in detail in section 10.2. These documents are improved under a defined management of change process and document revision control process as described in Vector's standard USD001 Controlled document management.

Change control is the flow of change-related documentation between the document author, our FSPs and all end users in Vector. Change control obtains internal and external feedback, including any potential impacts relating to the change, and approval of the controlled document prior to publication.

ASSET STANDARD	ROLE IN ASSET MANAGEMENT PRACTICE
Planning and design standards	These standards guide the planning and development of Vector's overall distribution network architecture. They work in conjunction with the Security of Supply (SoS) standards service level metric to ensure that the network has sufficient capacity and capability to provide the required service levels, enable customer connections and accommodate growth.
Maintenance standards	Vector has developed a set of maintenance standards for each class of assets that detail the required inspections, failure modes, condition monitoring, maintenance and data capture requirements. Where a cyclic maintenance strategy is applied these standards also set out the maintenance cycle frequency.
Operating standards	These standards define protocols and procedures for operating and controlling Vector's gas network, including contingency plans. They also inform the minimum requirements for network planning and design practices.
Construction standards	These standards and their accompanying standard design drawings cover the detailed design and installation of Vector's network equipment. They also include the data capture requirements for our asset management systems and plant in Vector's network.
Equipment specifications	Equipment specifications specify the materials and equipment to be used on the gas network and the quality and performance requirements with which the materials and equipment must comply.

ASSET STANDARD	ROLE IN ASSET MANAGEMENT PRACTICE
Gas safety and operating plan	This gas safety and operating plan has been developed for Vector's gas network to detail the controls in place to mitigate the risks that have been identified under the hazard and risk assessment processes for minimisation of harm to persons, property, the public and the environment, including emergency response
AS/NZ standards	Australian and New Zealand standards are referenced extensively in our standards and scopes of work.

TABLE 4-4: VECTOR STANDARDS

4.6 Asset management and asset management maturity

4.6.1 ASSET MANAGEMENT, ASSET MANAGEMENT STRATEGY AND ASSET MANAGEMENT POLICY

Our asset management policy broadly outlines the principles for undertaking asset management across the organisation (see section 4.2 for the broad outline of our policy). These principles then translate the strategic intentions into an asset investment strategy. These are documented in the AMP. Technical standards, work practices and equipment specifications support the asset management policies, guiding the capital and operational works programmes.

4.6.2 COST, RISK AND SYSTEM PERFORMANCE

Asset management encompasses all practices associated with considering management strategies as part of the asset lifecycle. The objective is to look at the lowest long-term cost rather than short-term savings only. To achieve optimal asset management requires a balance between cost, level of risk and performance of the asset. We utilise a risk-based approach that considers the different failure modes of an asset, its condition, criticality scores, probability of failure, likelihood of consequences and a final risk score (our condition-based asset risk models are described in section 4.8).

A combined list of proposed projects and initiatives are then prioritised based on a set of agreed business objectives and values with the constraints of resources taken into consideration. The combined list contains our proposed projects and initiatives, high level cost estimates and estimated risks together with investment prioritisation.

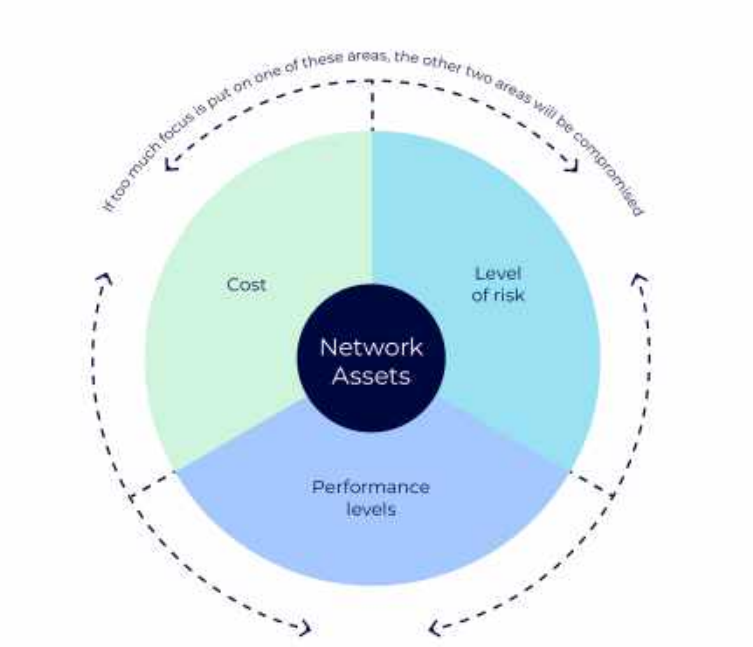


FIGURE 4-3: RELATIONSHIP, COST, RISK AND PERFORMANCE

COST

A clear business process with stage gates exists to describe the actions that need to be completed prior to moving past a stage-gate to the next stage in the budget and funding process. Our business cases state the risk and need that drives the requirement for a project, alternative options that were considered and the cost for each option. Our works cost estimates are detailed providing an overview of the total estimated cost of the works, the portion that is required to develop the design of the works, funding required for early procurement of long lead items and the portion required to move to full project funding. Business cases and cost estimates undergo a rigorous peer review process and then a controlled approval process via our SAP business software workflow procedure.

LEVEL OF RISK

Our risks are registered in our risk management system together with controls, actions, assignment of responsibilities and target dates for assessment, review and completion. We use a risk matrix that considers consequences and likelihood to assess and score risks. The risk scores are assigned in the risk management system. Initiatives to address a risk could also present itself as an opportunity for new solutions and innovations.

PERFORMANCE LEVELS

Our performance levels for our network are stated in the AMP. Our measures and the data are retained for reporting and analysis and reported annually to the Commerce Commission in our compliance statement.

4.6.3 INVESTMENT FORECAST PROCESS

The key objectives of asset management, as stated in Vector's asset management policy, relate to safety, reliability and the environment (see section 4.13) with performance against these objectives captured by the service level metrics (see section 3 –). By having a robust investment planning and prioritisation process, Vector aims to ensure that the investment required to meet these objectives and targeted service levels is efficient, bringing the greatest total benefit to our customers. This is also an important step towards achieving best industry practice in asset management principles, prescribed in ISO 55000.

The planning process is described below and is undertaken yearly as part of Vector's annual budgeting cycle.

- **Project proposals:** Once the need for a project has been identified, project proposals are created. The need of the projects is underpinned by customer needs, asset conditions and risks, network performance and strategies. Project proposals are prepared by Vector's subject matter experts;
- **Preliminary investment plan:** Project proposals are peer reviewed to ensure consistency of project proposals before incorporation into the preliminary investment plan. In this preliminary plan, projects are staggered to account for the realistic volume of work that can be undertaken in each year. This uses engineering judgement to take into consideration resources available for delivery including the construction and procurement capabilities available. Any synergies and interdependencies between projects are highlighted and incorporated into the preliminary plan;
- **Risk based prioritisation:** The preliminary investment plan is assessed against the resource and financial constraints, and where appropriate prioritised considering the key business objectives. The business objectives of a project proposal are expressed based in terms of improvements to service level metrics (refer to section 3 –) or in terms of risk mitigation (refer to section 5.3);
- **Draft investment plan:** Once projects have been through the prioritisation process, the draft investment plan is formed. This plan is reviewed and approved by the executive management team. The risk associated with projects that have not formed part of the draft investment plan following optimisation is highlighted and acknowledged; and
- **Final investment Plan:** Following consideration and approval by the executive management team, the final investment plan is reviewed and approved by the Board.

4.6.4 ASSET HEALTH, AGE-BASED REPLACEMENT, AND OUR CBARM MODEL

For our asset fleet we have developed an asset strategy for each asset class. These strategy documents clearly describe the asset class equipment, their status and condition, challenges, future management, and maintenance and replacement strategies. These strategy documents inform and facilitates the annual creation of the capital investment programmes and capital budget. They are updated annually to coincide with the development of the annual AMP.

We take a whole of life cycle approach to assessing the need for asset replacement to minimise the cost to customers. We apply a risk-based approach to forecasting asset condition, including age profiles, and therefore the expected asset volumes and expenditure required for asset replacement. Condition Based Asset Risk Management (CBARM) models have been developed that consider condition data, age profiles, risk data, as well as environmental conditions and location.

The value and criticality of the asset type determines the complexity of the modelling implemented so that the effort is appropriate for the risk posed to the network. Asset obsolescence, vendor support and/or availability of spare parts are included in the condition assessment of asset types. For some asset classes it is not efficient or possible to gather sufficient condition information to assess the health of individual assets or develop a CBARM model. In these cases, we use deterministic factors such as age and type information to predict asset replacement needs.

CBARM models have been developed for Vector's pipelines, district regulator stations (DRS), special crossings and belowground valve assets. The CBARM models incorporate inputs relating to asset configuration, recorded condition data, environmental factors and obsolescence to determine a health index (HI) score for each asset in the network. The model also identifies the probability and consequence of failure, which can be normalised across different asset types to identify and compare the expenditure strategy for each asset type.

The health index (HI) score of each asset has been calculated based on the condition and operational data and then forecasted over the next ten years, based on asset specific aging rate. In this assessment, the HI of a new asset is considered (0.5), and for an asset at its end of life is considered (10). These Health Index score is subsequently translated to probability of failure (PoF) values. The Health Index Band represents assets where the PoF is similar, by assigning:

- A typical value of PoF to all assets within the same health index band (for a given health index asset category); and
- A typical value of consequence of failure to all assets within the same criticality index band (for a given health index asset category).

A criticality index (CI) of assets are grouped in four bands based on their relative consequence of failure (CoF). The criticality of the asset is a measure of an asset's safety, reliability and environmental impact resulting from an asset failure. Each asset

is placed in a CI band, based on the relative magnitude of the overall CoF of the entire asset population, and compared to the average overall CoF for all assets in the same HI asset category.

There are four CI bands:

- C1 - 'Low' criticality: The consequence of failure impact is negligible and can be managed as part of business as usual;
- C2 - 'Average' criticality: The consequence of failure impact is moderate and require active monitoring. The 'C2' criticality index band represents assets where the overall CoF are approximately the same as the average overall CoF for all assets;
- C3 - 'High' criticality: The consequence of failure impact is high and requires active oversight along with treatment plans to reduce overall risk; and
- C4 - 'Very High' criticality: The consequence of failure impact is significant and requires active intervention along with treatment plans to reduce overall risk.

The CI, when combined with the HI, provides a risk profile for each of the modelled asset classes. This risk basis provides a critical input to defining the asset strategies, budget allocations and asset management decisions for capital budgeting. FIGURE 4-4 shows the CBARM model flow diagram.

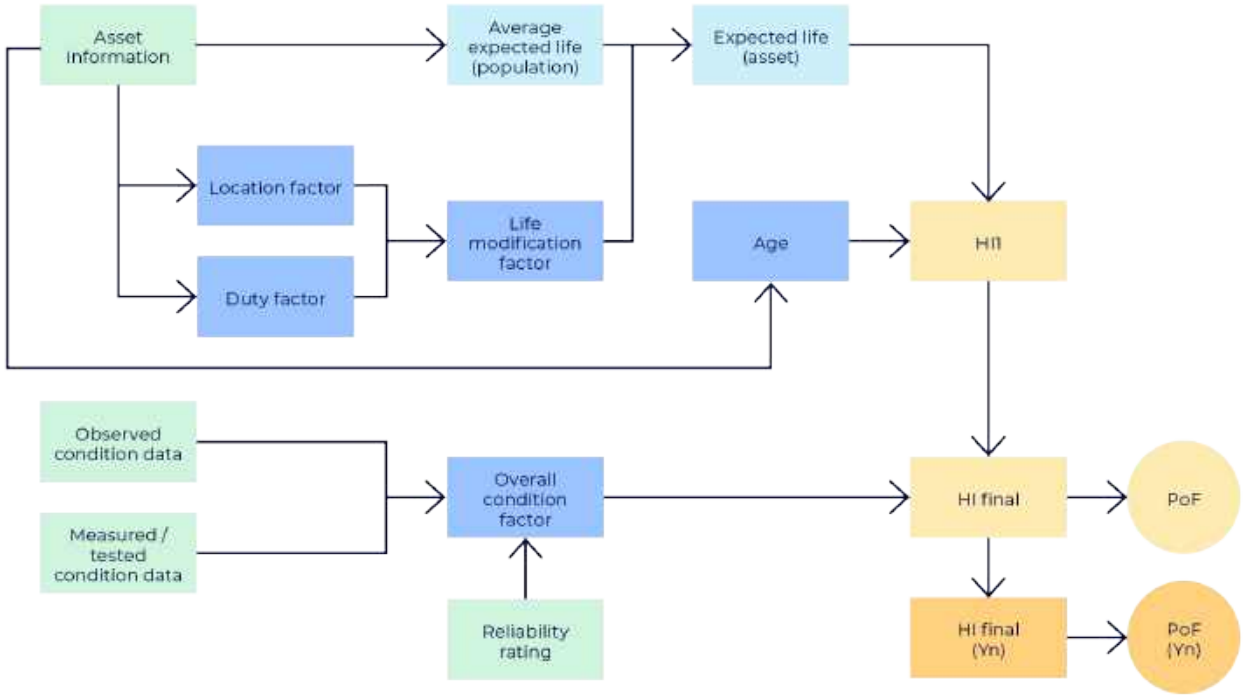


FIGURE 4-4: CBARM MODEL FLOW CHART

4.6.5 ASSET MANAGEMENT DOCUMENTATION, CONTROLS AND REVIEW

Document control is stipulated and governed by our standard GNS-0085 Management of change. Policies, strategies, and standards are circulated for review via our SharePoint application, including our external partners such as field service providers. Document control has been automated using Power Automate. Records are captured in a SharePoint Library using metadata which provides document update reminders, notifications and a streamlined solution for managing and controlling documents.

Updates of asset management documents, standards and standard drawings are issued via SharePoint. Each asset management document has a revision number, current date, and a date at which it needs to be reviewed.

This document control process also applies to outsourced works. The issuing, changes and return of changed documents are controlled via our SharePoint software application with a revision recording and history of changes system in place as part of the application.

4.6.6 COMMUNICATION OF THE ASSET MANAGEMENT PLAN

Our website portal (www.vector.co.nz), provides a wide range of asset management information to external parties. It provides information with regard to new connections, faults information, work in close proximity to our networks and our AMP amongst others. Our AMP, for both opex and capex are formally communicated with our field service providers via formal meetings and programme of works schedules.

Vector also has an Open Data Portal with network asset location information on Vector's gas distribution network. The site allows third parties the ability to access location information for electricity and gas assets electronically. In addition to creating map views, third parties can download the data or connect their systems directly to Vector data. This initiative ensures that infrastructure companies, construction companies and entities like Auckland Council and Civil Defence have access to up-to-date information about Vector assets. This is also another way in which Vector can assist construction companies to prevent third party asset damage.

4.6.7 AUDIT OF THE ASSET MANAGEMENT PLAN

Vector undergoes annual safety audits of its network and asset management practices in terms of NZS7901, Public Safety. These audits are completed by external independent auditors, and we use these reviews to address gaps and inform our plans to improve our asset management practice.

4.6.8 ASSET MANAGEMENT MATURITY

Developing our asset management maturity is a key focus of continuous improvement for Vector. We review our asset management practices using the Commerce Commission's AMMAT. We use these reviews to inform our plans to improve our asset management practice.

As described in section 3.3, our approach has matured progressively with our self-assessment improving year-on-year from an overall AMMAT score of 2.8 in RY23 to 2.9 in RY25.

Our latest AMMAT review (refer to section 10.16) highlighted the good progress we are making in terms of formalising our asset management practices and improving our asset management practices. We recognise the importance of continuous improvement and that this process is ongoing, in our aim of achieving a target score of three on each AMMAT rating criteria. We will continue to improve our CBARM models, formalise our data and information systems to support these models and continue developing our suite of asset management standards.

4.7 Asset management strategies

4.7.1 OVERVIEW

Management of Vector's network is undertaken in accordance with Vector's asset strategies. These strategies are focused on meeting service level targets and given the uncertainty over future gas demand, ensuring a prudent approach is adopted to continue to deliver safe and reliable services, while mitigating the risk of asset stranding. This shift in asset management reduces capex and increases opex which enables a risk-based targeted approach across different asset classes. This approach provides greater flexibility to respond to changing conditions and uncertainty.

Vector's assets are managed over their full lifecycle to avoid failures that pose a hazard to workers, public safety or harm to the environment and minimise interruptions of supply to our customers. The AM strategies are also aligned with statutory and regulatory requirements and the technical standards. A list of key asset strategy documents and technical standards are provided in section 10.2.

This section describes the AM strategies that are in place at Vector that span across all asset classes. These include planning, operation and maintenance strategies as well as specific strategies relating to service level performance i.e. safety, reliability, gas quality and environment. Specific asset class strategies are described in Vector's asset class strategy documents which have been summarised in this section.

4.7.2 NETWORK PLANNING STRATEGY

The planning strategy ensures that both Vector's QoS and SoS are maintained across the network. Broadly speaking QoS addresses network pressure and capacity issues, both current and forecast, while SoS addresses the level of redundancy or the degree of meshing across the network.

Demand for new customer connections outside existing network boundaries is typically supplied through the development of new distribution pipelines and pressure stations. Where forecast demand within an existing network supply area is expected to exceed the nominal capacity of an asset, causing a QoS breach, then solutions are identified to address the constraints. The timing of the solution is scheduled to ensure that the QoS is not compromised. Forecast QoS constraints are reviewed annually or if a significant load is added to the network, to ensure the scheduling of the solution remains valid.

The SoS criteria determines the level of redundancy required on the network to ensure the risk profile remains within acceptable limits set by Vector's risk framework (refer section 5.3). The design and planning for SoS are based on scenario modelling examining the consequences of supply interruption caused by equipment failure or damages to the network, on the customer's and Vector assets.

4.7.3 STANDARDISED ASSET DESIGN STRATEGY

Vector uses standardised design and equipment on its network. This has the advantage of lowering project costs through competitive bulk materials supply agreements, standardised installation drawings and practices, lower stockholding and emergency spares, standardised maintenance practices, and engaging in a rigorous equipment selection process to ensure fit-for-purpose whilst ensuring appropriate equipment performance over the life of the equipment.

Standardisation has been applied to pipelines, DRS equipment and installation practices. Vector may apply differing architectural treatments to its DRS to better align with local architecture, but construction techniques, materials and fit outs align with well-established standards.

By implementing standard designs, Vector eliminates the need for custom solutions for identical network installations. This ensures consistency in evaluation, design, and application while delivering cost efficiencies, streamlined procurement, reduced stockholding, minimized rework during construction, enhanced safety, and lead to a structured approach to incremental design improvements.

Vector continuously refines its standard designs based on operational experience and feedback from field service providers (FSPs). When design improvements are identified, they are systematically incorporated into updated standards, ensuring ongoing optimization across the network.

4.7.4 REFURBISHMENT AND REPLACEMENT STRATEGY

Assets that are no longer able to deliver the level of service that customers require in a safe, efficient and economical way, will be replaced or refurbished. In dealing with distribution assets, where Vector has large populations of low-cost assets and associated components, the optimal investment options to repair, replace or refurbish are relatively limited and are readily evaluated.

For DRS assets where replacement costs are typically high, the optimal investment options to repair, replace or refurbish will require more complex multi-criteria evaluation and business case justification. Factors that may be considered include:

- Maintenance costs over the remaining life of the asset will exceed that of replacement;
- The asset has become obsolete, component fabrication is expensive, the asset may be the last of its kind and difficult to maintain;
- Low cost retrofit replacements are available with enhanced ratings and safety features; and
- Associated risk and asset performance history.

The choice to refurbish assets is based on the condition of the asset, accessibility, its age, history of faults, known issues and criticality of the asset. The availability of assets and the safety of assets also play an important part to elect whether refurbishment is an option.

Asset replacement is generally condition based, rather than age based. Vector has developed CBARM models for its assets, which support a more risk-based approach to replacement and/or targeted intervention. This approach would be similarly applied to maintenance prioritisation.

4.7.5 MAINTENANCE STRATEGY

Vector's assets are maintained over their whole lifecycle to avoid failures that pose a hazard to workers or public safety. The core that underpins the maintenance strategy is scheduled inspections for equipment in accordance with maintenance standards for each asset class. Maintenance inspections are used to perform maintenance tasks, repairs and identify and record any non-compliances with the maintenance standards.

Vector has a comprehensive suite of in-house developed maintenance standards (refer to section 10.2) that define asset inspections, condition testing and associated maintenance tasks by asset class (refer to section 10.3). In general, Vector's philosophy is to keep its assets in use for as long as they can be operated safely, technically, and economically. The maintenance standards support this goal to ensure optimal performance. Corrective maintenance to address defects will then be undertaken within specified time frames, based on the assessment of the defect, as stipulated in the maintenance standards.

Each maintenance standard addresses the purpose, content, frequency, record requirements and associated treatment criteria. The treatment criteria and resulting actions generally direct field workers, to repair defects identified.

In addition to above, Vector has taken a pro-active approach to the management of its gas distribution network and assets. This involves improving overall AM capability and the ability to monitor the condition of the network as well as the implementation of programmed replacements in circumstances where these are deemed appropriate.

Some capability and monitoring improvements include the use of criticality information developed for CBARM to move to a data-driven, risk-based prioritisation of maintenance, increased "drive-by" leakage detection surveys, utilising new pipeline flow isolation technologies, and the introduction of inline camera inspection techniques.

4.7.6 RELIABILITY AND RESILIENCE STRATEGY

The operation of the gas network is focused on safety, reliability and resilience. Where network failures occur either through equipment malfunction or third-party damage, it must be possible to manage these situations safely. The impact these abnormal situations have on other gas users is dependent on the reliability and resilience of the network.

Through scenario modelling, it is possible to remove critical assets from the model to simulate an asset failure and test the impact of failure that these assets have on the performance of the network. Where the resultant network pressure model breach signals potentially unsafe operating pressures, mitigation measures are identified and enacted before a real situation arises. The determination of acceptable mitigation measures are identified through a risk-based approach (consequences x likelihood).

Vector has introduced a number of QoS and SoS projects to improve the reliability of the network. The intention is to extend this scenario-based approach and look more closely at the reliability of the various pressure networks, to prevent disruption of supply to our customers.

Reliability and resilience can also be impacted by cyber-attacks that target the core control systems with downstream impacts on the physical infrastructure. While the majority of controls will be implemented at a group level, we will continue to investigate and deploy specific tools designed to detect and prevent attacks on the core control systems of the gas network. These will integrate into the broader security monitoring capabilities of the group.

4.7.7 NETWORK LOAD FORECASTING PROCESS

Vector has updated its gas network load forecasting model to predict the hourly peak demand across its gas networks. Improvements in the new model include a better alignment with ICP connection and disconnection forecasts, an allowance for future efficiency factors that impact peak demand and an ability to split customer segments into residential, SME, commercial and industrial customer groups. In addition, the new model converts ICP level monthly kWh billing data to a peak hourly demand (m^3/h) for each connection based on a sample usage profile for each customer group.

The forecast number of ICPs per customer group are used as an input into the model. Based on the forecast ICPs, a combination of OATIS gate station hourly data and monthly billing data, the gas peak demand can be forecasted per customer group. For each year in any selected future scenario, the contribution to peak per ICP for each customer group is multiplied by the number of ICPs in the group which then calculates the total contribution to peak per group. The contribution to peak demand by group can then be aggregated to estimate the total network peak demand for different future scenarios.

Vector's new load forecasting model also treats new connections and existing connections differently by building in assumptions that existing customers become more efficient i.e. have a lower peak demand, over time. The assumptions on the rate and limit of efficiency gains can be adapted to test different scenarios.

Vectors load forecasts can be found in section 10.6.

4.7.8 QUALITY OF SUPPLY CRITERIA

Growth in network peak demand (organic growth) and Vector's QoS criteria (GNS-0074) is discussed in section 7.3 and 7.4. The QoS criteria captures a cost-quality trade-off that reflects the ability of our assets to accommodate gas demand without breaching QoS requirements, and to provide restoration capacity that supports planned and unplanned supply interruption events. Performance against QoS is managed through an annual network planning cycle that involves:

- Development of Vector's annual network load forecast in accordance with the gas distribution forecast utilisation standard (GNS-0086). An overview of Vector's load forecasting process is provided in section 4.7.7.
- Updating of Vector's network model with asset changes and the latest load forecast in accordance with GNS-0089 Gas distribution model building, using customer consumption data which is extracted from Gentrack.
- Modelling of the network to identify future capacity or security constraints that breach the QoS service level requirements. Modelling is undertaken using Synergi Gas, our network modelling software, and in accordance with the Gas Distribution Model Building standard (GNS-0089). This model includes the capability of modelling all pressure systems to ensure adequate capacity under contingency conditions or other nominated scenarios including future load increases, the impact of investment in additional network capacity and effect of seasonal load and asset ratings to meet QoS.
- Undertaking a risk assessment where a breach of the QoS service level is identified and developing options. Any proposal to respond to an expected breach will be developed in accordance with Vector's asset strategies and in accordance with Vector's piping system design standard (GNS-0002).

The QoS criteria is also taken into consideration when reviewing asset replacement options, and any synergies with network development works are investigated.

The key objective of the QoS is to ensure that the minimum operating pressure (MinOp) is at greater than 50% of the nominal operating pressure (NOP) and no more than 110% of its maximum allowable operating pressure (MAOP).

Where network modelling forecasts potential QoS issues, closer field monitoring of the pressure at the extremities of the network is carried out to confirm the accuracy of the model. Where forecast QoS breaches are confirmed, solutions are investigated and implemented in a timely manner to ensure the breach does not occur in practice.

In some cases, non-standard minimum network pressures are used as a result of network configuration, cost efficiency or special agreements with customers. Vector's QoS standard (GNS-0074) provides the MinOp that apply at the critical locations where non-standard conditions apply.

During contingency conditions, network pressures may drop below those experienced during standard and non-standard operating conditions. In these situations, maintaining network pressure depends on the type of fault and the network configuration. Contingency provisions such as customer load shedding are used to maintain network pressure to the end users. Upon loss of a critical element in the supply chain, the following minimum network pressures shall be maintained using contingency provisions:

- Intermediate pressure (IP) networks shall be operating at no less than 40% of NOP;
- Medium pressure (MP) networks shall be operating at no less than 30% of NOP; and
- Low pressure (LP) networks shall be operating at no less than 1.2kPa.

4.7.9 SECURITY OF SUPPLY STRATEGY

The QoS strategy ensures the gas networks operate within safe pressure limits but lacks the wider perspective of managing the network against High Impact, Low Probability (HILP) risks such as ensuring the safe delivery of gas upon the loss of critical components. The widespread application of meshed networks not only ensures efficient use of the network assets but allows a level of redundancy as a precaution against asset failure. For example, a single IP20 pipeline supplying a network has no redundancy, whereas the downstream MP4 network may have multiple DRS's and interconnected pipelines offering additional levels of redundancy.

The SoS criteria is a risk-based assessment based on the numbers of customers affected by an event, network pressure modelling following a simulated contingent event, and the costs and benefits of mitigation measures. The assessment criteria for a project to be implemented under the SoS category is on a case-by-case basis determined by evaluating the risk-mitigation cost trade-off.

4.7.10 ENVIRONMENTAL STRATEGY

The environmental strategy aims to systematically identify and manage the environmental effects of our business activities and operations where possible. Vector has ISO14001 Environmental Management System certification and will strive to maintain this.

To achieve the above, Vector is committed to:

- Ensuring environmental aspects and impacts are considered as part of business decisions;
- Meeting the requirements of all relevant environmental compliance obligations;
- Operating in a manner that prevents pollution, minimises environmental impacts and promotes beneficial environmental performance;
- Monitoring and continually improving our environmental footprint;

To deliver this strategy Vector will:

- Maintain environmental awareness across the business;
- Continually monitoring, reviewing, and improving the effectiveness of our Health, Safety and Environmental Management System;
- Minimising gas leaks on our network through proactive monitoring;
- Reduce waste by requesting take-back and end-of-life recycling solutions via our supplier code of conduct; and
- Integrating environmental criteria through our procuring processes via a supplier code of conduct.

4.7.11 SAFETY IN DESIGN STRATEGY

Safety in design is the process of integrating control measures early in the design process to eliminate or, if this is not reasonably practicable, minimise the risks to health and safety throughout the life of the asset being designed. Safety in design applies to any plant, substance or structure that is constructed whether fixed or movable.

It is the fundamental of getting asset management practices right and forces us to take a collaborative, well considered, risk based multidisciplinary approach across the lifecycle of the asset.

Vector's safety in design standard (GNS-0096) encompasses appropriate hazard identification and risk assessment methods throughout the design process and ensures that the choices about design, materials used, and methods of construction enhance the safety of the new asset throughout its complete lifecycle. Safe design is typically a part of a wider set of design objectives and is the process of successfully achieving a balance of these objectives without compromising the health and safety of those potentially affected by the new asset throughout its lifecycle.

4.7.12 DIGITAL STRATEGY

The Vector digital strategy has evolved to reflect the changing nature of our business, the wider energy landscape, and new digital technologies. Vector leverages smart digital platforms, optimised across five key value streams: Customer Operations, Network Operations, Network Planning and Performance, Network Procure & Construct, and Data & Analytics.

As part of the continuous improvement path for asset management we continue to invest in key systems that will enhance our core capabilities around asset replacement, planning and maintenance, and use network level data analytics and customer behavioural insights to ensure that our physical network investments are targeted.

Accordingly, we will continue to target investments as efficiently as we can by supporting traditional network assets with digital and new energy solutions for the long-term benefit of energy consumers.

4.8 Asset class strategies

The assets owned by Vector is divided into seven asset classes. For each asset class, a strategy document records the asset strategy down to sub-asset class level.

- Pipelines;
- Pressure stations;
- Valves;
- Special crossings;
- Corrosion protection; and
- Telemetry.

Vector's asset strategies for each of its asset classes describe in detail Vector's long-term actions and plans required to deliver specific objectives and network outcomes based on stakeholder requirements and long-term service level performance criteria.

Each asset strategy provides an overview of the class of asset, its purpose and information about its population, asset replacement considerations, its maintenance requirements, failure modes, specific known issues, risks and asset health indicators and refurbishment requirements. A high-level summary of these strategies is given below.

4.8.1 PIPELINES

Our asset strategy for distribution pipelines is described in GAA0002 Distribution pipelines. The strategies cover distribution mains and services pipelines.

PE PIPELINES

Vector's distribution pipelines are comprised of PE pipe (93.2%), steel pipe (6.7%) and nylon pipe (<0.1%).

The average age of Vector's mains and service PE pipelines is approximately 22 years; the standard life for pre-85 PE is 40 years and the standard life for modern PE is 60 years.

PE pipelines have been in use on Vector's networks since the 1970s. PE pipe manufactured up to the mid-1980s is known to be susceptible to premature brittle-like failure issues due to the resin type that was in use at the time of manufacture. The issues occur as a result of stress intensification brought on by the PE pipe being exposed to excessive shear and/or bending forces while in service.

Analysis carried out over recent years has shown that that the PRE rate for pre-85 PE systems is slightly higher than the average PRE rate for the whole of the Vector network, and that the PRE the rate for MP4 pre-85 PE systems is significantly higher than that for MP1 and MP2 pre-85 PE systems. The analysis also showed that for the 5-year period (FY19 – FY24), approximately 70% of pre-85 PE PRE were caused by either a squeeze-off failure or a manual-fusion joint failure. To address the risks associated with pre-85 PE systems Vector has an ongoing pre-85 pipeline replacement programme to replace the higher risk pre-85 pipelines and is planning to manage the remaining population of pre-85 pipelines by increasing the leakage survey cycles, reducing the operating pressure for underutilised networks, and introducing inline camera inspections to repair potential failure points. Further details for Vector's pre-85 risk management approach are in section 7.5.1. Priorities are based on risk factors which include PRE history, operating pressure, pipe diameter and pipeline criticality.

STEEL PIPELINES

Underground steel pipelines are protected from corrosion by means of pipe coatings and the use of cathodic protection (CP) systems. The average age of Vector's steel pipelines is approximately 37 years; the standard life for steel pipe is 60 years for MP pipelines and 70 years for IP pipelines. The overall condition of buried steel pipelines is good, and no programmed replacement of these pipelines is envisaged within the standard life of the asset. The replacement of steel pipelines is expected to continue to be of a corrective nature, targeting specific locations and addressing localized issues.

An inventory of critical spares and equipment items is held for Vector's networks; the items are owned by Vector and held on its behalf by its FSP, Omexom. The inventory includes items that are low volume (turnover) or high cost, or have long lead times for purchase, or are no longer produced (obsolete) or where the level of risk associated with not holding a spare is considered high.

NYLON PIPELINES

Small quantities of nylon mains pipe were installed on Vector's network during the early 1980s, however all known sections of nylon mains pipe have since been replaced (with PE) or decommissioned. A small-bore (6mm) nylon piping system known as Flexigas was also used for a short period during the late 1980s however it quickly became obsolete due to the introduction of PE pipe; approximately 2.5km of 6mm nylon service pipe remains in use. The level of risk presented by Flexigas nylon pipe is considered to be low and Vector's replacement strategy has therefore been to replace Flexigas service pipes as a matter of course whenever this type of pipe is exposed during a fault response or planned work.

PIPE IN BUILDINGS

There are approximately 96 sites where Vector owns a gas service pipe that terminates within a building - typically at a Gas Measurement System (GMS) location or a meter room. Vector undertakes annual inspections of these sites to assess the condition and accessibility of the service pipe, and the adequacy of available ventilation and installed gas-tight conduits.

RISER ASSEMBLY

Vector's strategy for riser assembly is described in GAA007 Riser assembly.

Approximately 70% of all PRE on Vector's gas network are caused by service riser faults - i.e. riser pipe, riser valve or riser crimp faults. Riser valve faults are also a major cause of both planned and unplanned interruptions on the network. Typical riser valve faults are the valve passing gas when in the closed position, the valve leaking or the valve being inoperable (e.g. seized). Over the recent 5-years period, most of the riser faults (75%) are related to riser valves. However, the majority of the riser valve faults (49%) are due to passing or seizing valves that did not result in a gas leak.

The increasing numbers of faults and the predominate percentages of riser assets faults over the other assets, is due to the recent, additional, AMS smart meters installation programme which resulted in an increase in riser asset survey and tests. The review of these faults indicated no significant risk associated with failure. However, Vector is currently implementing a riser inspection planned maintenance programme in FY25 to improve the asset performance. Any defects identified with the service riser assemblies are reviewed regularly with the FSP and prioritised for replacement based on the criticality of the asset and the type of defect.

Vector is committed to increase the performance of the riser assets by reducing the number of faults and defects through optimisation of the preventive expenditure allocated for the service riser asset class.

Vector also undertakes annual inactive-service surveys that target steel services that have been inactive (i.e. live but inactive) for more than 5 years; the survey identifies any corrective maintenance that the riser and/or riser valve requires and assesses the need to remove the riser and/or isolate the service to mitigate the risk of third-party damage.

CBARM STRATEGY

As described in section 4.6.3, Vector has developed CBARM models for its pipeline assets which support a more data-driven, risk-based approach to replacement and maintenance prioritisation. Each pipeline asset has been assessed based on two

failure modes i.e. pipe leakage (due to martial failure) and third-party damage. The HI score of each pipeline has been calculated based on its location and operational data and then forecasted over the next ten years, based on the specific asset aging rate. In this assessment, the HI of a new asset is considered (0.5) and for an asset at its end of life is considered (10).

The current risk distribution associated with pipelines (mains) is shown in the matrix below.

CURRENT RISK - YEAR 0 - TOTAL (KM)					
	C1	C2	C3	C4	Total
(0-2)	746	2,413	1,102	173	4,434
(2-4)	5	42	38	35	120
(4-5.5)	17	21	21	8	67
(5.5-6.5)	8	14	10	2	33
(6.5-7.5)	2	1	2	-	5
(7.5-8)	-	-	-	-	-
(8-10)	-	-	-	-	-
(10+)	-	-	-	-	-
Total	777	2,491	1,173	217	4,659

The current risk for the majority of the pipeline lengths is considered low; 95% of the associated risk is allocated to pipelines within a HI of (0-4) category. This indicates that most of the consequential failure risk is associated for pipeline assets with good conditions. The remaining risk within the HI (4-7.5) categories, is due to the pre-85 pipeline assets. Additionally, higher criticality assets, i.e. C3 & C4 have HI of <6.5 which indicates good condition and a lower probability of failure.

The forecast pipeline asset HI and CI, without any intervention, at the end of this planning period (10-years) and based on the current condition and specific individual deterioration rate, are shown in the table below.

FUTURE RISK - YEAR 10 - TOTAL (KM)					
	C1	C2	C3	C4	Total
(0-2)	731	2,319	1,038	162	4,250
(2-4)	18	127	91	37	273
(4-5.5)	2	10	10	8	30
(5.5-6.5)	2	11	9	6	28
(6.5-7.5)	16	18	17	4	55
(7.5-8)	-	2	1	-	3
(8-10)	7	4	5	-	15
(10+)	2	1	2	-	4
Total	777	2,491	1,173	217	4,659

The future increase in the consequential risk for the HI (6.5 - 10+) categories is mainly due to the aging of the pre-85 pipeline population. However, this increase is a result of a relatively small shift in the pipeline HI, i.e. 77 km (2%) of pipelines are >6.5 HI.

The planned interventions over the 10-year planning period will reduce the future forecast risk, as shown in the following matrix.

FUTURE RISK – AFTER INTERVENSION - TOTAL (KM)					
	C1	C2	C3	C4	Total
(0-2)	731	2,321	1,038	162	4,253
(2-4)	18	127	92	41	278
(4-5.5)	2	9	16	8	35
(5.5-6.5)	2	13	9	6	30
(6.5-7.5)	16	18	17	-	51
(7.5-8)	1	3	-	-	4
(8-10)	6	-	-	-	6
(10+)	-	-	-	-	-
Total	776	2,491	1,173	217	4,659

4.8.2 PRESSURE STATIONS

Management of our pressure station fleet is undertaken in accordance with Vector's asset strategy GAA0004 Pressure stations. The strategies cover equipment at gate stations, DRS, and service regulators.

GATE STATIONS

HP (high pressure) equipment (pressure regulating equipment, custody transfer metering, etc.) within the gate station is owned, operated, and maintained by the transmission company (Clarus), whereas distribution system equipment (i.e. valves and pipework etc.) within the gate station is owned, operated and maintained as part of Vector's distribution networks.

These assets are the main supplies into the local distribution network and are critical to the overall supply system. Condition assessment forms the basis of Vector's upgrade programme to address corrosion on pipe spools, valves and pipe supports.

DISTRICT REGULATOR STATIONS

Vector has 100 DRSs in service on its distribution network. The average age of the DRS population is 22 years; the standard life of a DRS is 35 years. The majority of DRS are installed aboveground and have a twin stream active/monitor/slam-shut (i.e. over-pressure protection) configuration.

DRS condition assessments are carried out on an ongoing basis to allow DRS upgrade priorities to be determined; the condition assessments cover the following general areas:

- Confirmation that the reliefs valves are vented to a safe location;
- Inlet and outlet fire valves present and accessible;
- The condition of the enclosure, ventilation and ease of access/egress; and
- The condition of DRS equipment – i.e. regulators, pipework, filter, slam-shuts, meter and corrector.

The ongoing DRS condition assessments and Vector's DRS CBARM model form the basis of Vector's DRS upgrade programme to address integrity issues, and the overall condition of the DRS population has shown a steady improvement over the period since the condition assessments were initiated in FY10. This approach will continue to ensure the integrity and condition of DRS's remain at a high standard.

SERVICE REGULATORS

Vector has 84 service regulators in service. The average age of the service regulators is 23 years, with the majority installed between the mid-1980s and the mid-1990s; the standard life for service regulators is 35 years. Sixty-eight service regulators are installed aboveground and 16 are installed in small pits belowground. However, all new service regulators are installed aboveground. Service regulators are typically installed in situations where it is not possible (or considered impractical) to locate the GMS outside of the customer's premises. A service regulator is typically comprised of a small-capacity pressure regulator along with upstream and downstream isolation valves.

In some situations, underground service regulators can be affected by the ingress of water, silt or other debris that over time leads to corrosion and impaired regulator performance. This can result in gas escapes from corroded fittings and pipework and can allow unacceptable over-pressure gas into downstream systems (and venting gas to atmosphere). Vector's remaining belowground service regulators are inspected annually and two-yearly for aboveground service regulators.

CBARM STRATEGY

As described in section 4.6.3, Vector has developed a CBARM model for its DRS assets which support a more data-driven, risk-based approach to replacement and maintenance prioritisation. Each DRS has been assessed based on four failure modes i.e. failed open, failed close, emission and third-party interference. The HI score of each DRS has been calculated based on location and operational data and then forecasted over the next ten years, based on the specific asset aging rate. In this assessment, the HI of a new asset is considered (0.5) and for an asset at its end of life is considered (10).

The current risk distribution associated with DRSs is shown in the risk matrix below.

CURRENT RISK - YEAR 0 - TOTAL (NUMBER)					
	C1	C2	C3	C4	Total
(0-2)	2	-	-	2	4
(2-4)	34	17	4	10	65
(4-5.5)	18	1	1	-	19
(5.5-6.5)	2	-	-	-	2
(6.5-7.5)	5	1	-	-	6
(7.5-8)	2	-	-	-	2
(8-10)	1	-	-	-	2
(10+)	-	-	-	-	-
Total	64	19	5	12	100

The current risk of the DRS population is considered low; (88%) of the associated risk is allocated to DRSs within a HI of (0-5.5) categories. This indicates that most of the consequential failure risk is associated for DRS assets with good conditions. The remaining risk within the HI (5.5-10+) categories is allocated to lower criticality assets i.e. C1 & C2, which indicates a lower consequence of failure.

The forecast DRS asset HI and CI without any intervention at the end of this planning period (10-years) based on the current condition and specific individual deterioration rate, are shown in the risk matrix below.

FUTURE RISK - YEAR 10 - TOTAL (NUMBER)					
	C1	C2	C3	C4	Total
(0-2)	-	-	-	1	1
(2-4)	9	4	2	5	20
(4-5.5)	30	14	2	6	529
(5.5-6.5)	12	-	1	-	13
(6.5-7.5)	3	-	-	-	3
(7.5-8)	2	-	-	-	2
(8-10)	7	-	-	-	7
(10+)	1	1	-	-	2
Total	64	19	5	12	100

The future increase in the consequential risk for the HI (6.5 - 10+) categories is due to asset deterioration. As described in section 7.5.2, Vector has a number of planned interventions over the 10-year planning period that will reduce the future forecast risk, as shown in the following risk matrix.

FUTURE RISK – AFTER INTERVENSION - TOTAL (NUMBER)					
	C1	C2	C3	C4	Total
(0-2)	2	-	-	2	4
(2-4)	37	17	4	10	68
(4-5.5)	17	1	1	-	19
(5.5-6.5)	2	0	-	-	2
(6.5-7.5)	5	1	-	-	6
(7.5-8)	1	-	-	-	1
(8-10)	-	-	-	-	-
(10+)	-	-	-	-	-
Total	64	19	5	12	100

4.8.3 VALVES

Our asset strategy for underground valves is described in GAA0006 Belowground valves, the strategy includes mains, service and blowdown valves.

The belowground valve population is comprised predominantly of ball valves and plug valves with a small number of gate valves. The average age of the line valve population is 33 years; the standard life of valve assets is 35 years. In general, valves are expected to last the lifetime of the network system to which they are connected, however valves will be replaced on an as required basis due to operational issues, leakage etc.

Plug valves were installed on Vector's network up until the mid-1980s; because of their design, plug valves require a higher level of maintenance which includes regular greasing to prevent the valve seizing and/or leaking. Ball valves have been used since the mid-1980s and are considered to be reliable and relatively maintenance free. Exact information on valve types (i.e. ball, plug etc.) installed on the network is not available (i.e. legacy valve information is not complete) however it is estimated that over 40% of mains valves are plug valves.

Mains and service valves are typically installed belowground. The majority are direct-buried and access to the valve is provided via a valve sleeve. In some cases (e.g. on larger diameter mains) valves are installed in pits or aboveground. Aboveground valves that are installed at gate station and DRS sites are operated and maintained as part of the station equipment.

The principal operational risks for line-valves are lost valves (i.e. a valve cannot be located in the field due to road alterations or re-sealing etc.), seized plug valves (i.e. corrective maintenance procedures are unable to make a seized valve operable), material failure (i.e. the valve body fractures causing a gas leak) and mis-aligned valve sleeves (i.e. the valve sleeve becomes mis-aligned due to ground movement etc thereby rendering the valve inoperable). Where lost valves or seized valves are confirmed, they are identified as such in Vector's asset database and a risk assessment carried out to determine if a replacement valve is required. Where the valve is assessed as being critical, it will be scheduled for replacement; where the valve is assessed as being non-critical, it will be classified as inoperable and transferred from a full-inspection maintenance plan to a safety-inspection maintenance plan.

AS/NZS 4645 requires adequate sectional isolation valves be installed to facilitate the safe operation of the gas distribution network. Vector uses network isolation modelling to determine the need for additional isolation valves in higher risk areas e.g. CBD, large catchment areas etc.

CBARM STRATEGY

As described in section 4.6.3, Vector has developed CBARM models for its belowground valve assets which support a more data-driven, risk-based approach to replacement and maintenance prioritisation. Each valve has been assessed based on two different failure modes – i.e. material failure and seizing. The HI score of each valve has been calculated based on its location and operational data and then forecasted over the next ten years, based on the specific asset aging rate. In this assessment, the HI of a new asset is considered (0.5) and for an asset at its end of life is considered (10).

The valves CBARM model has been updated to reflect the reclassification process for non-critical valves, described above. Additionally, a detailed review was conducted for cast iron valves (which are prone to material failure), based on their location and exposure to material stress. Accordingly, the number of valves with HI (>5.5) has significantly changed from previous AMPs.

The current risk distribution associated with belowground valves is shown in the risk matrix below.

CURRENT RISK - YEAR 0 - TOTAL (NUMBER)					
	C1	C2	C3	C4	Total
(0-2)	227	1,615	13	-	1,855
(2-4)	67	1,020	182	12	1,281
(4-5.5)	19	194	48	9	270
(5.5-6.5)	10	118	23	9	160
(6.5-7.5)	1	8	4	1	14
(7.5-8)	-	1	-	-	1
(8-10)	1	7	4	1	13
(10+)	-	-	-	-	-
Total	325	2,963	274	32	3,594

The current risk of the valve population is considered low; 95% of the associated risk is allocated to valves within a HI of (0-5.5) categories. This indicates that most of the consequential failure risk is associated for valve assets with good conditions. The remaining risk within the HI (5.5-10+) categories is allocated to lower criticality assets i.e. C1 & C2, which indicates a lower consequence of failure i.e. supply interruption.

The forecast valve asset HI and CI without any intervention at the end of this planning period (10-years) and based on each valve current condition and specific individual deterioration rate, are shown in the risk matrix below.

FUTURE RISK - YEAR 10 - TOTAL (NUMBER)					
	C1	C2	C3	C4	Total
(0-2)	226	1,584	12	-	1,822
(2-4)	50	445	1	-	496
(4-5.5)	17	493	156	7	673
(5.5-6.5)	22	315	67	12	416
(6.5-7.5)	8	76	22	8	114
(7.5-8)	-	18	2	1	21
(8-10)	1	24	10	3	38
(10+)	1	8	4	1	14
Total	325	2,963	274	32	3,594

The future increase in the consequential risk for the HI (6.5 - 10+) categories is due to asset deterioration as the population of the plug valves reaches its end of life.

As described in section 7.5.3, Vector has a number of interventions over the 10-year planning period that will reduce the future forecast risk, as shown in the following risk matrix.

FUTURE RISK – AFTER INTERVENSION - TOTAL (NUMBER)					
	C1	C2	C3	C4	Total
(0-2)	234	1,637	44	3	1,918
(2-4)	48	431	15	7	501
(4-5.5)	14	465	140	7	626
(5.5-6.5)	20	309	56	12	397
(6.5-7.5)	7	77	19	3	106
(7.5-8)	-	17	-	-	17
(8-10)	1	24	-	-	25
(10+)	1	3	-	-	4
Total	325	2,963	274	32	3,594

4.8.4 SPECIAL CROSSINGS

Vector's strategy for special crossings is described in GAA0005 Special crossings.

Vector's special crossings utilise either a steel carrier pipe (54%) or a PE carrier pipe (46%). Annual safety inspections are carried out on all special crossings and periodic (three or five yearly) detailed condition assessments are completed on most steel special-crossings. (Detailed assessment of a small number of sites is restricted due to requiring a motorway closure which is planned in conjunction with the motorway authority). The results of these assessments indicate that the majority of the crossings are in good condition with a small number of sites requiring various levels of upgrade work to address corroded and/or poorly designed pipeline support brackets. The crossings requiring upgrade work are prioritised and scheduled during 10-year planning period.

All special crossing sites have safety measures installed where there is a risk of the public accessing the pipe attached to the crossing structure; the measures typically include safety barriers and/or warning signs. Ongoing risk assessments are carried out as part of routine special-crossing planned maintenance inspections to ensure the existing public-safety measures at that site, are adequate. A public-safety risk assessment is also carried out for any planned new special-crossing to ensure that appropriate public-safety measures are included in the special crossing design.

CBARM STRATEGY

As described in section 4.6.3, Vector has developed CBARM models for its special crossing assets which support a more data-driven, risk-based approach to replacement and maintenance prioritisation. Using the special crossings CBARM model, each crossing is assessed on two different failure modes: pipe and fixing failure. The summary of the special crossing current asset conditions is described in the table below.

RISK MATRIX YEAR 0 – MAX					
	C1	C2	C3	C4	Total
(0-2)	-	32	14	-	45
(2-4)	1	11	3	1	16
(4-5.5)	-	7	1	-	8
(5.5-6.5)	-	3	-	-	3
(6.5-7.5)	-	-	-	-	-
(7.5-8)	-	5	-	-	6
(8-10)	-	-	4	-	4
(10+)	-	-	-	-	-
Total	1	58	22	1	82

The current risk of the special crossing population is considered low; the majority of the special crossings population are in C1 and C2 categories (i.e. 59).

The forecast special crossing asset HI and CI without any intervention at the end of this planning period and based on each special crossing's current condition and specific individual deterioration rate, are shown in the table below.

FUTURE RISK MATRIX – MAX					
	C1	C2	C3	C4	Total
(0-2)	-	17	12	-	29
(2-4)	-	18	3	-	20
(4-5.5)	1	8	2	1	12
(5.5-6.5)	-	3	-	-	3
(6.5-7.5)	-	6	1	-	7
(7.5-8)	-	-	-	-	-
(8-10)	-	1	-	-	1
(10+)	-	5	4	-	10
Total	1	58	22	1	82

The forecast 10-year values of HI comprise a relatively small number of HI category (10+) as a result of asset deterioration. As described in section 7.5.3, Vector has a number of interventions over the 10-year planning period that will reduce the future forecast risk, as shown in the following risk matrix.

RISK MATRIX – AFTER INTERVENTION – MAX					
	C1	C2	C3	C4	Total
(0-2)	-	44	16	1	61
(2-4)	-	9	3	-	12
(4-5.5)	1	1	2	-	4
(5.5-6.5)	-	2	-	-	2
(6.5-7.5)	-	2	1	-	3
(7.5-8)	-	-	-	-	-
(8-10)	-	-	-	-	-
(10+)	-	-	-	-	-
Total	1	58	22	1	82

4.8.5 CORROSION PROTECTION EQUIPMENT

Vector's strategy for corrosion protection equipment is described in GAA0003 Corrosion protection systems.

The majority of Vector's interconnected steel network is protected by impressed-current CP systems; the balance of the steel network (i.e. typically smaller standalone networks) are protected by sacrificial-anode CP systems. The CP systems comprise 9 transformer rectifiers and associated ground beds, 12 sacrificial-anode beds and approximately 1,000 CP test points.

The impressed-current CP (ICCP) systems have an average age of 30 years, and the sacrificial-anode CP systems have an average age of 29 years; the standard life of CP assets is 20 years. The condition of the overall CP system is considered adequate, and the performance requirements of AS 2832 are generally being met.

Additional CP test points have been installed over recent years to meet the test-point spacing requirements of AS 2832, however there is a need for the installation of further test points to address ongoing test-point spacing issues and to replace lost or damaged test-points; In addition, there is an ongoing requirement to install interference test points on an as-required basis to allow joint monitoring (i.e. by the respective pipeline owners) of Vector's steel pipeline and other steel pipelines (e.g. Watercare's) to address any CP interference issues at points where the pipelines cross or are in close proximity to one another.

Although ICCP system ground beds are generally expected to last the lifetime of the network system to which they are attached, sacrificial-anode system anodes require replacement when the anodes have been consumed, or when the CP current requirement exceeds the capacity of the anode system. Replacement of the anodes is carried out as required based on an assessment of the performance of the relevant anode system.

The replacement programme for Vector's CP assets includes an annual provision for the replacement of CP assets as required e.g. installation of surge diverters, installation of new ground beds or upgrade of existing ground beds, replacement of expired sacrificial anodes, installation or replacement of test points etc.

4.8.6 TELEMETRY EQUIPMENT

Vector's strategy for telemetry equipment is described in GAA0001 Telemetry equipment.

The telemetry systems used by Vector to monitor its gas distribution networks comprise the Telenet Supervisory Control and Data Acquisition System (SCADA) system, and the Cello system. Telenet equipment is typically installed at gate station and DRS sites, and Cello equipment is typically installed at system extremity or other critical pressure-monitoring points.

The use of Telenet monitoring is considered for all DRS that are supplied from an MP7 or higher-pressure system and where the DRS location provides a critical monitoring point for the associated pressure system/s, or where the DRS has a peak throughput in excess of 500 standard cubic metres per hour (scmh) or it supplies 1,000 ICPs or more. The use of Telenet monitoring is also considered for any system extremity point where the ability to monitor real-time system pressure data during a contingency event is critical. The use of the Cello monitoring is considered for all DRS sites and system extremity monitoring points where the availability of real time system pressure data is not considered to be critical, but where the availability of pressure data is considered vital for planning purposes.

The Telenet system employs two communication platforms - i.e. approximately half of the sites utilise Kingfisher Remote Telemetry Units (RTU) to monitor pressure, temperature and flow data and communicate with a master RTU by means of a digital radio transceiver. The balance of the Telenet sites utilise an electronic gas volume corrector to monitor pressure, temperature and flow data and communicate with the Vector base station by means of a General Packet Radio Service (GPRS) router utilising the Vector Communications Wireless Plus service. The Telenet data is passed from the Kingfisher master RTU and the GPRS base station to Vector's Power TG SCADA system from where it is archived in the PI archiving system.

The average age of the GPRS Telenet field equipment is approximately 11 years and it is in good condition. Intermittent performance issues have been encountered at some GPRS sites where a new corrector type has been installed however these are expected to be addressed through ongoing corrector-firmware upgrades.

The Cello system is comprised of Global System for Mobile Communication (GSM) remote data loggers that use short message service (SMS) messages for communication, and a receiving PC which has proprietary PMAC software, and a GSM modem installed. In addition to the population of Cello units installed at permanent pressure-monitoring locations, a small population of Cello units is also used for temporary pressure-monitoring e.g. for winter gauging purposes. The 15-minute time-stamped data is uploaded from the Cello unit to the PMAC base station once a day; data from permanent monitoring sites is then archived in the PI archiving system. The average age of the Cello units is approximately 5 years; the equipment is in good working order.

Vector's Cello units operate on Vodafone's 2G and 3G networks which are anticipated to be discontinued in December 2025. Vector is in the process of upgrading its Cello operating system and devices which is scheduled to be completed in June 2025.

SECTION 05

Governance, risk management and information management

5 – Governance, risk management and information management

5.1 Overview

This section provides an overview of Vector's governance and organisational structure, accountable for delivering effective and fit for purpose asset management planning. Fundamental to effective governance is a strong awareness and focus on risk management. Therefore, this section also includes an overview of our enterprise risk management framework, key risk practices and event management documentation with specific emphasis on high impact, low probability risks. Finally, our data and privacy management practices are covered, which includes a summary of information systems and our approach to cybersecurity. These elements are key enablers in ensuring Vector's asset management practice.

5.2 Governance and organisational structure

Vector's asset management governance and organisational structure is shown in Figure 5-1. This structure provides oversight and leads all aspects of our asset management practice.

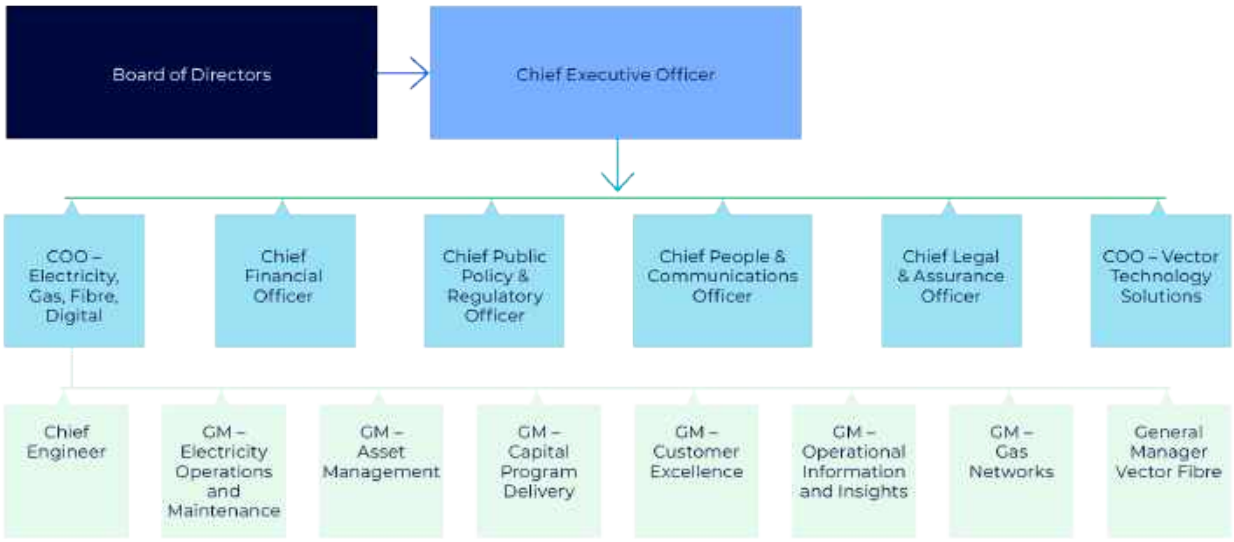


Figure 5-1: VECTOR'S ASSET MANAGEMENT GOVERNANCE AND ORGANISATIONAl STRUCTURE

Figure 5-1 pictorially represents the governance and organisational structure accountable for delivering effective and fit for purpose asset management planning for Vector's electricity, gas and fibre distribution businesses. An overview of the asset management accountabilities and responsibilities within the three levels of this structure are set out below.

- **Board of Directors** – At the highest level, the Board of Directors operates under the Board Charter, and provides governance over all aspects of Vector's asset management practices on behalf of Vector's owners and the broader stakeholder community. The board exercises oversight of the objectives of asset management (refer Asset Management Systems), its strategic direction, investment approvals and the customer service level outcomes achieved by Vector's gas distribution network. Overall budgets, significant expenditures and asset investments are reviewed and approved at the board level.

  Vector's Board of Directors maintains its asset management oversight through the implementation of governing policy, a delegated authority framework, management reporting and periodic reviews including internal and external operational audits. The board also receives performance reporting against key service levels and regulatory reliability targets.

  Full details of Vector's board members, the executive leadership team and our corporate governance structure are available on our website.

- **Group Chief Executive** – Under the delegated authorities' framework, the approved strategic plan, approved annual budgets, and day-to-day operation of the business is the responsibility of the Group Chief Executive (GCE). The GCE maintains oversight of Vector's asset management practices, including effective risk management (both strategic and operational), service level outcomes, strategic direction and investment approvals. To assist with this oversight, the GCE receives performance reporting against key metrics and service levels which include reporting against regulatory reliability targets.

- **Chief Legal and Assurance Officer** – Under delegation from the board and the GCE, the Chief Legal and Assurance Officer is accountable for providing Vector's legal counsel as well as policy, frameworks and governance for enterprise risk and resilience, internal audit, health, safety and environment, compliance and privacy (via a dedicated Privacy Officer). Responsibility for the

delivery of these functions at a business unit level is appropriately disseminated and delegated throughout the business through dedicated management functions and ownership models.

- **Chief Operating Officer – Electricity Gas & Fibre** – Under delegation from the board and the GCE, the Chief Operating Officer (COO) has full responsibility for Vector's gas asset management practice. This includes the establishment and enforcement of Vector's Asset Management Policy, the overall performance of Vector's gas distribution network, development and implementation of the approved AMP, and budgetary control within the delegated authorities' framework.
- **General Manager Gas Networks** – This role is accountable for asset management planning and delivery of Vector's gas distribution maintenance and annual capital programmes.
- **Chief Engineer** – Integral in strategic business model design and strategic business opportunities, this role works alongside project teams and executive sponsors to ensure Vector's electricity and gas networks and services are of the best practicable quality, delivered safely and effectively.
- **General Manager Electricity Operations and Maintenance** – Vector's field staff are managed through an outsourced contracting model. As such, the GM Electricity Operations and Maintenance is accountable for the contractual relationships and performance of field crews delivering our electricity maintenance programme. Work is centred around the delivery of maintenance plans in accordance with Vector standards and reactive response to outages.
- **General Manager Asset Management** – This role is accountable for electricity capital and maintenance investment planning and developing detailed electricity asset management plans and standards for all asset classes required to achieve Vector's asset management objectives.
- **General Manager Capital Programme Delivery** – This role is accountable for the delivery of the annual electricity capital programme, including project engineering, project management, and procurement and tendering of capital works.
- **General Manager Customer Excellence** – This role is accountable for providing the key link between asset management delivery and Vector's customers. The role leads our relationship with retailers and customers to ensure the relationship is continually strengthened and supported.
- **General Manager Information and Insights** – This role is accountable for managing Vector's electricity and gas distributions information and data assets. The role ensures information compliance with regulatory and privacy requirements and provides supporting business intelligence to inform operational decision making.
- **General Manager Fibre** – This role is accountable for asset management planning and delivery for Vector's Fibre business.

The governance framework overarching each of these roles is defined by the Code of Conduct and Ethics – the Vector Way, Vector's Delegated Authority (DA) framework, and position descriptions for each role. Vector's Board has delegated specific authorities to the GCE and authorised delegation of certain authorities to other levels of Vector's management. The limits and rules applied to delegations are prescribed in the DA documentation and govern the authority to commit to transactions or expose Vector to a risk. A periodic review of the DA is undertaken to ensure the framework is up to date.

Vector's Enterprise Resource Planning (ERP) System, Systems Applications and Processes (SAP) is the primary management system used to implement the DA. Financial delegations for approvals under the DA for opex and capex are set and managed within Vector's SAP system. A periodic review of the DA is undertaken to ensure the framework is up to date. The ERP system also provides control of asset management workflows, as well as the management of information that enables our asset management and project management practices.

5.3 Risk management

5.3.1 ENTERPRISE RISK POLICY AND FRAMEWORK

Risk management practices form an integral part of Vector's asset management processes. Vector's Risk Management Policy establishes clear principles which provide for a purpose-built flexible approach to the application of risk management across Vector.

Our activities in risk:

a) Create and protect value in our organisation;

b) Form an integral part of all organisational processes and decision-making;

c) Explicitly address uncertainty;

d) Are systematic, structured and timely;

e) Are customised to suit our organisational context and individual business activities;

f) Take into account human and cultural factors;

g) Are transparent and inclusive; and

h) Are dynamic and responsive to change.

The above principles form the basis of Vector's risk management approach allowing for the development of risk management objectives and a clear framework that is applicable across the Vector Group. Our Enterprise Risk Management (ERM) framework is based on the international standard for risk management, ISO 31000. It allows for a single, company-wide view of risk, aligning several profiles and contexts across Vector, to support the achievement of our strategic corporate objectives.

Vector's ERM framework (summarised below in Figure 5-2) is focused on understanding, monitoring and proactively treating the uncertainty and risks within the business. The management and tracking of identified risks and associated treatment plans is undertaken using Vector's ERM system.

FIGURE 5-2: VECTOR'S ENTERPRISE RISK MANAGEMENT FRAMEWORK

Vector's risk management processes and tools are embedded within its business operations to drive consistent, effective, and accountable decision-making. Consistent with the "Three Lines Model", all Vector people are responsible for applying Vector's ERM framework within their individual roles to proactively identify, analyse, evaluate, and treat risks. This risk mindset has been implemented through:

- Awareness of risk management's value at operational, executive team and Board level;
- Embedding of risk assessments and discussions within key decision-making processes; and
- Continuous development through both internal and external reviews.

5.3.2 RISK PROFILES

Vector operates both a top-down and bottom-up approach to risk management.

At the top level, the board sets the risk appetite and strategic direction for the business. The board has established a Board Risk and Assurance Committee (BRAC)[11] which assists the board in fulfilling its responsibilities to protect the interests of shareholders, customers, employees and the communities in which Vector operates. The BRAC provides oversight of Vector's risk and assurance policies and practices, monitors risk performance concerning Vector's risk appetite and business objectives, provides guidance regarding the development of the ERM framework, and ensures rigorous processes for internal control and legal compliance.

Vector's Group Risk function is tasked with the ongoing development and implementation of the ERM framework and risk processes. In addition to monitoring the changing business landscape and macro-economic trends, this function integrates and works with all Vector business units to facilitate smart risk-based decision-making as well as consistent bottom-up risk analysis and evaluation of risk against Vector's risk appetite. These perspectives inform the development of the Group Key Risk Profile which provides both the board and executive team with a consolidated view of:

- The strategically focused risks which could have a significant impact on the long-term value and sustainability of Vector's business; and
- The material operational risks facing Vector as part of its business-as-usual activities which require significant oversight and control.

To inform the Vector Group key risk profile, business unit and operational risk profiles are developed based on the objectives and operating context specific to each business unit. Figure 5-3 shows the alignment of Vector's risk profiling structure.

11 The BRAC contains at least three members of the board.

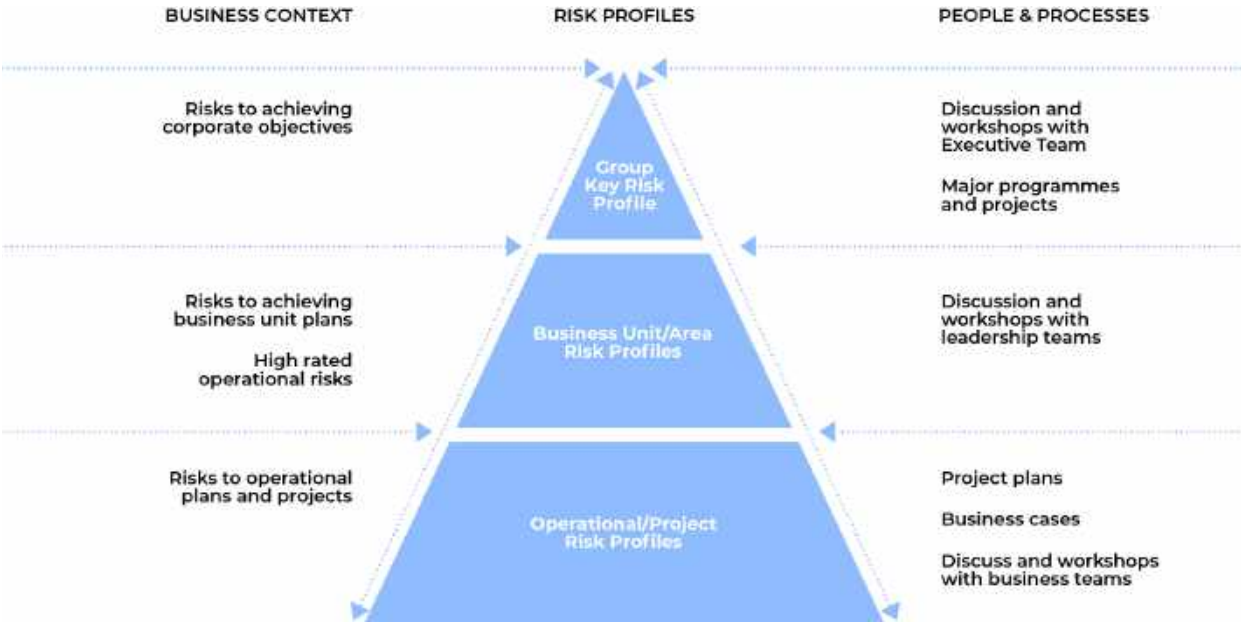


FIGURE 5-3: VECTOR'S RISK PROFILING STRUCTURE

5.3.3 GAS DISTRIBUTION RISK & ASSURANCE

Risks are analysed and evaluated against Vector's risk criteria and then treated to modify the risk level if required. Risk treatment considers the level of risk tolerability which is informed by applicable legislation and industry standards (including the Health and Safety at Work Act and the Gas Act).

Vector's risk management processes are integrated into the asset investment process and the development of asset class strategies to ensure appropriate treatment plans (which supplement existing controls) are developed and prioritised. Asset investment considers asset condition and risk through the development of our CBARM model to ensure the health of Vector's asset portfolio remains acceptable.

In line with the Institute of Internal Auditors' Three Lines Model, Vector also operates an internal audit function that establishes an assurance programme to monitor risk management functions and applicable business processes. This independent and objective function conducts and coordinates audits and performance reviews to provide assurance and confidence in the effectiveness of the risk management framework and supporting activities.

5.3.4 HIGH IMPACT LOW PROBABILITY RISKS

Network resilience and the ongoing management of HILP risks is a priority for Vector with proactive investment allocated to manage future events. We undertake regular critical site reviews, monitor reference material and global trends, have developed comprehensive event and contingency management plans and have engaged a variety of experts to help influence our planning and management of HILP events. Identification and management of HILP risks include consideration of both our internal and external operating environment. Figure 5-4 below provides a representation of HILP events influenced by a range of factors that require ongoing and evolving management to both prevent the occurrence and mitigate the impact so far as is reasonably practicable.

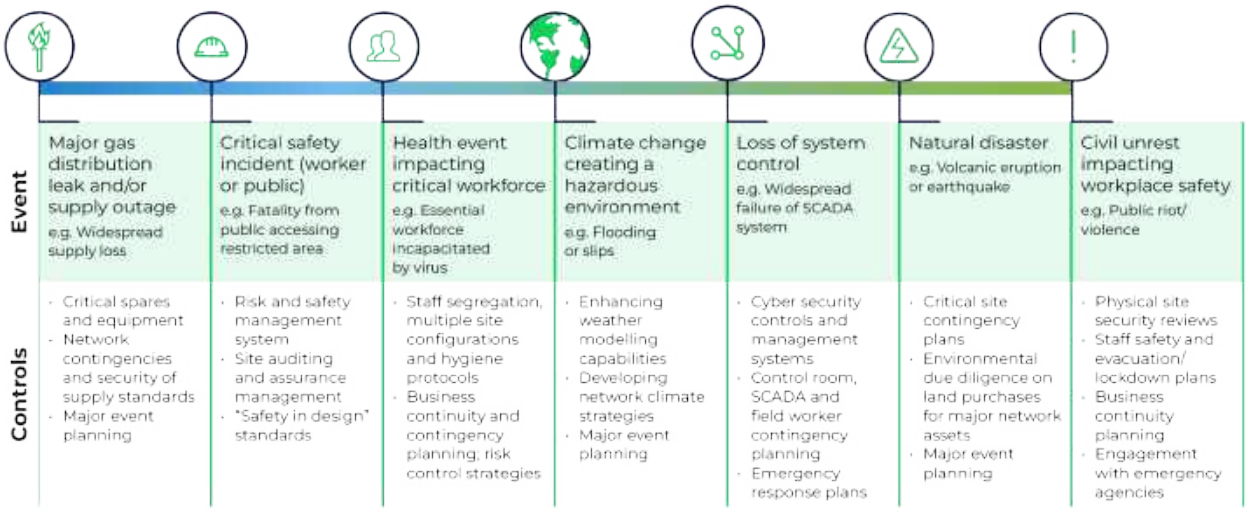


FIGURE 5-4: EXAMPLE OF HILP EVENTS

5.3.5 GAS DISTRIBUTION CLIMATE RELATED RISKS

Vector actively monitors climate risks, which play a pivotal role in informing our climate related disclosure. Alongside the ongoing weather volatility brought about by climate change, it's important to also note that under a disorderly decarbonisation scenario gas infrastructure companies and their connected customers are potentially exposed to material transition costs, disruption, and gas-asset stranding. The lack of clear policy and regulatory decisions on the transition from gas, coupled with declining gas supply, places gas infrastructure and its consumers at heightened risk of reduced asset utilisation and escalating costs.

5.4 Event management and emergency response

Vector has developed a suite of documentation that defines our key event management plans and processes (detailed in Table 5-1). This documentation ensures Vector maintains coordinated and clear management protocols to respond to events efficiently and effectively.

TITLE	DESCRIPTION
Business continuity management (BCM) policy	Formal representation of Vector's commitment to business continuity management, which forms an essential part of Vector's enterprise risk management function. Defines key business continuity management roles, responsibilities, accountabilities and reporting requirements. Approved by the Board, it is consistent with the following Standards: • AS/NZ 5050:2020 "Managing disruption-related risk" • ISO 31000:2018 "Risk management – Guidelines" • ISO 22301:2019 "Security and resilience - Business Continuity Management System – Requirements" • ISO 22313:2020 "Societal security – Business continuity management system – Guidance"
Crisis management plan	Provides the enterprise-wide framework and structure to assess and respond to any crisis-level incident or event affecting Vector, its customers and/or its employees, contractors and other stakeholders. Takes account of both the operational response and broader considerations including staff, customer and wider stakeholder engagement and support. Annual crisis management exercises and regular planning reviews are undertaken to ensure usability to support continuous improvement of the plan.
Crisis communications plan	Standalone plan governing the communications and external relations approach and processes during a crisis, emergency or business continuity event.
Emergency response guides	Ensures Vector is prepared for, and responds quickly to, any major incident that occurs or may occur on the gas distribution network. Key event guides include: • GEG-0001 Natural disaster • GEG-0003 Emergency response • GEG-0008 Major loss of supply

TITLE	DESCRIPTION
	• GEG-0011 Extreme heat Describes the roles and responsibilities for staff during a major incident. Reviewed annually to ensure there is continuous improvement and a standardised approach to all operational incidents.
Business continuity plans	Individual business unit / team plans which identify the critical functions and services provided by a unit / team and outline the recovery procedures to be undertaken during a disruptive event to maintain or resume these functions.

TABLE 5-1: EVENT MANAGEMENT AND EMERGENCY RESPONSE

5.5 Privacy

Vector takes its obligations under the Privacy Act very seriously. The volume and potential sources of data which are required to effectively manage and operate the network continue to expand. For example, new network and customer devices generate increasingly important information about consumption patterns, faults, performance and resilience which enables us to manage the network more efficiently and effectively. Vector understands its legal obligations and also its "social licence" to use this information responsibly and therefore has taken a conservative view on all data which relates to our customers, their physical location or their property. Vector has established protocols which define how any sensitive data is required to be protected, managed, and used by approved personnel.

Our data governance programme takes a holistic view of how data is managed and governed and specifically considers privacy across all areas of our data. A number of roles exist which assist in Vector's adherence to privacy obligations (refer to Table 5-2).

FUNCTION	ACCOUNTABILITY
Privacy Officer	Setting policy and supporting privacy related activities or issues. Dealing with privacy breaches, including any reporting requirements. The Privacy Officer is a requirement under the Privacy Act 2020.
Information Governance Council (IGC)	IGC is the primary body accountable for the governance of all information. They are the subject matter expert group for business data and information. IGC is the central council for which assurance is provided to all data and information initiatives and designs in accordance with the Group Data & Information Policy (GDIP). This councils an escalation for any data and information initiatives and decisions that exceed the coverage of the DIA (Data Impact Assessment).
Cyber Security	Establishment of systems and processes for the protection of all data.
Operational Information Management	Operational management, quality assurance and improvement of data.
Domain data owner	Domain data owners are the senior leadership roles tasked with uplifting enterprise data maturity by leading Vector's data governance organisation. Collectively they prioritise data and information initiatives across the enterprise.
Business data owner	The business data owner is accountable for a sub-domain of data. A business data owner may delegate responsibilities and accountabilities to their data steward(s).
Data owners	Accountable for ensuring appropriate processes and systems are in place for all sensitive data, and for implementing the requirements of data related policies and procedures.
Lead data steward	The lead data steward is responsible for the management and governance of data within a data community. The lead data steward has a solid understanding of the business and functional areas within that community.
Data steward	Responsible for implementing the requirements of data related policies and procedures.

TABLE 5-2: PRIVACY AND DATA GOVERNANCE FUNCTIONS AND ACCOUNTABILITIES

5.6 Asset management information systems

Vector has a suite of information systems that support its asset management practice.

5.6.1 PRIMARY SYSTEMS

Many of Vector's information systems operate through an integration layer that extends across these systems and enables the reporting and data analytics that support Vector's asset management processes. The following table provides an overview of the primary systems and provides insight into how they support asset management.

PRIMARY SYSTEM	FUNCTIONAL OVERVIEW
SAP	SAP is Vector's ERP System. It contains records for all assets and is used for managing the asset lifecycle from procurement and operation to maintenance and disposal. SAP also provides financial management related to asset management and project management
SAP planned maintenance (PM)	SAP PM is our asset maintenance management system used for planning, scheduling, executing and recording all maintenance activities on our assets
GE Smallworld	This system provides the geographic, schematic and connectivity information used in managing Vector's network assets
ARC-GIS	This system provides geospatial visualisation and analytics tools
Siebel	Siebel is Vector's Customer Relationship Management system. This system is used for managing customer requests for new connections, QoS complaints management, and fault and outage management
Gentrack	Gentrack provides records for all connected ICP as well as their regulatory and market attributes. It is used to manage energy consumption, revenue assurance and interfaces with the Gas Industry registry
Data Analytics Layer	This is a bespoke integration layer that provides reporting, monitoring and associated analytics related to network assets. It is a critical source of information for most of Vector's asset management processes
Siemens Power TG	This is Vector's SCADA system and is used to monitor and control operations on the network as well as provide data on network loading and other critical asset data
GE Power On	This is Vector's ADMS (Advanced Distribution Management System). This system is used to monitor and control operations on the network, and record and provide critical asset data
Donesafe	Donesafe is Vector's enterprise system for managing risk and incidents. It facilitates the recording, monitoring, and reporting of risks across business units, while also supporting appropriate incident management practices - a key aspect of effective asset management

TABLE 5-3: PRIMARY SYSTEMS OVERVIEW AND INSIGHTS

5.6.2 OTHER IMPORTANT SYSTEMS

Vector uses a number of other information systems, computer models and computer-based tools in the management of is gas distribution assets. In particular:

- **OSIsoft PI**: is a real-time network performance management system that imports data from various corporate systems (e.g. SCADA – see above) and provides a permanent archive of historical network data. Data may be extracted for later analysis in Microsoft EXCEL;
- **GasCore**: is a web-based data analysis software system used by Vector to monitor its gas distribution networks;
- **Forecast Scenario Model**: this is bespoke load forecasting model used in Vector's load forecasting practice. It is implemented in Microsoft EXCEL and draws data from other corporate systems and databases and third-party sources; and
- **Synergi**: is a network modelling tool gathering inputs from Smallworld, Gentrack and the PI archiving system to enable modelling of the meshed gas network. Outputs are gas network flow, pressure profile and capacity margins; and
- **Granular Customer Model and Database:** this is a bespoke model implemented as SQL Database that brings together relevant customer and energy information with information from third party sources (e.g. socioeconomics).

5.7 Information and data management

Vector has taken a coordinated approach to the management and governance of its information and data assets. The following five capabilities have been established reflecting the operational, strategic and governance overlaps across the disaggregated functions.

Enterprise Data and Analytics: This function provides strategic leadership for data across the whole of Vector, ensuring alignment between the company's data platforms, strategy, and operational model. They focus on developing data literacy, managing data architecture and governance, designing and administering data platforms, and engineering data products.

Network Data and Analytics: This function provides a focus on delivering data products that drive business outcomes and value. The team is responsible for information management, business intelligence, analytics, data engineering, and data science across the gas business domain.

Enterprise Data and Information Management: This function delivers and supports the information management programme that manages the people, processes and technology that provides control over the structure, processing, delivery and usage of data and information required for management and business intelligence purposes. Providing compliance and governance frameworks applicable to both physical and electronic information.

Network Data & Information Management: This function provides data stewardship to the application of information and data management across the gas network's systems of record for assets and operational activities through the development, execution and supervision of plans, policies, programs and practices that control, protect and enhance the value of data and information assets throughout their life cycles.

Enterprise Data Platforms: A technical function, this team is responsible for the management and development of the data and analytics application platforms.

5.7.1 DATA GOVERNANCE

Vector's Group Data and Information Policy and Information Governance Framework are the foundations that set out the governance requirements and operating model for the information lifecycle (refer Figure 5-5). This covers both information in electronic and physical form, as well as disciplines for the process of creating, obtaining, transforming, sharing, protecting, documenting and preserving data. In preparing the policy and operating model, Vector has followed the principles and framework as set out in the Data Management Association's body of knowledge[12].

The Group Data and Information Policy is supplemented and supported where necessary by other operational and policy documents including our Privacy Principles , Cyber Security Policy and Artificial Intelligence Policy.

FIGURE 5-5: DATA MANAGEMENT ASSOCIATION FRAMEWORK

5.7.2 OPERATING MODEL

Vector's data governance operating model is represented in the diagram below. Operationally, the Enterprise Data and Information Management (EDIM) group, within the wider Enterprise Data and Analytics function, provides capability horizontally across the different business units. Within each business unit, data stewards have been established to work with the data owners to ensure that business (i.e. operational) and governance requirements are met for each data set. The data stewards are trained and overseen by Enterprise Data and Information Management.

Vector operates an Information Governance Council (IGC) responsible for setting and supporting the implementation of the Group Data and Information policy. This includes being the escalation point for data related events and advice on the treatment and usage of data. Importantly the Council is made up of core disciplines and functions from across the business that impact privacy and data management including, but not limited to, Enterprise Information Management, Privacy, Legal, Information Management and Data and Analytics. In addition, Cyber Security and Digital Architecture teams also provide subject matter expertise where required to support the Council in managing risk and maintaining good practice. In line with good governance and given the importance of strong data and information management in the success of our Symphony Strategy, the Council reports directly to Vector's Executive Team.

Operationally, Vector maintains a Networks Information Management team to act as a dedicated data steward for critical gas data sets. This team is responsible for defining and ensuring the implementation of data standards, as well as managing the data within the System of Record for asset, asset performance, geo-spatial and customer data. Additionally, the team manages regulatory reporting (including one off requests) as well as managing other third party data requests such as location information and asset information.

12 DAMA-DMBOK, Data Management Body of Knowledge, Second Edition, DAMA International

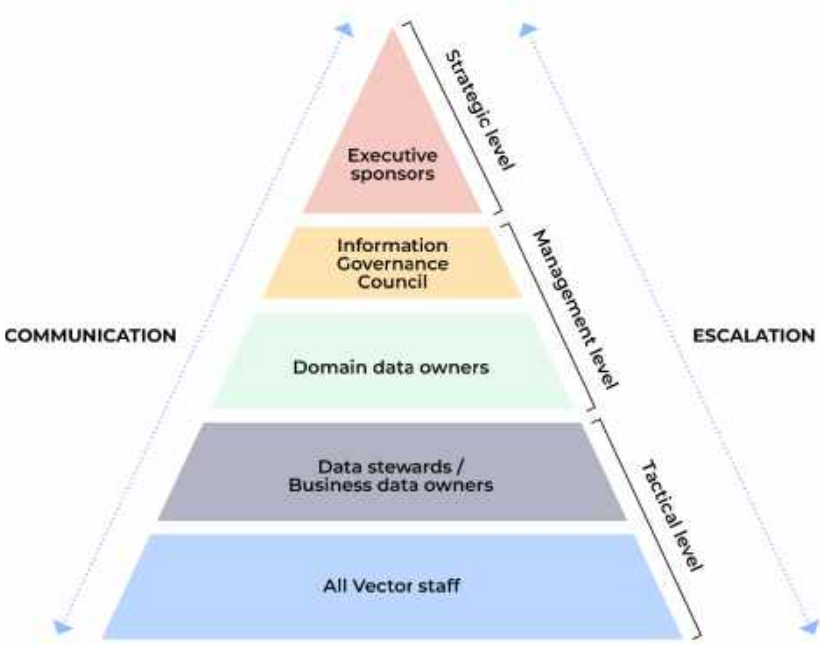


FIGURE 5-6: VECTOR'S DATA GOVERNANCE OPERATING MODEL

5.7.3 DATA QUALITY AND OPPORTUNITIES FOR IMPROVEMENT

The network information management function has an ongoing programme of work relating to the assurance and improvement of data that support the asset management practice described in the AMMAT (refer section 10.16).

An ongoing focus remains on improving data, with the following key initiatives underway:

- Asset inspection data improvement to incorporate cathodic protection readings;
- Improved access to smart meter data from MEPs;
- Improvement of faults and corrective maintenance data; and
- Enhancement of asset master data;
  - Align the asset hierarchy to network asset strategy and pressure systems
  - Align SAP equipment inventory with maintenance cycles across the asset classes
  - Improve GIS accuracy of services and mains connectivity
  - Review and confirm all gas distribution assets' data requirements.

5.8 Cyber security

In the context of our AMP, our strategy regarding cyber security continues to be focused on addressing two key categories of risk:

1. The protection of critical network assets from unauthorised access that could result in disruptions to service or physical damage; and
2. Safeguarding and restricting access to any personal/customer data thar is used for network management purposes.

At the core of this focus is the protection of Vector people, processes, data and systems from cyber security risks. Our operating environment is one where the number, sophistication and impact of malicious cyber security threats continues to grow and change, and we continually monitor how threat actors develop their tactics.

As Vector is operating in an increasing complex threat landscape, continuing to maintain an effective and mature security posture is a key priority and an area in which we continue to invest sufficiently to ensure we appropriately manage these cyber security risks.

We have continued to improve our ability to detect and prevent potential cyber security threats via our Security Operations Centre (SOC), which provides 24/7/365 monitoring of our Information Technology (IT) and Operational Technology (OT) environments, and our preventative and detective controls through ongoing initiatives such as network modernisation, user awareness and education, identity and access management as well as external assurance. Execution of the Vector cyber security strategy and roadmap has resulted in advances such as the continuous development of security orchestration, while automation has resulted in reduction of manual effort and time required to remediate security incidents as well as streamlined identification, assessment, and remediation of vulnerabilities. The network modernisation initiative has progressed with improvements to productivity, security, compliance, and accountability. Further enhancements to privileged access management and identity lifecycle automation will further enhance security risk mitigation, operational efficiency and visibility.

The Vector cyber security team continues to work with key global tier-1 security providers to apply a global perspective to cyber security assurance and technology, as part of an integrated Cyber Security Operating Model. We're also continuing our engagement and contribution to key New Zealand industry security forums, across public and private sectors.

The management of risk associated with cyber security within a complex and dynamic threat landscape is an industry wide concern. The Vector cyber security team continues to uplift cyber security capability across the industry, by bringing together key organisations to better protect themselves and promote security awareness. A cyber security risk can come from anywhere in the world, so collaboration between partners and industry participants provides a greater understanding of threats through intelligence and access to technologies, resources, and processes.

SECTION 06

Our assets

6 – Our assets

This section of the AMP sets out Vector's gas distribution assets; the types and volumes of assets, their functional role and key statistics.

6.1 Network overview

Vector's gas network supply area is centred on the Auckland isthmus and extends from north of Wellsford to Tuakau in the south. The supply area is shown in Figure 6-1.

FIGURE 6-1: VECTOR GAS NETWORK GEOGRAPHICAL AREA

Key statistics of Vector's network are given below.

Customer connections[13]	120,354
Distribution pipelines – includes mains and service pipes (km)[14]	7,014
Gate stations[15]	16
Pressure stations[16]	184
Peak load (m3/hour)[17]	90,946
Gas conveyed (PJ per annum)[18]	13.0

13 Source: Information Disclosure 2024 Schedule 9d(ii) (http://vector.co.nz/disclosures/gas-financial-and-network-information).

14 Source: Source: Information Disclosure 2024 Schedule 9c (http://vector.co.nz/disclosures/gas-financial-and-network-information). Includes mains and service pipe lengths.

15 Source: Vector's Geographical Information System (GIS).

16 Source: Information Disclosure 2024 Schedule 9a (http://vector.co.nz/disclosures/gas-financial-and-network-information). Includes Vector's district regulating stations and service regulators.

17 Calculated by adding the coincident load of each network system for a calendar year. Measured as standard cubic metres per hour (scmh).

18 Source: Information Disclosure 2024 Schedule 9d(ii) (http://vector.co.nz/disclosures/gas-financial-and-network-information).

6.1.1 NETWORK CONFIGURATION

Vector takes bulk gas supply from the HP transmission systems (greater than 20 bar) operating across the North Island. The transmission systems operate at pressures ranging between approximately 50 and 80 bar and typically deliver gas to Vector's distribution systems at IP20, IP10, MP7 and MP4 pressure level (20 bar down to 4 bar). A schematic view is shown in the following Figure 6-2.

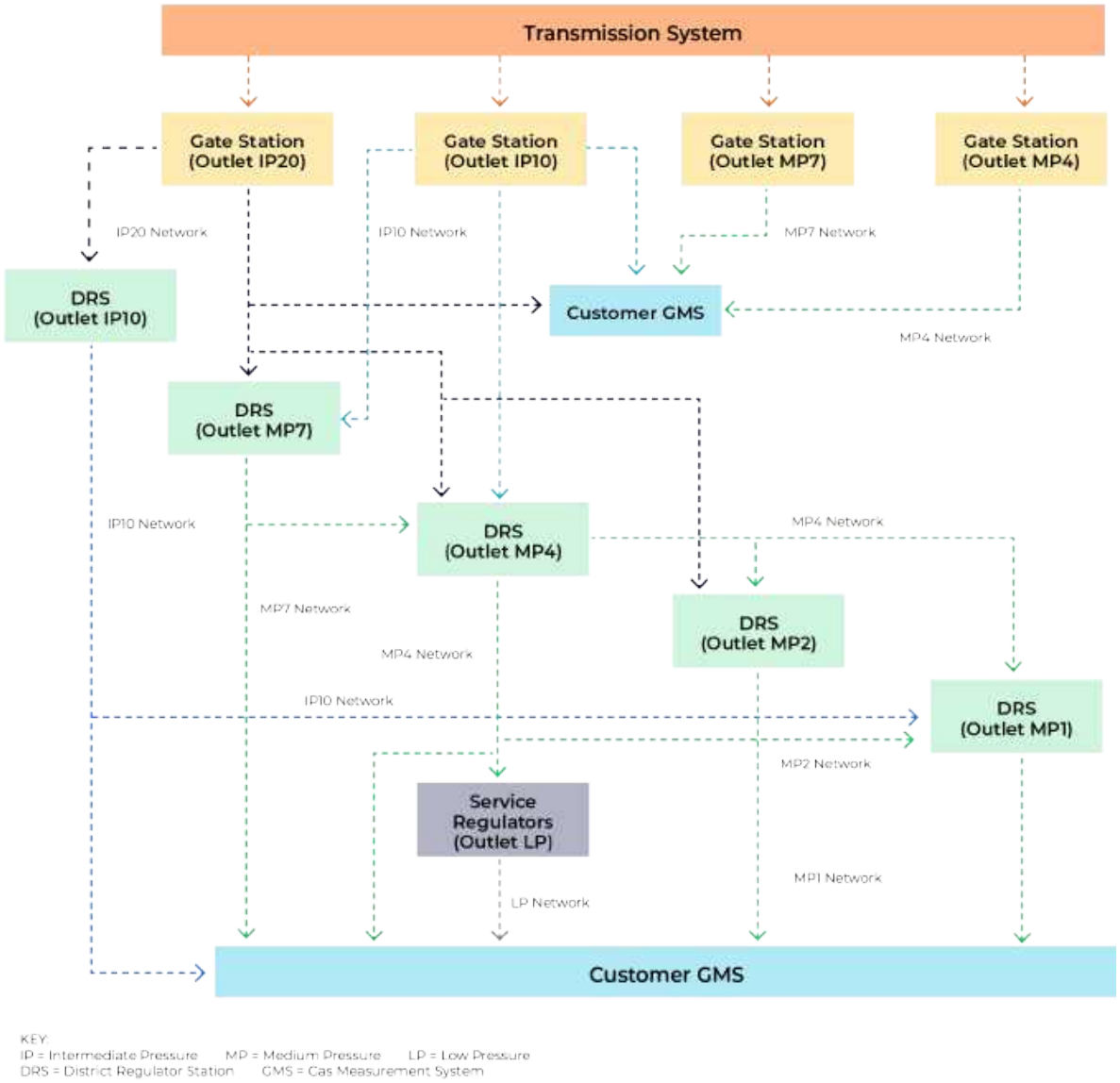


FIGURE 6-2: VECTOR NETWORK CONFIGURATION

The IP systems tend to be radial in design, whereas the design of the majority of MP systems tends to be of a mesh nature, providing back-feed security to large numbers of residential and commercial loads. MP systems are often supplied from multiple DRSs thereby further increasing the SoS. Typical load profiles of the network and a map of Vector's large customers that have an impact of network operations, can be found in section 10.5 and 10.10, respectively.

6.1.2 LOAD CHARACTERISTICS

The capacity of an individual pipeline is determined by the operating pressure, the diameter and the allowable pressure difference between inlet and outlet. Meshed distribution networks work on the same principle with the difference that pipelines are interconnected at several points and that such distribution networks can be fed at multiple points.

While this can result in large networks the advantage is that failure of one single asset does not compromise the entire network. Secondly, the size of the network ensures that organic load increases have minimal impact on the overall immediate impact on the network as the network pressures are continually rebalancing through the connectivity. Significant offtakes, particularly on the smaller networks, can significantly impact the performance of the network and these are modelled separately.

As the distribution networks expand and demand grows, certain parts of the networks, feeder mains, can develop large pressure drops that constrain delivery in downstream parts of the distribution systems. Each year, Vector prepares network pressure monitoring surveys and carries out distribution network analysis to identify any constraints and to reinforce networks to ensure operating pressures do not become insufficient.

DRSs have nominal outlet pressures which supply each discrete pressure system on the distribution network. System pressures in the network decrease in accordance with demand and the supply pressure. Under normal network operating arrangements, Vector's QoS standard stipulates the pressure at any point on the network shall be no less than 50% of its nominal pressure and no more than 10% above its maximum operating pressure. Further details of Vector's QoS standard can be found in section 4.7.8.

Pressure drops on each pressure system need to be considered separately, due to the meshed nature of the network and the different characteristics, i.e. mix of residential, commercial and industrial customers, each system exhibits.

Vector uses individual system pressure profiles to illustrate the load characteristics of each network. These are based on system pressure data that Vector collects as part of its system pressure monitoring programme and an understanding of the relationship between pressure and flow.

The typical daily winter pressure profile for residential loads and load profile for commercial / industrial customers are illustrated in section 10.5.

6.1.3 PEAK DEMAND AND ENERGY DELIVERED

Historical trends show gas demand (and sales volume) is primarily influenced by economic activities in an area, price and availability of substitute fuels (e.g. electricity, fuel oil etc.), marketing effort, population / household growth, socio-economic factors, climate, and the investment decisions made by large industrial and commercial gas consumers. In the short-term, gas demand is very sensitive to climatic conditions. A cold snap, for example, could drive up the demand for gas significantly. Conversely, a warm winter could result in a materially lower demand. Hence on a year–by-year basis, demand can vary significantly due to extreme weather conditions and normally represent only a small percentage of hours in a year.

The peak demand and the gas conveyed on the gas distribution network for the past six years is shown in the following graph (the individual demand forecasts for all gate stations on Vector's network are detailed in 10.6).

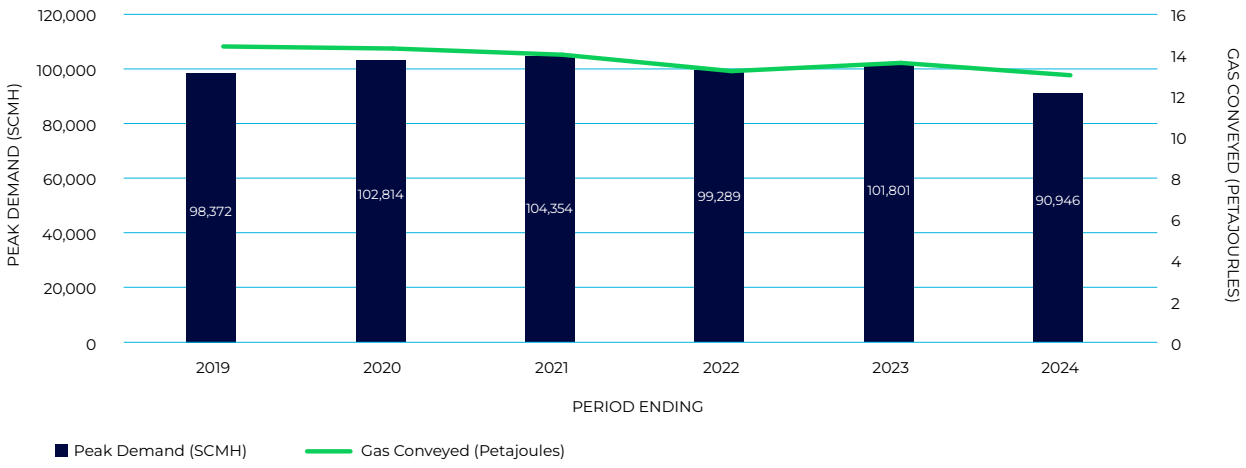


FIGURE 6-3: PEAK DEMAND AND GAS CONVEYED

The values reported above are the coincidental peak demands of all gate stations delivering supply to Vector's gas distribution networks.

Vector has a number of large customer sites at various locations in its network. Section 10.10 provides maps which indicate those customer sites with annual energy requirements in excess of 20 Terra Joule (TJ), and which hence have a significant impact on network operations and asset management.

6.2 Asset overview

Distribution networks extend from the outlet valve of the transmission gate station to the inlet valve on a consumer GMS. Distribution networks broadly contain the following six main categories of assets:

- Distribution pipelines (includes mains and service pipes);
- Pressure stations;
- Valves;
- Corrosion protection equipment;
- Monitoring and control equipment; and
- Special crossings.

6.2.1 DISTRIBUTION PIPELINES

Key statistics of the distribution pipeline assets are shown below.

PRESSURE LEVEL	MAINS PIPE (KM)	SERVICE PIPE (KM)	TOTAL	% OF TOTAL NETWORK
Intermediate Pressure (700 - 2,000kPa)	239	5	244	3%
MP (7 - 700kPa)	4,419	2,350	6,769	97%
LP (0 - 7kPa)	0	1	1	0%
Total	4,658	2,356	7,014	100%

MAINS PIPELINES

Vector's mains pipelines are operated in the IP range of 1,000 to 2,000kPa. The selection of these pressures has, in the majority of cases, historically been justified on an economic basis (considering gas volumes, transmission distances, delivery pressures etc). The IP pipelines are all constructed to a high technical standard of welded steel with all of them being protected against corrosion by CP, using either a system of sacrificial anodes or an impressed current installation.

The IP systems are generally the principal "backbone" systems of the distribution networks with laterals radiating from them to supply adjacent areas. The distribution assets which are used to directly supply gas consumers are constructed mostly of PE and operate in the MP range.

The figure below depicts the age profile of mains pipelines.

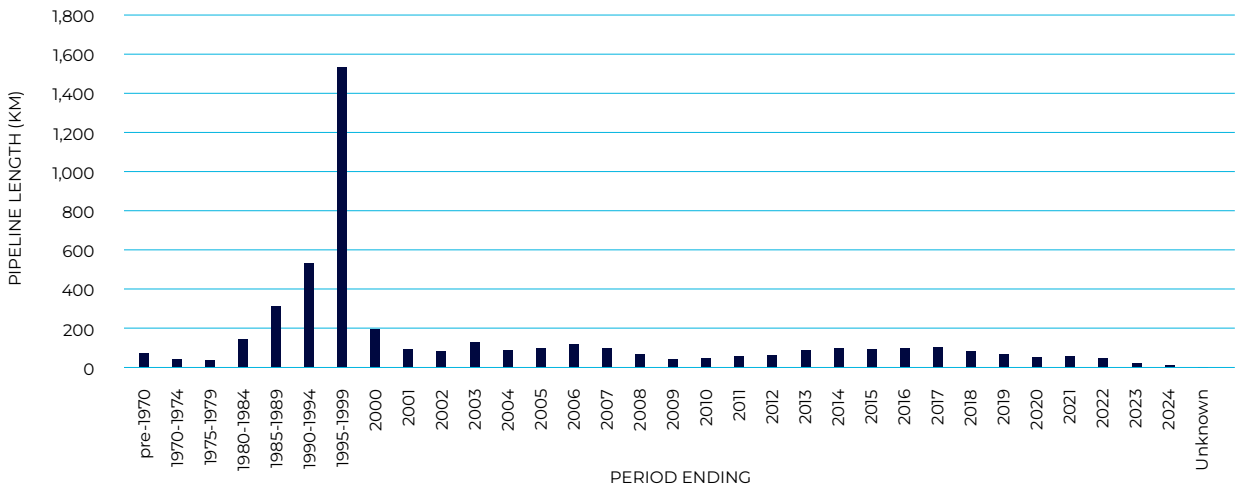


FIGURE 6-4: MAINS PIPELINES

SERVICE PIPELINES

Service pipelines provide the link between the gas mains in the street and the customer's gas meter and are comprised of a service pipe, riser and a riser valve. The outlet connection of the riser valve designates the end of Vector's distribution system. A service regulator is normally fitted downstream of the riser valve to regulate the gas pressure to the consumer meter-set and to downstream appliances / plant (in these cases the regulator is owned by GMS owners).

The figure below depicts the age profile of service pipelines.

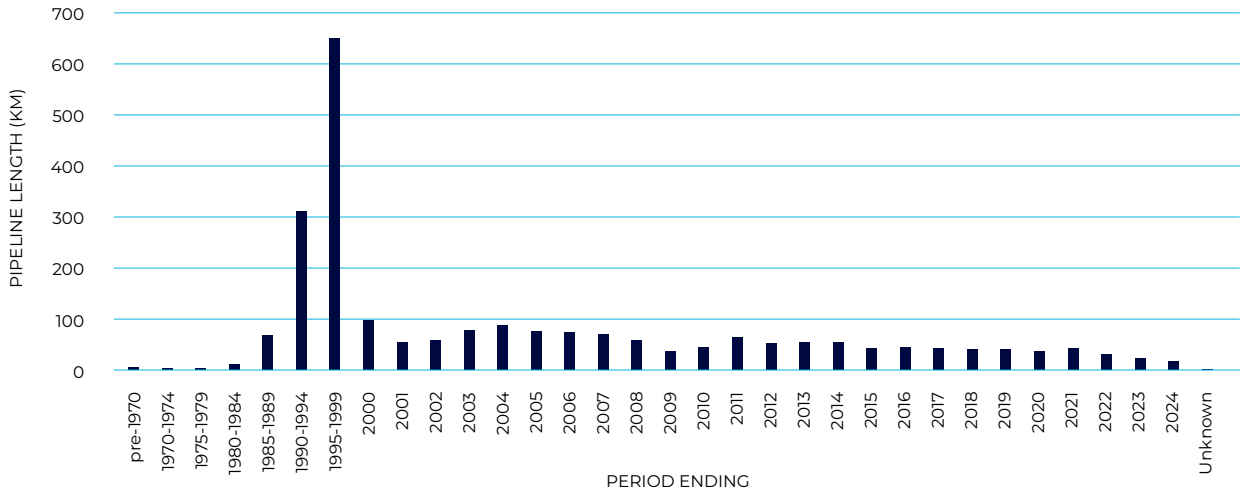


FIGURE 6-5: SERVICE PIPELINES

6.2.2 PRESSURE STATIONS

Pressure stations are those parts of a gas system that link two pipeline systems operating at different pressure levels. The station automatically reduces and regulates the gas pressure being supplied into the downstream pipeline system to which it is connected. Vector has three categories of pressure stations: gate stations, DRSs and service regulators.

GATE STATIONS

Where the pressure station is the link between the gas transmission system and a gas distribution network, it is known as a gate station. HP equipment (i.e. pressure regulating equipment and custody transfer metering etc) within the gate station is operated by Clarus, whereas distribution system equipment (i.e. legacy check metering (where installed) and associated valves and pipework etc) within the gate station is operated as part of Vector's gas distribution networks. Key statistics of equipment owned by Vector but installed at gate stations is listed in Table 6-1.

GATE STATION NAME	ASSETS OWNED BY VECTOR
GS-00001-AK Alfriston	All facilities downstream of the Interconnection Point
GS-00002-AK Bruce McLaren	All facilities downstream of the Interconnection Point
GS-00003-AK Drury	All facilities downstream of the Interconnection Point
GS-00004-AK Hunua	All facilities downstream of the Interconnection Point
GS-00005-AK Kingseat	All facilities downstream of the Interconnection Point
GS-00006-AK Papakura	All facilities downstream of the Interconnection Point, including DRS DR-00170-AK equipment, structures and downstream distribution outlet pipework, and associated telemetry equipment.
GS-00007-AK Pukekohe	All facilities downstream of the Interconnection Point
GS-00008-AK Ramarama	All facilities downstream of the Interconnection Point
GS-00009-AK Tuakau	All facilities downstream of the Interconnection Point including DRS DR-00250-AK equipment, structures and downstream distribution outlet pipework, and associated telemetry equipment
GS-00010-AK Waikumete	All facilities downstream of the Interconnection Point, including associated telemetry equipment
GS-00013-AK Westfield	All facilities downstream of the Interconnection Point including DRS DR-00244-AK equipment, structures and downstream distribution outlet pipework, and associated telemetry equipment
GS-00016-AK Henderson	All facilities downstream of the Interconnection Point, including DRS DR-00177-AK equipment, structures and downstream distribution outlet pipework, and associated telemetry equipment
GS-00018-AK Wellsford	All facilities downstream of the Interconnection Point
GS-00020-AK Warkworth 2	All facilities downstream of the Interconnection Point, including DRS DR-00256-AK equipment, structures, and downstream distribution outlet pipework.
GS-00021-AK Waitoki	All facilities downstream of the Interconnection Point, including DRS DR-00254-AK equipment
GS-00023-AK Harrisville	All facilities downstream of the Interconnection Point.

TABLE 6-1: GATE STATIONS

DISTRICT REGULATING STATIONS

Where the pressure station is the link between two Vector gas pressure networks it is known as a DRS. DRSs are used to reduce the operating pressure from higher operating pressure systems to systems with lower operating pressures.

DRSs are strategically located within the distribution network such that a continuous and safe supply of gas is delivered to all connected customers. They are primarily used to reduce the higher pressures associated with 'high volume' mains, (i.e. those with an operating pressure of 1,900kPa, 1,000kPa and 700kPa), down to a more economical distribution pressure level of between 200kPa and 420kPa.

Generally, a DRS converts significant volumes of gas from one pressure to another and they are the source of supply to a significant number of consumers. The importance of DRSs in the supply networks means duplicate assets are often provided to deliver a reasonable level of security. This duplication also enables maintenance to take place without a loss of supply to customers.

The lower operating pressures provided by the DRS assets allows modern technology and materials to be used to provide a safe, assured, and economical gas supply to the areas where customers are situated.

A service regulator is used to regulate the flow and pressure of gas to individual customer premises. Where for practical reasons a regulator cannot be installed immediately adjacent the gas meter (i.e. as part of the GMS) it is installed at a location upstream from the GMS and in some cases, is owned and maintained by Vector.

Key statistics of the pressure station assets are shown below.

Number of gate stations	16
Number of DRSs and service regulators	184

The figure below depicts the age profile of pressure stations.

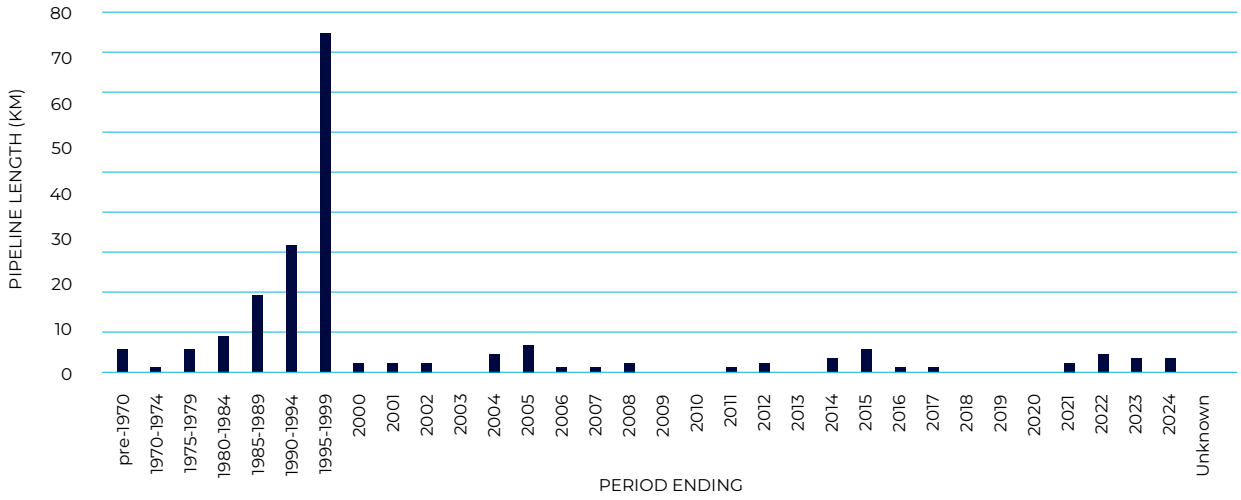


FIGURE 6-6: PRESSURE STATIONS

6.2.3 VALVES

BELOWGROUND VALVES

Belowground valves are comprised of mains and service valves (to isolate the flow of gas within the system) and blow down valves (to depressurise sections of the system in the event of an emergency). Valve types currently in use include ball valves, plug valves, gate valves and a relatively small number of other valve types. Although information on legacy valve types installed on Vector's is currently incomplete (i.e. it was not held in legacy Geographical Information System (GIS) (systems or asset databases), over 40% of mains valves installed on Vector's network are thought to be plug valves.

Key statistics of the line valves are shown below.

Number of IP valves	660
Number of MP valves	2,833
Number of LP valves	2

The figure below depicts the age profile of belowground valves.

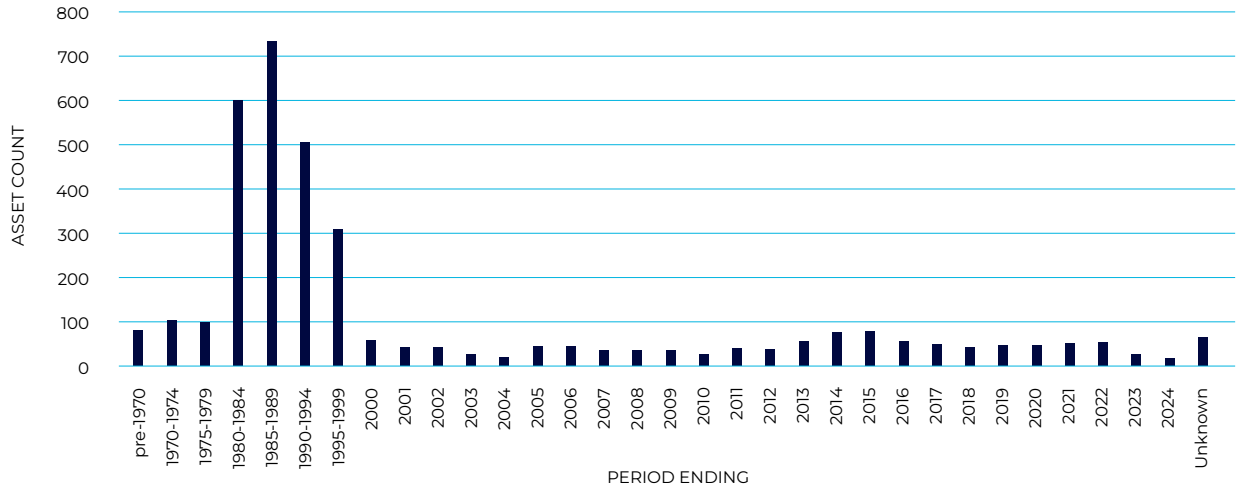


FIGURE 6-7: BELOWGROUND VALVES

RISER VALVES

Aboveground riser valves are installed at every GMS; they are positioned immediately upstream of the GMS service-regulator to allow the GMS (and downstream pipework) to be isolated from the gas distribution network in the event of an emergency or for maintenance purposes. The riser valve population is comprised of 10mm risers (approximately 92%), 25mm risers (4%), 32mm risers (2%), 50mm risers (1%) and various other riser sizes (1%).

Information on riser valve types is currently not held, however based on installation-date information, approximately 95% of riser valves are thought to be ball valves with the balance being plug valves.

Key statistics of the riser valves are shown below.

Number of IP riser valves	181
Number of MP riser valves	119,901
Number of LP riser valves	272

The figure below depicts the age profile of riser valves.

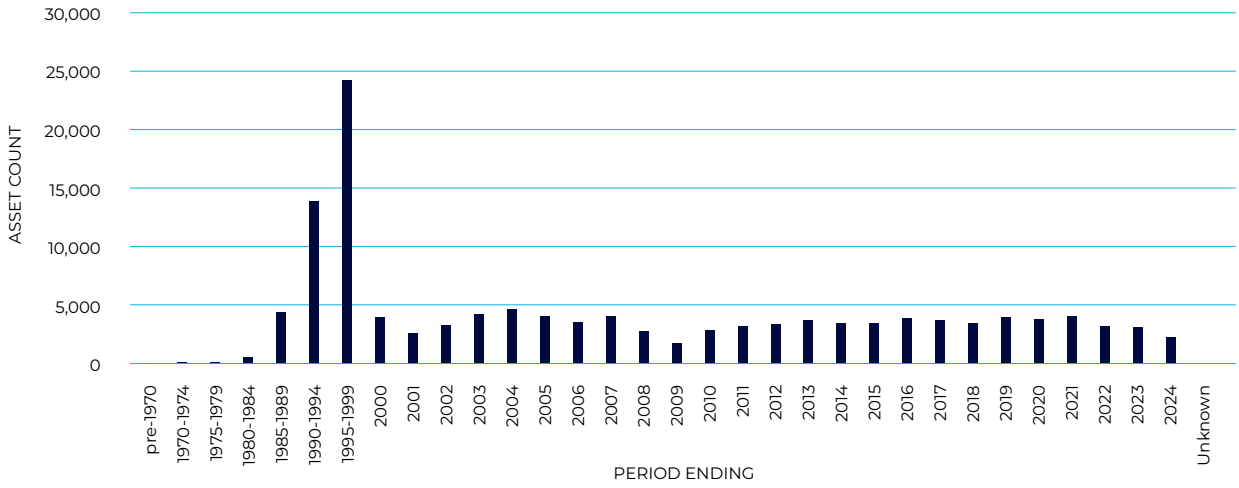


FIGURE 6-8: RISER VALVES AGE PROFILE

6.2.4 SPECIAL CROSSINGS

Special crossings are locations where a section of pipeline is installed aboveground in order to cross over a roadway, river or railway etc. They are typically installed where the installation of a belowground crossing is not practical.

Where the carrier pipe is PE, it is encased in a steel, Polyvinyl Chloride (PVC) or UV resistant PE duct in order to provide physical and ultraviolet protection to the carrier pipe. The duct is typically attached to the bridge structure by means of

galvanised or stainless steel fittings. Where the carrier pipe is steel it is typically either painted or wrapped (to provide corrosion protection) and attached directly to the bridge structure by means of galvanised or stainless steel fittings.

Key statistics of the special crossings are shown below.

Number of IP special crossings	20
Number of MP special crossings	61
Number of LP special crossings	6

The figure below shows the age profile of special crossings.

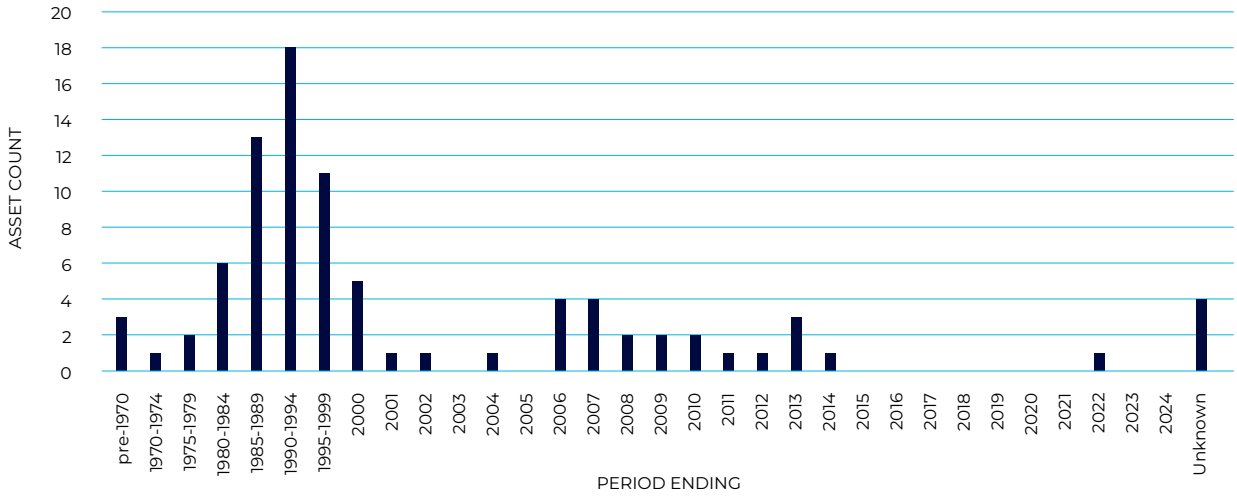


FIGURE 6-9: SPECIAL CROSSINGS

6.2.5 CORROSION PROTECTION EQUIPMENT

Belowground steel plant is protected against corrosion by the provision of protective coatings (e.g. high-density polyethylene) and the application of impressed current or sacrificial anode CP systems. Protective coatings are inspected whenever underground plant is exposed. CP test points are monitored on a periodic basis and maintained to ensure that the levels of protection being provided to the underground plant are kept within prescribed maximum and minimum levels.

The majority of Vector's interconnected steel network is protected by 9 impressed-current CP systems; the balance of the steel network (typically smaller standalone networks) are protected by sacrificial-anode CP systems.

Aboveground steel or metallic plant is protected against corrosion by the provision of paint or other suitable protective coating e.g. wrapping. Periodic inspections are carried out to monitor the condition of protective coatings and pipeline support brackets etc.

Key statistics of the corrosion protection equipment are shown below.

Number of impressed current CP systems	12
Number of sacrificial-anode CP systems	10

The figure below depicts the age profile of corrosion protection equipment.

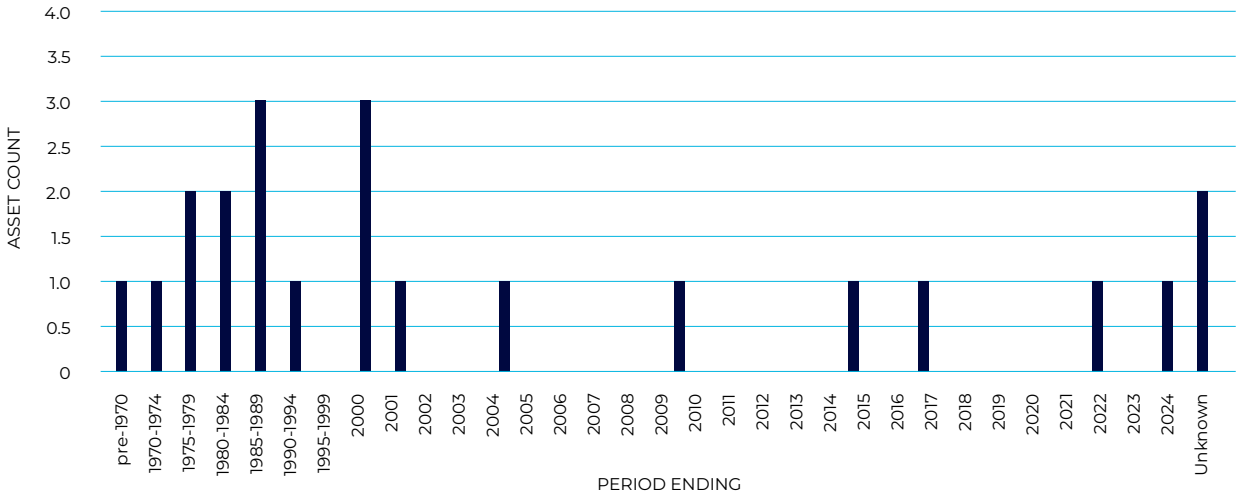


FIGURE 6-10: CATHODIC PROTECTION SYSTEMS

6.2.6 MONITORING AND CONTROL SYSTEMS

The telemetry systems used by Vector to monitor its gas distribution networks comprise the Telenet SCADA system and the Cello system.

The Telenet system provides near real-time monitoring i.e. it provides data refresh rates that range between 5 minutes and 30 minutes; approximately half of the Telenet sites utilise a radio communication platform and the balance utilise a GPRS communication platform. The Cello system provides 15-minute time-stamped monitoring data (typically pressure only) that is refreshed once a day. Communication between the Cello field sites and the base station is via the GSM network using SMS communication. Cello equipment is utilised at both permanent and temporary (e.g. winter gauging) monitoring sites.

Access to Telenet and permanent Cello site monitoring-data is provided via the PI archiving system. Access to the temporary Cello site monitoring-data is provided via a proprietary PMAC database.

The telemetry systems provide remote monitoring and alarming of critical inlet/outlet pressures, temperatures and flow rates, and corrected and uncorrected metering data. The telemetry system monitors data at gate stations, DRSs and major gas customer sites, and provides remote control facilities for the operation of the IP20 valves located at either end of the Auckland Harbour Bridge.

Key statistics of the telemetry systems are shown below.

Number of Telenet monitoring sites	74
Number of Cello monitoring sites	35

The figure below depicts the age profile of monitoring and control systems.

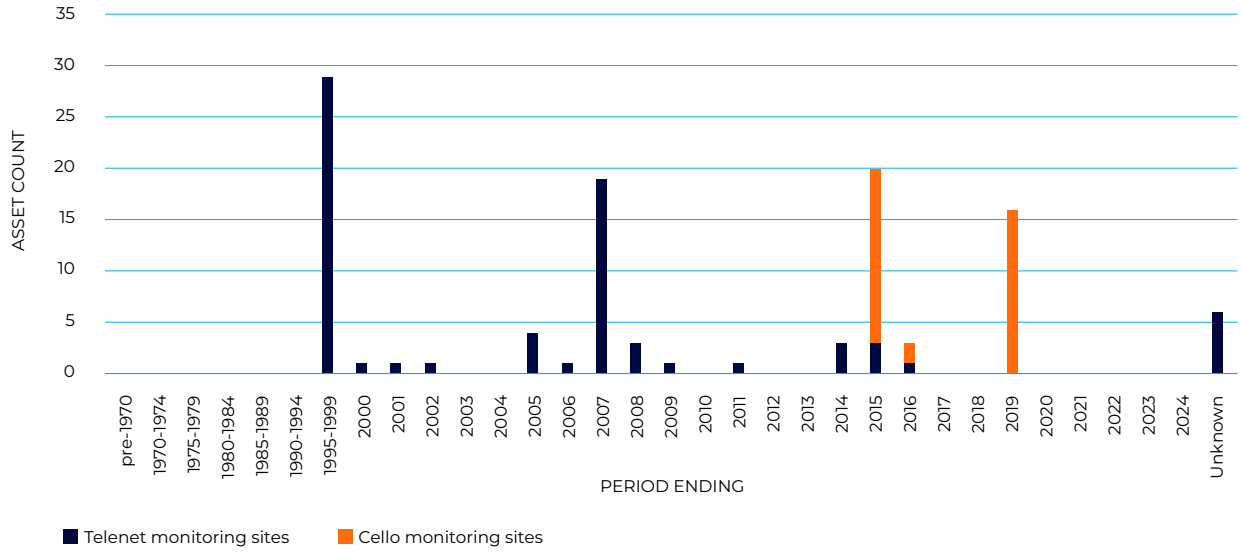


FIGURE 6-11: MONITORING AND CONTROL SYSTEMS

SECTION 07

Managing our assets lifecycle

7 – Managing our assets lifecycle

This section sets out Vector's project proposals for the next 10-year period. These proposals assist Vector in achieving service level targets through addressing the current or performance targets identified in section 3 –and appendix 10.3. The proposals are developed based on our asset management strategies (see section 4.6).

The proposed projects are identified from the assessment of the possible viable options. Where applicable, options consider non-network solutions and innovations, and deferral of investment. The majority of proposed projects are subject to technical assessment, modelling and simulation, exclusion viability, financial feasibility and / or post investment risk assessment.

An investment summary table gives forecast expenditure on the project for the 10-year period in New Zealand dollars. The forecast annual expenditure is given in financial years and all amounts are shown in millions of dollars nominal to two decimal figures.

7.1 Network maintenance

This section describes the key elements of Vector's approach to the maintenance of our network assets. These activities are crucial to ensuring that the assets are well maintained and can continue to operate safely and effectively while delivering to our asset management objectives.

Vector's maintenance portfolio covers a broad spectrum of activities and includes investment across both opex and capex profiles. The key elements of the portfolio include planned maintenance, corrective maintenance and reactive maintenance.

As maintenance is the primary source of ongoing asset condition information, the ongoing benefits from the improvements from our systems and standards changes will allow us to become more predictive and risk based in our overall approach. This will support our longer-term Condition Based Asset Risk Management (CBARM) modelling initiatives and associated asset lifecycle decision making.

7.1.1 NETWORK MAINTENANCE

ACTIVITY OVERVIEW

The key elements of our network maintenance programme are as follows:

- Reactive maintenance (RM) – this activity primarily focuses on restoration of supply when a fault or other network incident occurs. Reactive maintenance incorporates our faults response and the remediation work needed to restore supply.
- Planned maintenance (PM) – this activity delivers our routine maintenance programme for inspections, condition assessments, testing and servicing of our assets in accordance with our maintenance standards;
- Corrective maintenance (CM) – this activity primarily addresses issues identified through our condition-based assessments and inspections. Functionality is restored, and assets are repaired or replaced as required to ensure that the network can continue to operate safely and effectively; and
- Third party services (TPS) – this activity includes provision of network protection and disconnection services to third parties.

EXPENDITURE OVERVIEW BY ACTIVITY

Forecast investment summary ($million constant FY26)

DESCRIPTION	AMP2025 (FY26$) FY26-FY35 $M	AMP2024 (FY26$) FY25-FY34 $M[19]	CHANGES $M	CHANGES %
Reactive maintenance	26.54	27.41	-0.87	-3%
Planned maintenance	22.82	20.09	2.73	14%
Corrective maintenance	28.22	14.86	13.36	90%
Third-party Services	3.38	7.81	-4.43	-57%
Total	**80.96**	**70.17**	**10.79**	**15%**

TABLE 7-1: NETWORK MAINTENANCE VARIANCE TO PREVIOUS AMP

19 Excludes provisional inflation that is removed in this AMP.

EXPENDITURE OVERVIEW BY ASSET CATEGORY

DESCRIPTION	AMP2025 (FY26$) FY26-FY35 $M	AMP2024 (FY26$) FY25-FY34 $M	CHANGES $M	CHANGES %
Pipelines	56.27	52.71	3.56	7%
Pressure stations	3.41	2.01	1.40	70%
Valves	10.54	7.70	2.83	37%
CP systems	2.78	2.39	0.39	16%
Monitoring and control systems	2.13	0.94	1.19	127%
Special crossings	5.83	4.42	1.42	32%
Total	**80.96**	**70.17**	**10.79**	**15%**

TABLE 7-2 NETWORK MAINTENANCE BY ASSET CATEGORY - VARIANCE TO PREVIOUS AMP

7.1.2 REACTIVE MAINTENANCE

DESCRIPTION

Reactive maintenance relates to activities associated with our response to faults and other unplanned network events. These can be broken down into the following activities:

- First response – this is our rapid faults response to unplanned network events. The primary functions here are to make the network safe, fault isolation and to confirm the nature of any remedial work required; and
- Fault restoration and repair – this activity primarily focuses on the restoration of supply to all affected customers. These include temporary repairs and the restoration of the network to a fully operational state.

Reactive maintenance addressees all types of faults on the network including faults inherent to the degradation of the asset and faults due to environmental factors.

OBJECTIVES

We have identified the following objectives to guide our reactive maintenance programme.

ASSET MANAGEMENT OBJECTIVE	REACTIVE MAINTENANCE PORTFOLIO OBJECTIVE
Safety, environment and network security	Ensuring that the network can continue to operate effectively without detriment to the environment or the safety of our people and customers. Our work is prioritised accordingly.
Customers and stakeholders	Minimise impact to our customers and optimise restoration through faster response times, fault isolation and repairs.
Network performance & operations	Asset reliability - manage restorations without compromising asset reliability. Operational efficiency - continue to seek improvements to our response, isolation of faults to smaller localised areas and reduce impact to our customers.

KEY CHANGES AND IMPROVEMENT INITIATIVES

As shown in TABLE 7-1, reactive maintenance expenditure is forecast to decline by $0.87m (3%) during the 10-year planning period. The key changes and improvement initiatives for reactive maintenance over the 10-year planning period are shown below.

INITIATIVE	DESCRIPTION
Reactive response	The key reason for the change in reactive services is due to a lower Multi Utility Services Agreement (MUSA) adjustment factor and a higher third-party damage recovery.

EXPENDITURE FORECAST

Forecast investment summary ($million constant FY26)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Reactive maintenance	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	26.54
Total	**2.65**	**2.65**	**2.65**	**2.65**	**2.65**	**2.65**	**2.65**	**2.65**	**2.65**	**2.65**	**26.54**

7.1.3 PLANNED MAINTENANCE

DESCRIPTION

Planned maintenance is carried out periodically on all of Vector's assets to ensure they can continue to operate safely and effectively, to ensure reliability and resilience of the network and to maximise the service life of our assets. Our programme of planned maintenance also gathers important asset condition information which is a primary input into our predictive asset strategies and replacement plans and ensures compliance with regulatory requirements.

Vector has a suite of maintenance standards (refer to section 10.2) which are a key control in managing the risks associated with all our assets. These documents define the specific requirements and schedules for inspections and servicing for each type of asset in service (refer to section 10.3).

The main type of activities conducted during planned maintenance are:

- Functional inspections – regular inspections and patrols ensure the integrity of the network and focus on identifying issues that may have a more immediate impact on safety and reliability. Functional inspections are our most frequent asset inspections and primarily feed into Vector's corrective maintenance regime;
- Servicing and testing – maintenance tasks that are performed on an asset in accordance with our maintenance standards to ensure that our assets can continue to operate safely and effectively; and
- Full inspections – inspections that primarily record detailed asset condition information that is used to support our predictive asset strategies and analysis.

OBJECTIVES

We have identified the following objectives to guide our planned maintenance programme.

ASSET MANAGEMENT OBJECTIVE	PLANNED MAINTENANCE PORTFOLIO OBJECTIVE
Safety, environment and network security	Ensure that our planned maintenance regime is an effective control for the risks associated with owning and operating a network and our commitments to the environment and public safety are not compromised.
Customers and stakeholders	Minimise planned outages to our customers by grouping and prioritising works effectively, and where economically practical use alternative supply options to reduce planned interruptions.
Network performance & operations	Asset reliability - maximise asset life and improve reliability by ensuring that planned maintenance is completed in accordance with our maintenance strategies. Monitor asset performance and reliability and review our planned maintenance requirements to ensure they are up to date. Operational efficiency - ensure that our planned maintenance requirements and expectations are clearly defined, and our supporting systems are configured to reflect this. This ensures that our delivery resources can focus on delivery and improving efficiency. Asset lifecycle information - ensure that asset lifecycle and condition assessment information is recorded through our planned maintenance activities. Ensure that our asset data sets are consistent, complete and are of a high quality to support our predictive and risk-based asset strategies.

KEY CHANGES AND IMPROVEMENT INITIATIVES

As shown in TABLE 7-1, planned maintenance expenditure is forecast to increase by $2.73m (14%) during the 10-year planning period. The key changes and improvement initiatives for planned maintenance over the 10-year planning period are shown below.

INITIATIVE	DESCRIPTION
Pipeline inspections	• An increase of $1.3m in pipeline expenditure due to the introduction of a new pre-85 pipeline camera inspection programme (refer to section 4.8.1 and 7.5.1). This new inspection technology will identify potential failure points in pre-85 pipelines. • An increase of $0.2m due to an updated forecast for increasing leakage survey frequency from 6 to 3 monthly (refer sections 3.4 and 4.8.1).
Valve maintenance surveys	• An increase in valve maintenance of $0.85m due to a review of the valve population and increasing the valve maintenance frequency from 2-yearly to annually due to the reduction of capital replacement (refer section 7.5.3).
Monitoring and control systems inspections	• An increase of $0.1m in monitoring and control systems due to a review of the costs associated with the intrinsic safety inspections for telemetry equipment.
Special crossings inspections	• An increase of $0.1m due to an increase in the number of below ground crossing inspections..

EXPENDITURE FORECAST

Forecast investment summary ($million constant FY26)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Pipelines	0.88	1.15	1.25	1.22	1.27	1.21	1.21	1.27	1.21	1.22	11.92
Pressure stations	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.71
Valves	0.43	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	5.74
CP systems	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	2.38
Monitoring and control systems	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.53
Special crossings	0.17	0.15	0.15	0.15	0.15	0.17	0.15	0.15	0.15	0.15	1.53
Total planned maintenance	**1.85**	**2.25**	**2.36**	**2.32**	**2.38**	**2.33**	**2.31**	**2.38**	**2.31**	**2.32**	**22.82**

7.1.4 CORRECTIVE MAINTENANCE

DESCRIPTION

Corrective maintenance is the action to restore and renew functionality of our assets before they fail by remediation of condition issues predominantly identified through our planned maintenance activities. These actions are important to ensure the assets can continue to perform their intended function safely and reliably. Corrective maintenance activities assist with extending the service life of assets without compromising our performance expectations and are complementary to our pro-active CBARM driven asset replacement initiatives.

Our corrective investment can be broken down into the following key areas.

- Corrective asset replacements – these are corrective asset replacements that are undertaken to ensure that the network can continue to operate safely and reliably without compromising performance; and
- Corrective maintenance repairs – these are minor corrective works undertaken to restore assets to a safe and functional state. These activities are classified as opex.

OBJECTIVES

We have identified the following objectives to guide our corrective maintenance programme:

ASSET MANAGEMENT OBJECTIVE	CORRECTIVE MAINTENANCE PORTFOLIO OBJECTIVE
Safety, environment and network security	Ensuring that the network can continue to operate effectively without detriment to the environment or the safety of our people and customers. Our work is prioritised accordingly.
Customers and stakeholders	Improve the overall experience for our customers and community by improving overall network performance and wherever possible, maximizing the utilisation of any planned customer outage to complete work that is required.
Network performance & operations	Asset reliability – maximizing asset life and reduce the incidence and impact of failures to our customers by prioritizing work accordingly and reducing overall risk. Operational efficiency – enable efficient planning, coordination, optimisation, and delivery of all corrective work activity.

CORRECTIVE MAINTENANCE KEY CHANGES AND INITIATIVES

As shown in TABLE 7-1, corrective maintenance expenditure is forecast to increase $13.36m (90%) during the 10-year planning period. The key changes and improvement initiatives for corrective maintenance over the 10-year planning period are shown below.

INITIATIVE	DESCRIPTION
Pipeline replacement and repairs	• An increase of $3.46m for pre-85 pipeline corrective replacement due to the introduction of a new inline pre-85 pipeline camera inspection programme (refer to section 4.8.1). • An increase in pipeline defect repairs of $0.72m in defect resolution for faults identified from DCVG surveys, for steel pipelines. • A reduction of $0.2m due to the removal of pre-85 pipeline decommissioning due to the new pre-85 pipeline camera inspection programme (refer to section 4.8.1) • A reduction of $0.6m due to a lower forecast in the number network driven disconnections following the completion of the planned inspection programme.

INITIATIVE	DESCRIPTION
Risers' assembly	• An increase of $1.8m for additional riser assembly and valve replacements to address an increase in reported faults (refer section 4.8.1 and 7.5.1).
Pressure station replacement	• An increase of $1.2m for the subcomponent replacement of pressure stations equipment (refer section 7.5.2). • A $0.1m increase in general pressure station corrective maintenance and a forecast increase in the number of DRS removals.
Valve replacement	• An increase of $0.5m in valve defect resolution which targets higher priority defects and the ongoing legacy issue of "lost valves" where roading works have covered the valve boxes.
Corrosion protection systems equipment replacement	• A $0.4m increase for the subcomponent replacement of corrosion protection systems equipment (refer section 7.5.4).
Special crossings equipment replacement	• An increase of $1.8m for the subcomponent replacement of special crossings equipment (refer section 7.5.6). • An increase of $0.3m for bridge crossing decommissioning and removal. • A reduction in special crossings expenditure of $0.5m due to reprioritisation and early completion of special crossings activities e.g. Auckland Harbour Bridge and Newton Road bridge crossings.
Monitoring and control systems equipment	• An increase of $0.8m for the subcomponent replacement of monitoring and control systems equipment (refer section 7.5.5). • An increase of $0.3m for the removal of existing telemetry sites which are planned to be upgraded with new monitoring devices during the 10-year planning period.
Emergency response and management	• An increase $0.2m in costs to maintain Vector's emergency response and isolation equipment for steel pipelines.
Improved record management	• An increase of $0.4m for updating GIS records to improve legacy GIS issues.
General asset and safety replacements	• An increase of $1.5m in general asset and safety asset subcomponent replacements (refer section 7.5.1), to allow for potential reactive asset subcomponent replacements.

EXPENDITURE FORECAST

Forecast investment summary ($million constant FY26)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Pipelines	1.26	1.16	1.69	1.69	1.69	1.54	1.54	1.28	1.28	1.28	14.43
Pressure stations	0.30	0.34	0.37	0.31	0.29	0.27	0.23	0.19	0.19	0.19	2.70
Valves	0.33	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	4.79
CP systems	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.40
Monitoring and control systems	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	1.60
Special crossings	0.66	0.62	0.57	0.54	0.29	0.43	0.35	0.32	0.28	0.25	4.30
Total corrective maintenance	**2.76**	**2.82**	**3.33**	**3.24**	**2.97**	**2.94**	**2.82**	**2.48**	**2.44**	**2.42**	**28.22**

7.1.5 THIRD PARTY SERVICES

DESCRIPTION

Third party services maintenance activities describe third party directed requests such as the following:

- Network protection activities – these include issuing maps via the 'beforeUdig' service, safe work practice site briefings and presentations and issuing close approach consents; and
- Disconnection and reconnections - associated with customers' property movements.

OBJECTIVES

We have identified the following objectives to guide our third-party services maintenance programme:

ASSET MANAGEMENT OBJECTIVE	THIRD PARTY SERVICES MAINTENANCE PORTFOLIO OBJECTIVE
Safety, environment and network security	Ensuring that the network can continue to operate effectively without detriment to the environment or the safety of our people and customers. Our work is prioritised accordingly.
Customers and stakeholders	Improve the overall experience for our customers and community by improving overall network performance including the provision of disconnection services.
Network performance & operations	Asset reliability – reduce the incidence and impact of failures to our customers by prioritizing work accordingly and reducing overall risk.

KEY CHANGES AND IMPROVEMENT INITIATIVES

As shown in TABLE 7-1, third-party services maintenance expenditure is forecast to decrease $4.43m (57%) during the 10-year planning period. The key changes and improvement initiatives for third-party services maintenance over the 10-year planning period are shown below.

INITIATIVE	DESCRIPTION
Disconnections services	• A decrease of $2.7m due to the change to Vector's disconnection pricing schedule to enable full cost recovery of permanent gas disconnections, effective 1 October 2025.
Network protection activities	• A $1.7m reduction in network protection activities following an operational review of activities which enabled a more efficient survey of third-party activities across the gas network.

EXPENDITURE FORECAST

Forecast investment summary ($million constant FY26)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Third-party services	0.68	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	3.38
Total	**0.68**	**0.30**	**0.30**	**0.30**	**0.30**	**0.30**	**0.30**	**0.30**	**0.30**	**0.30**	**3.38**

7.2 Customer connections

7.2.1 CUSTOMER CONNECTION FORECAST

In Vector's previous AMP we described the gas industry as 'one that is characterised by very high uncertainty'. Since that time, uncertainty has only grown, driven by many factors including (but not limited to) supply issues, high costs of delivered gas, an economic downturn affecting all users and a lack of a clear national plan regarding the future of gas.

During the year we have seen two large industrials exit, one as they moved their operation out of Auckland and the other noted to media that their exit was to do with high energy prices. In addition, some developers in the Auckland area are reluctant to put gas into their sub-divisions due to the cost and uncertainty regarding the future of gas – meaning that they do not believe it is worth the risk to invest if consumers do not ultimately want gas. This has resulted in a material decline in requests for network extensions which will have longer term effects as subdivisions move into subsequent phases over time.

For the purposes of this AMP, Vector has explored various scenarios but has ultimately decided, for planning purposes, to adopt the scenario we have titled 'Lack of confidence in the long term'. This points to consumers behaving in rationale ways given very high levels of uncertainty in and within the gas industry.

The key narrative highlights are:

- Residential average usage per ICP continues to decline at an accelerated rate as customers transition their gas appliances to other fuels. New connections decline at a faster rate with no new connections from 2029. Disconnections to increase over time.
- Small & medium enterprises and commercial average usage per connection continues to decline as businesses move low heat gas applications to alternative fuels. New connections continue at a reduced rate until 2029 when they cease. Disconnections continue to increase over time.
- Industrial average usage per connection continues to fall at an accelerated rate. The mix of connections changes over time to reflect the loss of heavy manufacturing and large industrial processes in the Auckland region. No new industrial connections are assumed from 2026 given the lack of affordable gas contracts. Disconnections continue to increase over time.

Figure 7-1 shows the historical and 10-year forecast for the number of new customer connections.

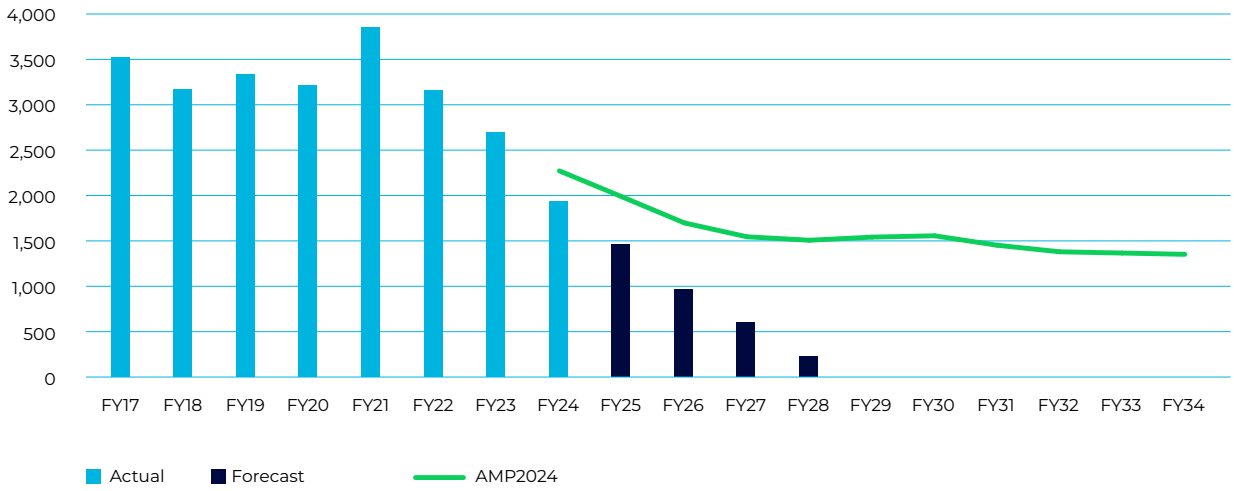


FIGURE 7-1: NEW GAS CONNECTIONS

7.2.2 CUSTOMER CONNECTION FORECAST EXPENDITURE (GROSS)

Forecast investment summary ($million constant)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Subdivision and mains extensions	1.00	0.78	0.47	-	-	-	-	-	-	-	2.25
Residential connections	4.41	2.73	0.96	-	-	-	-	-	-	-	8.09
Commercial connections	0.53	0.39	0.27	-	-	-	-	-	-	-	1.19
Total	**5.94**	**3.90**	**1.69**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**11.53**

7.3 System growth

System growth is driven by network demand exceeding the capacity of existing assets. These are generally caused by increases in new customer connections or increasing demand from existing connections. Vector's approach to asset development is outlined in the network planning strategy in section 4.7.2 and load forecasting process described in section 4.7.7.

Due to the forecast decline in customer connections (refer section 7.2.1) and decline in peak demand (see section 10.6), Vector is not forecasting any system growth projects during the 10-year planning period.

7.4 Quality of supply

Vector's planning strategy ensures that the QoS and SoS targets are maintained across the network. Broadly speaking QoS addresses network pressure issues, both current and forecast, while SoS addresses the level of redundancy or the degree of meshing across the network, both are critical to the resilience and reliability of the network.

The QoS criteria (refer section 4.7.8) describes the level to which the network is designed to deliver the accepted reliability levels. Subject to these levels being delivered network reliability is determined by the performance of the network assets.

Forecast of the QoS constraints and potential SoS risks are reviewed annually, to ensure the scheduling of the adequate reinforcement solutions. The timing of the solution is scheduled to ensure that the reliability and resilience of the network are not compromised.

Vector has identified several (small connections) meshing projects that will improve the reliability and resilience of the network and reduce the impact (measured by impacted customers) of any major event, e.g. land slide, third party damages, etc.

Vector's approach considers retaining only projects that have a significant potential impact on network resilience and security of supply which will improve our service levels by reducing the number of unplanned interruptions.

Forecast investment summary ($million constant)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Network reliability improvements	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	1.13
Total	**0.11**	**0.11**	**0.11**	**0.11**	**0.11**	**0.11**	**0.11**	**0.11**	**0.11**	**0.11**	**1.13**

7.5 Asset replacement and renewal

The safe and reliable operation of the network relies upon renewal and replacement of assets together with a sound maintenance regime. We undertake regular meetings with our FSPs to discuss the progress of maintenance programmes and proactively discuss potential issues to ensure the maintenance programme is effective in improving or maintaining service levels. Vector's ultimate aim for operations and maintenance is to meet the service level targets set out in section 3 – This includes ensuring asset safety and any associated environmental requirements are met.

Projects or programmes are initiated to address gaps in service level targets that are either already apparent or are forecast in the next 5-10 years.

This section provides details on all the asset replacement and renewal projects proposed for the next 10-year period for the continued safe and reliable operation of the network. Programmes of work have been created where expenditure is planned across a number of years.

Vector's forecast expenditure for planned and corrective maintenance and inspections is set out in Schedule 11b in section 10.12 as part of the disclosure Report on Forecast Operational Expenditure. Asset replacement and renewal is forecast in Schedule 11a in section 10.11 as part of the disclosure Report on Forecast Capital Expenditure.

7.5.1 DISTRIBUTION PIPELINES

The works programme covered in this section is in line with Vector's asset strategy document GAA002 Distribution pipelines.

TARGETED REPLACEMENT OF PRE-85 PE PIPE

Overseas research indicates that much of the PE pipe manufactured and used for gas networks from the 1960s through the early 1980s may be susceptible to premature brittle-like failures when subjected to stress intensification - these failures represent a potential public safety hazard.

Vector's gas distribution network currently includes approximately 76km of PE mains that were installed in 1984 or before - approximately 42% operate at MP4, 38% at MP2, and 20% at MP1. Incidents of brittle-like failure have occurred on Vector's network and the probability of failure is anticipated to rise with time due to factors such as installation, operating and environmental conditions – e.g. the use of PE squeeze offs during construction and repair.

Recent analysis of pre-85 PE PREs on Vector's network shows that the rate of pre-85 PE failures is slightly higher than the rate of failures on the whole of the Auckland network. The analysis also shows that the PRE rate for MP4 pre-85 PE systems is significantly higher than that for MP1 and MP2 systems. Vector has therefore adopted a strategy of targeted pre-85 PE mains and service pipeline replacement in highly populated areas with higher number of connections, higher fault rate per km, and higher-pressure tier, i.e. MP4. Priorities have been based on risk factors including PRE history, operating pressure, pipe diameter, pipeline criticality and proximity to business areas e.g. hospitals and schools etc.

Using Vector's CBARM risk model described in section 4.6.3, a geospatial model has been applied to the four criticality categories (C1-C4) for all pre-85 pipelines. This analysis enabled us to prioritise the pre-85 pipeline replacement programme based on asset risk. Based on the criticality of the pipeline and potential consequence of failure, pre-85 pipelines are included in Vector's 10-year pre-85 replacement programme.

FUTURE RISK - YEAR 10 – PRE-85 PE TOTAL (KM)					
	C1	C2	C3	C4	Total
(0-2)	-	-	-	-	-
(2-4)	-	-	-	-	-
(4-5.5)	-	-	-	-	-
(5.5-6.5)	1	2	1	1	5
(6.5-7.5)	16	17	14	2	49
(7.5-8)	0	2	1	-	3
(8-10)	6	4	4	-	15
(10+)	2	1	2	-	4
Total	25	25	23	3	76

For the remainder of pre-85 pipelines, with a lower number of connections off the mainline, a new pipeline camera inspection technique is being adopted (refer section 7.1.3 for further details). The inline camara inspection allows the identification and reinforcement of potential failure points which avoids replacing the entire length of the pre-85 pipeline. This approach aligns

with other GDBs in New Zealand and Australia and reduces the future replacement costs associated pre-85 pipelines, while achieving similar risk reduction outcomes. This approach has resulted in an increase in opex i.e. corrective replacement, as shown in section 7.1.4.

This strategy will also be augmented by the adoption of other risk mitigating measures e.g. the avoidance of applying squeeze-offs on pre-85 PE pipes where possible, increased leakage survey frequency, reduction of operating pressure for underutilised networks, and the use of pipe reinforcement fittings at pre-85 PE squeeze-off locations. The performance of these pipelines will continue to be closely monitored.

The camera inspection programme allows for a risk-based, targeted approach to pipeline maintenance. By identifying and reinforcing sections of the network rather than replacing entire pipelines and only replacing pre-85 pipelines where it is more cost effective, we defer capex and retain operational flexibility (refer to section 4.7).

The planned programme of pre-85 PE pipeline replacement work aligns with Vector's asset management policy and in particular a commitment to prevent harm to the public through the management of its assets over their entire lifecycle. The work programme also aligns with Vector's service level objectives and will improve overall network performance (as measured against service level targets) by reducing the number of unplanned interruptions and the number of PREs.

Forecast investment summary ($million constant)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Targeted replacement pre-85 PE pipe	1.34	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.33	0.33	6.70
Total	**1.34**	**0.67**	**0.67**	**0.67**	**0.67**	**0.67**	**0.67**	**0.67**	**0.33**	**0.33**	**6.70**

ASSET SAFETY AND COMPLIANCE REPLACEMENT

Periodically sections of mains and service pipeline will be identified that need to be replaced (on an as required basis) due to safety or compliance issues. Examples include pipes located under buildings, or pipes of non-standard material specification. An ongoing programme for the replacement of these assets as they are identified is planned to ensure that health, safety and compliance risks are mitigated. The projected cost for this programme is based on historical expenditure.

The planned programme of work aligns with Vector's asset management policy and in particular a commitment to prevent harm to the public through the management of its assets over their entire lifecycle. The work programme also aligns with Vector's service level objectives and will improve overall network performance (as measured against service level targets) by reducing the number of unplanned interruptions and the number of PREs.

Forecast investment summary ($million constant)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Asset safety and compliance provisions	0.16	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	2.54
Total	**0.16**	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**	**2.54**

7.5.2 PRESSURE STATIONS

The works programme covered in this section is in line with Vector's asset strategy document GAA004 Pressure stations.

Vector has reviewed its CBARM model for its DRS assets. As a result of this assessment, Vector reviewed its targeted and risk-based DRS upgrade programme for the 10-year planning period. The programme aligns with Vector's service level objectives and will improve overall network performance (as measured against service level targets) by reducing the risk of unplanned interruptions and poor pressure events associated with a DRS failure. The work programme also aligns with Vector's asset management policy and in particular a commitment to prevent harm to the public through the management of its assets over their entire lifecycle.

The scope of the upgrade can range from the replacement of individual components to the complete refurbishment or rebuild of the DRS. Where an upgrade of a DRS is required for integrity reasons, the design capacity of the DRS is reviewed to determine if a capacity upgrade or downgrade is also warranted. The planned DRS upgrade programme includes the following key activities:

- A carry over cost from FY24 to rebuild DR-00136-AK in Harris Road, East Tamaki in FY25. This pressure station is one of two that supply the East Auckland area. The DRS rebuild will address a number of issues including lack of DRS monitoring, removal of relief valves, installation of DRS isolation valves and the rebuild of the DRS enclosure;
- Replacement of obsolete equipment where long term supply of replacement parts cannot be guaranteed. These comprise of approximately 58 over-pressure protection slam-shut units and 12 regulators. Spare parts are currently kept in stock to mitigate the supply risk. However, a 10-year replacement programme has been developed to replace the obsolete equipment;
- Installation of vehicle impact protection at DRSs. Following a recent review of potential vehicle impact at DRS sites, a five-year programme has been developed to install vehicle protection at DRSs. Sites have been selected based on the DRS distance to live traffic lanes, traffic volumes and existing DRS protection; and
- A new programme to install monitor regulators at six stations (6%) to ensure the risk of station failure is reduced.

The forecast expenditure for pressure stations is shown in the following table.

Forecast investment summary ($million constant)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
District regulator station upgrades	0.39	0.20	0.17	0.13	0.14	0.11	0.11	0.11	0.11	0.11	1.61
Obsolete DRS equipment replacement	0.09	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.64
Total	**0.48**	**0.27**	**0.24**	**0.19**	**0.20**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**2.25**

7.5.3 BELOWGROUND VALVES

The works programme covered in this section is in line with Vector's asset strategy document GAA006 Belowground valves.

Over 40% of isolation valves installed on Vector's gas network are considered as plug valves. Plug valves were installed on the gas network up to the late 1980s at which time they were superseded by ball valves. Because of their design, plug valves are prone to seizing which can compromise Vector's ability to sectionalise the network during an emergency event. Where repeated attempts to unseize critical valves are unsuccessful, the valve is classed as inoperable and scheduled for replacement.

Some types of plug valve are manufactured from cast iron material and in certain situations (e.g. when subjected to prolonged mechanical stress due to ground movement) small diameter cast iron plug valves (i.e., 50NB or smaller) have been found to be at risk of fracture.

As the CBARM analysis shows (refer 4.8.3), the HI of the valve population (without any intervention) is projected to deteriorate over the 10-year period as the population of valves approaches its end of life. To mitigate this risk, Vector's strategic valve replacement programme targets the replacement of critical isolation valves that are currently inoperable, and the replacement of smaller diameter plug valves located in higher risk areas - e.g. Auckland downtown CBD and other metropolitan centres (e.g. Newmarket, Takapuna etc.).

The forecast expenditure for belowground valves is shown in the following table.

Forecast investment summary ($million constant)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Strategic valve replacement programme	0.52	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	2.82
Total	**0.52**	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**	**2.82**

7.5.4 CORROSION PROTECTION EQUIPMENT

The works programme covered in this section is in line with Vector's asset strategy document GAA0003 Corrosion protection systems.

REPLACEMENT OF CP ASSETS

AS/NZS 4645 requires all buried steel pipelines to be provided with CP to give long term protection against corrosion in accordance with AS 2832 (Cathodic protection of metals). Where CP system assets fail (e.g. sacrificial anodes, CP test points etc) due to age or third-party damage etc, new or upgraded CP assets may be required to ensure that the CP performance criteria of AS 2832 are met.

An ongoing programme of CP asset replacement or upgrade is required to ensure that CP assets can be replaced or upgraded on an as-required basis so that the level of CP protection on Vector's steel pipelines continues to meet the performance criteria of AS 2832. The planned programme of work aligns with Vector's asset management policy and in particular a commitment to maximise the value that Vector's assets deliver across their entire lifecycle through good practice asset management and risk management.

Forecast investment summary ($million constant)

DESCRIPTION	FY26	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	TOTAL
Corrosion protection system upgrade	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.43
Total	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.43**

INSTALLATION OF ADDITIONAL CP TEST POINTS AND ANODES

Analysis of Vector's CP test point spacing has shown that on some sections of Vector's network the test point spacing may not meet the requirements of AS 2832.1 Cathodic protection of metals. In particular the test point spacing in some suburban and high-rise areas does not meet the 500m spacing requirement stipulated in AS 2832.1, and in some cases, there is no test point installed at the end of the pipeline. This is a legacy issue and is often due to the original test point being destroyed or

lost as a result of street works. A programme to install additional CP test points on Vector's network to meet the requirements of AS 2832.1 is planned to be completed by FY34.

The planned programme of work aligns with Vector's asset management policy and in particular a commitment to maximise the value that Vector's assets deliver across their entire lifecycle through good practice asset management and risk management.

Forecast investment summary ($million constant)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Installation of additional CP test points and anodes	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.30
Total	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.30**

INSTALLATION OF MINITRANS REMOTE MONITORING EQUIPMENT

The transformer rectifier (TR) units currently installed on Vector's impressed current cathodic protection (ICCP) systems have no means of generating warnings or alerts of power failures or faults; in the event that the CP system is tripped due to an electrical fault, the fault will not be discovered until the next scheduled visit.

To provide the TRs with remote monitoring and alarm facilities, the installation of MiniTrans remote monitoring equipment at all 10 TRs is planned. This will allow the output of the TRs to be monitored by the system and automatically adjusted when environmental conditions change and will enable immediate notifications of CP system power failures or faults to be generated. The system will also allow the TR to be controlled remotely (i.e. from the field via a smart phone) for routine CP monitoring or DCVG survey purposes thereby significantly reducing travel time to and from the TR. In addition, the system provides constant data-logging of the CP system enabling AC interference or changes in current requirements to be readily identified.

The planned programme of work aligns with Vector's asset management policy and in particular a commitment to maximise the value that Vector's assets deliver across their entire lifecycle through good practice asset management and risk management.

Forecast investment summary ($million constant)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Installation of MiniTrans remote monitoring equipment	-	-	0.24	-	-	-	-	-	-	-	0.24
Total	**-**	**-**	**0.24**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.24**

7.5.5 MONITORING AND CONTROL SYSTEMS

The works programme covered in this section is in line with Vector's asset strategy document GAA0001 Telemetry equipment.

TELENET REPLACEMENT

The average age of Vector's Kingfisher Telenet equipment is 25 years and the average age of GPRS (corrector) Telenet equipment is 15 years. Due to age and regular performance issues, a programme has been developed to progressively replace Vector's Telenet equipment with a new telemetry monitoring system. The new system will be future-proofed and incorporate additional alarming and pressure control functionality.

This replacement programme will reduce Telenet system down-time and improve Vector's ability to monitor and respond to poor pressure events. The programme aligns with Vector's service level objectives and will improve overall network performance (as measured against service level targets) by reducing the number of poor pressure events.

Forecast investment summary ($million constant)

DESCRIPTION	FY26	FY27	FY28	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Telenet replacement	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.74
Total	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.74**

7.5.6 SPECIAL CROSSINGS

The works programme covered in this section is in line with Vector's asset strategy document GAA-0005 Special crossings.

SPECIAL CROSSING UPGRADE PROGRAMME

Detailed condition assessments of aboveground special crossing are undertaken 3-yearly or 5-yearly depending on the accessibility of the crossing. The assessment targets four areas of the crossing i.e. the pipeline, pipe supports, fixings and ground penetrations; the overall condition grading of the special crossing site is the average of the four assessments. The output from the condition assessments forms the basis of a 10-year special-crossing upgrade programme which targets the

upgrade of sites where any component of the crossing has a low condition grading. Using the CBARM model (refer to section 4.8.4, each crossing has been assessed based on two different failure modes i.e. pipe and fixing failure.

As a result of the CBARM modelling, a 10-year programme of work has been developed. This aligns with Vector's asset management policy and in particular a commitment to maximise the value that Vector's assets deliver across their entire lifecycle through good practice asset management and risk management.

Forecast investment summary ($million constant)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Special crossing upgrade programme	-	0.16	-	-	0.15	-	-	0.15	-	-	0.47
Total	**-**	**0.16**	**-**	**-**	**0.15**	**-**	**-**	**0.15**	**-**	**-**	**0.47**

7.6 Other reliability, safety and environment

ISOLATION VALVE INSTALLATIONS

AS/NZS 4645 requires sectional isolation valves be installed to facilitate the safe operation of the gas distribution network; AS/NZS 4645 also requires fire valves to be installed on all DRS inlet and outlet supply lines.

Vector has implemented an ongoing isolation valve installation programme to target the installation of additional isolation valves on strategic pipelines e.g. IP20 pipelines. The programme utilises the output from network-isolation modelling to identify critical sites where additional isolation valves should be installed to improve the safe operation of the network and improve the level of network resilience.

The network isolation studies completed to date have identified a number of sites where additional isolation valves are required. These have been prioritised and scheduled according to risk.

The programme of work to install additional isolation valves aligns with Vector's service level objectives and will improve overall network performance (as measured against service level targets) by limiting the severity of outages due to third party damage thereby reducing the number of unplanned interruptions. The work programme also aligns with Vector's asset management policy and in particular a commitment to prevent harm to the public through the management of its assets over their entire lifecycle.

NEW SYSTEM PRESSURE MONITORING SITES

Although the risk of pressure breaches resulting from system growth is considered low risk (refer to section 7.3), additional network monitoring is planned to support Vector's reactive response future planning initiatives e.g. lower system pressures to support Vector decarbonisation initiatives (refer section 3.4).

NEW PIPELINE WARNING SIGNS

Vector operates a network protection programme to support and reduce the number of third-party damages on our assets. To support the reduction in third party damage events (refer section 3.2.3) and help improve public and third-party awareness, Vector plans to install additional pipeline warning signs across its strategic pipelines operating in high growth areas.

Forecast investment summary ($million constant)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Isolation valves installations - supply isolation	0.17	0.26	0.24	-	-	-	-	-	-	-	0.67
New system pressure monitoring sites	0.04	-	-	-	-	-	-	-	-	-	0.04
New pipeline warning signs	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.54
Total	**0.26**	**0.31**	**0.29**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**1.24**

7.7 Asset relocations

One of Vector's objectives when planning projects and compiling the capital budget is to identify the need to relocate Vector assets when reasonably required by customers and third parties. Vector is obliged to relocate its assets in the road reserve by sections 33, 34 and 36 of the Gas Act 1992, section 54 of the Government Roading Powers Act 1989 and by the specific terms of licences or easements under sections 34 and 35 of the New Zealand Railways Corporation Act 1981.

The majority of relocations generally occur when infrastructure projects are initiated by road or rail corridor managers, e.g. Auckland Council or Auckland Transport (AT), New Zealand Transport Agency (NZTA) and to a lesser extent KiwiRail. The process and funding of such relocation works is governed by the relevant Acts as listed above.

The timing and scope of relocation projects are driven by customers and third parties and their project timing and schedule. The expenditure profile below is based on our knowledge of asset relocation projects and incorporates our best indicator of capex for the 10-year AMP period.

Forecast investment summary ($million constant)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Relocations	4.17	3.60	2.69	2.69	2.69	2.69	2.69	2.69	2.69	2.69	29.30
Total	**4.17**	**3.60**	**2.69**	**2.69**	**2.69**	**2.69**	**2.69**	**2.69**	**2.69**	**2.69**	**29.30**

7.8 Non-network assets

7.8.1 INFORMATION SYSTEMS, PROCESSES AND DATA

The Vector digital strategy has evolved to reflect the changing nature of our business, the wider energy landscape, and new digital technologies. Vector leverages smart digital platforms, optimised to deliver business outcomes across five key value streams: Customer Operations, Data & Analytics, Network Planning & Performance, Network Operations and Network Procure & Construct. The platforms are heavily focused on enabling Vector to significantly reduce the cost of complex, customised legacy platform migration and lifecycle maintenance due to the development of best in class micro services and the associated reduction in core system complexity.

CUSTOMER OPERATIONS

Customer operations is focused on utilising digital technology and platforms to improve the customer's experience by providing them with frictionless interactions and touchpoints throughout the end to end customer lifecycle, leading to a significantly reduced cost to serve and improve customer experiences.

By investing in enhanced customer engagement capabilities, Vector will ensure that it can meet changing customer expectations for service providers and deliver best in class utility services at a lower cost. This spans customer needs from self-service to estimation.

DATA & ANALYTICS

Data & Analytics is focused on utilising core capabilities to enable other value streams from a records perspective. This includes risk models, fault records, the network model and the core PI asset management system.

NETWORK PLANNING & PERFORMANCE

This value stream is focussed on utilising digital capabilities to enable effective project planning, compliance management, construction supervision and network calculations. It addresses the questions of where and when to build capacity into the network.

The performance aspect is focused on core digital capabilities to enhance and enable planned maintenance and construction across the network. This includes maintenance and inspection, work scheduling, construction and design, field recording & design, and work dispatch. Condition data captured from the field is used to help prioritise and drive the maintenance and construction work.

NETWORK PROCURE & CONSTRUCT

The actual build of capital works projects must be supported by several systems. This stream focuses on providing underlying capability to track and plan work as well as the asset and procurement tools needed to have assets where and when they are needed;

7.8.2 NON-NETWORK CAPEX

The proposed investment in the upcoming years in non-network capex will ensure Vector has the capability and tools required to deliver on our AM objectives. The key non-network projects and programmes include:

- Digital systems investments to support the technology required to operate our network effectively and securely, as well as executing upon our Symphony strategy. The proposed investment in the upcoming years supports non-network digital systems, processes and information management. Through the AMP period we continue to invest in a modernised network and lifecycle management that will both replace older platforms and leverage new technology delivered by modernised systems;
- Investment in new or replacement network equipment, including:
  - Lifecycle replacement of leakage surveying equipment in FY26 and improve the surveying cycle to reduce our GHG emissions;
  - Purchase new medium pressure steel isolation equipment in FY26 to enable a quicker emergency isolation and reduce costs for planned capital work;

  - Purchase advanced inline camera equipment in FY26 for the inspection and identification of squeeze off and butt welded joints in pre-85 PE pipelines, which are prone to failure. This technique will reduce future pipeline replacement by reinforcing the potential failure points;
  - Lifecycle replacement of steel drilling equipment in FY28 which is crucial for hot-tap connections and carrying out stoppling operations on steel pipelines; and
- Non-network property and leases capex provides accommodation required to ensure the network business can operate as an effective, well-governed business. In addition to accommodation these values reflect Right of Use (ROU) lease assets specific to the networks business. A key change in this AMP is the recognition of the 110 Carlton Gore Road office lease in FY35.

Forecast investment summary ($million constant)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Digital systems	2.66	2.05	1.65	1.69	1.96	0.78	0.93	0.75	0.87	0.87	14.21
Network equipment	0.45	0.00	0.35	-	-	-	-	-	0.15	0.15	1.10
Property/leases	0.21	0.13	0.14	0.31	0.13	0.16	0.49	0.20	0.14	3.48	5.39
Total	**3.31**	**2.18**	**2.13**	**2.01**	**2.08**	**0.93**	**1.42**	**0.95**	**1.17**	**4.51**	**20.70**

7.8.3 NON-NETWORK OPEX

Non-network opex provides the support services required to ensure the network business can operate as an effective, well-governed business and includes the following expenditure categories:

- System operations and network expenditure captures direct system and network support costs that are required to deliver on the capex and maintenance plans and includes a share of expenditure related to the resource shared between Vector's electricity and gas distribution businesses; and
- Business support expenditure includes a share of health and safety, public policy & regulatory, legal & risk management, finance, human resources, digital and marketing costs incurred at Vector group level. The gas distribution business benefits from economies of scale with Vector providing shared support across its group of businesses.

Proposed expenditure summary ($million constant)

DESCRIPTION	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
System operations and network support	2.30	2.25	2.35	2.33	2.36	2.36	2.38	2.38	2.41	2.41	23.53
Business support	9.15	9.46	9.77	10.10	10.19	10.28	10.36	10.45	10.54	10.90	101.20
Total	**11.45**	**11.70**	**12.12**	**12.44**	**12.54**	**12.64**	**12.74**	**12.84**	**12.95**	**13.31**	**124.73**

SECTION 08

Delivering our plan

8 – Delivering our plan

8.1 Overview

This Chapter provides an overview of the processes used to manage the delivery of our capital works and maintenance works programmes. It provides an overview of our programme delivery process that enables us to consistently deliver our work safely, to quality, cost efficiency, and to schedule. We also provide an overview of our approach to prioritizing works and optimizing resources for delivering our works programme.

CAPITAL WORKS DELIVERY

Capital delivery is the delivery of the annual capital works programme including engineering, project management, pricing, financial control, and governance.

CAPITAL PROJECT GOVERNANCE

Vector has a well-defined and embedded process for identifying network project needs, and capital justification to achieve its business objectives and reduce network risk. Our network investment planning and project delivery follows an approval process. The process is governed by the DA framework. Our SAP workflow mirrors the approval process for budget applications. A capital expenditure justification (CEJ), essentially a business case, together with a detailed cost estimate, are developed to demonstrate prudence and efficiency of expenditure and that the governance process has been followed.

Project progress is monitored and undergoes a monthly review. Exception reporting is provided monthly, covering; HSE, performance against schedule, financial performance, issues, challenges, and risks. HSE and risk are also reported through to the Board using our risk software application. Risks are escalated to the Board Risk Committee as required.

Monthly reviews of each project are carried out by the delivery team and asset specialists, including Vector's FSP to ensure that projects are going to plan and identify any issues, constraints, and challenges. The performance of projects in delivery is also reviewed through these meetings.

Approvals are required before any commitment is made. Approvals are governed by Vector's DA framework.

The capital works delivery process includes five primary stages: Risk assessment and project identification, scoping, feasibility assessment, procurement, and delivery (construction, commissioning and closeout). Table 8-1 provides an overview of the processes undertaken under each of these phases.

PHASE	ACTIVITY OVERVIEW
Identification of network risk and the need for a project or programme	• Network risk, network need requirement and options analysis • Project prioritisation • Establish base cost estimate • Needs statement • Recommendation for inclusion in AMP
Scoping	• Development of initial (preliminary) project scope • Cost estimation • Assessment of alternate project options • Determination of key project risks • Procurement analysis (identification of long lead time items) • Prepare Development Funding Application (CEJ)
Feasibility	• Identification and assessment of project-specific risks/issues • Surveying and/or Geotech investigation, flood risk assessment etc. • Early contractor investigations • Design concepts development and review • Safety in Design (SID) • Finalise project scope • Detailed design • Cost estimation and detailed materials list • Early procurement (long lead time items only) • Prepare Full Funding Application (CEJ) – Business case
Procurement	• Preparation of contract documentation

Delivery	• Cost, schedule, and quality performance monitoring • Risk and issues management • Construction • Commissioning • Handover / project close

TABLE 8-1: PROJECT LIFECYCLE DELIVERABLES

8.1.1 PROCUREMENT

The majority of the gas distribution equipment required for Vector's capital, customer and maintenance delivery programmes is sourced by the approved FSPs for installation. Equipment is sourced by the FSP's, to Vector's specifications, with the cost passed through to Vector when the item is installed. When non-standard equipment is purchased for the first time it goes through a management of change process to evaluate technical, commercial, and operational benefits and risks before being deployed.

Procurement of the works is through our MUSA contract using our FSPs for all maintenance and capital works.

8.1.2 CUSTOMER INITIATED CAPITAL PROJECTS – CUSTOMER DELIVERY TEAM

The customer delivery team delivers customer-initiated capital projects such as subdivisions, commercial connections, and residential connections. We use an outsourced delivery model where our FSP designs and delivers these works. The FSPs knowledge of the local network is beneficial in delivering these smaller, short-duration capital projects effectively.

Within Vector we have a team of customer advisors that administer the project delivery and maintain the interface with the customer and liaise with the gas networks team.

The MUSA customer works agreement provides a simple and well-understood contract engagement that reduces the administrative costs associated with tendering works while ensuring we demonstrate value for money through comparison with similar recent works and standard negotiated rates.

RESOURCE SCHEDULING

The priority of customer-initiated projects is generally governed by when the client contracts Vector to deliver the works. FSP resource levelling and outage scheduling are then used to fine-tune delivery scheduling.

FEASIBILITY AND DETAILED DESIGN

The gas network designs of projects delivered by the customer delivery team mostly consists of Vectors MP4 PE networks. These designs do not require a multi-disciplinary approach and its singularity of design is ideally suited for completion by our FSPs, with technical approval by Vector.

DELIVERY

Vector relies on one FSP for the delivery of all customer-initiated works.

Vector's customer advisors use our customer management application, Siebel, to monitor project progress through the various delivery stages. Change control of projects within the customer delivery team is generally through a client agreed variation.

Our FSPs commission equipment being brought onto the network to ensure it complies with our technical standards and can be operated and maintained safely. Once complete they update Vector's information systems and handover the installation to Vector.

8.1.3 MAJOR CAPITAL PROJECTS – GAS NETWORKS TEAM

Major capital projects are works identified from an assessment of network risks and a high-level assessment of solutions. The projects are then ranked, included, and scheduled in the AMP for capital delivery. Major capital projects are delivered by the gas networks team.

Gas networks use a mixture of in-house delivery specialists to manage the delivery of projects. This enables the ability to closely match capability and capacity while developing learning opportunities.

To help our contractors manage their workflow Vector provides a forward works view looking out 18 months in six-month horizons. Additionally, all our major projects are published on the Auckland Council's forward works viewer to help identify synergies across electricity, gas, fibre, and other utility projects.

RESOURCING AND SCHEDULING

Resourcing and scheduling of major projects is managed by Vector's delivery team and the FSP's project managers. The FSP is responsible for resourcing and scheduling of projects once agreed with Vector's delivery team.

SCOPE OF WORKS AND DESIGN

The delivery of major capital projects is initiated when a draft project brief with the proposed scope of works is produced by Vector's asset specialists. The initial draft is reviewed with the delivery team and updated for clarity if necessary. The project brief is then reviewed in a meeting attended by key stakeholders e.g. the project owner (the scope author), Vector's delivery team and FSP team members as appropriate.

The scope of works and technical safety in design are discussed to ensure clarity and provide opportunity for implementation of lessons learnt. Once completed, the project brief is signed and issued for pricing.

PRICING

Depending on the nature and scale of a project, we have the option to price or tender projects. Some major projects maybe tendered via NZS 3910 contracts. Generally, we allow six weeks for the contractor to prepare their offer. The pricing/tender period will increase or decrease depending on the complexity of the works and/or the volume of tenders in progress.

A FSP pricing review meeting is attended by key stakeholders e.g. the project owner (the scope author), Vector's delivery team, along with gas networks and FSP team members as appropriate.

NZS 3910 tenders are controlled by the programme office and once the contractor's offer is received, a team formally assesses the offer. The non-priced sections of the offer are formally assessed to ensure tender 'gates' are met. Once confirmed then the PM is provided with the priced information. This ensures we focus on the quality of the solution before we consider the price. Once an offer has been selected, we engage the contractor using a modified NZS 3910 contract.

DELIVERY

Our delivery team have an active role in every step of the delivery of their projects. Our project delivery model is based around the PMI delivery framework. Additional support is provided through an internal team, including HSE, procurement, engineering, asset management, quantity survey and risk specialists.

Projects are reviewed by the gas networks team and FSP on a monthly basis. This includes project programmes and financial forecasting. The Vector delivery team leads the reviews.

Financial performance is also tracked monthly by the programme office.

COMMISSIONING

When a project is complete and commissioned a final site over walkover and inspection is held. The FSP will update all relevant Vector systems and provide a completion package with all the necessary documentation. The general quality of the works is also checked, and "snag" lists compiled as necessary. Once all outstanding issues have been resolved the project is formally handed over to Vector. A lessons learnt session is held and a project brief review is completed.

8.2 Maintenance works delivery

8.2.1 FIELD SERVICE MODEL

Vector uses Omexom to undertake maintenance activities on Vector's behalf.

Omexom operate under the MUSA contract. The scope of the gas maintenance contract is to deliver the planned, corrective, third party services and reactive maintenance works programmes, based on the requirements set by our suite of maintenance standards.

The MUSA contract defines the responsibilities, obligations, and key performance indicators (KPIs) to complete scheduled works. Vector maintains a library of maintenance standards which Omexom must comply with when performing their duties.

The delivery of all these maintenance activities is closely monitored monthly to ensure the agreed annual targets are achieved. Extensive monthly feedback is obtained on actual versus planned progress, KPI performance, causality and issues impacting progress or performance, new risks, action plans and focal points for the coming months.

The overall effectiveness of the programme is evaluated by contract KPI performance and the roll-up to Vector's corporate performance metrics, of which environmental compliance, public, employee and contractor safety are the core measures.

Standard rates and allocations for prescribed activities are reviewed on an annual basis. Out of cycle rate increases or new rates arising from changes to standards, legislative requirements or other special circumstances are negotiated and managed using the contract management of change process.

8.2.2 GOVERNANCE – REPORTING AND APPROVALS

Performance against the annual budgets is closely monitored, with formalised management of change procedures in place. Regular reports monitor:

- Health, safety, and environmental issues;
- Monthly overall expenditure against budget forecasts; and
- Performance metrics.

Implementation of the AMP requires decisions to be made by both the board and management at all levels, reflecting their functional responsibilities and level of DA as set under the Vector governance rules. Functional responsibilities define the role of each staff member in the organisation. The DAs specify the level of financial commitment that individuals can make on behalf of the company.

8.3 Investment prioritisation process

The key objectives of asset management, as stated in Vector's asset management policy, relate to safety, reliability and the environment (see section 4.1) with performance against these objectives captured by the service level metrics (see section 3 –). By using a robust portfolio prioritisation process, Vector aims to ensure that the investment required to meet these objectives and targeted service levels is efficient, bringing the greatest total benefit to our customers. This is also an important step towards achieving best industry practice in asset management principles, prescribed in ISO 55000.

The planning process is described below and is undertaken yearly as part of Vector's annual budgeting cycle.

- **Project proposals:** Once the need for a project has been identified, project proposals are created. The need of the projects is underpinned by customer needs, asset conditions and risks, network performance and strategies. Project proposals are prepared by Vector's subject matter experts;
- **Preliminary investment plan:** Project proposals are peer reviewed to ensure consistency of project proposals before incorporation into the preliminary investment plan. In this preliminary plan, projects are staggered to account for the realistic volume of work that can be undertaken in each year. This uses engineering judgement to take into consideration resources available for delivery including the construction and procurement capabilities available. Any synergies and interdependencies between projects are highlighted and incorporated into the preliminary plan;
- **Risk based prioritisation:** The preliminary investment plan is assessed against the resource and financial constraints, and where appropriate prioritised considering the key business objectives. The business objectives of a project proposal are expressed based in terms of improvements to service level metrics (refer to section 3 –) or in terms of risk mitigation (refer to section 5.3);
- **Draft investment plan:** Once projects have been through the prioritisation process, the draft investment plan is formed. This plan is reviewed and approved by the executive management team. The risk associated with projects that have not formed part of the draft investment plan following optimisation is highlighted and acknowledged; and
- **Final investment Plan:** Following consideration and approval by the executive management team, the final investment plan is reviewed and approved by the Board.

8.4 Resource requirements and constraints

Vector has a MUSA contract with one key contractor known as our FSP. We provide the FSP a full list of planned projects in line with our financial year. This includes winter gas load information so projects can be programmed without additional risk to the gas networks performance. It is our expectation that the FSP manages their resources and programme of works to deliver this pipeline of planned projects.

Typically, Vector uses the MUSA and capital works job sheet as the contract mechanism for delivering projects including consents, traffic management, civil works, network tasks, and final reinstatements.

Designs for all projects are reviewed and approved by Vector. Further internal engineering and asset management support is provided by Vector's specialists. At any time during the delivery of these projects, Vector may engage specialist consultants to assist. For example, consultants can be engaged to:

- Compile, submit and facilitate resource consents;
- Define the scope associated with the removal of hazardous material such as asbestos;
- Mechanical engineering peer reviews;
- Route assessment and detailed design; and
- Undertake geotechnical studies.

As outlined in section 7.1, this AMP proposes an increase in maintenance activities, including the inspection and repair of pre-85 pipes and valves. This initiative will necessitate an increase in maintenance resources and the successful procurement and deployment of new equipment i.e., the pre-85 inline camera inspection equipment.

SECTION 09

Expenditure forecast

9 – Expenditure forecast

9.1 Overview

This section describes the capex and opex forecasts for the gas distribution network assets for the next 10-year planning period based on the investment proposals outlined in section 7 –. It includes context for key assumptions and provides a high-level comparison with the forecast included in the 2024 AMP (disclosed in June 2024).

The capex and opex forecasts presented in this section align with Vector's planning process and financial year (FY) reporting period 1 July to 30 June. All figures presented are in 2026 dollars The regulatory disclosure forecast, shown in section 10.11 and section 10.12 are presented in both constant and nominal dollars, as per the Information Disclosure requirements.

9.2 Capital expenditure forecast

Table 9-1 shows the forecast capex during the next 10-year planning period, broken down into the asset categories defined in the Commerce Commission's Gas Distribution Information Disclosure Amendments Determination 2012.

AMP2025 ($'000)	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Consumer connection	5,944	3,896	1,694	0	0	0	0	0	0	0	11,534
System growth	0	0	0	0	0	0	0	0	0	0	0
Asset replacement and renewal	2,643	1,767	1,814	1,531	1,695	1,511	1,511	1,664	1,176	1,176	16,488
Asset relocations	4,166	3,602	2,691	2,691	2,691	2,691	2,691	2,691	2,691	2,691	29,300
Quality of supply	113	113	113	113	113	113	113	113	113	113	1,127
Legislative and regulatory	0	0	0	0	0	0	0	0	0	0	0
Other reliability, safety and environment	260	313	293	54	54	54	54	54	54	54	1,243
Non-network asset	3,324	2,183	2,142	2,007	2,084	932	1,419	954	1,171	4,513	20,730
Total capex	**16,451**	**11,874**	**8,747**	**6,396**	**6,638**	**5,301**	**5,788**	**5,477**	**5,204**	**8,547**	**80,423**

TABLE 9-1 AMP 2025 CAPEX FORECAST (FINANCIAL YEAR, $'000 CONSTANT FY26)

9.2.1 CAPEX FORECAST VARIANCE TO PREVIOUS AMP

The forecast capex during the next 10-year planning period is broken down into the key asset categories defined in the Commerce Commission's Gas Distribution Information Disclosure Amendments Determination 2012. Figure 9-1 shows the difference between the 2025 and 2024 AMP expenditure forecasts year on year, with Table 9-2 breaking down the variance by expenditure categories (a bracketed number represents a lower spend).

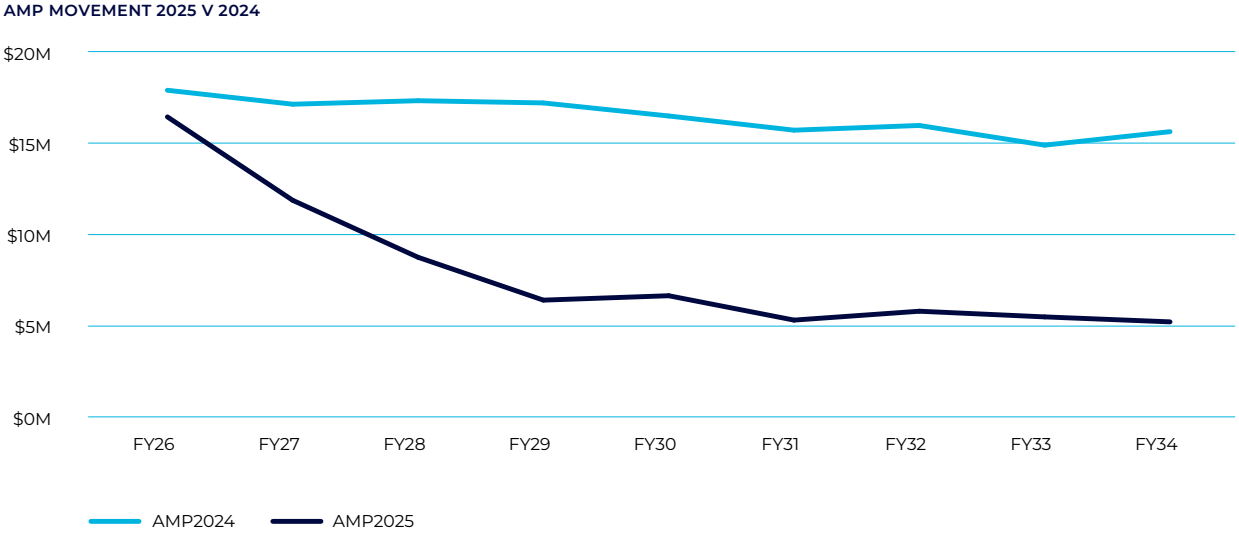


Figure 9-1: AMP 2025 VARIANCE TO AMP2024 CAPEX FORECAST (financial year, $'M constant FY26)

2025/2024 AMP VARIANCE ($'000)	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	TOTAL
Consumer connection	(2,288)	(3,745)	(5,857)	(7,706)	(7,775)	(7,299)	(6,970)	(6,906)	(6,846)	(55,391)
System growth	(273)	(273)	(273)	(273)	(605)	(605)	(605)	(605)	(605)	(4,118)
Asset replacement and renewal	(829)	(1,304)	(1,499)	(1,595)	(1,507)	(1,629)	(1,702)	(1,528)	(1,964)	(13,557)
Asset relocations	1,131	568	(343)	(343)	(343)	(343)	(343)	(343)	(343)	(701)
Quality of supply	113	(266)	113	(440)	113	113	113	113	113	84
Legislative and regulatory	0	0	0	0	0	0	0	0	0	0
Other reliability, safety and environment	(218)	(238)	(89)	(606)	(268)	(344)	(364)	(222)	(385)	(2,735)
Non-network asset	903	(14)	(643)	143	522	(314)	(320)	67	(406)	(63)
Total capex	**(1,461)**	**(5,273)**	**(8,592)**	**(10,820)**	**(9,863)**	**(10,421)**	**(10,192)**	**(9,423)**	**(10,436)**	**(76,481)**

TABLE 9-2: AMP 2025 VARIANCE TO AMP2024 CAPEX FORECAST TABLE (FINANCIAL YEAR, $'000 CONSTANT FY26)

9.2.2 EXPLANATION OF MAJOR NETWORK CAPEX VARIANCES

Key changes in network capex over the 9 years for which the 2024 AMP and 2025 AMP overlap are as follows:

- A $55.4m reduction in consumer connection expenditure largely driven by a reduction in reticulation and connection activities;
- System growth expenditure reduces to zero, $4.1m lower than the previous AMP due to the lower connections forecast;
- Asset relocation expenditure is reduced by $0.7m due to an adjustment to the long term forecast which uses an historical average of work volume and expenditure trends;
- Asset replacement and renewal expenditure is reduced by $13.6m driven by redirecting capital investment to operational expenditure; and
- Other reliability, safety and environment is reduced by $2.7m, with $1.5m due to a review of strategic valve requirements resulting in a reduction in the required number of new valves to isolate the gas network, and $1.2m due to redirecting capital investment to operational expenditure.

9.3 Operating expenditure forecast

Table 9-3 shows the forecast opex during the planning period, broken down into the asset categories defined in the Commerce Commission's Gas Distribution Information Disclosure Amendments Determination 2012.

2025 AMP ($'000)	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	TOTAL
Service interruptions and emergencies	2,654	2,654	2,654	2,654	2,654	2,654	2,654	2,654	2,654	2,654	26,540
Routine and corrective maintenance and inspection	4,451	4,463	4,544	4,397	4,357	4,316	4,219	4,265	4,239	4,228	43,481
Asset replacement and renewal	832	908	1,445	1,466	1,293	1,250	1,216	897	815	815	10,937
System operations and network support	2,304	2,246	2,348	2,334	2,356	2,359	2,381	2,384	2,407	2,410	23,530
Business support	9,149	9,456	9,769	10,101	10,185	10,278	10,361	10,452	10,543	10,900	101,195
Total opex	**19,390**	**19,728**	**20,760**	**20,952**	**20,846**	**20,856**	**20,832**	**20,653**	**20,659**	**21,008**	**205,683**

TABLE 9-3: OPEX FORECAST (FINANCIAL YEAR, $'000 CONSTANT FY26)

9.3.1 OPEX FORECAST VARIANCE TO PREVIOUS AMP

The forecast opex during the next 10-year planning period is broken down into the key asset categories defined in the Commerce Commission's Gas Distribution Information Disclosure Amendments Determination 2012. Figure 9-2 shows the difference between the 2025- and 2024-AMP expenditure forecasts year on year, with Table 9-4 breaking down the variance by expenditure categories (a bracketed number represents a lower spend).

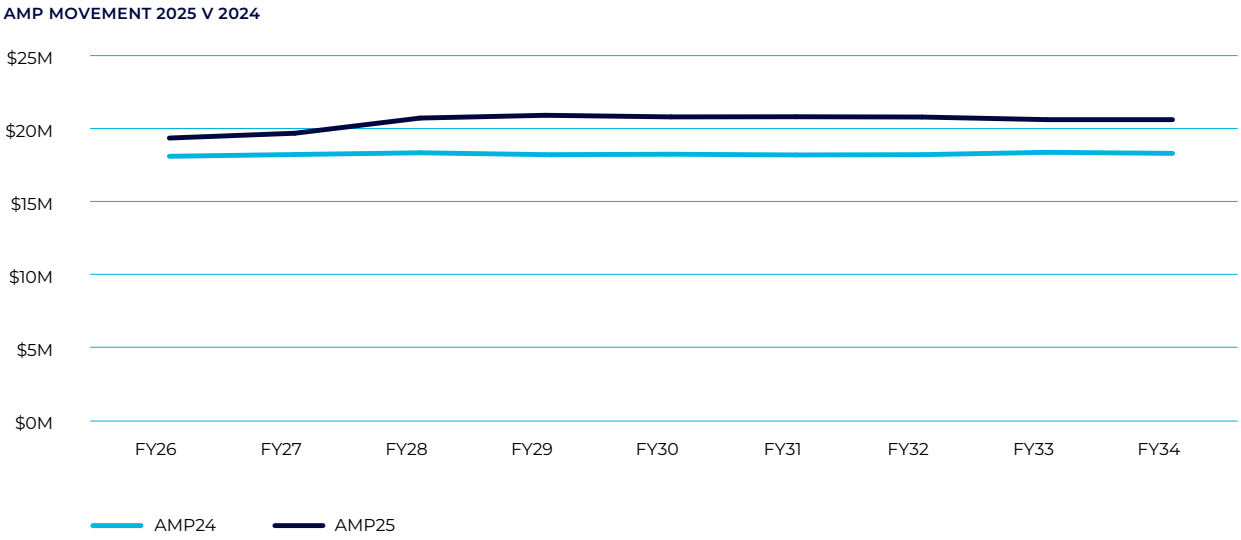


FIGURE 9-2: AMP 2025 VARIANCE TO AMP2024 OPEX FORECAST (FINANCIAL YEAR, $'M CONSTANT FY26)

2025/2024 AMP VARIANCE ($'000)	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	TOTAL
Service interruptions and emergencies	(148)	(189)	(203)	(203)	(203)	(203)	(203)	(203)	(203)	(1,757)
Routine and corrective maintenance and inspection	(56)	(97)	(90)	(85)	(115)	(80)	(157)	(239)	(155)	(1,074)
Asset replacement and renewal	832	908	1,445	1,466	1,293	1,250	1,216	897	815	10,122
System operations and network support	(703)	(777)	(690)	(720)	(715)	(730)	(727)	(744)	(742)	(6,548)
Business support	1,323	1,618	1,918	2,236	2,306	2,383	2,450	2,524	2,596	19,352
Total opex	**1,247**	**1,464**	**2,380**	**2,694**	**2,565**	**2,619**	**2,579**	**2,234**	**2,312**	**20,095**

TABLE 9-4: AMP 2025 VARIANCE TO AMP2024 OPEX FORECAST TABLE (FINANCIAL YEAR, $'000 CONSTANT FY26)

9.3.2 EXPLANATION OF MAJOR OPEX VARIANCES

Key changes in opex over the 9 years for which the 2024 AMP and 2025 AMP overlap are as follows:

- A $1.8m decrease in service interruptions and emergencies costs due to a lower reactive maintenance cost and higher third-party recoveries;
- A $1.1m decrease in routine and corrective maintenance costs due to the adoption of a 100% recovery for all disconnections, partially offset by the introduction of new pre-85 pipeline camera inspection programme and higher valve maintenance;
- A $10.1m increase in new asset replacement and renewal costs due to the reclassification of capex and opex and a new provision for the repair of pre-85 pipelines; and
- A $12.8m increase in system operations and network support costs and business support costs driven by an increased investment in digitalisation, increased costs for SaaS services now being recognised as opex, partially offset by decreased administration expenses (including insurance and subscription costs) and call centre charges.

9.4 Inputs and assumptions for information disclosed

This section outlines key inputs and assumptions used for the forecast expenditure in the AMP planning period. Estimates for projects and programmes for the first few years in the AMP period receive a higher level of scrutiny during the compilation of estimates and thus have a higher level of accuracy than projects in the latter years.

9.4.1 NETWORK CAPITAL EXPENDITURES

SPECIFIC PROJECTS

The requirement to invest capital for specific individual projects is borne out of customer connection requests, asset relocations triggered by third party infrastructure projects, asset condition and failure risks and network system reinforcement requirement for security of supply.

Vector uses CBARM models to prioritise asset replacement requirements over the 10-year forecast horizon. The CBARM models are based on the principles and calculation methodologies outlined in the OFGEM DNO Common Methodology and tailored to reflect Vector's operational environment. The models incorporate Vector's input data such as historical failure rates, to predict the volume of assets that will need to be replaced and thus the level of investment needed to manage each of the asset classes. Historical actual costs are used as the basis for the unit cost applied in the forecast expenditure.

The assumptions and processes that build up the reinforcement expenditure are detailed in section 7.3. It is initiated by an annual assessment of the customer peak loading on all pressure systems and district stations. Any capacity shortfalls and breaches of our security of supply standard are identified through network constraint modelling and solutions are assessed and proposed through investment option analysis.

Cost estimation for specific capital projects involves site inspections to determine constraints and risks. From this, a scope is compiled with a relatively detailed project estimate. The cost estimate is built with a bottom-up approach using a standardised cost estimating for materials and plant, standard rates for internal staff time writing and standard agreed rates for external commissioning support and contracted project management.

PROGRAMMES OF WORK

Forecasting for volumetric programmes of work applies to most of Vector's customer connection and disconnection expenditure relating to Vector's distribution assets.

The forecast for customer connections volumes is supported by data from the Auckland Forecasting Group (AFG). The cost estimates for customer connections are based on an average cost using historical data.

For distribution assets, Vector has continued with the use of CBARM models for asset classes including pipelines, district stations, valves and special crossings.

9.4.2 NETWORK MAINTENANCE ASSUMPTIONS

Vector's shift in asset management strategies results in reduced capital expenditure and increased operational expenditure. It is crucial that the Commission's allowance-setting process acknowledges this.

This AMP proposes an increase in maintenance activities, including the inspection and repair of pre-85 pipes and valves. This initiative will necessitate an increase in maintenance resources and the successful procurement of additional equipment. A key assumption in Vector's approach to reduce capex is the successful procurement of resources and adoption of new technology i.e. the pre-85 camera inspection equipment.

With the introduction of a new pre-85 pipeline inspection technique, there is a risk that the camera inspection equipment underperforms, be operationally challenging, or produce unreliable data. To mitigate this, Vector will undertake a controlled workshop and field trials prior to full deployment. This staged approach includes developing inspection protocols, operator training, and validation of detection accuracy.

9.4.3 NETWORK DIGITAL ASSUMPTIONS

Given the fast-changing landscape, the uncertainty in investments increases with time. There is reasonable certainty for the investments in the initial 18-24 months with less certainty beyond that. The investment forecasts provided are based on current knowledge based upon projects being currently undertaken and market conditions. Vector has a standard quarterly planning process that reviews investments, reprioritises as required and follows a business case process to proceed with investments.

Key assumptions in our forecasts include support for all existing platforms is provisioned thus not requiring unexpected replacement. Specifically, current SAP version support will continue through to 2027. In addition, cybersecurity threats will remain at a level where current investment forecasts are sufficient to protect Vector systems and respond to incidents within the IT domain. Investment forecasts do assume increased investment in OT Cybersecurity controls as the number of sensors and devices connecting to the OT network increases.

9.4.4 PROPERTY AND LEASES

A key change in this AMP is the recognition of the 110 Carlton Gore Road office lease in FY35.

9.4.5 OPERATING EXPENDITURES

To a large extent, the network operating expenditure relates to a programme of planned maintenance work driven by a suite of maintenance standards and associate corrective maintenance. To this end, our planned maintenance network operating expenditure forecast has been constructed bottom-up, taking into consideration the various activity unit rates, frequencies and the quantum of activities.

We have constructed the non-network operating expenditure forecast primarily based on the existing operating structure with modifications for known changes and excludes one-off transitional type cost items. Further, in certain instances, we have relied on historical averages to form a baseline view, where we believe forecasting the expenditure items with a reasonable degree of accuracy is challenging.

SECTION 10

Appendices

10 –Appendices

10.1 Glossary of terms

ADMS	Advanced Distribution Management System
AMMAT	Asset management maturity assessment tool
AMP	Asset management plan
BCM	Business continuity management
CAIDI	Customer average interruption duration index
capex	Capital expenditure
CBARM	Condition based asset risk management
CIV	Customer isolation valve
CMS	Customer management system
COO	Chief operating officer
CP	Cathodic protection
DA	Delegated Authority
DPP	Gas distribution services default price-quality price path determination
DRS	District regulating station
EPR	Earth potential rise
ERP	Enterprise resource planning
FSA	Formal safety assessment
FSP	Field service provider
GCE	Group chief executive
GIS	Geographical information system
GMS	Gas measurement system
GNS	Gas network standard
GPRS	General packet radio service
GSM	Global system for mobile communication
HILP	High impact, low probability
HP	High pressure
ICP	Installation control point
IP	Intermediate pressure
ISO 55001	International standard for asset management
IT	Information technology
km	Kilometre
LP	Low pressure
MAOP	Maximum allowable operating pressure
MinOp	Minimum operating pressure
MP	Medium pressure
MUSA	Multi utility service agreement
NOP	Nominal operating pressure
NZS	New Zealand standard
PE	Polyethylene
PJ	Peta joule

PRE	Public reported escape
PVC	Polyvinyl chloride
QoS	Quality of supply
RBA	Risk Based Approach
RTE	Response time to emergencies
RTU	Remote Telemetry Unit
SAIDI	System average interruption duration index
SAIFI	System average interruption frequency index
SAP	Systems applications and processes (Vector's corporate enterprise resource planning system)
SCADA	Supervisory control and data acquisition system
scmh	Standard cubic metres per hour
SoS	Security of supply
SMS	Short message service (communications)

10.2 Key asset strategies and standards

Vector has a set of asset strategies and standards that together define Vector's approach to asset management. An overview of the key policies and standards are set out below.

ASSET CLASS	PIPELINES
Strategies	GAA0002 Pipelines
Equipment specifications	GNS-0029 Specification for polyethylene pipe GNS-0030 Specification for polyethylene fittings GNS-0031 Specification for polyethylene to steel transition fittings GNS-0033 Specification for steel pipe GNS-0034 Specification for steel pipe coating GNS-0035 Specification for steel fittings and flange components GNS-0036 Specification for steel punch tees GNS-0037 Specification for stainless steel tube and fittings GNS-0038 Specification for ducts and sleeves GNS-0048 Specification for repair clamps GNS-0050 Specification for polyethylene to steel transition risers GNS-0055 Specification for under pressure fittings
Maintenance and operations standards	GNS-0018 Network protection GNS-0019 Leakage survey GNS-0020 Odourisation system maintenance GNS-0021 Service pipe inspections GNS-0024 System pressure monitoring GNS-0069 Pressure uprating without decommissioning GNS-0093 Defining the end of the network
Planning & design and construction standards	GNS-0002 Piping system design GNS-0007 Class location GNS-0064 Construction of steel pipe systems GNS-0065 Construction of plastic pipe systems GNS-0066 Purging GNS-0067 Hot tapping and flow-stopping GNS-0068 Steel non-destructive testing and inspection GNS-0072 Plastic pipe insertion

ASSET CLASS	PRESSURE STATIONS
Strategies	GAA0004 Pressure stations
Equipment specifications	GNS-0039 Specification for filters GNS-0044 Specification for pressure regulators GNS-0045 Specification for meters GNS-0049 Specification for pressure gauges
Maintenance standards	GNS-0012 Maintenance of gate and district regulating stations GNS-0073 Service regulator maintenance
Planning & design and construction standards	GNS-0001 Design of district regulating stations GNS-0056 Construction of district regulating stations

ASSET CLASS	VALVES
Strategies	GAA0006 Belowground valves GAA0007 Riser assembly
Equipment specifications	GNS-0032 Specification for polyethylene ball valves GNS-0040 Specification for steel ball valves GNS-0041 Specification for riser assembly GNS-0042 Specification for butterfly valves GNS-0047 Specification for valve boxes
Maintenance standards	GNS-0013 Valve maintenance
Planning & design and construction standards	GNS-0057 Construction of valve installations

ASSET CLASS	CORROSION PROTECTION SYSTEMS
Strategies	GAA0003 Corrosion protection systems
Equipment specifications	GNS-0051 Specification for corrosion protection wrapping materials GNS-0052 Specification for anodes GNS-0054 Specification for insulating joints
Maintenance standards	GNS-0014 Maintenance of aboveground coating systems GNS-0015 Maintenance of belowground corrosion protection systems
Planning & design and construction standards	GNS-0003 Design and specification of aboveground coatings for steel assets GNS-0004 Design of belowground corrosion protection systems GNS-0058 Construction of aboveground corrosion protection systems GNS-0059 Construction of belowground corrosion protection systems

ASSET CLASS	TELEMETRY EQUIPMENT
Strategies	GAA0001 Telemetry equipment
Equipment specifications	GNS-0046 Specification for Telenet equipment
Maintenance standards	GNS-0016 Telenet maintenance
Planning & design and construction standards	GNS-0005 Design of Telenet systems GNS-0060 Construction of Telenet systems

ASSET CLASS	SPECIAL CROSSINGS
Strategies	GAA0005 Special crossings
Equipment specifications	Covered in above asset categories
Maintenance and operations standards	GNS-0095 Maintenance of special crossings
Planning & design and construction standards	Covered in above asset categories

ASSET CLASS	GENERAL
Strategies	Not applicable
Equipment specifications	GNS-0043 Specification for asset identification markers
Maintenance and operations standards	GNS-0011 Continuing surveillance GNS-0017 Asset repair GNS-0022 Decommissioning of assets GNS-0070 Gas leak investigation GNS-0071 Material and equipment failures GNS-0078 Maintenance of critical spares and equipment GNS-0080 Personnel qualification GNS-0082 Auditing GNS-0083 Gas safety and operating plan GNS-0084 Technical records management GNS-0085 Management of change GNS-0087 Asset condition grading
Planning & design and construction standards	GNS-0008 Pressure classification and operating ranges GNS-0009 Distribution system analysis GNS-0062 Pressure testing GNS-0063 As-built field recording GNS-0074 Gas distribution quality of supply criteria GNS-0086 Gas distribution forecast utilisation GNS-0089 Gas distribution model building GNS-0096 Safety in design GNS-0098 Gas distribution emissions reporting methodology GNS-0099 Network connection standards

HEALTH, SAFETY AND ENVIRONMENT KEY REQUIREMENTS
HSEMS01 HSEMS Overview
HSEMS02 Strategy, Leadership and Behaviour
HSEMS03 Training and Competence
HSEMS04 Engagement, Participation and Consultation
HSEMS05 Contractor Management
HSEMS06 Emergency Management
HSEMS07 Wellness and Fitness to Work
HSEMS08 Risk Management
HSEMS09 Incident Management
HSEMS10 Audits, Reviews and Performance Reporting
HSEMS11 Operational Control
HSEMS12 Project Management
HSEMS13 Legal Compliance
HSEMS14 Document, Data and Record Management
HSEMS15 Action Management

GAS DISTRIBUTION OPERATING STANDARDS
UCO004 Networks Event Management and Investigation
GNS-0081 Gas distribution network performance indicator data capture
GNS-0083 Gas safety and operating plan
GEG-0001 Natural disaster guide
GEG-0003 Emergency response event guide
GEG-0008 Major loss of supply guide
GEG-0011 Extreme heat guide

10.3 Planned maintenance activity schedule

ASSET CLASS	PM ACTIVITIES
Pipelines	• 6-monthly leakage survey of all the distribution system, including services • 3-monthly leakage survey of Intermediate Pressure pipelines (IP20 and IP10) • Monthly odorant checks at all gate stations • 3-monthly odorant checks at ICP risers at key system extremity points and designated DRS • Annual inspections of service pipes installed under or through a building • 5-yearly inspection of inactive service pipes that have been inactive for more than 5 years

ASSET CLASS	PM ACTIVITIES
Pressure stations	• 6-monthly operational checks of enclosure, barricades, signage, locks, vents, pipework/equipment supports, filters, pressure control equipment, meter; leak test of installation • Annual functional checks on valves, regulators, relief valves and overpressure protection devices; corrosion inspection of aboveground pipework; equipment audit and condition grading assessment • Annual inspection of belowground service regulators including operational checks of service regulator enclosure, signage, paintwork, site protection, valves, filters, pressure control equipment; corrosion check on pipework and equipment; leak test of installation • 2-yearly inspection of aboveground service regulators including all activities described for belowground service regulators (refer above)

ASSET CLASS	PM ACTIVITIES
Valves	• Annual inspection and testing of all IP mains, emergency, and business district valves. • Annual inspection and testing of the remote-controlled IP20 Auckland Harbour Bridge isolation valves. • 2-yearly inspection and testing of all IP service valves • 2-yearly inspection and testing of all MP mains and service valves installed within a steel network • 5-yearly inspection and testing of all MP mains and service valves installed within a PE network

ASSET CLASS	PM ACTIVITIES
Corrosion protection systems	• 2-monthly inspections of impressed current transformer-rectifier installations to record output current and voltage • 2-monthly inspection of drainage bonds to check their satisfactory operation • 3-monthly, 6-monthly and annual inspections of CP test points to measure on and instant-off pipe to soil potentials in major urban, urban, and rural areas respectively • 3-monthly and 6-monthly inspections of CP test points to measure “On” pipe to soil potentials in rural and urban areas respectively • 3-monthly, 6-monthly and annual inspections of galvanic anodes to check their satisfactory operation in major urban, urban, and rural areas respectively • 3-monthly, 6-monthly and annual inspections of isolation between buried or submerged pipelines and other underground metallic structure (including associated protective casings) in major urban, urban, and rural areas respectively

ASSET CLASS	PM ACTIVITIES
Telemetry equipment	• Annual maintenance inspections of Telenet master station, field sites and repeater station installations • 4-yearly intrinsic safety inspections of Telenet equipment installed in hazardous zones

ASSET CLASS	PM ACTIVITIES
Special crossings	• Annual safety inspection of all crossings • 3-yearly detailed condition assessment for all aboveground special crossing sites where the crossing can be accessed to undertake a close-up detailed inspection along the whole length of the crossing • 5-yearly detailed condition assessment for all crossing sites with limited access

ASSET CLASS	PM ACTIVITIES
General	• 6-monthly leakage survey of the distribution system • 3-monthly leakage survey of Intermediate Pressure pipelines (IP20 andIP10) • Monthly odorant checks at all gate stations • 3-Monthly odorant checks at ICP risers at key system extremity points and designated DRS

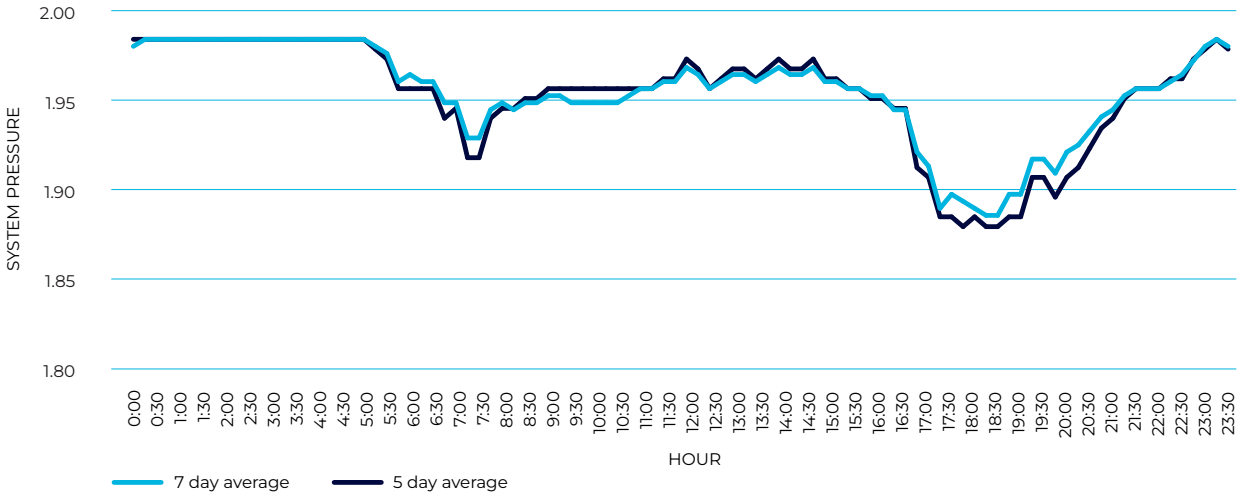
10.4 Asset management metrics

CLASSIFICATION	METRIC	FY20	FY21	FY22	FY23	FY24
Interruptions	Number of planned interruptions on the network (Class B)	423	443	427	501	577
Interruptions	Number of unplanned interruptions on the network (Class C)	32	38	35	21	19
Interruptions	Number of unplanned interruptions caused by third party damage (Class I)	146	139	158	131	121
Interruptions	Number of unplanned outage events (interruptions that affect more than 5 ICPs)	1	3	2	4	2
Interruptions	Number of unplanned outage events caused by third party damage (interruptions that affect more than 5 ICPs)	1	3	1	2	1
Reliability	SAIDI - Based on the total number of interruptions	1,316	745	952	781	902
Reliability	SAIDI - Class B (planned interruptions on the network)	767	390	468	418	734
Reliability	SAIDI - Class C (unplanned interruptions on the network)	137	149	267	170	50
Reliability	SAIDI - Class I (unplanned interruptions caused by third party damage)	412	206	217	193	118
Reliability	SAIFI - Based on the total number of interruptions	6.5	6.2	6.5	6.7	7.7
Reliability	SAIFI - Class B (planned interruptions on the network)	4.7	4.2	4.3	4.9	6.1
Reliability	SAIFI - Class C (unplanned interruptions on the network)	0.3	0.5	0.4	0.4	0.3
Reliability	SAIFI - Class I (unplanned interruptions caused by third party damage)	1.6	1.6	1.7	1.5	1.3
Reliability	CAIDI - Based on the total number of interruptions	201	119	147	116	117
Reliability	CAIDI - Class B (planned interruptions on the network)	165	94	108	86	120
Reliability	CAIDI - Class C (unplanned interruptions on the network)	419	302	652	480	161
Reliability	CAIDI - Class I (unplanned interruptions caused by third party damage)	264	130	127	126	95
System Condition and Integrity	Number of third party damage events per 1000 km	41	45	47	36	38
System Condition and Integrity	Leak detected by system survey per 1000 km	3.8	1.8	2.8	4.3	2.7
System Condition and Integrity	Number of non-compliant odour tests	0	0	0	0	0
Customer Service	Number of complaints per average total of customers	0.0010	0.0010	0.0010	0.0008	0.0008
Consumer Service	Number of telephone calls to emergency numbers answered within 30 seconds per total number of calls	91%	91%	79%	79%	85%
Customer Service	Number of emergencies	102	117	104	87	109
Customer Service	Average call response time (hours)	0.61	0.61	0.65	0.65	0.60

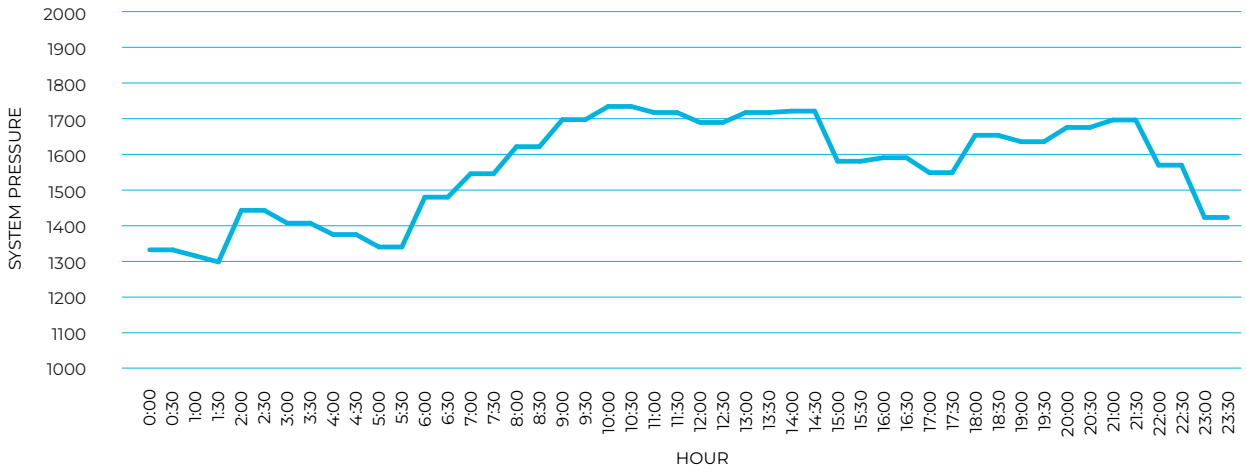
10.5 Typical load profiles

The typical daily winter pressure profile for residential loads and load profile for commercial/industrial customers are illustrated in the following figures. Residential load typically has two peaks whereas the commercial and industrial load is more consistent for the whole day.

TYPICAL DAILY PRESSURE PROFILE RESIDENTIAL – WINTER



TYPICAL DAILY PRESSURE PROFILE COMMERCIAL/INDUSTRIAL – WINTER



Demand curves for specific industrial consumers are far more variable – conforming closely to the nature of the customer's business. A typical industrial load curve is therefore not a meaningful concept.

A measure of load diversity is achieved with residential customers providing peaks in the morning and early evening, with the commercial and industrial load filling in the trough between these peaks. The mix of customer types within a distribution network, and their location, influences the size and duration of the peaks.

10.6 Load forecast

	ACTUAL (SCMH)						FORECAST (SCMH)											
NETWORK SYSTEM	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**ANNUAL GROWTH**	**TOTAL GROWTH**
Alfriston	112	112	118	96	116	-	-	-	-	-	-	-	-	-	-	-	-	-
Central Auckland Network System (co-incident)	79,601	84,128	87,082	81,350	83,969	76,105	60,760	59,818	59,751	57,588	86,471	85,234	53,890	52,499	50,914	49,286	-3.5%	-35.0%
Drury Gate Station (co-incident)	2,466	2,106	1,961	1,859	2,263	2,024	1,615	1,584	1,550	1,513	1,478	1,441	1400	1,358	1,313	1,267	-3.7%	-37.0%
Harrisville	3,788	3,572	3,183	3,569	3,886	3,301	3,414	3,344	3,267	3,186	3,108	3,025	2,936	2,843	2,746	2,645	-2.0%	-20.0%
Hunua (Vector)	648	618	881	877	772	786	587	578	568	557	547	535	522	508	494	478	-3.9%	-39.0%
Kingseat	20	11	8	8	8	8	6	6	6	6	6	6	6	5	5	5	-3.9%	-39.0%
Pukekohe	870	615	685	606	1,722	687	636	641	643	643	643	642	638	633	625	616	-7.4%	-10.0%
Ramarama	376	363	373	369	343	302	346	345	343	340	338	334	329	324	318	311	0.3%	3.0%
Tuakau	6,294	4,971	4,403	3,324	3,309	3,278	3,442	3,443	3,434	3,417	3,400	3,373	3,337	3,292	3,239	3,176	-0.3%	-3.0%
Waitoki	1,768	3,823	2,998	4,707	2,392	2,071	2,295	2,332	2,361	2,383	2,403	2,415	2,418	2,414	2,401	2,379	1.5%	15.0%
Warkworth	2,429	2,497	2,663	2,525	2,466	2,385	1,989	1,974	1,954	1,930	1,907	1,880	1,847	1,811	1,770	1,726	-2.7%	-28.0%
Wellsford																		
Total	**98,372**	**102,814**	**104,354**	**99,289**	**101,146**	**90,946**	**75,092**	**74,066**	**72,878**	**71,565**	**70,301**	**68,883**	**67,324**	**65,637**	**63,637**	**61,888**	**-3.2%**	**-32.0%**

10.7 System pressure modelling register

		BASE YEAR 2024			10-YEAR FORECAST		
PRESSURE SYSTEM	NOMINAL OPERATING PRESSURE (NOP) (KPA)	FLOW (SCMH)	MIN. OPERATING PRESSURE (KPA)	PROPORTION OF NOP	FLOW (SCMH)	MIN. OPERATING PRESSURE (KPA)	PROPORTION OF NOP
Broadway Park MP2	200	39	199	100%	42	198	99%
Bruce Maclaren IP10	1000	2,540	970	97%	5,77	983	98%
Central Auckland IP20	1900	76,105	1351	71%	49,090	1679	88%
Central Auckland MP4	400	24,051	339	85%	15,907	369	92%
Central Auckland MP7	700	6,284	644	92%	4,250	661	94%
Conifer Grove MP2	200	296	175	88%	196	188	94%
Drury NC MP4	400	2,024	289	79%	1,267	323	81%
East Auckland IP10	1000	9,419	686	69%	6,066	783	78%
East Auckland MP4	400	11,095	337	84%	7,338	371	93%
Glendene MP4	400	205	395	99%	237	310	78%
Harrisville MP7	700	3,301	460	66%	2,645	490	70%
Herd Road MP4	400	9	400	100%	6	400	100%
Holloway Place MP4	400	166	399	100%	109	399	100%
Landsford Crescent MP2	200	67	176	88%	77	175	87%
Mangere Bridge MP4	400	42	398	100%	28	399	100%
Manukau MP2	200	677	188	94%	447	194	97%
Manurewa IP10	1000	824	848	85%	545	862	86%
Manurewa North MP4	400	2,226	365	91%	1,472	383	96%
Manurewa South MP4	400	730	395	96%	483	397	99%
Monahan MP1	35	58	30	86%	67	29	84%
North Shore MP4	400	9,385	327	82%	6,207	362	91%
Pakuranga MP4	400	6	400	100%	4	400	100%
Panmure MP4	400	46	396	99%	31	398	100%
Papakura MP4	400	473	389	97%	313	395	99%
Penrose MP2	200	1,055	182	91%	697	191	96%
Pukekohe IP10	1000	692	995	100%	616	996	100%
Pukekohe MP4	400	686	386	97%	611	389	97%
Ramarama MP4	350	302	335	96%	311	336	96%
South Auckland MP7	700	3,989	624	89%	2637	655	94%
Te Atatu MP4	400	359	391	98%	238	396	99%
Totara Heights MP1	100	303	87	87%	200	94	94%
Tuakau IP20	1900	3,278	1674	88%	3,158	1,677	88%
Tuakau MP7	700	644	682	97%	625	683	98%

		BASE YEAR 2024			10-YEAR FORECAST		
PRESSURE SYSTEM	NOMINAL OPERATING PRESSURE (NOP) (KPA)	FLOW (SCMH)	MIN. OPERATING PRESSURE (KPA)	PROPORTION OF NOP	FLOW (SCMH)	MIN. OPERATING PRESSURE (KPA)	PROPORTION OF NOP
Universal Drive MP4	400	140	389	97%	92	395	99%
Waitoki IP20	1900	2,072	1667	85%	2,382	1657	87%
Whangaparaoa MP4	400	2,072	368	92%	2,382	359	90%
Warkworth IP20	1700	919	959	56%	843	1039	61%
Warkworth MP4	400	2,386	336	84%	1,726	338	85%
Wattle Downs & Wiri MP4	400	941	380	95%	622	390	98%

10.8 AMP information disclosure compliance

INFORMATION DISCLOSURE DETERMINATION REQUIREMENT	AMP SECTION REFERENCE
Contents of the AMP	
3. The AMP must include the following:	
3.1. A summary that provides a brief overview of the contents and highlights information that the GDB considers significant;	Executive Summary
3.2. Details of the background and objectives of the GDB's asset management and planning processes; and	Foreward and Section 4.3
3.3. A purpose statement which:	
(a) makes clear the purpose and status of the AMP in the GDB's asset management practices. The purpose statement must also include a statement of the objectives of the asset management and planning processes;	Foreward and Section 4 –
(b) states the corporate mission or vision as it relates to asset management;	Foreward
(c) identifies the documented plans produced as outputs of the annual business planning process adopted by the GDB;	Section 4.5 and Section 8 –
(d) states how the different documented plans relate to one another, with particular reference to any plans specifically dealing with asset management; and	Section 4.5 and 8 –
(e) includes a description of the interaction between the objectives of the AMP and other corporate goals, business planning processes and plans.	Section 4 –
3.4. Details of the AMP planning period, which must cover at least a projected period of 10 years commencing with the disclosure year following the date on which the AMP is disclosed.	Foreword
3.5. The date that it was approved by the directors.	Foreword
3.6. A description of each of the legislative requirements directly affecting management of the assets, and details of:	Section 4.5.1
(a) how the GDB meets the requirements; and	Section 4.5.1
(b) the impact on asset management.	Section 4.5.1 and Section 4.6
3.7. A description of stakeholder interests (owners, consumers, etc) which identifies important stakeholders and indicates:	Section 2 –
(a) how the interests of stakeholders are identified;	Section 2 –
(b) what these interests are;	Section 2 –

INFORMATION DISCLOSURE DETERMINATION REQUIREMENT	AMP SECTION REFERENCE
(c) how these interests are accommodated in asset management practices; and	Section 2 –
(d) how conflicting interests are managed.	Section 2.2
3.8. A description of the accountabilities and responsibilities for asset management on at least 3 levels, including-	
(a) governance—a description of the extent of director approval required for key asset management decisions and the extent to which asset management outcomes are regularly reported to directors;	Section 5.2
(b) executive—an indication of how the in-house asset management and planning organisation is structured; and	Section 5.2
(c) field operations—an overview of how field operations are managed, including a description of the extent to which field work is undertaken in-house and the areas where outsourced contractors are used.	Section 5.2 and Section 8 –
3.9. All significant assumptions-	
(a) quantified where possible;	Executive Summary, Section 7 –and 9 –
(b) clearly identified in a manner that makes their significance understandable to interested persons, including-	Executive Summary, Section 7 –and 9 –
(c) A description of changes proposed where the information is not based on the GDB's existing business;	Executive Summary, Section 7 –and 9 –
(d) the sources of uncertainty and the potential effect of the uncertainty on the prospective information; and	Executive Summary, Section 7 –and 9 –
(e) the price inflator assumptions used to prepare the financial information disclosed in nominal New Zealand dollars in the Report on Forecast Capital Expenditure set out in Schedule 11a and the Report on Forecast Operational Expenditure set out in Schedule 11b.	Section 10.17
3.10. A description of the factors that may lead to a material difference between the prospective information disclosed and the corresponding actual information recorded in future disclosures.	Executive Summary, Section 1 –
3.11. An overview of asset management strategy and delivery.	Section 4 – and Section 8 –
3.12. An overview of systems and information management data.	Section 5.7 and 10.16
3.13. A statement covering any limitations in the availability or completeness of asset management data and disclose any initiatives intended to improve the quality of this data.	Section 5.7
3.14. A description of the processes used within the GDB for:	
(a) managing routine asset inspections and network maintenance;	Section 7.1

INFORMATION DISCLOSURE DETERMINATION REQUIREMENT	AMP SECTION REFERENCE
(b) planning and implementing network development projects; and	Section 4.6 and Section 8 –
(c) measuring network performance.	Section 3 –
3.15. An overview of asset management documentation, controls and review processes.	Section 4.5, Section 4.6.5, Section 4.6.7 and 10.16
3.16. An overview of communication and participation processes.	Section 4 –, Section 8 – and Section 10.16
3.17. The AMP must present all financial values in constant price New Zealand dollars except where specified otherwise.	Compliant
3.18. The AMP must be structured and presented in a way that the GDB considers will support the purposes of AMP disclosure set out in clause 2.6.2 of the determination.	Compliant
ASSETS COVERED	
4. The AMP must provide details of the assets covered, including-	
4.1. A map and high-level description of the areas covered by the GDB, including the region(s) covered; and	Section 6.1 and Section 10.10
4.2. A description of the network configuration, including-	
(a) A map or maps, with any cross-referenced information contained in an accompanying schedule, showing the physical location of:	Section 6.1 and Section 10.10
(i) All main pipes, distinguished by operating pressure;	Section 10.10
(ii) All ICPs that have a significant impact on network operations or asset management priorities, and a description of that impact;	Section 10.10
(iii) All gate stations;	Section 10.10
(iv) All pressure regulation stations; and	Section 10.10
(b) if applicable, the locations where a significant change has occurred since the previous disclosure of the information referred to in subclause 4.2(a), including-	N/A
(i) a description of the parts of the network that are affected by the change; and	N/A
(ii) a description of the nature of the change.	N/A
NETWORK ASSETS BY CATEGORY	
5. The AMP must describe the network assets by providing the following information for each asset category-	

INFORMATION DISCLOSURE DETERMINATION REQUIREMENT	AMP SECTION REFERENCE
5.1. pressure;	Section 6.2
5.2. description and quantity of assets;	Section 6.2
5.3. age profiles; and	Section 6.2
5.4. a discussion of the results of formal risk assessments of the assets, further broken down by subcategory as appropriate. Systemic issues leading to the premature replacement of assets or parts of assets should be discussed.	Section 4.8, Section 7.1 and Section 7.5
6. The asset categories discussed in clause 5 should include at least the following:	
6.1. the categories listed in the Report on Forecast Capital Expenditure in Schedule 11a(iii); and	Section 6.2
6.2. assets owned by the GDB but installed at gate stations owned by others.	Section 6.2
SERVICE LEVELS	
7. The AMP must clearly identify or define a set of performance indicators for which annual performance targets have been defined. The annual performance targets must be consistent with business strategies and asset management objectives and be provided for each year of the AMP planning period. The targets should reflect what is practically achievable given the current network configuration, condition and planned expenditure levels. The targets should be disclosed for each year of the AMP planning period.	Section 3 – and Section 10.4
8. Performance indicators for which targets are defined in clause 7 must include—	
8.1. the DPP requirements required under the price quality path determination applying to the regulatory assessment period in which the next disclosure year falls;	Section 3 – and Section 10.4
8.2. consumer oriented indicators that preferably differentiate between different consumer types;	Section 3 – and Section 10.4
8.3. indicators of asset performance, asset efficiency and effectiveness, and service efficiency, such as technical and financial performance indicators related to the efficiency of asset utilisation and operation; and	Section 3 – and Section 10.4
8.4. the performance indicators disclosed in Schedule 10b of the determination.	Section 3 – and Section 10.4
9. The AMP must describe the basis on which the target level for each performance indicator was determined. Justification for target levels of service includes consumer expectations or demands, legislative, regulatory, and other stakeholders' requirements or considerations. The AMP should demonstrate how stakeholder needs were ascertained and translated into service level targets.	Section 3 – and Section 10.4
10. Targets should be compared to historic values where available to provide context and scale to the reader.	Section 3 – and Section 10.4
11. Where forecast expenditure is expected to materially affect performance against a target defined in clause 7, the target should be consistent with the expected change in the level of performance.	N/A
NETWORK DEVELOPMENT PLANNING	
12. AMPs must provide a detailed description of network development plans, including—	

INFORMATION DISCLOSURE DETERMINATION REQUIREMENT	AMP SECTION REFERENCE
12.1. A description of the planning criteria and assumptions for network development;	Section 4.6, Section 4.7 and Section 5.3
12.2. Planning criteria for network developments should be described logically and succinctly. Where probabilistic or scenario-based planning techniques are used, this should be indicated and the methodology briefly described; and	Section 4.6, Section 4.7 and Section 5.3
12.3. The use of standardised designs may lead to improved cost efficiencies. This section should discuss:	
(a) the categories of assets and designs that are standardised; and	Section 4.7.3 and Section 10.2
(b) the approach used to identify standard designs.	Section 4.6
12.4. A description of the criteria used to determine the capacity of equipment for different types of assets or different parts of the network.	Section 4.7 and Section 4.8
12.5. A description of the process and criteria used to prioritise network development projects and how these processes and criteria align with the overall corporate goals and vision.	Section 8.1, Section 7.2 and Section 8.3
12.6. Details of demand forecasts, the basis on which they are derived, and the specific network locations where constraints are expected due to forecast increases in demand:	Section 4.7, Section 10.6, Section 10.7 and Section 10.14
(a) explain the load forecasting methodology and indicate all the factors used in preparing the load estimates;	Section 4.7 and Section 6.1
(b) provide separate forecasts to at least system level covering at least a minimum five-year forecast period. Discuss how uncertain but substantial individual projects/developments that affect load are taken into account in the forecasts, making clear the extent to which these uncertain increases in demand are reflected in the forecasts; and	Section 6.1, Section 7.3 and Section 10.6
(c) identify any network or equipment constraints that may arise due to the anticipated growth in demand during the AMP planning period.	Section 7.3, Section 10.6 and Section 10.7
12.7. Analysis of the significant network level development options identified and details of the decisions made to satisfy and meet target levels of service, including-	
(a) the reasons for choosing a selected option for projects where decisions have been made;	Section 7.3
(b) alternative options assessment for projects that are planned to start in the next five years; and	Section 7.3
(c) consideration of planned innovations that improve efficiencies within the network, such as improved utilisation, extended asset lives, and deferred investment.	Section 7.3
12.8. A description and identification of the network development programme and actions to be taken, including associated expenditure projections. The network development plan must include-	

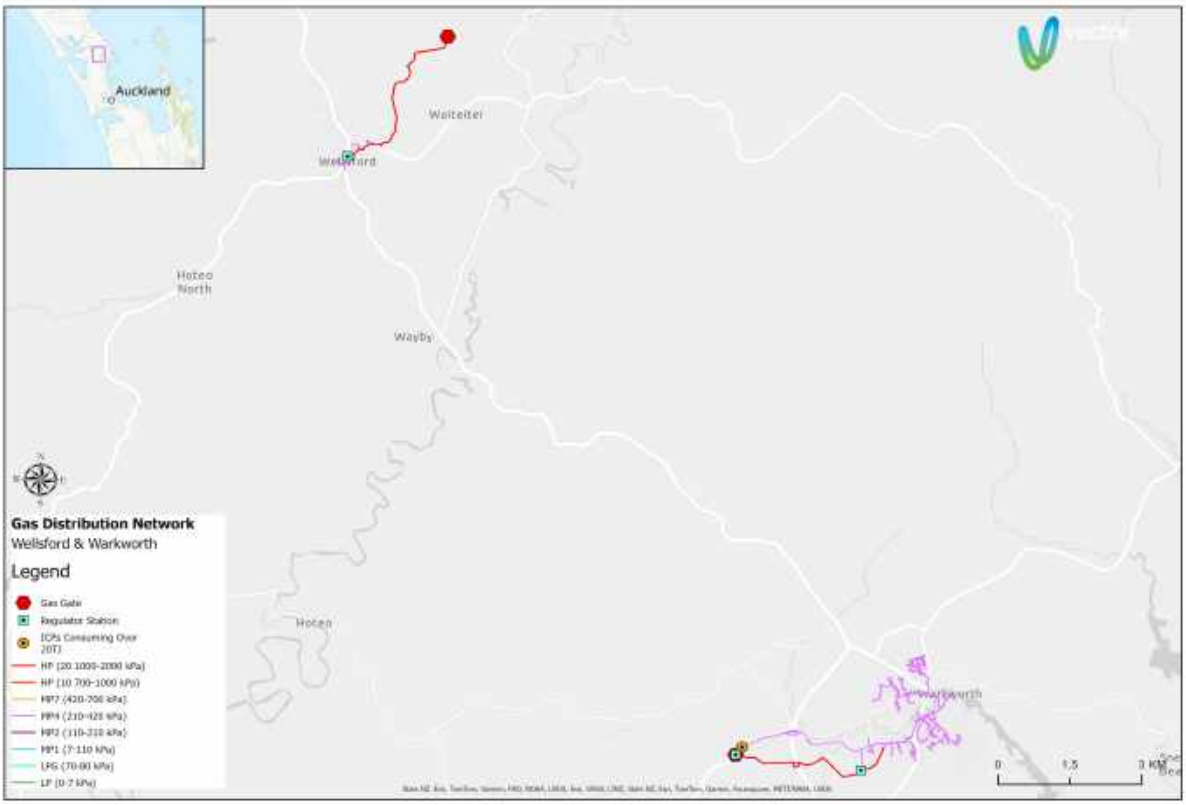
INFORMATION DISCLOSURE DETERMINATION REQUIREMENT	AMP SECTION REFERENCE
(a) a detailed description of the material projects and a summary description of the non-material projects currently underway or planned to start within the next 12 months;	Section 7.3
(b) a summary description of the programmes and projects planned for the following four years (where known); and	Section 7.3
(c) an overview of the material projects being considered for the remainder of the AMP planning period.	Section 7.3
LIFECYCLE ASSET MANAGEMENT PLANNING (MAINTENANCE AND RENEWAL)	
13. The AMP must provide a detailed description of the lifecycle asset management processes, including—	
13.1. The key drivers for maintenance planning and assumptions;	Section 4.6, Section 4.8 and Section 7.1
13.2. Identification of routine and corrective maintenance and inspection policies and programmes and actions to be taken for each asset category, including associated expenditure projections. This must include-	Section 4.6, Section 7.1, Section 7.5
(a) the approach to inspecting and maintaining each category of assets, including a description of the types of inspections, tests and condition monitoring carried out and the intervals at which this is done;	Section 7.1 and Section 10.2
(b) any systemic problems identified with any particular asset types and the proposed actions to address these problems; and	Section 4.8 and Section 7 –
(c) budgets for maintenance activities broken down by asset category for the AMP planning period;	Section 7.1
13.3. Identification of asset replacement and renewal policies and programmes and actions to be taken for each asset category, including associated expenditure projections. This must include-	
(a) the processes used to decide when and whether an asset is replaced or refurbished, including a description of the factors on which decisions are based, and consideration of future demands on the network and the optimum use of existing network assets;	Section 4.6 and Section 4.8
(b) a description of innovations that have deferred asset replacements;	Section 7 –
(c) a description of the projects currently underway or planned for the next 12 months;	Section 7.5 and Section 10.9
(d) a summary of the projects planned for the following four years (where known); and	Section 7.5
(e) an overview of other work being considered for the remainder of the AMP planning period; and	Section 7.5
13.4. The asset categories discussed in clauses 13.2 and 13.3 should include at least the categories in clause 6.	Compliant
NON-NETWORK DEVELOPMENT, MAINTENANCE AND RENEWAL	
14. AMPs must provide a summary description of material non-network development, maintenance and renewal plans, including—	

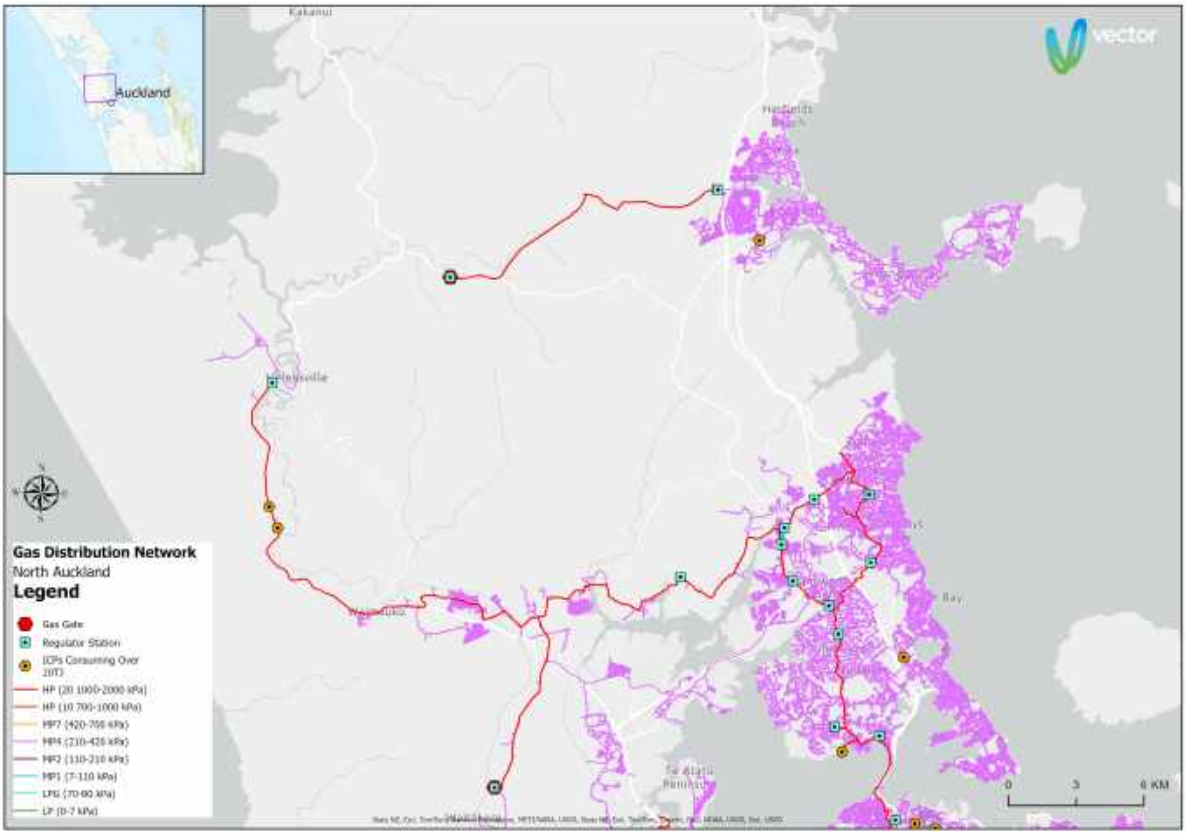
INFORMATION DISCLOSURE DETERMINATION REQUIREMENT	AMP SECTION REFERENCE
14.1. a description of non-network assets;	Section 5.6, Section 5.7, Section 5.8
14.2. development, maintenance and renewal policies that cover them;	Section 5.6
14.3. a description of material capital expenditure projects (where known) planned for the next five years; and	Section 7.8
14.4. a description of material maintenance and renewal projects planned (where known) for the next five years.	Section 7.8
RISK MANAGEMENT	
15. AMPs must provide details of risk policies, assessment, and mitigation, including—	Section 5.3
15.1. Methods, details and conclusions of risk analysis;	Section 5.3
15.2. Strategies used to identify areas of the network that are vulnerable to high impact low probability events and a description of the resilience of the network and asset management systems to such events;	Section 4.6 and Section 5.3
15.3. A description of the policies to mitigate or manage the risks of events identified in clause 15.2; and	Section 5.3
15.4. Details of emergency response and contingency plans.	Section 5.4
EVALUATION OF PERFORMANCE	
16. AMPs must provide details of performance measurement, evaluation, and improvement, including—	
16.1. A review of progress against plan, both physical and financial;	Section 9.2, Section 9.3 and Section 10.9
16.2. An evaluation and comparison of actual service level performance against targeted performance-	Section 3 –
16.3. An evaluation and comparison of the results of the asset management maturity assessment disclosed in the Report on Asset Management Maturity set out in Schedule 13 against relevant objectives of the GDB's asset management and planning processes.	Section 3.3 and Section 4.6.8
16.4. An analysis of gaps identified in clauses 16.2 and 16.3. Where significant gaps exist (not caused by one-off factors), the AMP must describe any planned initiatives to address the situation.	Section 4.6.8 and Section 5.7.3
CAPABILITY TO DELIVER	
17. AMPs must describe the processes used by the GDB to ensure that-	
17.1. The AMP is realistic and the objectives set out in the plan can be achieved; and	Section 8 –
17.2. The organisation structure and the processes for authorisation and business capabilities will support the implementation of the AMP plans.	Section 8 –

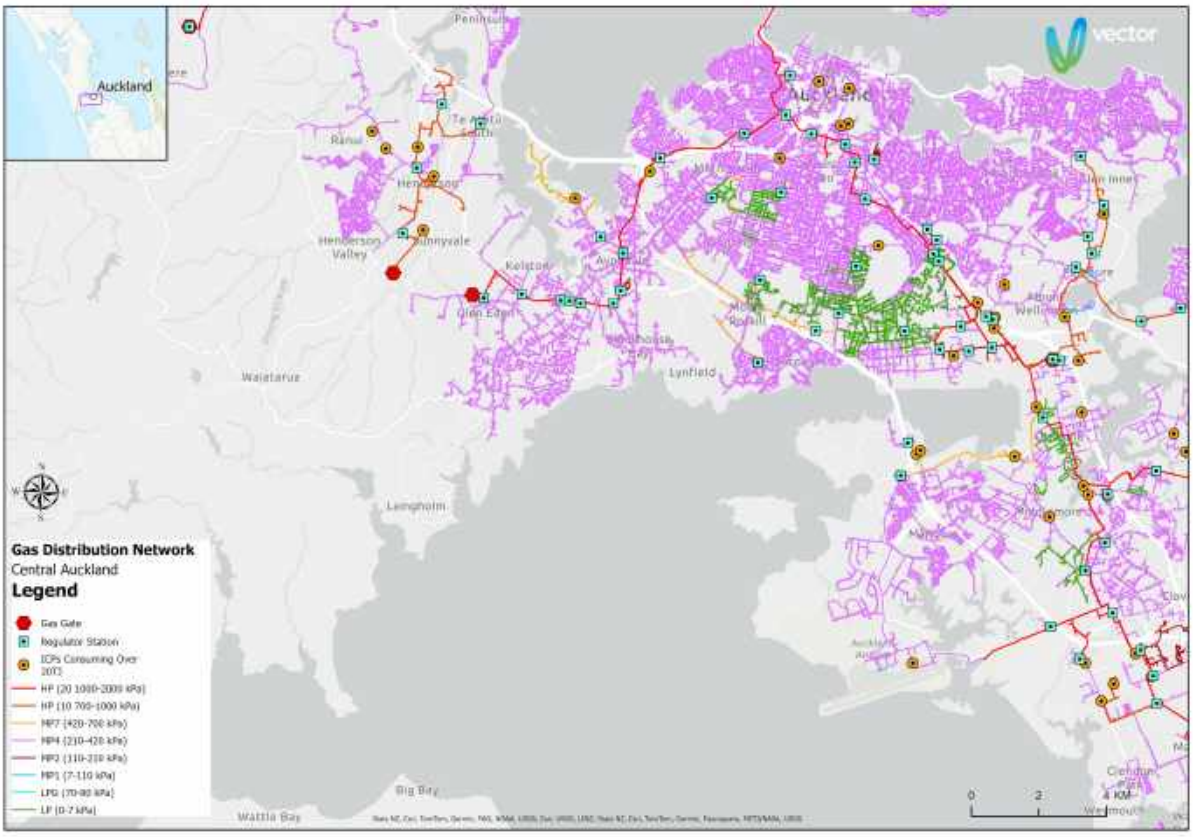
10.9 Significant changes from 2024 AMP

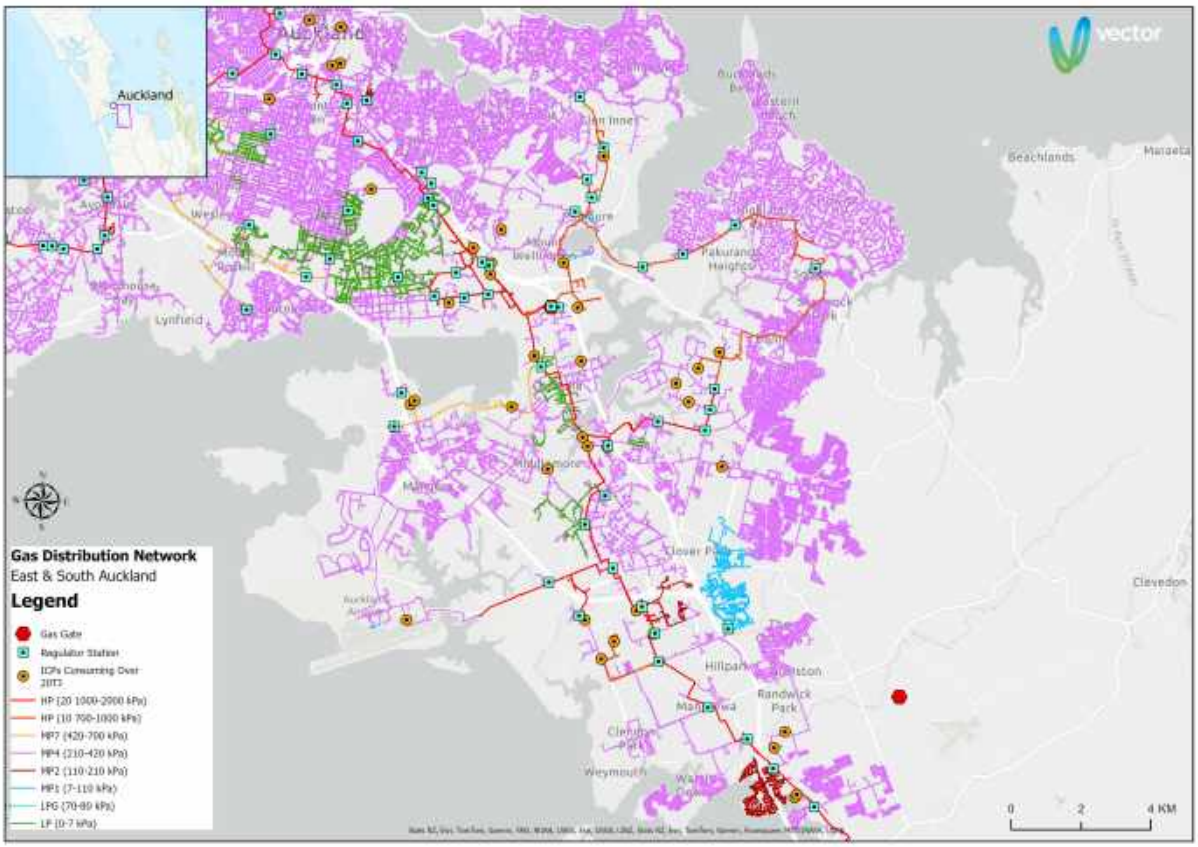
2025 AMP SCHEDULE DATE	PROJECT AND PROGRAMME DESCRITPION	2024 AMP SCHEDULE DATE	REASON FOR CHANGE
Removed	MP Reinforcement network meshing MP4	Programme	Updated load forecast
Removed	DRS capacity upgrade	Programme	Updated load forecast
Removed	Telemetry equipment replacement	Programme	Changed to opex
Removed	Riser assembly replacement	Programme	Changed to opex
Reduced programme	Corrosion protection system upgrade	Programme	Allocation to opex
Reduced programme	District regulator station upgrades	Programme	Allocation to opex
Reduced programme	Special-crossing upgrade programme	Programme	Allocation to opex
Reduced programme	Asset safety and compliance provisions	Programme	Allocation to opex
Programme	Telenet replacement	n/a	New project
FY26	Hot tapping and plugging equipment	n/a	New initiative
FY26	Inline camera inspection equipment	n/a	New initiative

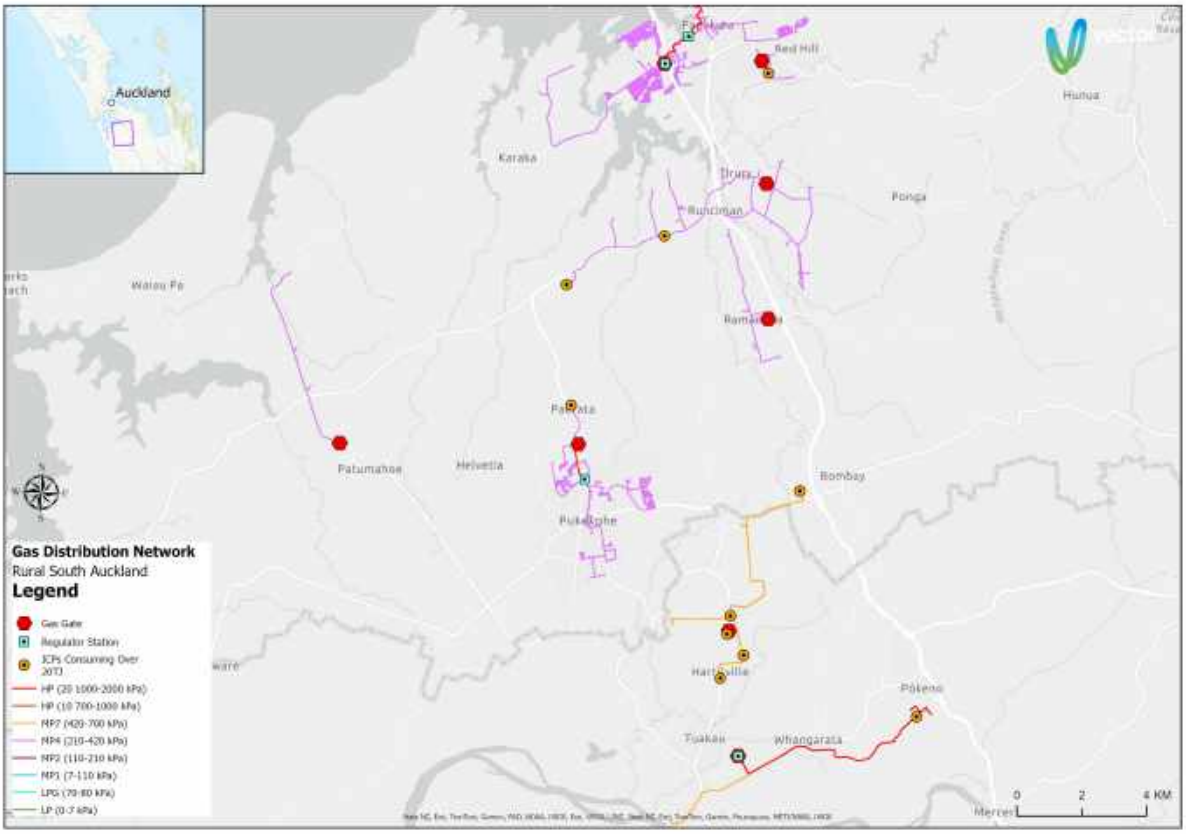
10.10 Gas distribution maps






Auckland
Gas Distribution Network
Central Auckland
Legend
Gas Gate
Regulator Station
ICPs Consuming Over 20TJ
HP (20 1000-2000 kPa)
HP (10 700-1000 kPa)
MP7 (420-700 kPa)
MP4 (210-420 kPa)
MP2 (110-210 kPa)
MP1 (7-110 kPa)
LPG (70-80 kPa)
LP (0-7 kPa)
Waitarua
Lynfield
Lenghorn
Big Bay
Wattle Bay
0 2 4 KM


Auckland
Gas Distribution Network
East & South Auckland
Legend
Gas Gate
Regulator Station
ICPs Consuming Over 20TJ
HP (20 1000-2000 kPa)
HP (10 700-1000 kPa)
MP7 (420-700 kPa)
MP4 (210-420 kPa)
MP2 (110-210 kPa)
MP1 (7-110 kPa)
LPG (70-80 kPa)
LP (0-7 kPa)
Lynfield
Beachlands
Maraetai
Pakuranga Heights
Clevedon
Hillpark
Randwick Park
Weymouth
0 2 4 KM


Auckland
Red Hill
Huntly
Karaka
Drury
Runciman
Ponga
Waiau Pa
Patumahoe
Helvetia
Bombay
Pukekohe
Tuakau
Whangarata
Pōkeno
Gas Distribution Network
Rural South Auckland
Legend
Gas Gate
Regulator Station
ICPs Consuming Over 20TJ
HP (20 1000-2000 kPa)
HP (10 700-1000 kPa)
MP7 (420-700 kPa)
MP4 (210-420 kPa)
MP2 (110-210 kPa)
MP1 (7-110 kPa)
LPG (70-80 kPa)
LP (0-7 kPa)
0
2
4 KM

10.11 Report on Forecast Capital Expenditure (Schedule 11a)

Company Name	**Vector Limited**
AMP Planning Period	**1 July 2025 – 30 June 2035**

SCHEDULE 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)

GDBs must provide explanatory comment on the difference between constant price and nominal dollar forecasts of expenditure on assets in Schedule 14a (Mandatory Explanatory Notes).

This information is not part of audited disclosure information.

sch ref		for year ended	*Current Year CY* 30 Jun 25	*CY+1* 30 Jun 26	*CY+2* 30 Jun 27	*CY+3* 30 Jun 28	*CY+4* 30 Jun 29	*CY+5* 30 Jun 30	*CY+6* 30 Jun 31	*CY+7* 30 Jun 32	*CY+8* 30 Jun 33	*CY+9* 30 Jun 34	*CY+10* 30 Jun 35
9	**11a(i): Expenditure on Assets Forecast**		**$000 (nominal dollars)**										
10	Consumer connection		9,595	5,910	3,971	1,769	-	-	-	-	-	-	-
11	System growth		-	-	-	-	-	-	-	-	-	-	-
12	Asset replacement and renewal		4,062	2,627	1,799	1,893	1,640	1,860	1,698	1,741	1,966	1,424	1,460
13	Asset relocations		2,911	4,138	3,668	2,810	2,880	2,952	3,026	3,102	3,179	3,259	3,340
14	Reliability, safety and environment:												
15	Quality of supply		164	112	114	117	120	123	126	130	133	136	140
16	Legislative and regulatory		-	-	-	-	-	-	-	-	-	-	-
17	Other reliability, safety and environment		493	258	318	305	57	59	60	62	63	65	67
18	**Total reliability, safety and environment**		657	370	432	422	177	182	186	192	196	201	207
19	**Expenditure on network assets**		17,225	13,045	9,870	6,894	4,697	4,994	4,910	5,035	5,341	4,884	5,007
20	Expenditure on non-network assets		1,711	3,225	2,170	2,184	2,098	2,233	1,024	1,597	1,100	1,384	5,470
21	**Expenditure on assets**		18,936	16,270	12,040	9,078	6,795	7,227	5,934	6,632	6,441	6,268	10,477
22													
23	*plus* Cost of financing		159	180	129	112	96	102	64	83	69	75	201
24	*less* Value of capital contributions		12,606	9,466	7,327	4,365	2,650	2,716	2,784	2,854	2,925	2,998	3,073
25	*plus* Value of vested assets		-	-	-	-	-	-	-	-	-	-	-
26	**Capital expenditure forecast**		6,489	6,984	4,842	4,825	4,241	4,613	3,214	3,861	3,585	3,345	7,605
27													
28	Assets commissioned		7,535	6,628	4,748	5,537	4,223	4,536	3,216	3,861	3,588	3,346	7,605
29													
30			*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
31		for year ended	30 Jun 25	30 Jun 26	30 Jun 27	30 Jun 28	30 Jun 29	30 Jun 30	30 Jun 31	30 Jun 32	30 Jun 33	30 Jun 34	30 Jun 35
32			**$000 (in constant prices)**										
33	Consumer connection		9,595	5,767	3,780	1,643	-	-	-	-	-	-	-
34	System growth		-	-	-	-	-	-	-	-	-	-	-
35	Asset replacement and renewal		4,062	2,563	1,713	1,758	1,485	1,644	1,464	1,464	1,613	1,140	1,140
36	Asset relocations		2,911	4,038	3,492	2,609	2,609	2,609	2,609	2,609	2,609	2,609	2,609
37	Reliability, safety and environment:												
38	Quality of supply		164	109	109	109	109	109	109	109	109	109	109
39	Legislative and regulatory		-	-	-	-	-	-	-	-	-	-	-
40	Other reliability, safety and environment		493	252	303	283	52	52	52	52	52	52	52
41	**Total reliability, safety and environment**		657	361	412	392	161	161	161	161	161	161	161
42	**Expenditure on network assets**		17,225	12,729	9,397	6,402	4,255	4,414	4,234	4,234	4,383	3,910	3,910
43	Expenditure on non-network assets		1,711	3,147	2,066	2,028	1,900	1,973	883	1,343	903	1,108	4,272
44	**Expenditure on assets**		18,936	15,876	11,463	8,430	6,155	6,387	5,117	5,577	5,286	5,018	8,182
45	**Subcomponents of expenditure on assets (where known)**												
46	Research and development		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Formula Bar

	for year ended	Current Year CY 30 Jun 25	CY+1 30 Jun 26	CY+2 30 Jun 27	CY+3 30 Jun 28	CY+4 30 Jun 29	CY+5 30 Jun 30	CY+6 30 Jun 31	CY+7 30 Jun 32	CY+8 30 Jun 33	CY+9 30 Jun 34	CY+10 30 Jun 35
Difference between nominal and constant price forecasts		$000										
Consumer connection		-	143	191	126	-	-	-	-	-	-	-
System growth		-	-	-	-	-	-	-	-	-	-	-
Asset replacement and renewal		-	64	86	135	155	216	234	277	353	284	320
Asset relocations		-	100	176	201	271	343	417	493	570	650	731
Reliability, safety and environment:												
Quality of supply		-	3	5	8	11	14	17	21	24	27	31
Legislative and regulatory		-	-	-	-	-	-	-	-	-	-	-
Other reliability, safety and environment		-	6	15	22	5	7	8	10	11	13	15
Total reliability, safety and environment		-	9	20	30	16	21	25	31	35	40	46
Expenditure on network assets		-	316	473	492	442	580	676	801	958	974	1,097
Expenditure on non-network assets		-	78	104	156	198	260	141	254	197	276	1,198
Expenditure on assets		-	394	577	648	640	840	817	1,055	1,155	1,250	2,295

	for year ended	Current Year CY 30 Jun 25	CY+1 30 Jun 26	CY+2 30 Jun 27	CY+3 30 Jun 28	CY+4 30 Jun 29	CY+5 30 Jun 30
11a(ii): Consumer Connection		$000 (in constant prices)					
*Consumer types defined by GDB**							
Mains Extensions/Subdivisions		1,444	971	759	457	-	-
Service Connections - Residential		7,357	4,280	2,646	928	-	-
Service Connections - Commercial		794	516	375	258	-	-
Customer Easements		-	-	-	-	-	-
** include additional rows if needed*							
Consumer connection expenditure		9,595	5,767	3,780	1,643	-	-
less Capital contributions funding consumer connection		9,704	5,585	3,802	1,653	-	-
Consumer connection less capital contributions		(109)	182	(22)	(10)	-	-
11a(iii): System Growth							
Intermediate pressure							
Main pipe		-	-	-	-	-	-
Service pipe		-	-	-	-	-	-
Stations		-	-	-	-	-	-
Line valve		-	-	-	-	-	-
Special crossings		-	-	-	-	-	-
Intermediate Pressure total		-	-	-	-	-	-
Medium pressure							
Main pipe		-	-	-	-	-	-
Service pipe		-	-	-	-	-	-
Stations		-	-	-	-	-	-
Line valve		-	-	-	-	-	-
Special crossings		-	-	-	-	-	-
Medium Pressure total		-	-	-	-	-	-

92		**Low Pressure**						
93		Main pipe	-	-	-	-	-	-
94		Service pipe	-	-	-	-	-	-
95		Line valve	-	-	-	-	-	-
96		Special crossings	-	-	-	-	-	-
97		**Low Pressure total**	-	-	-	-	-	-
98		**Other network assets**						
99		Monitoring and control systems	-	-	-	-	-	-
100		Cathodic protection systems	-	-	-	-	-	-
101		Other assets (other than above)	-	-	-	-	-	-
102		**Other network assets total**	-	-	-	-	-	-
103								
104		**System growth expenditure**	-	-	-	-	-	-
105	*less*	Capital contributions funding system growth	582	-	-	-	-	-
106		**System growth less capital contributions**	(582)	-	-	-	-	-
107								
108								
109			*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
		for year ended	**30 Jun 25**	**30 Jun 26**	**30 Jun 27**	**30 Jun 28**	**30 Jun 29**	**30 Jun 30**
110	**11a(iv): Asset Replacement and Renewal**							
111		**Intermediate pressure**	**$000 (in constant prices)**					
112		Main pipe	19	-	-	-	-	-
113		Service pipe	-	-	-	-	-	-
114		Stations	457	462	258	228	189	199
115		Line valve	-	-	-	-	-	-
116		Special crossings	557	-	159	-	-	149
117		**Intermediate Pressure total**	1,033	462	417	228	189	348
118		**Medium pressure**						
119		Main pipe	1,506	1,455	905	905	905	905
120		Service pipe	331	-	-	-	-	-
121		Station	-	-	-	-	-	-
122		Line valve	607	503	248	248	248	248
123		Special crossings	-	-	-	-	-	-
124		**Medium Pressure total**	2,444	1,958	1,153	1,153	1,153	1,153
125		**Low Pressure**						
126		Main pipe	-	-	-	-	-	-
127		Service pipe	-	-	-	-	-	-
128		Line valve	-	-	-	-	-	-
129		Special crossings	-	-	-	-	-	-
130		**Low Pressure total**	-	-	-	-	-	-

131	**Other network assets**						
132	Monitoring and control systems	478	72	72	72	72	72
133	Cathodic protection systems	109	71	71	305	71	71
134	Other assets (other than above)	(2)	-	-	-	-	-
135	**Other network assets total**	585	143	143	377	143	143
136							
137	**Asset replacement and renewal expenditure**	4,062	2,563	1,713	1,758	1,485	1,644
138	*less* Capital contributions funding asset replacement and renewal						
139	**Asset replacement and renewal less capital contributions**	4,062	2,563	1,713	1,758	1,485	1,644
140							

11a(v): Asset Relocations

142	*Project or programme**						
143							
144							
145							
146							
147							
148	** include additional rows if needed*						
149	All other projects or programmes - asset relocations	2,911	4,038	3,492	2,609	2,609	2,609
150	**Asset relocations expenditure**	2,911	4,038	3,492	2,609	2,609	2,609
151	*less* Capital contributions funding asset relocations	2,320	3,652	3,173	2,400	2,400	2,400
152	**Asset relocations less capital contributions**	591	386	319	209	209	209
153							

11a(vi): Quality of Supply

		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
154	for year ended	**30 Jun 25**	**30 Jun 26**	**30 Jun 27**	**30 Jun 28**	**30 Jun 29**	**30 Jun 30**
155							
156							
157	*Project or programme**	**$000 (in constant prices)**					
158							
159							
160							
161							
162							
163	** include additional rows if needed*						
164	All other projects or programmes - quality of supply	164	109	109	109	109	109
165	**Quality of supply expenditure**	164	109	109	109	109	109
166	*less* Capital contributions funding quality of supply						
167	**Quality of supply less capital contributions**	164	109	109	109	109	109
168							

11a(vii): Legislative and Regulatory

	Project or programme						
	** include additional rows if needed*						
	All other projects or programmes - legislative and regulatory	-	-	-	-	-	-
	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**						
	** include additional rows if needed*						
	All other projects or programmes - other reliability, safety and environment	493	252	303	283	52	52
	Other reliability, safety and environment expenditure	493	252	303	283	52	52
less	Capital contributions funding other reliability, safety and environment						
	Other Reliability, safety and environment less capital contributions	493	252	303	283	52	52

11a(ix): Non-Network Assets

Routine expenditure

	*Project or programme**						
	** include additional rows if needed*						
	All other projects or programmes - routine expenditure	876	1,496	1,292	875	837	1,146
	Routine expenditure	876	1,496	1,292	875	837	1,146

Atypical expenditure

	*Project or programme**						
	** include additional rows if needed*						
	All other projects or programmes - atypical expenditure	835	1,651	774	1,153	1,063	827
	Atypical expenditure	835	1,651	774	1,153	1,063	827
	Expenditure on non-network assets	1,711	3,147	2,066	2,028	1,900	1,973

10.12 Report on Forecast Operational Expenditure (Schedule 11b)

Company Name	**Vector Limited**
AMP Planning Period	**1 July 2025 – 30 June 2035**

SCHEDULE 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.
GDBs must provide explanatory comment on the difference between constant price and nominal dollar operational expenditure forecasts in Schedule 14a (Mandatory Explanatory Notes).
This information is not part of audited disclosure information.

sch ref

	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	**30 Jun 25**	**30 Jun 26**	**30 Jun 27**	**30 Jun 28**	**30 Jun 29**	**30 Jun 30**	**30 Jun 31**	**30 Jun 32**	**30 Jun 33**	**30 Jun 34**	**30 Jun 35**
Operational Expenditure Forecast	**$000 (in nominal dollars)**										
Service interruptions, incidents and emergencies	2,628	2,654	2,707	2,762	2,822	2,884	2,948	3,013	3,079	3,147	3,216
Routine and corrective maintenance and inspection	4,527	4,451	4,553	4,729	4,676	4,735	4,793	4,789	4,948	5,026	5,123
Asset replacement and renewal	-	832	926	1,504	1,559	1,405	1,388	1,380	1,041	967	988
Network opex	7,155	7,937	8,186	8,995	9,057	9,024	9,129	9,182	9,068	9,140	9,327
System operations and network support	2,317	2,304	2,291	2,443	2,482	2,561	2,620	2,703	2,766	2,854	2,921
Business support	8,179	9,149	9,646	10,165	10,741	11,069	11,415	11,761	12,125	12,500	13,207
Non-network opex	10,496	11,453	11,937	12,608	13,223	13,630	14,035	14,464	14,891	15,354	16,128
Operational expenditure	17,651	19,390	20,123	21,603	22,280	22,654	23,164	23,646	23,959	24,494	25,455

	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	**30 Jun 25**	**30 Jun 26**	**30 Jun 27**	**30 Jun 28**	**30 Jun 29**	**30 Jun 30**	**30 Jun 31**	**30 Jun 32**	**30 Jun 33**	**30 Jun 34**	**30 Jun 35**
	$000 (in constant prices)										
Service interruptions, incidents and emergencies	2,628	2,599	2,599	2,599	2,599	2,599	2,599	2,599	2,599	2,599	2,599
Routine and corrective maintenance and inspection	4,527	4,359	4,371	4,450	4,307	4,267	4,227	4,132	4,177	4,152	4,141
Asset replacement and renewal	-	815	890	1,416	1,436	1,266	1,224	1,191	878	799	799
Network opex	7,155	7,773	7,860	8,465	8,342	8,132	8,050	7,922	7,654	7,550	7,539
System operations and network support	2,317	2,257	2,199	2,299	2,286	2,308	2,310	2,332	2,335	2,357	2,361
Business support	8,179	8,960	9,261	9,567	9,892	9,975	10,066	10,147	10,237	10,325	10,675
Non-network opex	10,496	11,217	11,460	11,866	12,178	12,283	12,376	12,479	12,572	12,682	13,036
Operational expenditure	17,651	18,990	19,320	20,331	20,520	20,415	20,426	20,401	20,226	20,232	20,575
Subcomponents of operational expenditure (where known)											
Research and development	-	-	-	-	-	-	-	-	-	-	-
Insurance	377	307	317	327	337	349	360	372	385	398	411

	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	**30 Jun 25**	**30 Jun 26**	**30 Jun 27**	**30 Jun 28**	**30 Jun 29**	**30 Jun 30**	**30 Jun 31**	**30 Jun 32**	**30 Jun 33**	**30 Jun 34**	**30 Jun 35**
Difference between nominal and real forecasts	**$000**										
Service interruptions, incidents and emergencies	-	55	108	163	223	285	349	414	480	548	617
Routine and corrective maintenance and inspection	-	92	182	279	369	468	566	657	771	874	982
Asset replacement and renewal	-	17	36	88	123	139	164	189	163	168	189
Network opex	-	164	326	530	715	892	1,079	1,260	1,414	1,590	1,788
System operations and network support	-	47	92	144	196	253	310	371	431	497	560
Business support	-	189	385	598	849	1,094	1,349	1,614	1,888	2,175	2,532
Non-network opex	-	236	477	742	1,045	1,347	1,659	1,985	2,319	2,672	3,092
Operational expenditure	-	400	803	1,272	1,760	2,239	2,738	3,245	3,733	4,262	4,880

10.13 Report on Asset Condition (Schedule 12a)

Company Name	**Vector Limited**
AMP Planning Period	**1 July 2025 – 30 June 2035**

SCHEDULE 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.

sch ref					Asset condition at start of planning period (percentage of units by grade)						
7											% of asset forecast to be replaced in next 5 years
8	**Operating Pressure**	**Asset category**	**Asset class**	**Units**	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade unknown**	**Data accuracy (1–4)**	
9	Intermediate Pressure	Main pipe	IP PE main pipe	km	-	-	-	-	-	N/A	-
10	Intermediate Pressure	Main pipe	IP steel main pipe	km	-	-	100.00%	-	-	3	-
11	Intermediate Pressure	Main pipe	IP other main pipe	km	-	-	-	-	-	N/A	-
12	Intermediate Pressure	Service pipe	IP PE service pipe	km	-	-	-	-	-	N/A	-
13	Intermediate Pressure	Service pipe	IP steel service pipe	km	-	-	100.00%	-	-	3	-
14	Intermediate Pressure	Service pipe	IP other service pipe	km	-	-	-	-	-	N/A	-
15	Intermediate Pressure	Stations	Intermediate pressure DRS	No.	-	-	82.50%	17.50%	-	4	4.74
16	Intermediate Pressure	Line valve	IP line valves	No.	-	3.35%	93.30%	1.22%	2.13%	3	1.02
17	Intermediate Pressure	Special crossings	IP crossings	No.	-	-	42.10%	52.60%	5.30%	3	7.70
18	Medium Pressure	Main pipe	MP PE main pipe	km	-	0.28%	1.48%	98.24%	-	3	0.14
19	Medium Pressure	Main pipe	MP steel main pipe	km	-	-	100.00%	-	-	3	-
20	Medium Pressure	Main pipe	MP other main pipe	km	-	-	-	-	-	N/A	-
21	Medium Pressure	Service pipe	MP PE service pipe	km	-	0.05%	99.95%	-	-	3	0.03
22	Medium Pressure	Service pipe	MP steel service pipe	km	-	-	100.00%	-	-	3	-
23	Medium Pressure	Service pipe	MP other service pipe	km	-	-	100.00%	-	-	3	-
24	Medium Pressure	Stations	Medium pressure DRS	No.	-	-	100.00%	-	-	4	4.74
25	Medium Pressure	Line valve	MP line valves	No.	-	4.90%	87.30%	2.01%	5.79%	3	1.02
26	Medium Pressure	Special crossings	MP special crossings	No.	-	4.80%	33.90%	27.40%	33.90%	3	7.70
27	Low Pressure	Main pipe	LP PE main pipe	km	-	-	22.96%	77.04%	-	3	-
28	Low Pressure	Main pipe	LP steel main pipe	km	-	-	-	-	-	N/A	-
29	Low Pressure	Main pipe	LP other main pipe	km	-	-	-	-	-	N/A	-
30	Low Pressure	Service pipe	LP PE service pipe	km	-	-	6.53%	93.47%	-	3	-
31	Low Pressure	Service pipe	LP steel service pipe	km	-	-	100.00%	-	-	3	-
32	Low Pressure	Service pipe	LP other service pipe	km	-	-	-	-	-	N/A	-
33	Low Pressure	Line valve	LP line valves	No.	-	-	100.00%	-	-	3	-
34	Low Pressure	Special crossings	LP special crossings	No.	-	-	-	-	-	N/A	-
35	All	Monitoring and control systems	Remote terminal units	No.	-	-	80.60%	19.40%	-	4	14.80
36	All	Cathodic protection systems	Cathodic protection	No.	-	-	52.38%	47.62%	-	4	4.11

10.14 Report on Forecast Utilisation (Schedule 12b)

Company Name **Vector Limited**

AMP Planning Period **1 July 2025 – 30 June 2035**

SCHEDULE 12b: REPORT ON FORECAST UTILISATION

This Schedule requires a breakdown of current and forecast utilisation (for heavily utilised pipelines) consistent with the information provided in the AMP and the demand forecast in schedule S12c.

sch ref

Forecast Utilisation of Heavily Utilised Pipelines

Region	Network	Pressure system	Nominal operating pressure (NOP) (kPa)	Minimum operating pressure (MinOP) (kPa)	Total capacity at MinOP (scmh)	Remaining capacity at MinOP (scmh)	Unit	Utilisation *Current Year CY* y/e 30 Jun 25	*CY+1* y/e 30 Jun 26	*CY+2* y/e 30 Jun 27	*CY+3* y/e 30 Jun 28	*CY+4* y/e 30 Jun 29	*CY+5* y/e 30 Jun 30	Comment
-	-	-	-	-	-	-	scmh	-	-	-	-	-	-	-
							kPa							
							scmh							
							kPa							
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							kPa							
							scmh							
							kPa							

** Current year utilisation figures may be estimates. Year 1–5 figures show the utilisation forecast to occur given the expected system configuration for each year, including the effect of any new investment in the pressure system.*

Disclaimer for supply enquiries

Any interested party seeking to invest in supply from Vector's distribution networks should contact their retailer and confirm availability of capacity.

Notes and assumptions

Winter peak monitoring indicated that all systems are below the criteria of heavy utilisation. There is no pressure system with a consumption greater than or equal to 500 scmh, and its utilisation (pressure drop) is greater than or equal to 40% from the nominal operating pressure (NOP). This information is based on modelled estimates of utilisation and capacity at lowest pressure point in the network.

10.15 Report on Forecast Demand (Schedule 12c)

Company Name	**Vector Limited**
AMP Planning Period	**1 July 2025 – 30 June 2035**

SCHEDULE 12c: REPORT ON FORECAST 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.

sch ref

12c(i) Consumer Connections

Number of ICPs connected in year by consumer type

Consumer types defined by GDB	*Current year CY* **30 Jun 25**	*CY+1* **30 Jun 26**	*CY+2* **30 Jun 27**	*CY+3* **30 Jun 28**	*CY+4* **30 Jun 29**	*CY+5* **30 Jun 30**
Residential	1,395	922	570	200	-	-
SME	27	20	15	10	-	-
Commercial	33	24	17	12	-	-
Industrial	2	-	-	-	-	-
Total	1,457	966	602	222	-	-

12c(ii): Gas Delivered

	Current year CY **30 Jun 25**	*CY+1* **30 Jun 26**	*CY+2* **30 Jun 27**	*CY+3* **30 Jun 28**	*CY+4* **30 Jun 29**	*CY+5* **30 Jun 30**
Number of ICPs at year end (at year end)	120,756	120,045	118,862	117,191	115,539	113,679
Maximum daily load (GJ per day)	51,182	45,710	41,773	38,644	35,754	33,039
Maximum monthly load (GJ per month)	1,312,398	1,172,076	1,071,124	990,885	916,797	847,186
Number of directly billed ICPs (at year end)	-	-	-	-	-	-
Total gas conveyed (GJ per annum)	12,122,958	10,875,809	10,143,962	9,380,652	8,898,334	8,305,001
Average daily delivery (GJ per day)	33,214	29,797	27,792	25,630	24,379	22,753
Load factor	76.98%	77.33%	78.92%	78.89%	80.88%	81.69%

10.16 Asset Management Maturity (Schedule 13)

Company Name	Vector Limited
AMP Planning Period	1 July 2025 – 30 June 2035
Asset Management Standard Applied	

SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY

This schedule requires information on the GDB's self-assessment of the maturity of its asset management practices.

Question No.	Function	Question	Score	Evidence—Summary	User Guidance	Why	Who	Record/documented information
1	Asset management policy	To what extent has an asset management policy been documented, authorised and communicated?	3	Vector's Asset Management Policy is formally authorised by the Chief Operating Officer – Electricity, Gas, Fibre. As a controlled document, it is managed within the organisation's document management system and undergoes periodic reviews to ensure alignment with evolving business objectives, regulatory requirements, and industry best practices, ensuring that all relevant stakeholders understand their roles and responsibilities in supporting asset management objectives.		Widely used AM practice standards require an organisation to document, authorise and communicate its asset management policy (eg, 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.
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?	2.3	Good asset management is embedded within the Vector's policies and strategies, which are formally approved by Vector's Board, along with the associated budget. These documents have been included as part of the asset management framework that ensures best practices to support the company's strategic objectives, regulatory requirements, and stakeholder expectations.		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 (eg, as required by PAS 55 para 4.3.1 b) 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 policies, 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.
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?	3	Asset class strategies have been developed and reviewed for all primary asset classes, ensuring a structured approach to asset management. Lifecycle costs and service implications are carefully considered in maintenance and replacement decisions to optimise performance and long-term value. These strategies undergo an annual review to ensure alignment with evolving operational needs and industry best practices. This is an ongoing program of work, with opportunities for continuous improvement and integration with Vector's Condition-Based Asset Risk Management (CBARM) models and new 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 4.3.1 d) 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.
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	Asset Management Plans (AMPs) are formally documented, implemented, and maintained in alignment with Vector's asset management strategies. These plans encompass all asset lifecycle activities, ensuring a structured and consistent approach to asset stewardship. They are detailed through header-class strategies and supporting standards that cover key aspects, including planning, design, equipment selection, operation, maintenance, inspection, testing, and decommissioning.		The asset management strategy need 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).

Company Name	Vector Limited
AMP Planning Period	1 July 2025 – 30 June 2035
Asset Management Standard Applied	

SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
3	Asset management policy	To what extent has an asset management policy been documented, authorised and communicated?	The organisation does not have a documented asset management policy.	The organisation has an asset management policy, but it has not been authorised by top management, or it is not influencing the management of the assets.	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.	The asset management policy is authorised by top management, is widely and effectively communicated to all relevant employees and stakeholders, and used to make these persons aware of their asset related obligations.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
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?	The organisation has not considered the need to ensure that its asset management strategy is appropriately aligned with the organisation's other organisational policies and strategies or with stakeholder requirements. OR The organisation does not have an asset management strategy.	The need to align the asset management strategy with other organisational policies and strategies as well as stakeholder requirements is understood and work has started to identify the linkages or to incorporate them in the drafting of asset management strategy.	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.	All linkages are in place and evidence is available to demonstrate that, where appropriate, the organisation's asset management strategy is consistent with its other organisational policies and strategies. The organisation has also identified and considered the requirements of relevant stakeholders.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
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?	The organisation has not considered the need to ensure that its asset management strategy is produced with due regard to the lifecycle of the assets, asset types or asset systems that it manages. OR The organisation does not have an asset management strategy.	The need is understood, and the organisation is drafting its asset management strategy to address the lifecycle of its assets, asset types and asset systems.	The long-term asset management strategy takes account of the lifecycle of some, but not all, of its assets, asset types and asset systems.	The asset management strategy takes account of the lifecycle of all of its assets, asset types and asset systems.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
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?	The organisation does not have an identifiable asset management plan(s) covering asset systems and critical assets.	The organisation has asset management plan(s) but they are not aligned with the asset management strategy and objectives and do not take into consideration the full asset life cycle (including asset creation, acquisition, enhancement, utilisation, maintenance decommissioning and disposal).	The organisation is in the process of putting in place comprehensive, documented asset management plan(s) that cover all life cycle activities, clearly aligned to asset management objectives and the asset management strategy.	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.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.

Company Name	Vector Limited
AMP Planning Period	1 July 2025 – 30 June 2035
Asset Management Standard Applied	

SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Score	Evidence—Summary	User Guidance	Why	Who	Record/Documented Information
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?	3	The AMP is effectively communicated to all stakeholders, including employees and Field Service Providers (FSPs). To support seamless execution, the organisation has established clear end-to-end processes, Vector's delegated authorities, and structured work programs. The AMP is also publicly accessible on the Vector website, ensuring transparency. Additionally, monthly meetings are held to monitor progress, address challenges, and ensure the effective delivery of the AMP.		Plans will be ineffective unless they are communicated to all those, including contracted suppliers and those who undertake enabling function(s). The plan(s) need 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 receivers role in plan delivery. Evidence of communication.
29	Asset management plan(s)	How are designated responsibilities for delivery of asset plan actions documented?	3	The AMP defines the key roles responsible for its delivery. Vector's delegated authorities framework, policies, and role descriptions further establish responsibilities and decision-making authority. Key tasks are assigned to team members, who provide monthly progress reports to ensure alignment with the plan and drive accountability.		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.
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)	3.2	Vector is strategically integrating its projects with the N2 Forward Works Planner to enhance collaboration across companies. By seeking opportunities to work together, Vector is aiming to optimise resources and reduce operational costs through more coordinated planning in the execution of Capex projects.		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 need 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.
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?	3.2	Specific event guides for the gas network have been created for critical high-risk events, such as natural disasters and major supply losses. An annual emergency exercise is conducted to test the response preparedness of both contractor and Vector during these major events. Vector also maintains documents that outline processes and plans to ensure business continuity and uphold H&S standards during environmental disasters.		Widely used AM practice standards require that an organisation has 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.

Company Name	**Vector Limited**
AMP Planning Period	**1 July 2025 – 30 June 2035**
Asset Management Standard Applied	

SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
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?	The organisation does not have plan(s) or their distribution is limited to the authors.	The plan(s) are communicated to some of those responsible for delivery of the plan(s). OR Communicated to those responsible for delivery is either irregular or ad-hoc.	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 as is working towards resolution.	The plan(s) are communicated to all relevant employees, stakeholders and contracted service providers to a level of detail appropriate to their participation or business interests in the delivery of the plan(s) and there is confirmation that they are being used effectively.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
29	Asset management plan(s)	How are designated responsibilities for delivery of asset plan actions documented?	The organisation has not documented responsibilities for delivery of asset plan actions.	Asset management plan(s) inconsistently document responsibilities for delivery of plan actions and activities and/or responsibilities and authorities for implementation inadequate and/or delegation level inadequate to ensure effective delivery and/or contain misalignments with organisational accountability.	Asset management plan(s) consistently document responsibilities for the delivery of actions but responsibility/authority levels are inappropriate/ inadequate, and/or there are misalignments within the organisation.	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.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
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)	The organisation has not considered the arrangements needed for the effective implementation of plan(s).	The organisation recognises the need to ensure appropriate arrangements are in place for implementation of asset management plan(s) and is in the process of determining an appropriate approach for achieving this.	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.	The organisation's arrangements fully cover all the requirements for the efficient and cost effective implementation of asset management plan(s) and realistically address the resources and timescales required, and any changes needed to functional policies, standards, processes and the asset management information system.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
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?	The organisation has not considered the need to establish plan(s) and procedure(s) to identify and respond to incidents and emergency situations.	The organisation has some ad-hoc arrangements to deal with incidents and emergency situations, but these have been developed on a reactive basis in response to specific events that have occurred in the past.	Most credible incidents and emergency situations are identified. Either appropriate plan(s) and procedure(s) are incomplete for critical activities or they are inadequate. Training/ external alignment may be incomplete.	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.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.

Company Name	Vector Limited
AMP Planning Period	1 July 2025 – 30 June 2035
Asset Management Standard Applied	

SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Score	Evidence—Summary	User Guidance	Why	Who	Record/documented information
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	As defined in the AMP, the COO - Electricity Gas & Fibre has overall responsibility for Vector's Network Asset Management. The GM's of Gas Networks, Chief Engineer, Field Services, Capital Programme Delivery, Customer Excellence and Commercial Strategy all report to the COO and with appropriate authorities for delivering various parts of the asset management policy and plan. External TSPs have a good understanding of their roles in the delivery of asset management strategy, objectives and plans.		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 eg, 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.
40	Structure, authority and responsibilities	What evidence can the organisation's top management provide to demonstrate that sufficient resources are available for asset management?	3	In addition to our internal asset management and engineering capability, Vector utilises external TSP's and consultants to supplement internal resources to help deliver on its AMP. Specialist consultants provide advice on resource consents, pipeline route assessment and engineering analysis.		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.
42	Structure, authority and responsibilities	To what degree does the organisation's top management communicate the importance of meeting its asset management requirements?	3	Service Levels and KPI's are set and monitored across the organisation through readily accessible team charters and dashboards. In addition, monthly reporting and regular meetings with programme delivery and service providers ensure that there is a strong focus on the delivery of asset management requirements. "All Hands" sessions are organised six monthly to convey the asset management objectives to the wider EGF team.		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 (eg, PAS-55 s 4.4.3 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.
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?	3.2	Maintenance, design and planning standards have been developed which together, with the controls established in the commercial contracts with the service providers, ensure that the KPI's established are being monitored and deficiencies addressed. Maintenance information is collected and stored in SAP PM. The requirements and performance expectations are communicated through well established communication mechanisms. Dedicated field asset owners provide assurance against these standards. A robust QA process has been implemented, to review the inspections and PM activities completed per FY. The QA activities are grouped by asset category and managed by each asset owner. Dashboard and data collection solutions are in place, enabling task creation whenever follow-ups are required, and providing continuous monthly KPI reviews conducted with contractors.		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 (eg, 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 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.

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SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
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)?	Top management has not considered the need to appoint a person or persons to ensure that the organisation's assets deliver the requirements of the asset management strategy, objectives and plan(s).	Top management understands the need to appoint a person or persons to ensure that the organisation's assets deliver the requirements of the asset management strategy, objectives and plan(s).	Top management has appointed an appropriate people to ensure the assets deliver the requirements of the asset management strategy, objectives and plan(s) but their areas of responsibility are not fully defined and/or they have insufficient delegated authority to fully execute their responsibilities.	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.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
40	Structure, authority and responsibilities	What evidence can the organisation's top management provide to demonstrate that sufficient resources are available for asset management?	The organisation's top management has not considered the resources required to deliver asset management.	The organisations top management understands the need for sufficient resources but there are no effective mechanisms in place to ensure this is the case.	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.	An effective process exists for determining the resources needed for asset management and sufficient resources are available. It can be demonstrated that resources are matched to asset management requirements.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
42	Structure, authority and responsibilities	To what degree does the organisation's top management communicate the importance of meeting its asset management requirements?	The organisation's top management has not considered the need to communicate the importance of meeting asset management requirements.	The organisations top management understands the need to communicate the importance of meeting its asset management requirements but does not do so.	Top management communicates the importance of meeting its asset management requirements but only to parts of the organisation.	Top management communicates the importance of meeting its asset management requirements to all relevant parts of the organisation.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
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?	The organisation has not considered the need to put controls in place.	The organisation controls its outsourced activities on an ad-hoc basis, with little regard for ensuring for the compliant delivery of the organisational strategic plan and/or its asset management policy and strategy.	Controls systematically considered but currently only provide for the compliant delivery of some, but not all, aspects of the organisational strategic plan and/or its asset management policy and strategy. Gaps exist.	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	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.

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SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Score	Evidence – Summary	User Guidance	Why	Who	Record/documented information
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)?	2	An HR strategy is in place to align competencies and human resources with Vector's AMP and strategy. HR Plans for monitoring succession, development and availability of resources by encouraging on-the-job learning, through financial support for formal learning and the investment of time and energy into the career development framework for our employees, thus solidifying the bond between employee and the organisation.		There is a need for an organization 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.
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	The competency requirements and associated gas industry training requirements e.g. Certificate of Competence (CoC), are well established for all construction, maintenance, and safety critical activities on the network which is predominantly carried out by FSPs. Vector staff also have the option of completing a CoC. Training achieved is recorded in Vector's learning management system. Individual succession and development plans have been developed and is supported through ongoing professional development. A qualifications register is maintained which identifies CoC expiry dates and any refresher training required.		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. (eg, 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.
50	Training, awareness and competence	How does the organization 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	The competency and associated training requirements for all individuals involved in asset management activities across both FSPs and Vector are well established.		A critical success factor for the effective development and implementation of an asset management system is the competence of persons undertaking those 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.
51	Communication, 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?	3	Effective two-way communication channels are in place for staff and other stakeholders, including group presentations/meetings (electricity, gas, and fibre), internal video updates, dashboards, reporting, standards, meetings, and additional information on Vector's website. Additionally, the FSPs have direct access to a suite of controlled technical standards and relevant systems. Monthly operational meetings are held with the FSPs to review the delivery of annual plans and identify areas for improvement.		Widely used AM practise 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), employee's 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.

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SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
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)?	The organisation has not recognised the need for assessing human resources requirements to develop and implement its asset management system.	The organisation has recognised the need to assess its human resources requirements and to develop a plan(s). There is limited recognition of the need to align these with the development and implementation of its asset management system.	The organisation has developed a strategic approach to aligning competencies and human resources to the asset management system including the asset management plan but the work is incomplete or has not been consistently implemented.	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).	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
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?	The organisation does not have any means in place to identify competency requirements.	The organisation has recognised the need to identify competency requirements and then plan, provide and record the training necessary to achieve the competencies.	The organisation is the process of identifying competency requirements aligned to the asset management plan(s) and then plan, provide and record appropriate training. It is incomplete or inconsistently applied.	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.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
50	Training, awareness and competence	How does the organization 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?	The organization has not recognised the need to assess the competence of person(s) undertaking asset management related activities.	Competency of staff undertaking asset management related activities is not managed or assessed in a structured way, other than formal requirements for legal compliance and safety management.	The organization is in the process of putting in place a means for assessing the competence of person(s) involved in asset management activities including contractors. There are gaps and inconsistencies.	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.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
53	Communication, 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?	The organisation has not recognised the need to formally communicate any asset management information.	There is evidence that the pertinent asset management information to be shared along with those to share it with is being determined.	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.	Two way communication is in place between all relevant parties, ensuring that information is effectively communicated to match the requirements of asset management strategy, plan(s) and process(es). Pertinent asset information requirements are regularly reviewed.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.

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SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Score	Evidence—Summary	User Guidance	Why	Who	Record/documented information
58	Asset Management System documentation	What documentation has the organisation established to describe the main elements of its asset management system and interactions between them?	2.5	The Asset Management System (AMS) model has been adopted, providing a structured framework for managing the gas network, ensuring alignment with ISO 55000 standards and Vector's strategic objectives. Twenty percent of the documentation related to the AMS development has been successfully drafted and is awaiting review and sign-off before being published across the related stakeholders. The Management of Change process has been defined in a flowchart that outlines each step and the responsibilities across the organisation. Embedded within this, a document control solution has been implemented, enabling the collection and capture of records using metadata, while triggering reminders and notifications with the support of automated systems.		Widely used AM practice standards require an organisation maintain up to date documentation that ensures that its asset management systems (ie, the systems the organisation has in place to meet the standards) can be understood, communicated and operated. (eg, s 4.3 of PAS 55 requires the maintenance of up to date documentation of the asset management system requirements specified throughout s 4 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.
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?	2.5	Asset Management Systems have been developed but are evolving further. Asset management information flows from various systems, as well as from internal and external sources. System protocols are in place to collect and store all data in our warehouse, enabling us to build dashboards and reports. A data transformation project is currently under development across the organisation, and all asset owners have been designated as data stewards as part of this transformation, and conducting a review for each piece of data within each asset category to determine whether it has value in supporting the management system and decision making for the organisation. Data assurance processes exist to ensure the data is accurate and complete and has been signed off by the GM Operational Insights and Information.		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.
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?	2.5	The organization maintains the quality, accuracy, and consistency of its asset management systems through a comprehensive data governance framework. Controls have been established to govern data quality within Vector's asset management systems, including data validation, audits, ensuring any inconsistencies are promptly addressed. A comprehensive data standard is being developed to ensure the quality and consistency of asset master data throughout its lifecycle. Data assurance processes are in place to verify the accuracy and completeness of the data, with ongoing efforts focused on refining these processes to continually enhance data quality. These controls are under constant improvement to adapt to changing needs, ensuring the data remains accurate and aligned with organizational goals.		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 (eg, 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.
64	Information management	How has the organisation's ensured its asset management information system is relevant to its needs?	3	The asset management information system is aligned with the asset management requirements, ensuring that all data and insights are relevant and useful. Users can easily verify that the information meets their specific needs through Power BI dashboards, Web GIS, and SAP PM, with support from a dedicated Operational Information and Insights team. Additionally, a data transformation project is currently under development to bring future improvements and changes to our information systems and the way we utilise data.		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.

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SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
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?	The organisation has not established documentation that describes the main elements of the asset management system.	The organisation is aware of the need to put documentation in place and is in the process of determining how to document the main elements of its asset management system.	The organisation 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.	The organisation has established documentation that comprehensively describes all the main elements of its asset management system and the interactions between them. The documentation is kept up to date.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
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?	The organisation has not considered what asset management information is required.	The organisation is aware of the need to determine in a structured manner what its asset information system should contain in order to support its asset management system and is in the process of deciding how to do this.	The organisation has developed a structured process to determine what its asset information system should contain in order to support its asset management system and has commenced implementation of the process.	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.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
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?	There are no formal controls in place or controls are extremely limited in scope and/or effectiveness.	The organisation is aware of the need for effective controls and is in the process of developing an appropriate control process(es).	The organisation has developed a controls that will ensure the data held is of the requisite quality and accuracy and is consistent and is in the process of implementing them.	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.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
64	Information management	How has the organisation's ensured its asset management information system is relevant to its needs?	The organisation has not considered the need to determine the relevance of its management information system. At present there are major gaps between what the information system provides and the organisations needs.	The organisation understands the need to ensure its asset management information system is relevant to its needs and is determining an appropriate means by which it will achieve this. At present there are significant gaps between what the information system provides and the organisations needs.	The organisation has developed and is implementing a process to ensure its asset management information system is relevant to its needs. Gaps between what the information system provides and the organisations needs have been identified and action is being taken to close them.	The organisation's asset management information system aligns with its asset management requirements. Users can confirm that it is relevant to their needs.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.

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SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Score	Evidence – Summary	User Guidance	Why	Who	Record/documented information
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	Processes of identification and assessment of asset related risks across the asset lifecycle are defined by the LIC0001 EGT Risk Management Process. Supporting risk management systems are used to assess and document asset related risks throughout the lifecycle as defined by the process. HILP (High Impact, Low Probability) assessment has been applied to potential scenarios relevant to the gas network assets, providing an understanding of the risk controls applicable to each case, along with a response plan and a set of initiatives to mitigate these risks.		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 (eg, 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.
78	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?	3	Risk assessments are used to support asset management decisions associated with asset management strategies and plans, and the prioritisation and allocation of resources, budget and activities. The influence of risk management is well documented in Vector's asset strategy documentation. FSP maintains a CoC qualification register to ensure all field service resources remain up to date with their site-safe certifications. Technical standards are reviewed periodically to ensure qualification requirements meet industry standards and are republished once updates are approved through the MoC process.		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.
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	The business has a Legal, Regulatory, and HSQE team that advises on its obligations and monitors compliance. Regulatory changes are assessed, and corresponding updates are made to business operating procedures and practices. Additionally, Vector's asset management is subject to external audits, such as asset management system audits.		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 (eg, 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.
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	A suite of technical standards form the basis of Vector's control and management of its network assets. These are supported by the AMP, a maintenance plan and good project and operations management. The effective management of associated projects, budgets and high level work plans are monitored against the expectations established in the AMP. GN6 documentation has been established to control each process life cycle activities, and GAA documents have been created to define the management strategy by asset class.		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 [eg, 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.

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SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
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?	The organisation has not considered the need to document process(es) and/or procedure(s) for the identification and assessment of asset and asset management related risks throughout the asset life cycle.	The organisation is aware of the need to document the management of asset related risk across the asset lifecycle. The organisation has plan(s) to formally document all relevant process(es) and procedure(s) or has already commenced this activity.	The organisation is in the process of documenting the identification and assessment of asset related risk across the asset lifecycle but it is incomplete or there are inconsistencies between approaches and a lack of integration.	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.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
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?	The organisation has not considered the need to conduct risk assessments.	The organisation is aware of the need to consider the results of risk assessments and effects of risk control measures to provide input into reviews of resources, training and competency needs. Current input is typically ad-hoc and reactive.	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.	Outputs from risk assessments are consistently and systematically used as inputs to develop resources, training and competency requirements. Examples and evidence is available.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
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?	The organisation has not considered the need to identify its legal, regulatory, statutory and other asset management requirements.	The organisation identifies some its legal, regulatory, statutory and other asset management requirements, but this is done in an ad-hoc manner in the absence of a procedure.	The organisation has procedure(s) to identify its legal, regulatory, statutory and other asset management requirements, but the information is not kept up to date, inadequate or inconsistently managed.	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.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
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?	The organisation does not have process(es) 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.	The organisation is aware of the need to have process(es) and procedure(s) 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 but currently do not have these in place (note: procedure(s) may exist but they are inconsistent/incomplete).	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 activities related to asset creation including design, modification, procurement, construction and commissioning. Gaps and inconsistencies are being addressed.	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.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.

Company Name	Vector Limited
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SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Score	Evidence – Summary	User Guidance	Why	Who	Record/documented information
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?	3	A suite of maintenance standards are in place. In addition, a standards improvement register and assurance (audit) process is in place. KPIs are reviewed monthly to ensure the asset management plan is implemented accordingly. In addition to a more comprehensive asset performance review conducted at the end of each fiscal year.		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 (eg, 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.
95	Performance and condition monitoring	How does the organisation measure the performance and condition of its assets?	2.5	Service levels, asset condition and performance information are consistently gathered and reviewed. Various BI reports have been created to monitor key performance indicators and actions based on condition and performance information. Vector has also adopted a condition based risk management approach to its asset management with the support of information from SAP PM to form the leading indicators used to improve the asset management strategy and plans.		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).
99	Investigation of asset-related failures, incidents and nonconformities	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	Vector has an investigation process in place with clear responsibilities defined. This process is managed in line with Vector's HSE management system and is supported by our risk management system. Incidents are reported as per Vector's Incident Management Process. Major events are investigated systematically, risk assessed, and appropriate mitigation plans are developed. Ownership of the actions is clearly defined, followed up on and reported. Major incidents or nonconformities are thoroughly investigated, followed by a lessons-learned session. Actions are then recorded in a controlled document to ensure that corrective and preventive actions are taken.		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.
105	Audit	What has the organisation done to establish procedure(s) for the audit of its asset management system [process(es)]?	3	Vector has an established audit procedure. External and internal audits, and reviews on asset management practices are carried out on a regular basis. Field work carried out by contractors is sample audited.		This question seeks to explore what the organisation has done to comply with the standard practice AM audit requirements (eg, 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.

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SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
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	The organisation does not have process(es)/procedure(s) in place to control or manage the implementation of asset management plan(s) during this life cycle phase.	The organisation is aware of the need to have process(es) and procedure(s) in place to manage and control the implementation of asset management plan(s) during this life cycle phase but currently do not have these in place and/or there is no mechanism for confirming they are effective and where needed modifying them.	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.	The organisation has 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, which is itself regularly reviewed to ensure it is effective, for confirming the process(es)/ procedure(s) are effective and if necessary carrying out modifications.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
95	Performance and condition monitoring	How does the organisation measure the performance and condition of its assets?	The organisation has not considered how to monitor the performance and condition of its assets.	The organisation recognises the need for monitoring asset performance but has not developed a coherent approach. Measures are incomplete, predominantly reactive and lagging. There is no linkage to asset management objectives.	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.	Consistent asset performance monitoring linked to asset management objectives is in place and universally used including reactive and proactive measures. Data quality management and review process are appropriate. Evidence of leading indicators and analysis.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
99	Investigation of asset-related failures, incidents and nonconformities	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?	The organisation has not considered the need to define the appropriate responsibilities and the authorities.	The organisation understands the requirements and is in the process of determining how to define them.	The organisation are in the process of defining the responsibilities and authorities with evidence. Alternatively there are some gaps or inconsistencies in the identified responsibilities/authorities.	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.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
105	Audit	What has the organisation done to establish procedure(s) for the audit of its asset management system (process(es))?	The organisation has not recognised the need to establish procedure(s) for the audit of its asset management system.	The organisation understands the need for audit procedure(s) and is determining the appropriate scope, frequency and methodology(s).	The organisation is establishing its audit procedure(s) but they do not yet cover all the appropriate asset-related activities.	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.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.

Company Name	Vector Limited
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SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Score	Evidence – Summary	User Guidance	Why	Who	Record/documented information
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 conformances?	3	Actions arising from audits, investigations, asset performance reviews, risks and legal compliance are captured in various systems and registers. Formal investigation processes are in place for major events. Root cause analysis and condition and performance reviews are being completed when needed.		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
111	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?	2	Continuous improvement processes are in place for the ongoing enhancement of Vector's technical standards. Internal action registers capture improvements related to risks, audits, and asset performance reviews, which are included in the asset strategy and monthly reports. Optimisation improvements across risk, cost, and performance will be driven by enhanced data and reporting, currently underway.		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.
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?	3.2	Vector participates in a number of national and international working groups to identify new asset management technologies and practices e.g. Australian Pipelines and Gas Association and Gas Infrastructure Emissions Reduction Reference Group (APGA).		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 organization which does this (eg, by the PAS 55 ± 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.

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SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
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?	The organisation does not recognise the need to have systematic approaches to instigating corrective or preventive actions.	The organisation recognises the need to have systematic approaches to instigating corrective or preventive actions. There is ad-hoc implementation for corrective actions to address failures of assets but not the asset management system.	The need is recognized for systematic instigation of preventive and corrective actions to address root causes of non compliance or incidents identified by investigations, compliance evaluation or audit. It is only partially or inconsistently in place.	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.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
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?	The organisation does not consider continual improvement of these factors to be a requirement, or has not considered the issue.	A Continual Improvement ethos is recognised as beneficial, however it has just been started, and or covers partially the asset drivers.	Continuous improvement process(es) are set out and include consideration of cost risk, performance and condition for assets managed across the whole life cycle but it is not yet being systematically applied.	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.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.
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?	The organisation makes no attempt to seek knowledge about new asset management related technology or practices.	The organisation is inward looking, however it recognises that asset management is not sector specific and other sectors have developed good practice and new ideas that could apply. Ad-hoc approach.	The organisation has initiated asset management communication within sector to share and, or identify 'new' to sector asset management practices and seeks to evaluate them.	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.	The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen.

10.17 Mandatory Explanatory Notes on Forecast Information (Schedule 14a)

1. This schedule requires GDBs to provide explanatory notes to reports prepared in accordance with clause 2.6.6.
2. This schedule is mandatory-GDBs 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

Vector has used a capital expenditure inflator based on the model used by the Commerce Commission in its DPP price reset on 1 October 2022. We have used PPI as the capital expenditure inflator.

Vector has used the NZIER (New Zealand Institute of Economic Research) December 2024 PPI (Producer Price Index-inputs) forecast up to March 2029. Thereafter, we have assumed a long-term inflation rate of 2.00%.

The constant price capital expenditure forecast is inflated by the above-mentioned index to convert to a nominal price capital expenditure forecast.

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

Vector has used an operational expenditure inflator based on the model used by the Commerce Commission in its DPP price reset on 1 October 2022. We have used an inflator which is a mix of Producer Price Index (PPI) and Labour Cost Index (LCI). The weighting between PPI (40%) and LCI (60%) as per the Commission's model.

Vector has used the NZIER (New Zealand Institute of Economic Research) December 2024 PPI (Producer Price Index-inputs) forecast up to March 2029. Thereafter, we have assumed a long-term inflation rate of 2.00%.

Vector has used the NZIER (New Zealand Institute of Economic Research) December 2024 LCI (Labour Cost Index) forecast up to September 2028. Thereafter, we have assumed a long-term inflation rate of 2.00%.

The constant price operational expenditure forecast is inflated by the above-mentioned index to convert to a nominal price operational expenditure forecast.

10.18 Certificate for Year Beginning Disclosures

Schedule 17 Certification for Year-beginning Disclosures

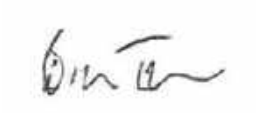
Clause 2.9.1

We, Bruce Turner and Paul Hutchison, being directors of Vector Limited certify that, having made all reasonable enquiry, to the best of our knowledge:

a) The following attached information of Vector Limited prepared for the purposes of clauses 2.6.1, 2.6.6 and 2.7.2 of the Gas 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 and 12c are based on objective and reasonable assumptions which both align with Vector Limited's corporate vision and strategy and are documented in retained records.



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Director

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Director

13 June 2025

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Date