POWERCO

GAS ASSET MANAGEMENT PLAN 2015

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MANAGING ASSETS

Powerco is continuously investing in maintaining and renewing its aging gas network assets. Over the next 10 years we will spend almost $140m in capital expenditure on our networks.

1. EXECUTIVE SUMMARY

1.1 PURPOSE OF THE DOCUMENT

Powerco's gas network provides an important service to many households and businesses across the North Island of New Zealand. As long-term stewards of the network assets, our aim is to focus on managing the network to deliver a safe, high-quality and highly efficient gas supply. The gas team's objective is to deliver exceptional service to our customers and this influences our overall attitude, our priorities and day-to-day activities.

This Asset Management Plan (AMP) sets out the long-term strategy for the delivery of Powerco's gas distribution services. It describes, at a practical level, our asset management policies and processes, the performance we expect and receive from our network assets. It explains how we strive to efficiently utilise the resources required to balance the price and service quality trade-offs that our customers tell us they require.

This AMP covers the period from 1 October 2015 to 30 September 2025, with a particular focus on work programmes planned for the next three to five years, for which the forecasts of asset management drivers have a reasonable degree of accuracy. As it is a working document, the AMP describes the areas where we believe our asset management processes, systems and data can be improved. We call this process of continuous improvement our "Asset Management Journey". This document, the second disclosed for our gas business, is based on the 2013 AMP. It reflects our progress on this journey.

Our goal is to position Powerco's asset management to achieve industry-leading practice, as referenced against ISO 55000, an internationally recognised asset management standard, within a two-year period. This means building progressively on the foundations of the previous PAS 55 framework, which were introduced across the gas business in 2010.

This AMP was approved by the Board of Directors on 24 September 2015.

1.2 OPERATIONAL FOCUS AND KEY CHALLENGES

Our operating environment has been stable in recent years. The Default Price-quality Price Path (DPP), the regulatory framework under which we currently operate, has allowed us to focus on achieving our Asset Management Objectives, increasing the level of service we offer to our customers, while maintaining the mandatory level of safety expected for a gas network of the importance of Powerco's.

However, there are a number of challenges and uncertainties facing the gas business over the AMP planning period. Work programmes are in place to maintain the current high level of safety performance, drive better operating efficiency, facilitate the uptake of gas as a preferred energy source across our network footprint and lift our asset management capability:

- **Managing the safety of our operations:** Maintaining high safety standards across the gas network is a primary objective for Powerco. In this regard our business practices and processes are mature and well executed and safety is considered paramount and built into everything we do. Our safety standards, along with changing legislative requirements, are a primary driver of investment decisions and operational expenditure. This is one reason why we have put in place an extensive inspection programme across all parts of our network and why we have effective response times to faults and emergencies.

  We recognise the challenge of avoiding complacency and continually striving to improve our focus on ensuring public safety as well as providing a safe work environment for our workforce, including our contractors. Network safety designs that were acceptable when constructed are routinely reviewed against current best practice with the goal of reducing the risk of harm where practicable.

- **Stable prices and operating efficiency:** Powerco is a company that places a high level of importance on delivering stable prices to our customers and we have a strong history of delivering this outcome. Our challenge is to maintain stable price outcomes against a backdrop of generally rising input costs. As a business, we constantly challenge our cost base and operating efficiency.

  Powerco outsources its field services work and day-to-day network operations. We transitioned from an alliance "outsourcing" model to field service agreements at the beginning of the regulatory period. The tendering process for the field service agreements established market-tested unit rates for specific work on the network. Two years after the implementation of this new model, we have seen greater efficiency in our operations, an increase in ownership of critical Asset Management tasks by our staff, including work planning, design, and scheduling, and stable prices. Such stability and efficiency are the foundation to deliver long-term value for our customers.

- **Customer service and new quality measures:** The Commerce Commission has indicated it will review the quality measures under which gas distribution businesses operate. Our current quality-price path depends on appropriate response time to emergencies.

  In preparing this AMP, we conducted market research to gauge if our customers were satisfied with the quality of their gas supply, and with their relationship with Powerco. The results from this survey show that our current service levels are highly rated, and is summarised in Section 3.2.

  This does not mean that we should be complacent and reduce our focus or levels of investment. We recognise that gas is a discretionary fuel and we must maintain high levels of service and reliability to our customers. Decreasing the level of customer satisfaction, or increasing the cost of our services, will ultimately lead to customers turning away from us.

The high level of customer satisfaction and stable (or improving) quality metrics demonstrates the effectiveness of the current quality standard. The performance metrics provided through this AMP and our annual Information Disclosures provide our stakeholders with clear measures of our performance and our commitment to deliver efficient, safe and high quality service to our customers.

- **New connections:** The Gas Hub, Powerco's natural gas brand, connects industry players with each other and consumers. The Gas Hub encourages consumers to switch to gas by marketing information about the benefits of gas as a fuel choice and providing cost calculators to allow consumers to make comparisons against other fuels sources such as electricity.

  The Gas Hub initiative continues to be a success. Last year, we recorded a record number of new connections since its launch. The more customers we connect, the better utilisation of the network and our resources is, ultimately driving cost-efficiencies for our customers.

- **Asset investment drivers:** The average asset age of Powerco's gas distribution network, as at 30 September 2014, was 22 years, with a remaining useful average asset life of around 37 years. At a high level, this indicates that, for the foreseeable future, on the basis of asset age alone, there is no major driver for a step change in the annual level of maintenance or asset replacement and renewal. We have, however, identified some asset classes that are starting to fail.

  With most of our asset underground, a challenge for the business is seeking innovative ways to ascertain the condition of underground assets whilst assets remain *in situ*. We often have to adopt holistic approaches, based on previous failure data, to predict where failure is likely to happen. This asset management plan sets out various initiatives which are either being progressed or are at the planning stage.

- **Asset management maturity journey:** We are continuing on our path towards conforming to a recognised asset management framework standard. With PAS 55 now retired, we are aligning with the broader ISO 55000 standard. We are focusing on developing detailed asset class strategies and plans, leveraging on the data we have collected over the last three years.

  Powerco is continuing with its plans to replace our core Enterprise Resource Planning system, a key enabler to improve asset data quality and asset management decision making.

- **Design and information standardisation:** Our gas network has developed over time through the acquisition of smaller, discrete networks. While these individual networks are fully integrated into the Powerco gas business, geographically they remain as discrete islanded networks which were built using different design philosophies and operated and maintained using different standards.

  As a result, we own and maintain a heterogeneous stock of assets and one of our strategic asset management challenges is to achieve greater efficiency through standardisation when it is cost effective to do so. Achieving greater standardisation is a key consideration when assessing options for replacement or enhancement of assets.

Reflecting the above operational context, and in the continuity of the 2013 Asset Management Plan, the 2015 plan sets out a number of specific, forward facing objectives (and targets) that will help us to measure our progress over the AMP planning period. At the highest level the asset management objectives can be summarised as follows:

- **Safety** – Keep the public, our staff and our contractors safe from harm.
- **Delivery** – Ensure our networks have the capacity and resilience to meet the quality of supply expected by our customers.
- **Reliability** – Safe containment of gas and operational reliability to deliver gas to our customers at the right quality.
- **Efficiency** – Continuously seek out and deliver cost efficiencies.
- **Partnership** – Be a responsible partner for our customers and our other stakeholders.

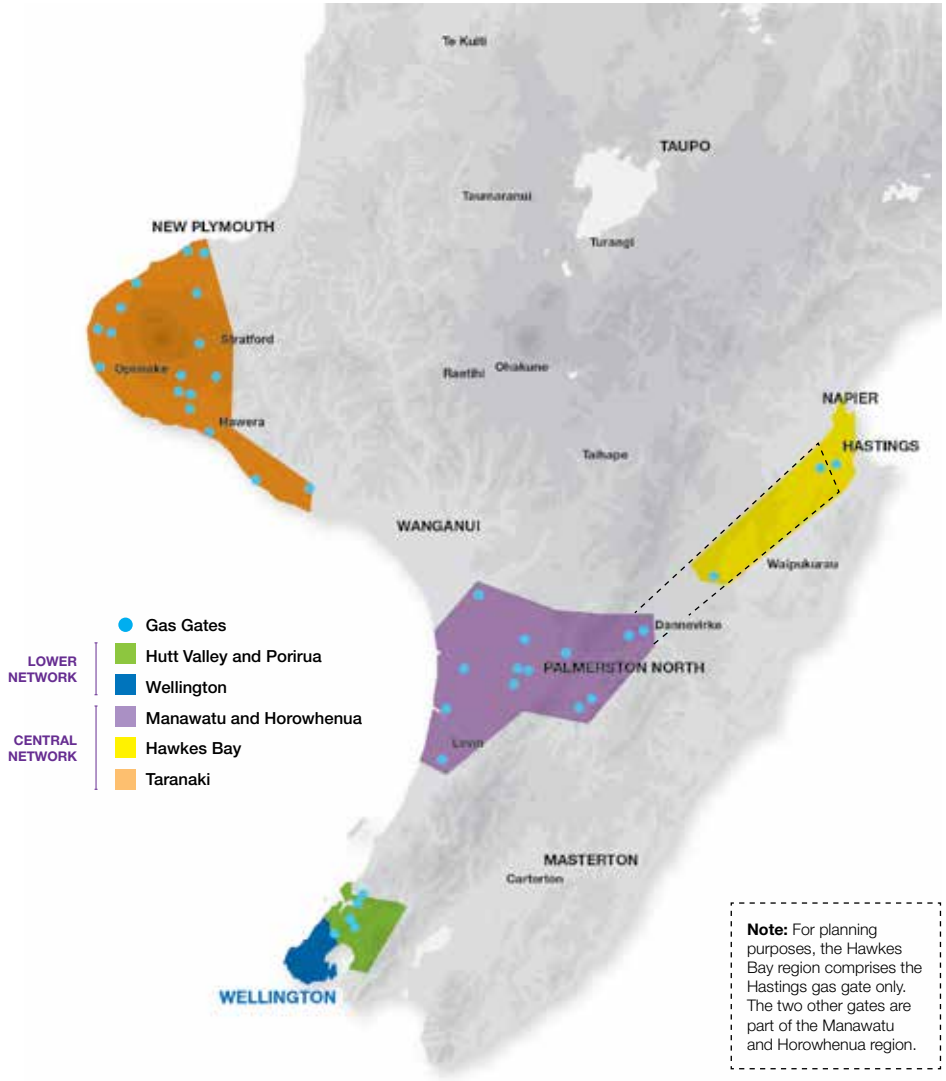
1.3 OUR ASSETS AND CUSTOMERS

Our gas distribution system starts where Powerco takes custody of a retailer's gas from the Transmission System Operator (TSO) at a designated gate station handover point. It usually ends at the inlet of the Gas Measurement System (GMS) that supplies the end user (our customer). Powerco owns and operates ~55,000 GMS, which are not covered by this AMP. The gate station and assets upstream of the handover point belong to the TSO with Powerco owning the distribution assets downstream from the handover point.

Unlike the electricity network, our gas network is non-contiguous in nature and not interconnected, there being five separate regions serviced by Powerco. These regions can be further subdivided into 36 gate stations that feed 34 distribution segments. As shown on Figure 1.1 Powerco's five operating regions are:

- Wellington
- Hutt Valley and Porirua
- Taranaki
- Manawatu and Horowhenua
- Hawkes Bay

Figure 1.1: **Powerco's Network shown by Region.**



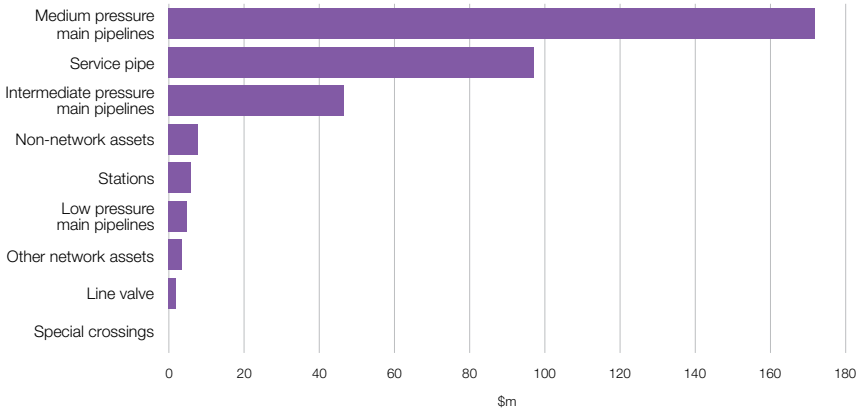
The gas network comprises:

- Mains, the underground pipes, operating at different pressures that are typically placed within the road corridor to move gas to individual service points.
- Services, the smaller underground pipes that branch off the mains and deliver gas to individual customers.
- Additional equipment providing:
  - Pressure regulation (District regulation stations – DRS)
  - Isolation (Line and service valves)
  - Corrosion protection (Cathodic protection systems)
  - Safety and protection
  - Communication of data (SCADA)

Together these assets supply around 103,000 customers (around 40% of total gas connections in New Zealand) in the North Island and comprise more than 6,200km of mains and service pipes. Our network is the second largest in New Zealand in terms of length and number of customers connected.

Powerco's gas network assets had a forecast regulatory asset base (RAB) value of $341m, as at 30 September 2014. Figure 1.2 below illustrates the breakdown of RAB value by assets class (based on an extrapolation of a breakdown of net book value).

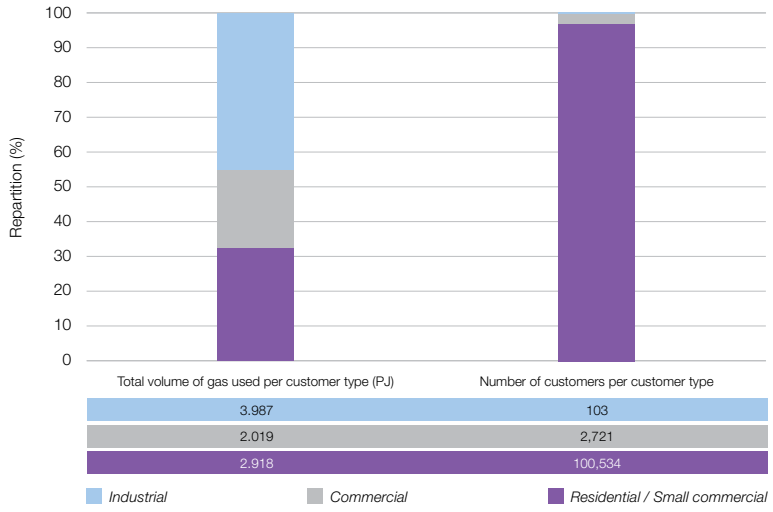
Figure 1.2: **RAB Value by Gas Assets Type as of 30/09/2014.**



Powerco's network assets serve residential, commercial and industrial customers. Network safety requirements dictate our approach to system condition and reliability and, as a result, we do not offer different levels of gas supply quality to different customers, i.e. all customers receive the same high level of service quality in terms of system reliability, system condition/integrity and gas quality.

However, we do maintain a classification of customers for capacity and commercial purposes. The majority of our customers, by number of connection points (or ICP – Installation Control Point), are residential consumers where gas is utilised for cooking, hot water heating and warming their homes. While there are comparatively few large industrial customers, this load classification consumes the highest volume of gas. This is illustrated in Figure 1.3 below.

Figure 1.3: **Comparison between yearly volumes and number of customers reparation as of 30/09/2014.**



Over the past six years we have seen a progressive increase in the number of customers connected to our networks and a real rate of growth in the unit volume of gas delivered to customers. Based on our assessment of forecast regional economic activity we expect the current rate of growth (circa 0.7% per annum on a connection number basis) to continue.

1.4 OUR ASSET MANAGEMENT FRAMEWORK

Our overall asset management philosophy and approach to managing our assets and setting operational priorities, strongly reflects Powerco's corporate vision and mission statements.

Figure 1.4: **Powerco's Mission Statement.**

"In profitable **partnership** with our stakeholders we are **powering the future** of New Zealand through the **delivery** of **safe**, **reliable** and **efficient energy**."

Asset management as a discipline continues to undergo progressive development internationally. Powerco has in place a programme of continuous asset management improvement, which underpins this AMP.

In early 2010, we established the foundations for the implementation of the internationally recognised asset management framework PAS 55 framework into the gas business. PAS 55 is the British Standards Institution's (BSI) Publicly Available Specification for the optimised management of physical assets. PAS 55 has now been superseded by the broader ISO 55000 standard. The principles are the same, and we are transitioning towards this new standard.

The Asset Management Maturity Assessment Tool (AMMAT), which the Commerce Commission has introduced as a component of company information disclosures, is based on PAS55 principles and requires gas distribution businesses (GDBs) to self-assess their maturity against this benchmark. Since our first assessment in 2013, we have progressed in all the categories of the AMMAT, increasing our overall score from 2.1 to 2.5 out of 4.

Powerco believes improving our asset management capability will translate directly to improved outcomes (both cost and performance) for our customers. For this reason we are continuing our programme of work aimed at making targeted improvements to our asset management processes, systems and documentation, over the next two years. Our goal is to move from a developing to an intermediate status on the AMMAT scale within three years.

In Section 2 we summarise the key components of our asset management framework. Together these describe a whole of life approach to investment planning which is aimed at being able to show how investment plans contribute to the delivery of specific network outputs, our asset management objectives and Powerco's mission statement (i.e. a line of sight from dollars to outputs through to the delivery of objectives).

ISO 55000 describes asset management as the coordinated activities of an organisation to realise value from assets. It involves balancing costs, risks, opportunities and performance benefits. The application of an asset management system provides assurance those objectives can be achieved consistently and sustainably over time.

Consistent with this definition, Powerco's asset management framework comprises a number of coordinated components which together describe our asset management planning approach. These are:

- Network Asset management policy
- Governance arrangements
- Asset management objectives
- Strategies which translate our objectives into our approach
- Asset management plans based on the strategies and reflect the implementation of asset life cycle management, network development and non-network projects

Each of these components is summarised below.

1.4.1 ASSET MANAGEMENT POLICY

Powerco's network asset management policy (AM Policy) establishes the overall governance for asset management within the gas business. It has been developed to ensure the business continually focuses on delivering exceptional service to our customers in a way that balances risk and long-term costs. The AM Policy establishes the core asset management principles that drive our planning framework and governance arrangements. It contains our objective for asset management which can be summarised as:

To ensure Powerco's asset management approach achieves optimal management of its network assets (i.e. maintenance and operation, renewal, development and disposal) in order to deliver optimal outcomes for all stakeholders, consistent with their needs and requirements.

The AM Policy has been widely disseminated and communicated within the Gas and wider Powerco team.

1.4.2 GOVERNANCE

Section 3 of the AMP summarises Powerco's organisational structure, which provides the overarching governance across all asset management activities, including the processes for establishing objectives and managing risks, establishing the needs case / drivers for investment, project and expenditure approvals, approach to procurement and works delivery.

Since the adoption of the PAS 55 principles by the business, we have revised our organisation to achieve our asset management and business objectives. We have embedded critical asset management tasks, such as planning, performance analysis, and detailed design into our teams. More recently, we have increased our capabilities in reliability analysis and project delivery to enable us:

- Addressing specific asset class management
- Increasing our efficiency to deliver our upcoming work programmes

1.4.3 ASSET MANAGEMENT OBJECTIVES

As noted above, our aim is to deliver exceptional service to our customers, at a cost they can be confident represents value for money. This is reflected in Powerco's overall objective to "strive to be a be a reliable partner, delivering New Zealand's energy future". We have translated the delivery of this overarching objective into a number of specific asset management objectives relevant to the gas business, based around five key areas, of safety, delivery, reliability, efficiency and partnership.

Together these objectives, and associated measures and targets, which are set out in Section 4, form the basis for our strategies, which detail the approach we take to achieve targeted outcomes.

1.4.4 ASSET MANAGEMENT STRATEGIES

Our asset management objectives are directly related to our strategies for network development and life cycle management set out in Section 6. These strategies establish our approach to:

- Managing public and people safety
- Planning for network capacity and resilience
- Managing network integrity and operational reliability
- Optimising our investments and efficient service delivery
- Maintaining and further improving our environmental performance
- Provision of customer centric services through our Gas Hub
- Information provision and decision support processes

These strategies drive the specific life cycle plans we have for managing the risks associated with each asset class and network plans we have for each region.

1.4.5 ASSET LIFE CYCLE, NETWORK AND NON-NETWORK PLANS

Our planning framework consists of three aspects:

- **Asset life cycle plans:** These comprise the operation, maintenance and renewal activities that will be carried out. A separate lifecycle plan has been established for each asset class. As the majority of our assets are located underground, understanding and monitoring the condition of these assets is a unique challenge. Our response to is to seek to develop innovative techniques to better understand these assets. The asset life cycle plans are outlined in Section 7 of the AMP.
- **Network plans:** Our network plans set out the current performance, major projects and forecast growth within each region of the network. Our network plans also discuss, at a high level, the options we looked at when considering the network development required in each region. The network plans are outlined in Section 8 of the AMP.
- **Non-network project plans:** These set out our development of safety systems, information acquisition and investment in supporting information systems. The non-network plans are outlined in Section 8 of the AMP.

Together Sections 7 and 8 establish the specific asset related and operational expenditures set out in Section 9 of the AMP.

1.5 ASSET MANAGEMENT IMPROVEMENT

Asset management is not a static process. As circumstances affecting our assets change (e.g. standards, knowledge, performance and / or weather events, etc.) the expenditure interventions required in a given year are likely to change. The process of annual review, and the governance arrangements we have recently reviewed and are now in place, are designed to ensure that the AMP remains relevant in a dynamic environment.

In addition to the processes that are part of our day to day activities, we have an asset management improvement programme that includes a wide range of initiatives to achieve asset management excellence. It is our goal to fully align our asset management practices with the international standard ISO 55000 within the next two years. This is a challenge but considered achievable.

Our “self-assessment” against the criteria specified in the Asset Management Maturity tool, indicates that the business currently has an average maturity score of around 2.5 (with four representing full maturity). Our aim is to lift our maturity rating to at least 3.0 over the next two years and we have put in place an asset management maturity, improvement roadmap to help deliver this. The improvement roadmap includes a number of initiatives:

- **Improved asset data:** Information on our assets is a critical input to our asset investment decision making process. Improving the raw asset data and information is a priority over the next two years.
- **Replacement of our enterprise resource planning system:** Along with having good asset data, it is necessary to have the right repositories and systems to transform the data into insightful information. An enterprise resource planning system will enable us to efficiently collect, store and analyse data from the field, to senior management level.
- **Refined asset management strategies:** As noted above we have recently aligned our organisational structure to reinforce Powerco’s asset management governance role. This has resulted in greater focus being placed on asset lifecycle planning and the development of the underlying models and data to support this.
- **Improving our safety management and systems:** Safety is our top priority as reflected in our company target of “zero harm”. Our improvement roadmap includes a programme of targeted implementation of effective safety measures throughout the business.

1.6 KEY DRIVERS OF EXPENDITURE

The key expenditure drivers fall into three areas:

- System Growth and Network Development
- Renewal and Maintenance
- Non-Network

Each of these is summarised below.

1.6.1 SYSTEM GROWTH AND NETWORK DEVELOPMENT

The primary driver for system growth and network development expenditure is the need to augment current network capacity to meet forecast demand and / or to deliver enhanced security of supply on specific parts of the network to meet customer requirements. Our networks are designed and built to meet the needs of our current and future customers. The capacity of each network must be sufficient to cope with a 1-in-20 year peak load and we use modelling software to forecast network capacity and pressure performance to ensure security of supply and an ability to cater for future growth. In addition to peak load modelling forecasting, we also forecast the mean demand growth in our networks. The primary indicator we use to forecast growth is the number of ICP connected on our network. Over the next ten years, we forecast a growth in the net numbers of ICP on our network and in Section 8 we set out details of the specific expenditure drivers across each part of our network.

In summary network development expenditure, over the AMP planning period, results from the need to increase network capacity specifically in Wellington CBD, New Plymouth and Palmerston North to cater for forecast demand growth.

1.6.2 RENEWAL AND MAINTENANCE

In the case of renewal and maintenance expenditure, our estimates have been developed in response to the current and projected states of our assets as indicated by condition information, age profile and expected life, and against an assessment of current and predicted performance of our assets.

Renewal and maintenance expenditure is largely stable and relatively predictable. The primary drivers of expenditure include:

- Management of asset integrity – leakage surveys, pipe coating surveys
- Replacement of pipeline prone to leakage
- Protection of above ground assets
- Fault response

Looking past the first 3-5 years the potential for unforeseen expenditure increases. Areas where this may arise include increased safety and inspection requirements, increased construction compliance costs and the need to implement risk reduction programmes.

1.6.3 NON-NETWORK IMPROVEMENTS

The replacement of our enterprise resource planning system is the primary driver for non-network expenditure. In addition, other initiatives as set out in Section 8 of the AMP, include:

- Improved quality of information on assets
- Improved information available to network contractors and third parties
- Improved HSE management

1.7 FORECAST CAPITAL AND OPERATIONAL EXPENDITURE

The forecast expenditure over the planning period (1 October 2015 to 31 September 2025) is shown below. The basis of the expenditure profile can be summarised as follows:

- The capital investment profile over the next 10 years is aimed at maintaining adequate level of supply throughout the period, while embarking on significant renewal programmes.
- Sustaining growth and connecting new customers remains a strong theme over the period, representing around 40% of our network capital expenditure. This includes bringing gas to new residential developments, at the outskirts of existing cities.
- Quality of supply expenditure is set to grow over the next seven years as we strengthen the resilience of our networks with the implementation of a Security of Supply Policy.
- Non-network capital expenditure has increased to take into account the implementation of the new Enterprise Resource Planning system.

The investment profile set out in the 2015 AMP is aimed at meeting long term network capacity and growth and delivering efficient, but broadly stable, levels of asset renewal and maintenance. The AMP sets out the rationale for this expenditure profile in the context of specifically identified expenditure drivers.

1.7.1 CAPITAL EXPENDITURE

Figure 1.5 shows an annual breakdown of total capital expenditure (in real/constant terms) over the period RY15 to RY25. Expenditure is broken down into the following categories:

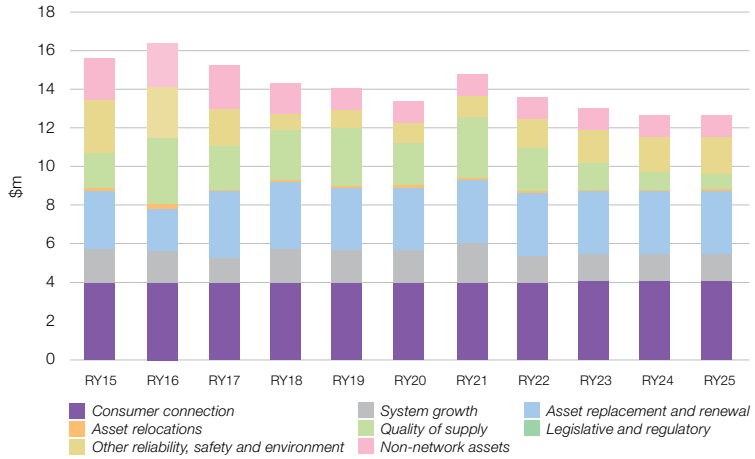
- Consumer connection
- System growth
- Asset replacement and renewal
- Asset relocations
- Reliability, safety and environment
- Non network assets

Our forecast is for the level of annual total capital expenditure to reach $16m in RY16 before stabilising around $14m, then decreasing to $12m towards the end of the planning period. The forecast level of expenditure has increased slightly from our 2013 and 2014 forecasts. Reasons to include this higher level of expenditure include:

- The implementation of the ERP system across RY16 to RY18
- The clearing of the backlog of projects accumulated in RY13 and RY15 discussed in the 2014 AMP update
- The delivery of a major growth project to bring extra supply to a growing part of Palmerston North in RY16
- The continuation of a pro-active replacement of a certain type of plastic pipeline manufactured before 1985 across the period

It is noted that, despite these timing changes, total capital expenditure over the current five year regulatory period remains broadly in line with previous projections. We are confident in our ability to deliver the proposed quantum of work through the company's recently revised structure.

Figure 1.5: **Capital Expenditure forecast (constant $).**



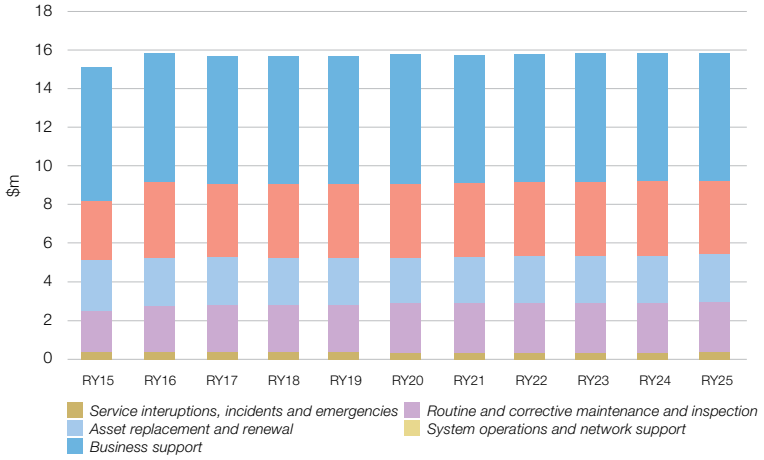
While customer connections and system growth represent the largest expenditure categories, over the planning period we forecast spending $13.7m to improve public safety on the network, $8.8m to improve the quality of supply and $10.0m to maintain the network integrity by replacing pre-1985 PE pipe.

1.7.2 NETWORK OPERATING EXPENDITURE

Figure 1.6 shows an annual breakdown of total operating expenditure (in constant terms) over the period RY15 to RY25. Network operating expenditure is the component of our total operating expenditure which is directly associated with running the gas distribution network. A large proportion of the network expenditure (in the order of 50%) is mandatory and is dictated by legislation or industry standards and codes of practice. Network operating expenditure is categorised as relating to either, a) maintenance work (i.e. routine maintenance/inspections, fault and emergency maintenance, and refurbishment and renewal maintenance) or b) expenditure associated with operating the system (i.e. control centre).

Our projections forecast that operating costs will remain relatively flat through the AMP planning period with efficiency gains largely offsetting higher compliance and safety management costs.

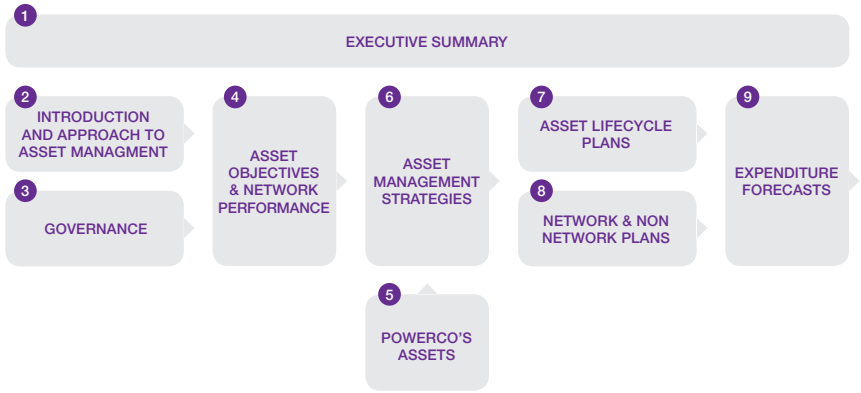
Figure 1.6: **Operational Expenditure forecast (constant $).**



1.8 STRUCTURE OF THE 2015 AMP

Figure 1.7 sets out the structure of this AMP. We have designed the document to represent a logical progression from the high level objectives and targets we have established need to be achieved to meet customer expectations. It will also include a description of Powerco's assets, the strategy and approaches we intend to employ to help us deliver our objectives (including key assumptions) through to the bottom up expenditure plans which are derived from an assessment of individual expenditure drivers. Powerco's proposed expenditure profile for the 10-year planning period is the summarised. Detailed supporting information, referenced in the AMP sections, is included in an Appendix to the AMP document.

Figure 1.7: **Structure of the AMP.**



1.9 CONCLUSION

The 2015 AMP is the second disclosed AMP for our gas business. It is an evolution from our 2013 AMP as we progress on our Asset Management Journey. It describes our vision and plans for the long term management of our gas assets. We are committed to providing a safe, high quality gas supply to our customers and we hope that you find this commitment reflected throughout the pages of the document.

STAYING SAFE

We are committed to achieving an incident-free environment for our staff, contractors and the public. At Powerco, we take safety seriously. We talk to homeowners, children in schools and the public about how to be safe around our networks. We also incorporate safety in the early stages of designing our assets.

2. INTRODUCTION

For more than a century, Powerco (and its predecessors) have distributed electricity and gas to New Zealand homes and businesses, and, over the last 20 years, we have grown to become a significant part of New Zealand's economic infrastructure. We operate and maintain one of the largest networks of electricity lines and gas pipes in New Zealand. We are also the second largest energy distributor in New Zealand in terms of customer connections. Our network of assets is complex and the scope of our operations is large. Today our gas network supplies consumers in Wellington, Hutt Valley, Porirua, Taranaki, Manawatu, Horowhenua and the Hawkes Bay.

The purpose of this AMP is to describe how we manage our assets at a practical level over the long term. It is aligned with our asset management policy and strategy, and reflects our overall objective of asset management: managing the gas network assets, throughout their entire lifecycle to become New Zealand's leading asset manager, enabling us to provide excellent customer service, and a consistent safe, reliable and cost-effective service.

The AMP describes our strategy and processes, the performance we both expect and receive from our network, and how we efficiently utilise the resources required to achieve our long-term goals. It covers the period from 1 October 2015 to 30 September 2025, with a particular focus on the work programmes planned for the next three to five years.

This AMP is a working document that represents the status of our business at this point in time. Hence, as we develop and refine our practices, the application of what we describe in here will change. We call this continuing process of change our Asset Management Journey. This journey started in earnest in 2010 with the adoption of the PAS 55 framework, and continues today towards alignment with the ISO 55000 standard, as we continually strive to improve.

We have two shareholders, QIC (58%) and AMP Capital (42%). We are interested in delivering long-term value to both our customers and shareholders; we recognise the place we hold in the supply of energy to New Zealanders. Our vision, mission and values are centred on these responsibilities.

2.1 POWERCO'S VISION, MISSION AND VALUES

Our **Vision**, "Your Reliable Partner Delivering New Zealand's Energy Future", requires us to effectively manage, maintain and improve our assets and to safely and reliably deliver the energy that our customers expect – today and into the future. The New Zealand electricity and gas distribution sectors are heavily regulated and, as such, our investment and pricing decisions must be made in consultation with our regulator. We have a responsibility to our stakeholders, shareholders and regulators to ensure that our business decisions are carefully considered so that the actions we take achieve the objectives that we have set in the most cost-effective manner.

Figure 2.1: **Powerco's Corporate Vision.**

Powerco, your reliable partner, delivering New Zealand's energy future

This AMP describes our journey towards achieving this vision over the next 10 years.

Our **Mission** statement seeks to build further on our vision of reliable community partnership and focuses our people on the importance of our future energy needs. The Mission statement also highlights the essential requirement to operate safely and efficiently in delivering energy.

Figure 2.2: **Powerco's Mission Statement.**

"In profitable **partnership** with our stakeholders we are **powering the future** of New Zealand through the **delivery** of **safe**, **reliable** and **efficient energy**."

These themes are key to our business and are reflected through this AMP. Our Asset Management Objectives (described in Section 4) and our Asset Management Strategies (Section 6) show how we put our Mission into effect and what it means for our plans going forward. Our work with establishing The Gas Hub (described in Section 3) is also instrumental in building strong partnerships with our customers and stakeholders within the communities in which we operate.

Our **Values** define our identity, who we are, and what we stand for. We developed these Values by describing a set of observable behaviours that would be displayed by the typical Powerco employee. These behaviours define the way we go about our work and our relationships with others. By demonstrating these behaviours we will be living our Values. The Values define our culture, inform our decisions and provide authority to our leadership. Our asset management framework and The Gas Hub brand aim to embed these Values in our approach to all aspects of the investment cycle, from planning through to delivery to the end-consumer.

Figure 2.3: **Powerco's Values.**

Safe	We are committed to keeping people safe.
Trustworthy	We act with integrity. We are honest, consistent and ethical. We trust each other and our external partners and work to be trusted in return.
Collaborative	We work together with our partners, contribute our capabilities and provide timely support and consideration to achieve our collective goals.
Conscientious	We are proactive, hardworking, diligent and thoughtful. We are mindful of the needs of others and of the environment. We take ownership for our actions.
Intelligent	We make informed decisions for the best outcome. We continually seek improvement and innovative solutions from our suppliers and ourselves.
Accountable	We lead. We take ownership of our decisions and responsibility for our actions. We are proactive in identifying and resolving problems.

Like our Vision and Mission, you will see our Values reflected through this AMP in the approach we take to our business.

2.2 STAKEHOLDERS' INTERESTS

The environment in which we operate is complex and involves many stakeholders that sometimes have contradictory interests. To be a "reliable partner", it is our job to assess and balance these interests in our decisions to make sure we can offer the right service, with the right quality, at the right price. To do this, Stakeholders' interests are identified through various mechanisms. We regularly consult with many of our stakeholders and ensure that clear responsibilities are established inside the company to make sure we properly identify and manage stakeholders' expectations.

Stakeholder requirements don't always align or are sometimes mutually exclusive. For example, different customers may place greater or lesser emphasis on price or quality, or have an expectation that the level of service can continually be improved with minimal cost implications. In such instances, Powerco is required to exercise judgment, but in all cases we strive to engage with stakeholders in a transparent manner to explain our decisions. The publication of this AMP, consumer questionnaires through The Gas Hub and pricing consultation are examples of our engagement.

Our identified stakeholders, their interests and how we identified them, is summarised in the following table.

Table 2.1: **Stakeholders and Main Interests.**

STAKEHOLDER	MAIN INTERESTS	HOW STAKEHOLDERS' INTERESTS ARE IDENTIFIED
Gas customers	• Service quality and reliability • Price • Safety • Information • Environmental • Seamless experience with their gas installation	• Market research studies • Engagement and consultation with retailers • Dedicated client managers for major consumers • Gas Hub website analysis • Satisfaction surveys after connections through The Gas Hub • Gas Hub presence at home shows
Retailers	• Service quality and reliability • Price • Safety • Efficient business-to-business processes	• Regular meetings • Network service agreements • Retailer consultations • Active participation with gas industry company
Public, landowners, iwi	• Public safety • Land access and respect for traditional lands • Environmental	• Consultation and feedback • Access and easement negotiations and agreements • Acts, regulations and other requirements
Transmission	• Technical performance and rules compliance	• Involvement in the Gas Association of New Zealand
Other distribution companies	• Standards setting • Benchmarks	• Involvement in the Gas Association of New Zealand
Powerco's shareholders	• Efficient and effective business management and planning • Financial performance • Governance • Risk management	• Corporate governance arrangements • Formal reporting • KPIs
Commerce Commission	• Pricing levels • Quality standards • Effective governance	• Meeting with commissioners and staff • Quality response to consultation papers, decision paper and regulatory determination
State bodies and regulators	• Safety via the Ministry of Business, Innovation and Employment • Market operations and access via the Gas Industry Company • Environmental performance via the Ministry for the Environment	• Published acts, rules and determinations • Formal reporting • On-going consultation

Table continued on next page >

STAKEHOLDER	MAIN INTERESTS	HOW STAKEHOLDERS' INTERESTS ARE IDENTIFIED
Employees	• Safe, productive working environment • Training and development • Continuous improvement, adoption of new technologies	• Regular dialogue, internal communications and employee surveys • Employment negotiations
Contractors	• Safe, productive working environment • Commitment in works volume	• Contractor negotiations and dialogue • Contract managers present in the regions
Other Powerco divisions	• Expertise sharing • Standardisation of tools and systems	• Regular discussions across the business • Tactical initiatives discussed and co-ordinated

Stakeholders interests are translated into our governing policies, objectives and processes. For example, "service quality and reliability", required by gas customers, retailers, and the Commerce Commission, is directly reflected in the Delivery objective "Adequate network capacity".

2.3 APPROACH TO ASSET MANAGEMENT

We strive to demonstrate transparent and responsible asset management processes that align with demonstrated best practice. In this section, we describe how we have integrated these principles in our business as usual activities, utilising ISO 55000 as a framework.

2.3.1 BASIS OF POWERCO'S ASSET MANAGEMENT

We want our asset management approach to be pragmatic and efficient. Our assets have a long design life, and they often require important capital investment. Our responsibility, as an asset owner, is to ensure our decisions are clearly aligned with our stakeholders' needs as described in Section 2.2, including our customers, our shareholders, and the people and organisations that live, and work around our assets. The guidance of international standards, PAS 55 and ISO 55000, allow us to keep the clear line of sight between those needs, and the way we manage our assets.

2.3.2 ASSET MANAGEMENT POLICY

Our asset management policy presides over all our asset management activities. The policy provides alignment and linkages between the asset management activities, our corporate mission, vision and values. It represents our commitment to manage our assets in an efficient and structured way so we can deliver optimal outcomes for all stakeholders.

In 2015, after having had a separate policy for the management of gas assets since 2011, we have adopted a Network Asset Management Policy that apply across both Electricity and Gas networks. The changes are minor in respects to our previous policy, although it introduces the importance of asset-related data to achieve our vision. Section 5 of this AMP gives more details on how we consider data as an asset.

Specifically, it states that we will pursue the following objectives:

- Positioning the safety of the public, our staff and contractors as paramount
- Developing our networks in a way that reflects the evolving needs of our customers
- Delivering a cost effective service by optimising asset cost and performance
- Be proactive, transparent, and authentic in our interactions with our stakeholders
- Meeting all statutory and regulatory obligations

We believe these elements are critical to being a good partner in delivering on New Zealand's future energy needs. A full version of this policy, authorised by our Chief Executive Officer, can be found in Appendix 3. A more detailed description of all the Governance arrangements, processes and document hierarchy is described in Section 3.

The asset management system we employ is designed to deliver the requirements set out in the asset management policy and the long-term organisation objectives set out in our Business Plan.

2.3.3 REPRESENTATION OF OUR ASSET MANAGEMENT SYSTEM

To facilitate a good understanding of how asset management fits into our activities, we have developed a representation of our asset management system and its different functions. This is shown in Figure 2.4 below.

Our asset management system is split into three levels and represents the core elements within the PAS 55 framework. The first function shows how our stakeholders' interests, from our customers to investors, flow through to our Organisational Strategic Plan.

The second illustrates how the Organisational Strategic Plan flows through to our asset management system itself and its core functions of strategy, whole-of-life asset management, planning for growth, and customer feedback and analysis. The third shows how these activities are supported by enabling functions including information systems, strong people systems and organisational governance (described in Section 3).

The three levels of our asset management system are summarised on the next page.

Figure 2.4: **Representation of our Asset Management System.**

2.3.4 ORGANISATIONAL STRATEGIC PLAN

The development of our Organisational Strategic Plan[1] is led by the Executive Management Team and agreed to by the Board of Directors. It describes our long-term organisational strategy to deliver the vision and mission. This is the starting point for our asset management system within the framework set by our asset management policy.

Fundamental to our asset management system is the translation of the organisational strategy into specific Asset Management Objectives and targets. These objectives and targets establish a set of numerical measures by which we can assess our network performance. In summary, our five asset management objectives are:

- **Safety** – Keep the public, our staff and our contractors safe from harm.
- **Delivery** – Ensure our networks have the capacity and resilience to meet the quality of supply expected by our customers.
- **Reliability** – Safe containment of gas and operational reliability to deliver gas to our customers at the right quality.
- **Efficiency** – Continuously seek out and deliver cost efficiencies.
- **Partnership** – Be a responsible partner for our customers and our other stakeholders.

These are described in more detail in Section 4.

2.3.5 THE CORE ASSET MANAGEMENT FUNCTIONS

The core asset management functions have a direct impact on the quality and capacity of our assets and the ability of our network to serve our customers. Underlying these functions are the processes that we follow to take the right decisions. Some are time-based while others are triggered by events, such as a new connection request from a customer. In Section 3, Governance and Delivery, we will describe the main processes and how responsibilities are defined. The core functions we utilise in our asset management system are:

2.3.5.1 ASSET STRATEGY

Our asset management strategy is designed to translate our asset management objectives (Section 4) into the class and network plans we have for our assets. The asset management strategy takes a long-term, whole-of-life view on our asset deployment and establishes how it will be implemented. This is discussed in detail within Section 6.

[1] This is formally documented in our annual Business Plan, but details our long-term strategy as an organisation.

2.3.5.2 ASSET PLANNING

This is where we make the planning decisions for our assets. Given our strategy and objectives, the question we ask is "What do we need to do and when do we need to do it in order optimise the performance and utilisation of our assets to reach our targets and objectives within each network area?" These plans drive the network-related costs that we face as a business. The detail of our asset planning for each of our network areas is described in Section 8.

2.3.5.3 ASSET LIFECYCLE

Our asset lifecycle planning drives our overall asset management functions (operations, maintenance and renewal or disposal) from a whole-of-life class management perspective. Founded on our asset management strategy, our asset class management is designed to ensure we efficiently manage our assets to deliver reliable service to our gas customers. Our practices around class management and what they mean for each asset class are described in Section 7.

2.3.5.4 ASSET AND CUSTOMER ANALYSIS

How did our assets perform? Did we manage to achieve what we wanted from the strategy and planning functions? Are our delivery processes working properly?

What was the impact of our activities on our consumers and customers? These are the questions we are answering in this function, on a short- (e.g. incident analysis), medium- (e.g. works plan delivery) and long-term (e.g. trends analysis). These are core components to the strategies (described in Section 6) that we employ to translate our asset management objectives to our asset lifecycle and network plans.

2.3.6 THE ENABLING FUNCTIONS

Surrounding the core functions are the three enabling functions. They act like the grease on the cogs and are essential

2.3.6.1 ASSET INFORMATION

Asset information enables us to take efficient and cost-effective decisions on how to manage our assets. It is the foundation that enables our whole system to work. Our plans around these are discussed in Section 8.

2.3.6.2 ORGANISATION AND PEOPLE

Our system can work only if we have the right organisation and the right people with the right skills. In particular, it includes human resources management processes and competency frameworks. As noted previously, our governance arrangements and processes are described in Section 3.

2.3.6.3 RISKS AND HAZARDS

There are inherent hazards associated with gas delivery and this is reflected by the legislative requirements that require demonstrable management of the resultant safety risks. Much of our day-to-day operational expenditure is driven by the need to manage safety risks and comply with the legislation.

Our asset management decisions, whether driven by safety, capacity or reliability, are risk- based. This drives the need to have robust risk and hazard management processes.

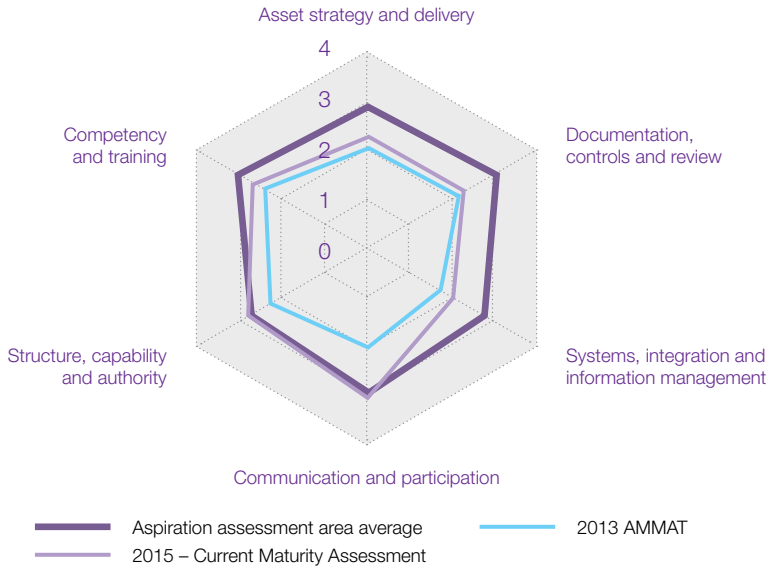
This approach is based on our corporate risk management system. Our risk management system is described in detail within Section 3.

2.3.7 CONTINUOUS IMPROVEMENT AND ASSESSMENT OF OUR ASSET MANAGEMENT SYSTEM

Each year, we step back and look at our performance and strive to improve our asset management capabilities. As noted earlier, we call this improvement process our asset management journey. This started in 2010 when we went through a formal PAS 55 audit and continues today with a sustained focus on improving our processes and systems. This leads to an annual review of our key asset management documents – Policy and Strategy – and a review of our processes and organisation on a case-by-case basis. For example, in 2012 we restructured our service delivery arrangements to achieve better long-term asset management and value to our customers.

A useful tool to establish a measure of our maturity in the asset management journey is the AMMAT self-assessment established by the Commerce Commission in their Information Disclosure requirements for Gas Distribution Businesses (GDBs). We have completed this in-house and had it peer-reviewed with other asset management specialists across the company. The results (shown in Figure 2.5) show that we are progressing towards a maturity level of 3 for most of the categories. This year's average level is 2.5, compared to 2.1 in 2013. Progress is still needed on information management due to the poor accuracy of historical data in some areas. Additionally we are continuing to improve our asset management capabilities and processes. Our objective is to reach an average level of 3 in the next two years.

Figure 2.5: **AMMAT Self-Assessment Score.**



We also take the opportunity to improve our asset management system by leveraging off the different audits and industry relations we have. This includes the compliance audit with NZS 7901 in regards to public safety management systems and peer review with the Electricity business.

2.3.8 COMPLIANCE WITH NEW ZEALAND LEGISLATION AND STANDARDS

Powerco is accountable for complying with all the relevant Acts that will impact on our asset management approach, including the Gas Act 1992, the Gas Safety and Measurements Regulations 1992 and the Gas Default Quality Price Path established under Part 4 of the Commerce Act.

We do this by embedding the requirements into our standards and utilising industry Codes of Practice including AS/NZS 4645:2008 for Gas distribution networks, and NZS 7901:2014 – Safety Management System for Public Safety. The Executive Management Team (comprising the Chief Executive and his direct reports), is accountable for the organisation to fulfil compliance and issue an annual compliance statement. A full list of these legislative requirements can be found in Appendix 4.

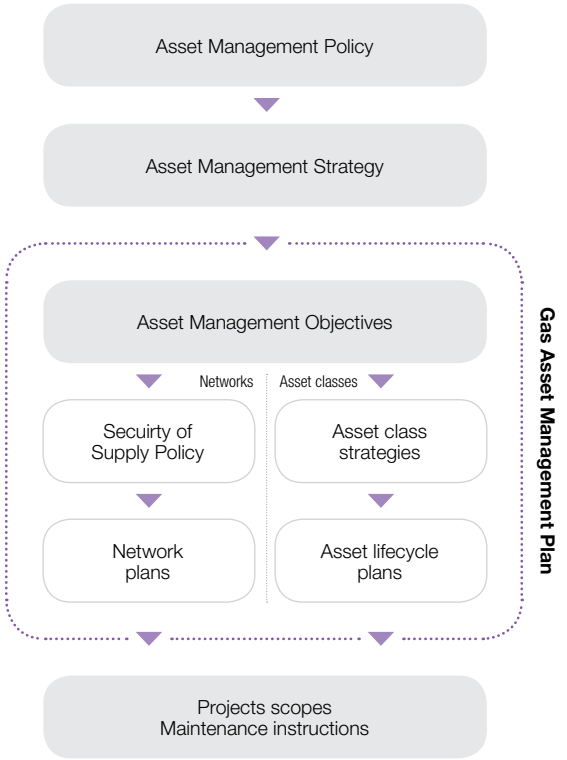
As noted previously, a large portion of our operating expenditure costs in the gas business are driven by maintaining compliance with the legislation and standards.

2.3.9 THE RELATIONSHIP BETWEEN THE ASSET MANAGEMENT SYSTEM AND THIS AMP

The operation of our asset management system is what we do day-to-day. Each part has a different operational timeframe, ranging from daily operations management to less frequent but regular assessment of the effectiveness and performance of our asset strategies. Our longer-term asset management objectives and goals tend to be reviewed annually but are typically held constant over much longer timeframes.

All of these components form our approach to asset management. Figure 2.6 shows how this AMP summarises all these activities and flows from our governance documents. In this way it communicates our overall approach to asset management from our stakeholders.

Figure 2.6: **Place of the AMP in our Asset Management Framework.**



2.4 TRANSITION FROM PAS 55 TO ISO 55000

In January 2014, the International Organization for Standardization published the ISO 55000 series of standards. As with PAS 55, ISO 55000 enables an organisation to achieve its objectives through the effective and efficient management of its assets. Where PAS 55 is limited to the management of physical assets, ISO 55000 gives an approach that can be applied to any assets.

PAS 55 is now withdrawn and we are planning to realign our current system with ISO 55000. While the principles and functions broadly remain the same, the key elements of the system have slightly changed. We will progressively review our current documents to align with the prescribed framework, with the aim of being fully compliant in the next two to three years.

2.5 KEY ASSUMPTIONS OF THE AMP

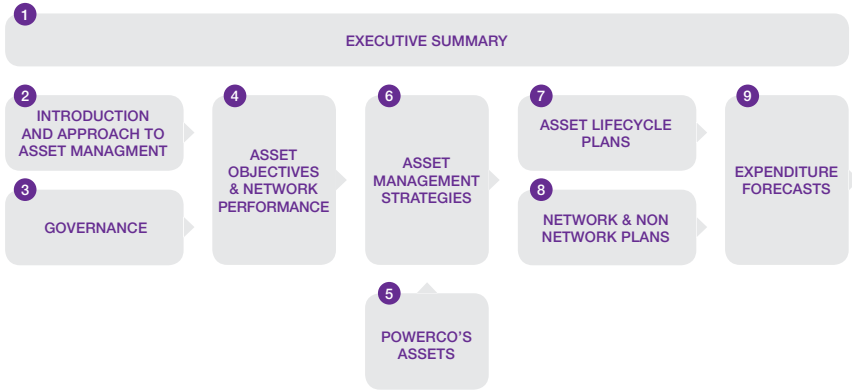
This AMP is based on some fundamental assumptions that underpin our long-term strategic direction and operating environment. These key assumptions are:

- The present gas structure broadly remains the same and Powerco continues to operate as a non-vertically integrated gas business.
- The gas transmission system continues to operate and develop in generally the same direction as currently, and is maintained to an adequate level.
- Field services continue to be outsourced, and there are no major disruptive changes to the availability of contractors.
- Design services are provided in-house.
- Consumer demand and expectations continue to follow long-term trends and are not significantly altered by disruptive technology or legislation. This assumption relates to a major unforeseen shift.
- There is no major change to the regulatory regime – for example, structural changes to the regulatory institutions or mechanisms currently in place.
- To the extent possible, all the assumptions made in developing this AMP have been quantified and described in the relevant sections. Where an assumption is based on information that is sourced from a third-party, we have clearly set this out.

2.6 STRUCTURE OF THIS DOCUMENT

This AMP has been structured to traverse the levels of our asset management system. It starts with the overall governance and process, and then explains our asset management objectives, and the historical and targeted performance measures (driven by our Organisational Strategic Plan and Asset Management Policy). It then describes our asset strategies developed to achieve our objectives, the asset lifecycle plans, and the network plans based on those strategies. The AMP then culminates in a summary of our capex and opex expenditures for the planning period. More detailed maps of our supply areas and required regulatory schedules are contained in the appendices. The structure of the document is outlined below.

Figure 2.7: **Structure of the AMP.**



MAKING THE RIGHT DECISIONS

We operate in a complex environment. It is vital we find the right balance between all stakeholders' requirements. We do this through a collaborative approach when making decisions.

3. GOVERNANCE & DELIVERY

Asset management is the core of our business. Successful asset management requires clear and structured governance to ensure our processes, systems and data deliver a safe, reliable and sustainable network.

This section describes our asset management governance model and the processes through which we deliver the outcomes sought by our stakeholders and customers. The section covers:

- The governance responsibilities and organisation structure related to asset management
- The processes we utilise when managing our gas asset fleet and networks
- The delivery model we employ
- Our asset management enabling processes
- Our risk management processes and systems

The final section describes the improvement processes we utilise to ensure continuous improvement in our day-to-day business.

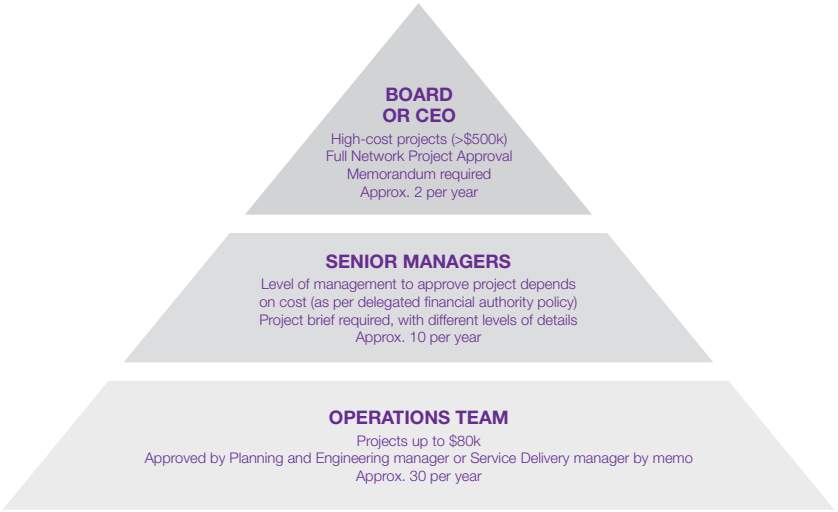
3.1 ASSET MANAGEMENT RESPONSIBILITIES

Effective asset management requires several levels of planning, from strategic and long-term planning to delivery of the works in the field. The appropriate tier for decision-making depends on the time horizon and the financial value of the decision.

Figure 3.1 and Figure 3.2 illustrate how decision-making and implementation responsibilities devolve from the Board and the Executive team to the various management and operational teams within Powerco and in the field, and how approval authorities are delegated based on the financial value of the projects.

Figure 3.1: **Decision-making and Implementation Responsibilities.**

Figure 3.2: **Responsibility Tiers.**



Powerco's Corporate Governance Charter and Group Delegations of Authority clearly document the levels of delegation. As a corporate standard this policy is reviewed annually. Because the delegations policy determines approval levels in the finance system, and is externally audited.

The following section describes in more detail the parties involved in our asset management governance.

3.1.1 POWERCO'S BOARD

Powerco's Board comprises six directors nominated by its two shareholders – QIC and AMP Capital. The Board is accountable to shareholders for the company's performance and the effective monitoring of management, and provides strategic guidance. The Board satisfies these responsibilities by approving Powerco's business plan (termed the "organisational strategic plan" in PAS 55, or "Organisational plans and organisational objectives" in ISO 55000) that sets out the major strategies for achieving strategic objectives, while meeting the key corporate governance policies of the company.

The Board reviews and approves each AMP as well as annual capital and operating expenditure forecasts. The Board also approves operational and capital projects involving expenditure of more than $2,000,000, and the divestment of any assets worth more than $250,000. One of the main considerations for the Board when assessing projects is the alignment of the project with the AMP.

In order to help it make informed decisions, the Board uses a structure that includes two additional committees:

- The Audit and Risk Committee, which is responsible for overseeing risk management practices. The Committee meets quarterly to review processes and controls and review and discuss issues reported by internal and external auditors. It reports back to the rest of the Board.
- The Regulatory and Asset Management Committee, which is responsible for ensuring that Powerco's AMP is appropriate, regulatory requirements are met, and asset-related risk is appropriately managed.

The Board receives monthly reports that include performance reports which describe the status of key work programmes, updates on high-value and high-criticality projects and the status of Powerco's top 10 risks.

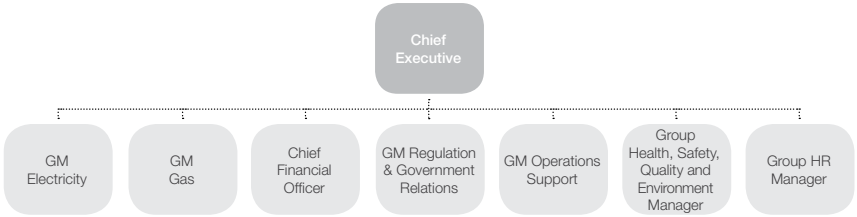
3.1.2 ORGANISATIONAL STRUCTURE

Powerco's organisational structure helps facilitate the direction and leadership required to implement an integrated and holistic approach to asset management.

3.1.2.1 CORPORATE STRUCTURE

The organisation has two customer-focused units (gas and electricity divisions) supported by five functional units (Finance, Regulation, Operations Support, Human Resources and Quality, Safety and Environment). This structure enables the gas division to focus on core activities and decisions and access specialist skills and advice as required.

Figure 3.3: **Powerco's Corporate Structure.**

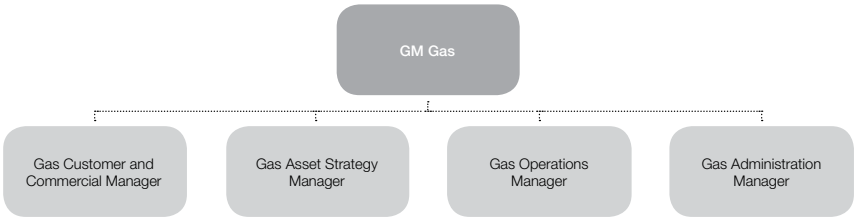


The five functional units fulfil a variety of roles that support asset management. The Operations Support unit manages non-network assets that are normally shared between the gas and electricity divisions – including asset information, IT infrastructure and telecommunications system assets. The Operations Support unit also includes a Programme Office, which provides specialised corporate-focused project management expertise to the company.

3.1.2.2 GAS DIVISION'S STRUCTURE

The gas division's structure was refined in early 2015 to align it with the main asset management functions, as shown in Figure 3.4.

Figure 3.4: **Gas Division Structure.**



The network responsibility includes ensuring that the network assets are developed, renewed, maintained, operated and used sustainably and efficiently to meet the needs of all stakeholders.

The following asset-focused groups report to the General Manager:

- **Asset Strategy:** This is the asset manager function, which involves overseeing long-term activities on the network, sponsoring the asset strategy, and developing, monitoring and analysing asset objectives, performance and reliability. The development of the AMP is part of this group.
- **Operations:** This group is responsible for the preparation and delivery of work on the networks. This includes developing technical standards, design, operation and maintenance, and the management of the contractors working on the network.
- **Commercial:** Despite not being a "technical" group, the commercial team is our direct link with our customers and end-consumers. Through customer surveys, and account management of major users on the network, the team helps us ensure network capacity is sufficient to cater for growth, and that our service is of quality.

3.1.3 FIELD OPERATIONS MANAGEMENT

Powerco's field service operations are fully outsourced. Field service personnel undertake the network maintenance and capital work, gather asset condition information and provide rapid response to faults and incidents. The field service personnel are the main operational eyes and ears that assist the development of our asset management processes.

Field service operations are managed by Powerco's Operations Team.

In 2012, we changed our service provision contract model from a mix of alliance and network management models to a field service agreement for three reasons:

- To help regain knowledge of our assets, their performance and their condition
- To reduce costs by internalising the planning, design, project management and administrative functions and move to a rates-based contract
- To ensure that competitive pressure is maintained on the overall costs of operational and project delivery

3.1.3.1 DAY-TO-DAY MANAGEMENT

Five regional Field Service Co-ordinator (FSC) roles exist in the service delivery team. These roles are physically based with our service providers in the regions of their responsibility and ensure an operational link between Powerco and the service providers. The FSCs schedule the activities on the network, check work completion and quality and ensure day-to-day co-ordination with customers, local councils and regional authorities.

A Contracts Manager supervises the FSCs, ensures that the contract is executed in accordance with the specification and monitors the service providers' Key Performance Indicators (KPIs). The Contracts Manager is also responsible for validating and benchmarking the various contractual rates and selecting other contractors when required.

To increase efficiency in the field and ensure information is shared accurately and in a timely manner, service providers have direct access to these two key systems:

- The Service Provider Application (SPA), which delivers the scheduled maintenance programme on hand-held devices and allows reporting of both completed works and defects found on the network
- The Customer Works Management System (CWMS), which facilitates access to and completion of customer connection projects. This platform is also used by service providers to share resource availability information and schedule works

Maintenance activities are supervised by a Maintenance and Minor Works Manager, who is responsible for organising and delivering the scheduled maintenance programme, overseeing corrective maintenance activities and defining the guidelines that allow the services providers to immediately fix defects when discovered. This "find and fix" philosophy is closely monitored to ensure the intended efficiency is achieved by reducing travel and administrative costs.

3.1.3.2 FIELD WORKS INSTRUCTIONS

Works instructions are agreed with service providers. These instructions prescribe how Powerco expects works to be carried out on the networks and helps determine the rates used in our contracts.

A field audit programme is in place to help ensure service providers apply the works instructions. The audit programme provides additional assurance that our service providers construct and maintain the gas network to Powerco's required standards of quality and safety. The programme is implemented through independent auditors, who report all nonconformances. All nonconformances and required corrective actions are managed through Powerco's Operations team, which oversees the service provider or providers. The service providers' KPIs are strongly linked to the proper application of the work instructions.

3.1.3.3 RESPONSE TO FAULTS AND EMERGENCIES

The work instructions and service providers' contractual commitments include ensuring effective fault and emergency response. Powerco's Electricity Network Operation Control (NOC) dispatch team has the capability to manage emergency calls and dispatch the on-call emergency teams. Service providers are required to respond to emergencies in less than 60 minutes in all areas, except CBDs, which have 30-minute targets. This internal target has been defined to ensure we achieve our regulatory requirements and manage the risk to the public.

The NOC dispatch team applies the Emergency Management Plan and has a duty to escalate events according to the plan.

3.1.4 ENSURING ASSET MANAGEMENT IS REALISTIC AND OBJECTIVES ARE ACHIEVABLE

Deliverability is central to Powerco's asset management and our processes. This includes setting objectives, taking full account of the skills and competencies needed in the relevant roles and how best to meet our targets. We set our asset management goals, objectives and long-term investment profiles to ensure their delivery takes account of the following practical constraints:

- **Rates of Change:** As a general principle, we have designed our asset management strategies, objectives and work programmes to avoid step changes in the path of future investment. This has been done to help ensure we deliver work efficiently, our customers do not experience step changes in our service, and the prices we charge do not exhibit unexpected step changes.

- **Technical Complexity:** Powerco realises that the specialist resource base available is not generally sufficient to support high rates of technical change. Consequently, Powerco focuses on investments that are well understood by our engineers and field staff, and are industry-proven. Where new technology can bring clear economic benefits (for example, network automation) our processes require proof of concept trials, standardisation, and workforce education to ensure changes can be delivered effectively.
- **Field Resource Availability:** The technical resource we utilise is specialist and finite. Achieving sustained augmentation of the long-term technical resource requires careful planning, open discussion with our service providers, appropriate contractual frameworks and support for industry training organisations. Our future strategies, contractual arrangements and investment profiles have been developed in a way that enables network services to be delivered within the practical constraints of the resource available in the New Zealand market.

Maintaining flexibility and the ability to work effectively with our services providers to scale and tailor their resources to match our specific requirements has enabled us to achieve reliable delivery of our work programmes in recent years.

3.1.5 ASSET MANAGEMENT COMMUNICATION PROCESS

Powerco has an established process for communicating the AMP and associated documents to relevant parties – this includes disclosing the current and historical AMPs on our website. Key aspects of this process are as follows:

- **Responsibility:** The GM Gas has responsibility for communication to the Gas Division. Powerco's Corporate Affairs Manager is responsible for distributing the plan to external stakeholders.
- **Powerco staff access to information:** All key strategy, policy, planning and standards documentation is managed via a central standards system, which provides central access to staff. Formal controls for document updates are in place.
- **Contractor access to information:** Aspects of Powerco's standards and policy framework that are relevant to the field are made available to our contractors through the Operations team. With our primary contractors, we use a collaborative online platform, the Gas Contractor Portal, to communicate work instructions, standards, contractual arrangements, key performance indicators, and annual works plans forecasts with our services providers.
- **Stakeholder meetings:** Powerco has structured programmes to communicate its policies and plans to stakeholders and other interested parties. Key stakeholder groups include councils, retailers and major consumers and the Commerce Commission.
- **Internal audit:** Powerco has a programme of internal audit, which tests internal compliance with, and understanding of, processes.

Powerco also actively involves its staff and stakeholders in its asset management processes. Identification of asset condition and potential works requirements are a particular focus. A range of processes also support staff involvement in the refinement of our asset management processes over time.

All key Asset Management documentation (Policy, Strategy and Asset Management Plan) are part of Powerco's document control process, managed by the Risk and Assurance team. They are stored in, and made available to Powerco's staff through the Business Management System (BMS). When loaded into the BMS, a document owner and a review date are set. The BMS features a version control system and is set up to send a reminder to the document owner for review.

3.1.5.1 ASSET MANAGEMENT REPORTING PROCESS

Monthly reports against a balanced scorecard of critical performance measures are actively reviewed by management teams, and reported to the Executive, CEO and Board. The scorecard covers financial, customer, process and network-related issues. Monthly KPIs include lost-time injuries, financial performance against budget, network project completion and connection rates. The status of key projects and performance against budget (including explanations of any variations) are reported monthly. Longer-term performance measures are reported annually as part of our information disclosure.

Additional detailed reporting is used in the business to ensure the status and effectiveness of key processes are understood. Monthly reports on the work programme and projects status are prepared and monitored.

3.1.5.2 ASSET MANAGEMENT PROCESSES IMPROVEMENT

Every year, we review the KPIs coming out of the reporting process and analyse them as part of the asset and customer analysis function.

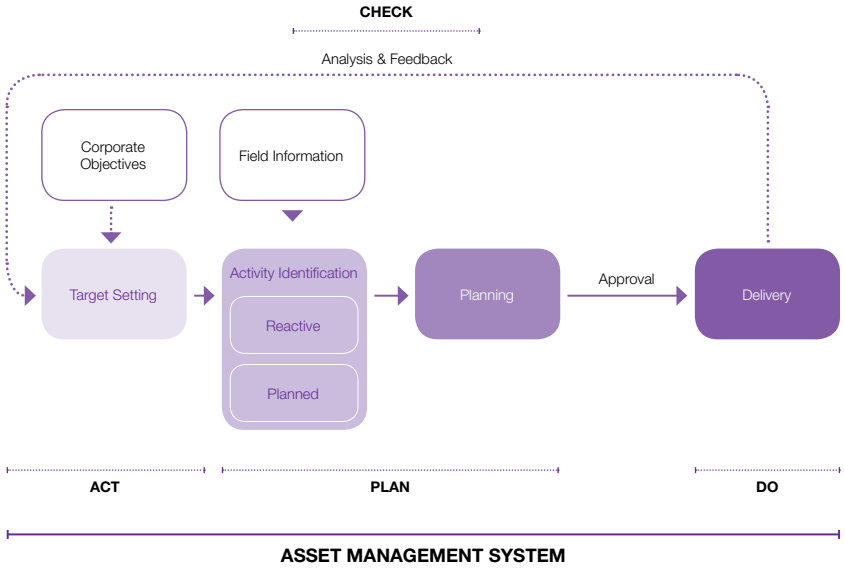
Standards and works instructions are also reviewed on a regular basis to improve delivery, safety and efficiency.

3.2 ASSET MANAGEMENT CORE PROCESSES

Our organisational structure allows us to assign responsibilities and accountabilities at the right level. However, we need robust processes to ensure the effective long-term, whole-of-life management of our assets, particularly in relation to planning, lifecycle activities, delivery and communication. This section also covers how non-network decisions are managed.

In Section 2, we described the core functions of our Asset Management System. Figure 3.5 describes the process we follow inside these functions when making our asset management decisions. A key part of the system is the feedback loop that supports continuous improvement.

Figure 3.5: **Asset Management Core Processes.**



The details of these processes are documented as part of our "process library" initiative, and made available in our Business Management System (BMS).

3.2.1 SETTING TARGETS

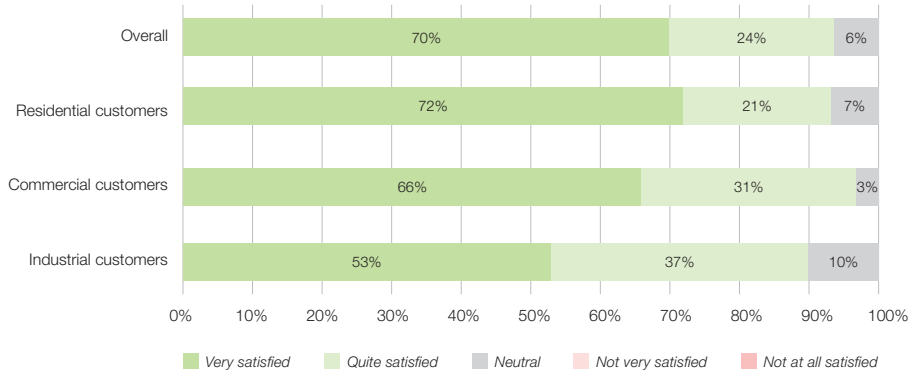
To set the right targets, we assess performance and acceptable risk levels against the following:

- A clear line of sight with our corporate strategic plan
- Legislative requirements
- Staff and contractor safety and the impact on the public
- Our consumers' and customers' expectations in terms of quality and price
- The competition from other energy sources (natural gas is a discretionary fuel)
- The trade-off between mitigation costs and the cost incurred should a risk be realised
- Industry standards
- Powerco's reputation as a professional and responsible organisation

For example, we have set high targets around our delivery objectives, targeting fewer than 15 poor-pressure events per year due to insufficient network capacity, which accords with our consumers' expectations.

We regularly test those targets through market research to ensure our customers are satisfied with the reliability of our services. Our latest study, prepared in July 2015 to support this AMP, showed that the level of satisfaction is very high across all our customers categories: residential, commercial and industrial. Out of 400 randomly chosen respondents, none were dissatisfied by the reliability of the service offered by Powerco, as shown on the figure below.

Figure 3.6: **Gas Customers' Ratings of Reliability.**



Once set, targets are allocated as agreed among the gas management team and reported on monthly.

More detail on our objectives and targets for this AMP are set out in Section 4.

3.2.2 ACTIVITIES IDENTIFICATION

We have several processes that enable us to identify required activities on the network, which can be of two types: reactive (i.e. triggered as a result of an inspection or request from a customer) or planned (i.e. scheduled over the long term). Reactive activities are recorded into a programme of works with a target delivery date that reflects the level of urgency.

3.2.2.1 REACTIVE ACTIVITIES

Reactive activities result from maintenance requirements, faults, customer or consumer requirements, or any unexpected event that requires immediate action on the network. Our responses to these problems often involve "ready to use" solutions, standards or work instructions. By their nature, reactive activities cannot be identified early enough to be individually forecast.

We analyse the need for reactive work using historical data, including:

- Consumer connections and consumer maintenance
- Corrective maintenance and defects remedied
- Fault responses and emergency activities

With the better understanding and information-sharing we get from the field, thanks to our new service provision model and field electronic data collection, we aim to reduce the need for reactive work by more accurately anticipating what is likely to happen on the network.

3.2.2.2 PLANNED ACTIVITIES

This section deals with the risks that we consider when creating our works plans. Our risk management methodologies are detailed in Section 3.3.3.

Planned activities are driven by our accepted risk levels and the targets established for each objective. If we consider that our current or future risk levels, in terms of safety, delivery or reliability, are outside acceptable limits, we will consider different options and include them in a new project with an indicative delivery date.

Managing safety risks: Formal Safety Assessment

Every five years, we perform a network Formal Safety Assessment, as required by AS/NZS 4645:2008 (Gas Distribution Networks) and NZS 7901:2014 (Safety Management System for Public Safety). This is a living document where we record and assess every hazard, threat and mode of failure that we have identified on our networks with our current controls.

If the risk is above a "High" level, we modify the controls to reduce it to a lower level. If the risk is "High" or "Medium", we conduct an ALARP ("as low as reasonably practical") test within a defined timeframe. If the risk is lower than "Medium", we accept the current controls.

As of August 2015, we have identified ten hazards that directly relate to safety, divided into 63 generic assessed risks. These hazards are detailed below.

Table 3.1: **Identified Safety Hazards.**

HAZARDS	DETAILS
Gas release	Gas is released into the atmosphere (this is associated with the loss of structural integrity)
Gas release in an insufficient ventilated location	Gas is released and reaches a critical concentration that can cause asphyxiation or have the potential to be ignited if an energy source is present
Fire and explosion	Gas is released, reaches a critical concentration and additional energy source is present (i.e. ignition source)
Electricity	People are harmed due to the usage of electrical equipment (e.g. Scada cabinet) or the presence of stray currents on metallic pipes
Pneumatic energy	The gas conveyed through the network is pressurised
Third party interference	Assets are damaged or operated by an unauthorised person, including vandalism
Environmental conditions and natural disasters	Assets are damaged during earthquakes, volcanic eruptions, lahars, thunderstorms, flooding, tsunami or landslides
Heights	People are harmed by falling, slipping or tripping on the asset
Hazardous material	Assets are made of hazardous material
Confined spaces	Assets are located in a confined space

Our assessment shows that we have 12 risks that are at an “Intermediate” level with our current controls. The tables in Appendix 5 describe these risks.

Our preliminary ALARP review does not identify an urgent need to add supplementary controls. A systematic ALARP assessment framework will be created and the risks reassessed against that framework by the end of the RY14.

A process map describing this process is available in Appendix 6.

The various mitigation activities identified are then added to the relevant programme of work (operational or capital).

Managing delivery risk: Capacity and Growth assessment, Security of Supply assessment

In order to determine whether or not we need to expand the network we first carry out a capacity assessment that examines the pattern of peak demands on each pressure system, the ability of the District Regulation Stations (DRS – supply points on the network) to meet those peak demands, and the ability of the pipework to convey sufficient gas to meet the peaks. Over the network as a whole, we are finding that the increasing use of gas-fired hot water installations is tending to drive peak demands higher. Our analysis of the demand profiles gives us a first indication of the degree of risk we face on each network should we experience peak demands that exceed our forecasts or, alternatively, if we should experience reduced supply (due, for example, to a DRS component failure.)

In addition to peak demand growth, we analyse areas where general volume growth is occurring, as follows:

- Infill growth in areas where our mains already front the consumer
- Customer-specific volume growth, where consumers are using more gas (e.g. due to, the installation of additional appliances)
- External growth, where new consumers are driving the need to extend our network and build new mains (e.g. new subdivisions)

In the long-term, a certain degree of uncertainty applies to residential growth forecasts. We are improving our forecasts for commercial and industrial demand by working more closely with these consumers, but we generally do not have more than one year’s visibility of their future activities and needs. To provide additional headroom for unexpected growth, we generally build our networks in industrial and commercial parks with higher pressure and capacity specifications on a case-by-case basis.

A process map describing this process is available in Appendix 7.

Growth in the residential market is easier to anticipate and plan for over the long-term. In 2011, we carried out a detailed review of the likely growth in each region, analysing data from Statistics New Zealand and local councils to evaluate different growth scenarios. We have been using this study as a baseline for this AMP, carrying a re-evaluation where council plans have changed.

Infill and volume growth are provided for by setting a minimum network pressure that would maintain enough headroom to accommodate the identified growth at times of peak demand. To help ensure we achieve this goal we have stress-tested our growth assumptions using scenarios from our growth review and have evenly spread the expected volume increase across the relevant parts of the network.

Footprint growth is mainly driven by new subdivision activity. We have had strong demand for new builds on our footprint as the concept of gas as a fuel has become better received. Our relationship with developers, reinforced by local councils' plans, has helped us to understand where new subdivision activity is likely to occur on our footprint over the next three to five years.

For more information about our growth forecasts, refer to Section 6.

In early 2015, we have developed a security of supply policy that we will start implementing across our critical networks during the planning period. The policy aims to practically reduce the risk of large outages. This could happen where a DRS is not able to maintain supply into a pressure system, or when the flow through a pipe needs to be interrupted, for a leak repair for example. Specifically, it mentions the requirement for monitoring on critical stations, the establishment of trunk mains linking stations together, and the use of by-pass when the number of customers likely to be affected by an outage is greater than five. We are reviewing the alignment of our current network configuration with the policy and will decide to close the gap on a case-by-case basis, using a risk-based approach.

Managing reliability risk: Reliability assessment

We aim to operate a sound network. The reliability assessment is a tool that helps us understand the risk of our assets failing. We use the data collected through our electronic field data system (SPA) to build Failure Mode and Effect Analysis (FMEA) for each of our asset classes. This helps us evaluate the risk that an asset will fail in the future.

A process map describing this process is available in Appendix 8.

This risk-based approach helped us identifying one specific reliability issue with polyethylene networks constructed before 1985 that have previously been squeezed-off, and installed in specific years. We have started a replacement programme on those assets that have experienced higher leakage rates than others, and will gather more data on pipe and soil condition as we go.

We have not identified any other significant asset class with a specific reliability issue, apart from obsolescence. However, the main risk with the failure of our assets is associated with Third Party Damages on underground pipelines. We will review our current mitigation (plan issuing, mark outs, etc.) this upcoming year.

3.2.3 PLANNING

In the previous section, we described how activities are identified and delivery dates determined. This is how we begin building our gas works plan and our maintenance programme, including identifying the right justification for each project to be executed.

3.2.3.1 GAS WORKS PLAN – CAPITAL WORKS PROGRAMME

As part of our annual planning process, we review the improvement register and identify the works planned for that year.

Significant works are managed as discrete projects, as are programmes of work to address asset class works. For each project, we review the impact of the status quo on our short-term network KPIs and our long-term expenditure profiles. We endeavour to deliver a smooth work programme, without step changes in activity, provided we have the resources available to achieve this and our ability to efficiently deliver is maintained.

We also review the best way to deliver each project in terms of internal resourcing and cost efficiency in order to complete any investigations, project justifications or designs. Our contract structure allows us to use alternative contractors or seek competitive tenders for work if a project requires specialist work or the cost is expected to be more than $100,000.

Finally, we look at the delivery timeframe to plan the works during the year and revise our cost estimates.

3.2.3.2 GAS WORKS PLAN OPTIMISATION AND PRIORITISATION

Once we have established the work programme for the year, we run an optimiser tool to enable us to rank projects in terms of risk reduction efficiency. From time to time, we find we cannot accommodate all the works identified for the year because of time, material, resources or budget constraints. The ranking helps us to focus on the most efficient projects.

The optimiser tool has been set up with weighting factors that are reflective of the Company's risk profile acceptance and reinforced in the Asset Strategy, and our Asset Objectives. In general, the following order applies:

- Safety and compliance
- Financial performance
- Long-term asset performance (capacity and reliability)
- Customer value

3.2.3.3 PROJECTS APPROVAL

Before a project can be authorised for delivery (detailed design, physical execution) we produce a Network Project Approval Memorandum (NPAM). The NPAM is the last gate before expenditure is incurred – it describes how the project is aligned with our strategy and objectives, the scope of works and the option analysis and recommendations. The following are involved in the approval process:

- The asset strategy team, or commercial team as project sponsors
- The project delivery team to consider the option analysis and that the deliverability of the works has been properly considered
- The asset strategy manager (for critical projects) to ensure alignment with our asset management governance and structure
- The relevant holder of the financial authority needed for this project

If a project deviates from a standard design or practice, justification is needed at this step, before approval, in order to achieve process efficiency and maximise cost efficiency.

3.2.3.4 MAINTENANCE PROGRAMME

Our routine maintenance and inspection programme is planned at asset class and regional levels. Normal operational condition and maintenance activities are specified in the standards prepared by the operations team.

3.2.3.5 CUSTOMER-INITIATED WORKS AND MAINTENANCE

Residential requests come directly to the customer team from individuals or through their retailers. Most customer-initiated works have standard designs and procedures applied. Our customer contribution policy is used to identify the costs to be passed on to the consumer.

Other customer-initiated works (commercial, subdivision reticulation, etc.) go through the same process as capital works, with commercial oversight and justification provide by the Pricing and Revenue Manager.

3.2.3.6 RELOCATIONS

Pipe relocations or alterations are reactive activities driven by third-party requests (for example road realignments). They come directly to, and are dealt with, by service delivery. Most of these activities can have their costs recovered, as provided for by the Gas Act.

3.2.4 DELIVERY MODEL

3.2.4.1 DELIVERY PROCESS

Once a project is approved, the detailed design and delivery of activities begins and requires internal and external resources to ensure projects are delivered to the required quality, budget and deadline. Maintenance and operational activities are managed directly by Powerco's Maintenance and Minor Works team. Delivery work is categorised as described below.

Capital works and customer-initiated works delivery

Project delivery nominates a project manager that will lead the project from the design phase to its completion. Approved projects must have a detailed design completed within the project delivery team, or using external consultants. While our preference is to use "ready to use" standard solutions, detailed individual designs are sometimes required.

Once this step is completed, the project manager co-ordinates the procurement and construction activities with the relevant service provider, using the appropriate standards and works instructions. The contract manager may be involved in this process when, for example, works are out for tender.

When physical works are completed and receipted by the project manager, we analyse performance against the relevant operational KPIs and assess the effectiveness of execution to assist future project planning.

The Operations Manager can also use the Maintenance and Minor Works stream to deliver low complexity, low cost capital works, in the same way we deliver corrective works.

Maintenance and operations programme delivery

Scheduled activities are automatically issued through our computerised maintenance management system. The Maintenance and Minor Works Manager, is responsible for ensuring that all activities are issued to, and carried out by, the service providers. Instructions are sent to, and results are collected by, the field staff electronically through the service provider application (SPA) provided via portable hand-held devices.

For corrective works or defects, field staff apply a "find and fix" delegated authority depending on the value and the safety risks of the defect. Other corrective works are reported back to the Maintenance and Minor Works Manager who will plan the defect's resolution, with the assistance of the Defects and Minor Works Coordinators. Once a defect is fixed, the root cause is reported to us in SPA for further analysis.

The overall maintenance budget for the maintenance programme sits with Operations.

3.2.4.2 OTHER REACTIVE ACTIVITIES

For all other activities (including pipe location or stand-overs), operations is the entry point and these activities are managed through the use of standards and works instruction. If needed, issues can be escalated to engineering and planning.

3.3 ASSET MANAGEMENT ENABLING (NON-NETWORK) PROCESSES

The Asset Management System representation (see Figure 2.4 in Section 2) described what is happening to the core functions. Non-network processes are part of the enabling functions.

3.3.1 PEOPLE AND ORGANISATION

3.3.1.1 ORGANISATIONAL COMPETENCIES AND TRAINING REQUIREMENTS

To ensure that people in particular roles have the required knowledge, experience and skills to perform those roles, each position description in Powerco details competency requirements. Powerco has an annual review and development process, during which managers work with employees to design personal development plans to help ensure that training is in place to continually improve competencies. Human Resources monitor these plans and ensure training and development is coordinated in the organisation.

Powerco's competency certification policy governs the access, operation and type of work allowed by personnel on the network assets.

3.3.1.2 SYSTEMS TO RETAIN CORE ASSET KNOWLEDGE IN-HOUSE

Powerco's systems and structures are designed to ensure we maintain an intimate knowledge of the configuration and condition of our assets. While our service providers are our eyes and ears on the network, key investment decisions are made by Powerco employees.

We have a range of mechanisms to ensure the asset knowledge held by service providers is fed back to Powerco's engineers, analysts and IS systems. For example, service providers have hand-held devices that can store information and photos of assets and these are fed into Powerco's systems, such as the GIS. We also regularly involve field staff in workshops, such as Failure Mode and Effect Analysis, and safety by design workshops, to capture field experience.

3.3.2 ASSET INFORMATION

Best practice asset management requires the collection of relevant, quality and timely information that covers the whole of the lifecycles of assets. Powerco currently has a comprehensive suite of core systems that cover all asset management data requirements (see Section 5.8.1). In this planning period, we will be replacing our core Enterprise Resource Planning system, JD Edwards. In preparation for this exercise, we are maintaining, and accelerating our focus on data gap identification and data quality improvement. It is part of the "Improve quality of information on assets" initiative described in Section 8.8.

The following sections provide an overview of the systems and information management data that support our asset management, as well as:

- The processes used to identify asset management data requirements
- The systems and controls that ensure the quality and accuracy of information
- The extent to which systems, processes and controls are integrated
- Limitations in the availability or completeness of data
- Initiatives to improve the quality of data

3.3.2.1 PROCESSES TO IDENTIFY ASSET MANAGEMENT DATA REQUIREMENTS

Powerco's Continuous Improvement Programme provides a structured path that enables us to respond to identified data gaps and quality issues identified by teams and individuals and to drive incremental quality improvements. Data requirements identified during asset management process development, review or re-engineering that require changes to existing systems, or the development of new systems, are managed within the Information Services Team. These requirements vary from asset class to asset class. In general, they comprise:

- Asset type, size and material
- Location
- Installation date
- Operating pressure
- Maximum Allowable Operating Pressure (MAOP)
- Maintenance data

3.3.2.2 CONTROLS

Extensive effort is made to protect the integrity of asset information held in our information systems. The system architecture deployed by Powerco has security controls in place to restrict access, a change management process to control system changes, and is also fully backed up on and off-site. Process and controls to limit human error are applied to user interfaces to reduce inputting errors. Reconciliation of data occurs, where possible, to identify cases of potential data error.

3.3.2.3 INTEGRATION

Asset management information systems support Powerco's asset management processes. Over the past seven years, we have implemented new enterprise systems and are working through a replacement programme for our ageing systems.

Powerco is constrained by the inability of some of the current systems to share information, and by limited integration options. We are attempting to manage information-sharing via the data warehouse and business intelligence tools. BizTalk provides integration between some of our systems, although ageing systems are not always able to use modern integration tools due to their proprietary nature.

We strive to implement open platform, fit-for-purpose systems that allow Powerco to manage its asset management information so that data and information are readily accessible to internal and external parties. This strategy will be applied when we implement a new Entreprise Resource Planning system as discussed in Section 3.3.2.

3.3.2.4 LIMITATIONS OF DATA AND INITIATIVES TO IMPROVE DATA

Obtaining high-quality information to support asset management can be expensive. Powerco is continually assessing where new investments should be made to improve the data available. We have a wide range of projects that mainly focus on making better use of the data we already collect. We also have a Continuous Improvement Team to deliver incremental improvements to systems, data and processes.

There are a few areas where we are aware that the data is limited:

- **Age:** some asset installation dates have been assumed. The previous paper record system did not have all of this information available when it was entered in our GIS system. We used approximations, considering the installation date of the nearest available asset.
- **Location:** the location records can be based on physical features of the environment when the asset was installed (i.e. boundary lines, kerb, lamp post, etc.). When these features move, the location records can be altered. Tracer wires and local operative field knowledge allows us to accurately locate the pipe when needed and correct the data.
- **Material:** Not all older drawings recorded pipe material. We can assume the material by looking at the installation date and surrounding assets (e.g. fittings). On a case by case basis, we expose the pipes to verify our records.

We are continually working to improve the asset data we maintain in our enterprise systems. To date, we have done all we can to input available historical construction information into our GIS, as well as continuing to update any new information we receive from field work on existing assets. We know we have limited information and intend to focus our efforts in coming years to fill these gaps.

Starting this year, we will run a company-wide initiative to help us quantify the data, and build a business case to improve data quality in terms of completeness, accuracy, and timeliness.

3.3.3 RISKS

Managing risk is a primary activity in Powerco. We have already explained how we apply risk management in our planning process. Here, we will explain the principles and processes we use to define the risk levels.

Powerco has a dedicated Risk and Assurance Team that helps ensure risk management is well applied throughout the hierarchy of the organisation. The Risk and Assurance Team is the custodian of our Risk and Compliance Management Policy, which is derived from the principles included in ISO 31000.

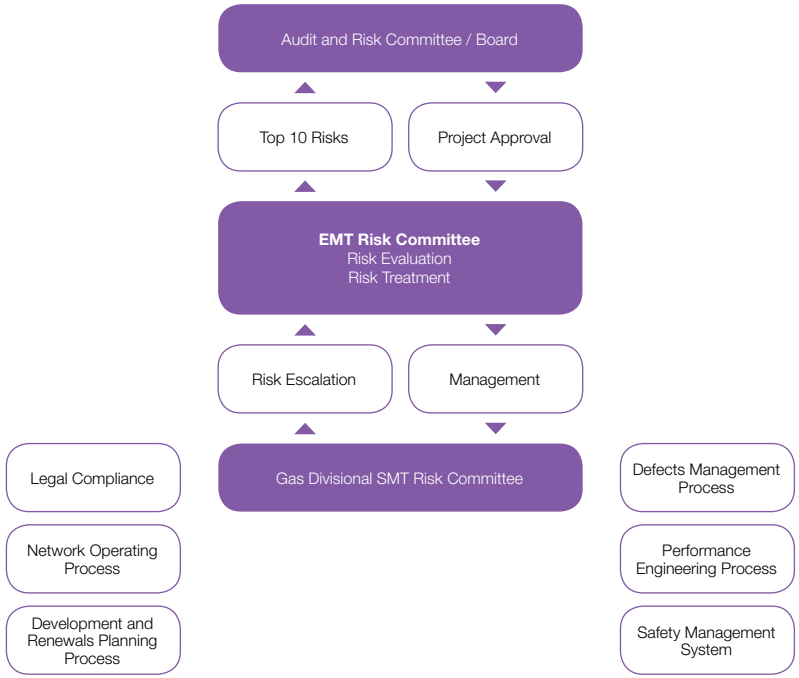
The objectives of the risk management policy are:

- To ensure adequate consideration is given to the balance of risk and reward in achieving Powerco's business objectives
- To enrich strategic, tactical and operational decision-making through the use of risk management practices
- To enable Powerco to better assess the risk relating to business opportunities in order to meet the stakeholders' expectations
- To embed the use of risk assessments into all decision-making

In the rest of the organisation, managers ensure their staff are aware of their risk management obligations through training and assessment. The Executive Management Team (EMT) reviews risk and audit issues on a monthly basis to determine possible changes to the strategic and operational environment. The Board has a governance role in risk policy development and has an Audit and Risk Committee that oversees risk management practices in Powerco.

A high-level view of the structure is described in Figure 3.7.

Figure 3.7: **Powerco's Risk Management Process.**



3.3.3.1 HIGH-IMPACT/LOW-PROBABILITY EVENTS (HILP)

Powerco's networks are designed to be resilient to low-probability, high-consequence events that are outside our control, such as upstream supply failure, natural disasters and critical equipment failures. The nature of our assets and the way we run our business limits the consequences should these events occur. These HILP events include:

- Loss of supply due to gas transmission pipeline failure
- Undetected gas escape into a building leading to fire or explosion
- Long-term loss of service due to a natural disaster (e.g. earthquake, volcanic activity or landslide).

Those events are identified by way of geo-graphical analysis, overlaying network information with potential hazards in GIS, and network flow and capacity modelling.

In order to eliminate, isolate or reduce the impact of these events, we use the follow mitigations:

- **Geographically Diverse:** The geographically diverse nature of our networks increases the likelihood that natural disasters will affect only part of our networks.
- **Multiple Supply Points:** Our networks are designed with multiple supply points where practicable, to mitigate the impact of a supply point failure.
- **Standard Equipment:** Our networks utilise standard equipment where possible. Consequently, assets can be reallocated/rebuilt easily in the event of failure.
- **Earthquake Resilient:** Powerco's facilities have been progressively upgraded to ensure resilience to earthquakes and meet all related statutory requirements.
- **Scalable Response:** Powerco's scale and stable long-term capital programmes mean that it can scale and redeploy resources quickly to attend to localised, or regional natural disasters.
- **Proven Response Plans:** Powerco has thoroughly tested response plans and demonstrated capability to manage significant natural events and widespread damage to its networks.
- **Business Continuity Plans:** We have structured business continuity plans in place to ensure that the corporate aspects of our business are resilient and will support on-going operation of our networks.

3.3.3.2 RISK MANAGEMENT PROCESS

Risk Identification – Most of the risk identification undertaken throughout the business takes place via workshops. Newly identified risks are escalated when they become known. The Risk and Assurance Team formally manages this process to ensure that there is a coherent common approach and methodology, and risks are quantified according to Powerco's standard measurement of scale of risk.

Risk Analysis – The risk analysis workshops involve developing an understanding of the causes and sources of the risk, their likelihood and consequences, and existing controls. Powerco uses BPS Resolver ballot voting software to minimise the likelihood of bias. Once the results are obtained, the risk assessments are loaded into Methodware, Powerco's risk management application. Methodware allows the risks, controls and action plans to be monitored and updated in the interim period between risk workshops.

Risk Evaluation – It is important that the complexity and modelling of risk is commensurate with its nature and magnitude. Risk evaluation allows decisions to be made on risks that need treatment and the priority of the treatment action. These priorities are based on the results of the risk analysis phase. Some risks may not require any further action if the current controls are deemed to be adequate.

Risk Treatment – Depending on the rating, Powerco's risk treatment options are deliberated by management and executives. Options include the following strategies:

- Risk avoidance
- Reduction of likelihood or consequence
- Elimination
- Acceptance
- Risk-sharing

3.3.3.3 RISK REGISTERS, MONITORING AND REPORTING

Powerco uses a risk register to record and monitor risks. The risk register is regularly maintained, updated and audited, as well as being reviewed by senior management. Powerco's top risks are escalated to senior management and the Board on a six-monthly rotation.

Powerco's risk-monitoring process aims to achieve the following:

- Ensure that controls are effective and efficient
- Identify improvement opportunities from risk assessment and incidents
- Detect changes to the internal and external environments
- Identify emerging risks.

3.3.3.4 KEY RISK AREAS

We have identified the following key risk areas from the above process.

Health, Safety and Environment – Due to the nature of operations, the health and safety of employees and third parties is recognised as a key risk to Powerco. Powerco is continually working to improve Health and Safety practices and is guided by a number of acts and industry standards, including the Health and Safety in Employment Act, NZS 7901, relative to public safety, and AS/NZS 4645 relative to network management. Appendix 5 lists the health, safety and environment risks as assessed to AS/NZS4645.

The risks of harm to the public and personnel are monitored through regular network inspections. During construction projects, these risks are monitored through a compliance process. For livening, a set of pre-commissioning tests and procedures is specified, and before commissioning may proceed, the tests need to be satisfactory.

Other factors affecting reliability and public safety, such as vehicle collisions, trees, and vandalism need to be monitored and controlled.

Operational security controls include maintenance and inspection regimes, operational procedures, including systems of locks, keys and alarms, and controlled access of personnel to network sites. High-risk sites are fenced to maintain public safety.

Natural disasters are considered a major risk given that Powerco serves a wide area of the North Island, including areas that are exposed to seismic and volcanic activity and land-slips. The review of pipeline design results from this risk profile.

The tactical response to these risks largely centres on contingency planning, with the Emergency Management Plan being the main guiding document. Powerco also maintains alliances with Civil Defence and regional councils, and takes part in Civil Defence exercises.

To better identify and manage environmental risks and associated impacts, Powerco has joined the Landcare Research managed Enviro-Mark NZ programme. This programme sets out independently audited steps for the development of an Environmental Management System to ISO 14001:2004 standards.

Powerco is actively working towards certification in this programme and has achieved gold level certification for the activities on the gas network, and platinum level for the Corporate Office in New Plymouth, and the regional offices in Tauranga and Wellington.

Regulatory, Legal and Compliance – Powerco must comply with a variety of legal and regulatory obligations, including the Gas Act, the Health and Safety in Employment Act, the Commerce Act and its obligations as a lifeline utility. Risks are identified relating to compliance with local government requirements, legislation, regulatory requirements and contractual obligations with service providers. These risks are managed by embedding compliance requirements into operational and maintenance processes. A network compliance programme is also in place to ensure that existing standards are fully compliant. All changes to standards are communicated to contractors and other employees through awareness and training programmes.

Asset Reliability (or asset integrity) – Because gas is inherently hazardous, measures need to be in place to prevent hazards from affecting the general public.

Many risk management techniques that help to achieve this goal are ingrained within the industry. Nevertheless, formal steps need to be in place to ensure that these risks are managed. Managing these risks is a central part of the Asset Lifecycle activities, which drive the update of maintenance standards and schedules and the asset inspection process.

From a standards perspective, our focus is on the development of new standards covering the design/construct, materials purchasing and asset disposal stages of the asset lifecycles.

Gas Delivery (operational continuity) – These relate to all risks that can cause a disruption of gas supply, including inadequate network capacity.

Adherence to network security criteria is a core part of the asset management process because it affects the network's ability to serve customers without outages. Particular design philosophies, defined in the security of supply policy, are applied to help ensure quality of supply criteria are met.

Live gas techniques can often be applied, so that outages are not needed.

Commercial – One of the key outcomes of the risk management programme is to ensure the financial sustainability of the business. Risk management in this area relates to the financial consequences of asset failure.

3.3.3.5 CONTINGENCY PLANNING

As part of our risk mitigation strategies, we have different contingency plans in place that are regularly tested by exercises. The main strategies relevant to the gas activities are the Emergency Response Plan, the Business Continuity Plan and the Pandemic Contingency Plan.

Emergency Response Plan – Our Emergency Response Plan (ERP) is regularly reviewed and continues to develop to improve its performance in emergency situations. The ERP is designed for emergencies, i.e. events that fall outside the ordinary operation of the network that routinely deals with incidents. The plan is supported by training, tests, equipment and support structures to ensure that the proper response can be delivered.

Business Continuity Plan – Powerco's Business Continuity Plan (BCP) is designed to manage and support a number of scenarios, including system failure, major infrastructure failure or loss of the network operations centre. The BCP is supported by a Business Impact Analysis, which is conducted on a regular basis by business units to identify and prioritise critical infrastructure, assets and processes for recovery action. The BCP is rehearsed by the appropriate teams on a regular basis and Powerco's IT infrastructure has been designed with built-in resilience to ensure continuity of operations.

Pandemic Contingency Plans – Powerco has developed a plan to prepare and respond to an influenza pandemic occurring in New Zealand. This plan provides a basis for establishing a common understanding of the specific roles, responsibilities, requirements and activities to be undertaken in response to the pandemic. It ensures the operational integrity and continuity of the electricity and gas networks to the fullest possible extent, even though this may be at a reduced level, both during and after the pandemic. Due to the unpredictable nature of pandemics, the plan also considers the wider implications for the company beyond "keeping the lights on and gas fires burning". These implications for Powerco therefore go beyond its obligations as a lifeline utility provider.

3.4 ASSET MANAGEMENT PROCESSES IMPROVEMENT

Asset management is not a static process. As circumstances affecting our assets change (e.g. standards, knowledge, etc.) the expenditure interventions required in a given year are likely to change. The process of annual review, and the governance arrangements that we have in place, are designed to ensure that the AMP remains relevant in a dynamic environment.

In addition to the processes that are part of our day-to-day activities, we have an asset management improvement programme that includes a wide range of initiatives to achieve asset management excellence, operational excellence and sustainable growth. We call these improvement initiatives. These are the result of the different audit or review mechanisms we use in our asset management system, such as:

- Annual management review of the asset management system performance
- Peer reviews of the system with the Electricity business
- NZS 7901 audit in regards to the Public Safety Management System.

3.4.1 IMPROVEMENT INITIATIVES

3.4.1.1 ASSET MANAGEMENT MATURITY

It is our goal to align our asset management practices with a recognised, international standard. We were audited against PAS 55:2008 in 2010 and this helped us to highlight gaps in our Asset Management System. Our score was between 1 and 2 in most of our activities. We have been using the results of this audit to redesign our organisation and field processes so that we can get improved information from the field and a better understanding of our assets.

With PAS 55 being replaced by ISO 55 000, we will be transitioning to this new standard.

Using the Asset Management Maturity tool this year, we have reassessed our practices and have scored between 2 and 3. We have progressed in all of the six key domains, achieving our targets in terms of structure, capability and authority, and communication and participation.

Our weakest point remains information management. Last year, we produced a capability plan for our systems, and we will be carrying out a business-wide initiative to increase the quality of our data over the next 3-5 years.

Figure 3.8 shows the overall scores split by category. More details of the assessment can be found in Appendix 2.

Figure 3.8: **AMMAT Self-Assessment Score.**

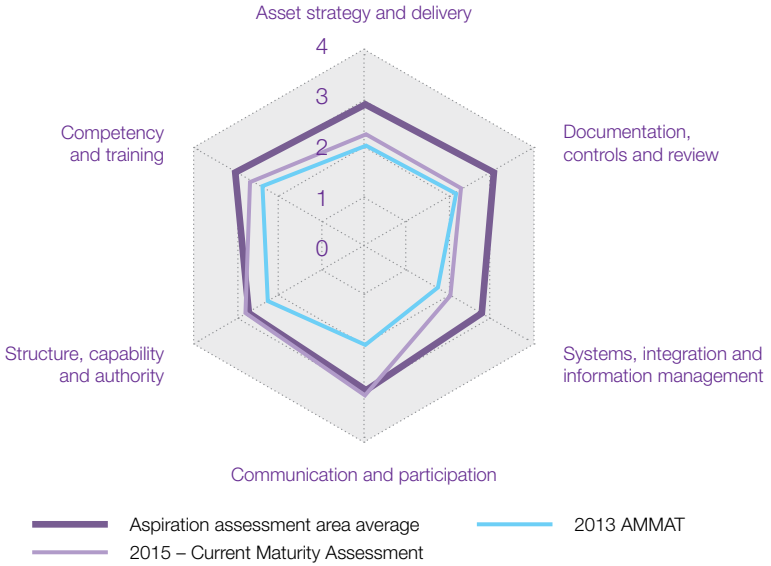
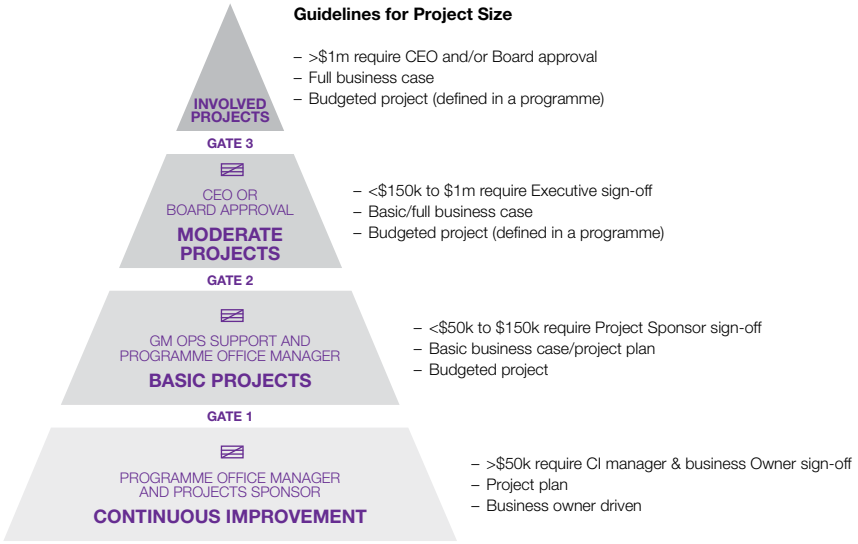


Figure 3.9: **Guidelines for Non-Network Project Size.**



3.4.1.2 TACTICAL INITIATIVES

In 2014, we produced a five-year plan describing the steps we need to take to increase the performance of the gas business. Those steps, or tactical initiatives, were defined by the leadership team, and presented to all staff for feedback. It resulted in three main areas of focus: Asset Management Excellence, Operational Excellence and Efficient Growth, and align with Powerco's overall business plan and strategies.

Every year, we examine our overall company performance, the operating environment, and readjust the tactical initiatives accordingly. At the same time, we review their cost, efficiency and ease of implementation. After several iterations and discussions with other groups in the company, we finalise a plan for each aspect.

To assist the delivery of non-network business improvement projects (including asset management projects), the Powerco Operations Support group has a Programme Office, which also manages the portfolio of business improvement projects in Powerco's business plan, business unit tactical plans, programmes of work and ideas generated by individuals via an intake process.

For all these projects, the Programme Office uses the escalation scale described in the next figure to authorise a project.

3.4.1.3 CONTINUOUS IMPROVEMENT

Tactical initiatives are dealt with on an annual basis. For low complexity and low costs improvements, we promote a continuous improvement approach.

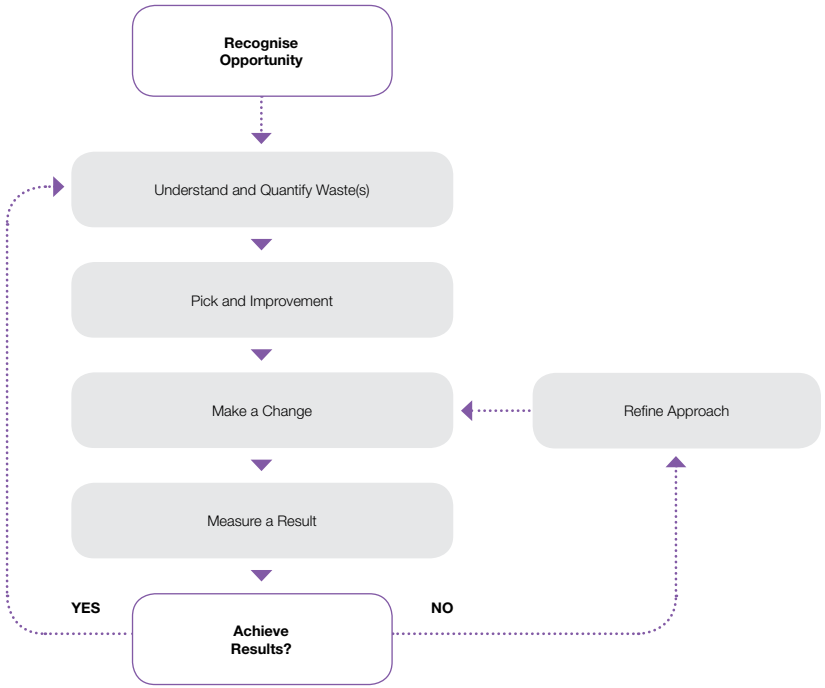
Continuous Improvement at Powerco aims to deliver incremental improvements in systems and processes. It also enables a real shift in thinking and culture to create an environment in which improvement is not just a destination but an ever-growing goal.

As a programme with dedicated resources within the Project Management Office, Continuous Improvement works with all of Powerco and supports each team to identify, develop and implement their own improvement initiatives.

Table 3.2: **Continuous Improvements Service Catalogue.**

DELIVERY PIPELINE	CULTURE AND TRAINING
The pipeline is the main delivery channel for implementing continuous improvement throughout Powerco. All work we do is managed across four main areas of work: – **Process Mapping** – **Process/System Improvement** – **Process Management** – **Project/Initiative Scoping**	In order to enable a lateral upshift in skill and capability, the CI programme in conjunction with HR offers a number of training and coaching initiatives available to all Powerco staff: – **CI Coaching** – ***Improve* Presentations & Workshops** – **Kaizen Essentials** – **Kaizen Practitioner**

Figure 3.10: **The Process of Continuous Improvement.**



ENGAGING WITH CUSTOMERS

Powerco delivers an essential service to its customers, who are best placed to tell us how we are doing. We consult regularly with them through surveys, market research and individually managing clients who need extra attention.

4. ASSET OBJECTIVES & SERVICE LEVELS

4.1 INTRODUCTION

At Powerco, we are committed to delivering exceptional service to our customers by providing a reliable and secure gas distribution service at a price that represents outstanding value for money. We strive to do this in the safest way possible, not only for our customers, but also for the public, contractors and staff that live, work and play around our networks. This allows us to actively support New Zealand's energy future. Delivering on these aspirations is at the heart of what we do and is set out in our corporate Vision, Mission, and Values. We care deeply about these. This section describes how our corporate Vision and Mission translates into our asset management objectives and it establishes measures by which we can judge our success.

The objectives set out in this section are used throughout our whole-of-life asset management practices, are embedded within our asset management policy and strategies, and utilised within our plans. We have framed these to reflect our commitment to further improving service levels to our customers in an environment of growing concerns in public safety, energy and infrastructure costs, and consistent and steady growth in connections and gas delivery.

4.2 FROM CORPORATE MISSION TO ASSET MANAGEMENT

Our asset management objectives translate directly from our corporate Vision and Mission. Our Mission states:

> "In profitable **partnership** with our stakeholders we are **powering the future** of New Zealand through the **delivery** of **safe**, **reliable** and **efficient energy**."

The five core components of our mission statement are Safety, Delivery, Reliability, Efficiency and Partnership. Hence, the asset management objectives that establish the basis for our Gas Asset Strategy are:

Safety – Keep the public, our staff and our contractors safe from harm.

Delivery – Ensure our networks have the capacity and resilience to meet the quality of supply expected by our customers.

Reliability – Safe containment of gas and operational reliability to deliver gas to our customers at the right quality.

Efficiency – Continuously seek out and deliver cost efficiencies.

Partnership – Be a responsible partner for our customers and our other stakeholders.

These objectives are forward-facing and supported by targets that will enable us to measure our progress towards delivering exceptional service to our customers. The targets associated with each measure over the AMP period are summarised in the table in Section 4.8, at the end of this section.

The targets are realistic and achievable and to ensure this we have considered what is possible and appropriate in our industry. A more specific outline of the process we have used to develop these is included in Section 3.2.1 (Governance – Setting targets). At the time of writing, we do not believe that the expenditure forecasts will materially affect performance against the targets described in this section.

4.3 SAFETY

Powerco is committed to preventing harm to the public, our staff, and contractors. For this reason we are committed to maintaining and improving the standard of safety management applied to our network.

4.3.1 PUBLIC SAFETY

Public safety objective: Keep all assets and operations safe.

Powerco's assets are integrated within our communities. Accordingly, we place the highest possible priority on minimising the safety risks our assets and their operation may pose to the public. We also ensure that we construct, operate, and maintain our network assets in compliance with all applicable safety legislation.

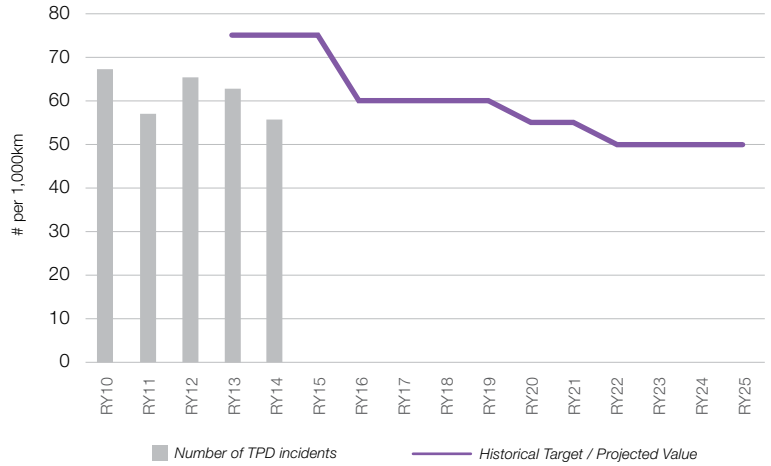
Our commitment to public safety was demonstrated during 2013 by certifying our Public Safety Management System (PSMS). Our PSMS defines the specific steps we take to ensure our assets are designed to be safe and to remain safe during operation.

4.3.1.1 THIRD PARTY DAMAGE

Third-party damage (TPD) to our networks represents one of the greatest public safety risks and impacts on supply reliability. The ultra-fast broadband (UFB) roll-out has caused a step-change increase in road corridor excavation, which has heightened this risk and driven the need for greater investment in safety campaigns and location services, and increased the incidents of TPD. While most TPD incidents are relatively benign, they have the potential to cause significant damage and injury, and the number of TPD incidents is an important public safety measure.

Despite an increase in the level of corridor activity, we have managed to reduce the rate of incidents on the network. This is a continuous effort and we have to maintain a strong focus on education and assistance. Our short-term target reflects this high activity. We expect the level of TPD to steadily reduce, as shown on Figure 4.1.

Figure 4.1: **Historical and Projected Third Party Damage.**

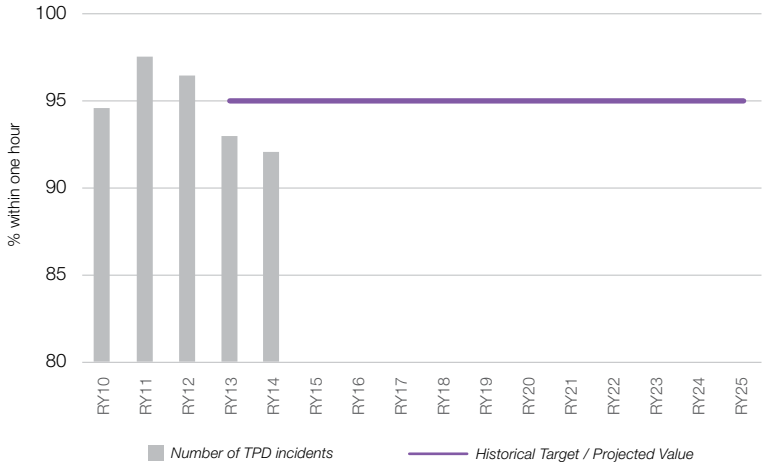


4.3.1.2 RESPONSE TIME TO EMERGENCY AND EMERGENCY CALLS

Response time to an emergency is a quality standard set out in the Commerce Commission's Price-Quality path. It is an important measure of our ability to control incidents and prevent escalating consequences. Our response to emergencies relies on our system for receiving emergency calls from the public. Accordingly, we set targets and measure our time to receive emergency calls.

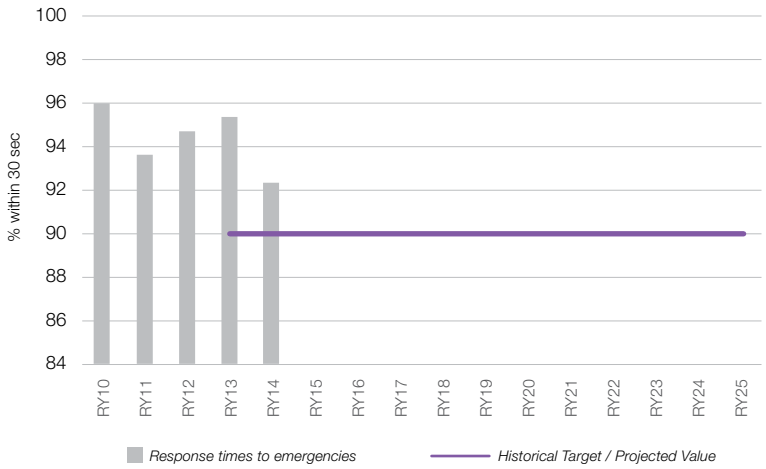
The requirements in our Price Quality standard for response to emergencies are 80% under 60 minutes, and 100% under 180 minutes. For simplicity, our internal target is responding to 95% of emergencies within one hour, which has proven to be difficult as shown on Figure 4.2. However this higher target ensures we meet the requirements in our Price Quality standard.

Figure 4.2: **Historical and Projected Response Time to Emergencies.**



Our response time to emergency calls has constantly been meeting our expectations as shown on Figure 4.3 below.

Figure 4.3: **Historical and Projected Emergency Calls Answered Within 30 Seconds.**



4.3.1.3 SUMMARY OF PUBLIC SAFETY AND TARGETS

Together, Third Party Damage rate, response time to emergency and response time to emergency calls form our Public Safety measures and targets. They are summarised in the table below.

Table 4.1: **Public Safety Measures and Targets.**

TARGET	MEASURE	VALUE	BASIS FOR THE VALUE	WHEN
Minimise risk caused by third-party damage	Number of TPD incidents	<50 p.a. per 1,000km	Historical value, amended due to the high corridor activity	By RY20/21
Response to emergencies	Time to respond (to site) when an emergency is reported	>95% within 1 hour[1]	Chosen to exceed the requirements under the Price-Quality standard	Throughout the period
Receive emergency calls efficiently	Percentage of emergency calls answered within 30 seconds	>90%	Historical value	Throughout the period

4.3.2 PEOPLE SAFETY

People Safety Objective: Keep our staff and contractors free from harm.

The objective, expressed above, is reinforced by our safety strap-line of:

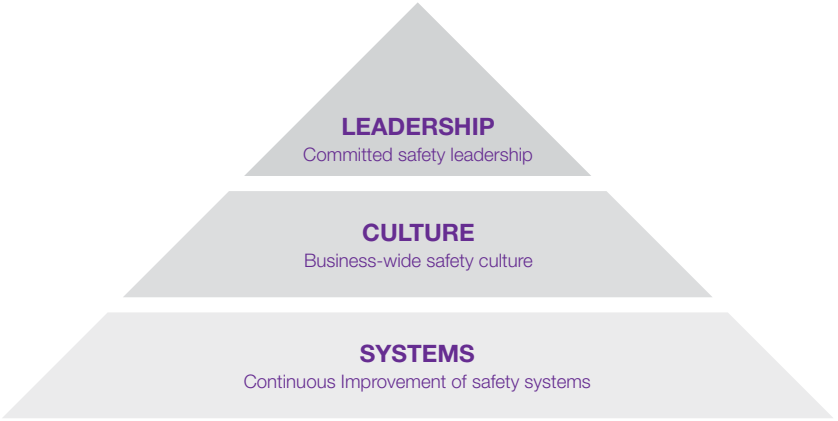
Think Safe, Work Safe, Home Safe.

Powerco is committed to ensuring the highest levels of safety for our staff and contractors who are responsible for the construction and maintenance of the gas network. We strive to continually improve our leadership, systems, and culture in this area.

The core philosophy behind our health and safety approach is to provide committed safety leadership that supports the development of a safety-first culture across our workforce. This safety culture is strongly supported by the understanding that good health and safety outcomes are the result of integrating and embedding safety practices within the business as part of our overall operational excellence philosophy as illustrated in Figure 4.4: Powerco Safety Strategy Model.

[1] Price-Quality standard is 80% <60 minutes and 100% within three hours.

Figure 4.4: **Powerco Safety Strategy Model.**



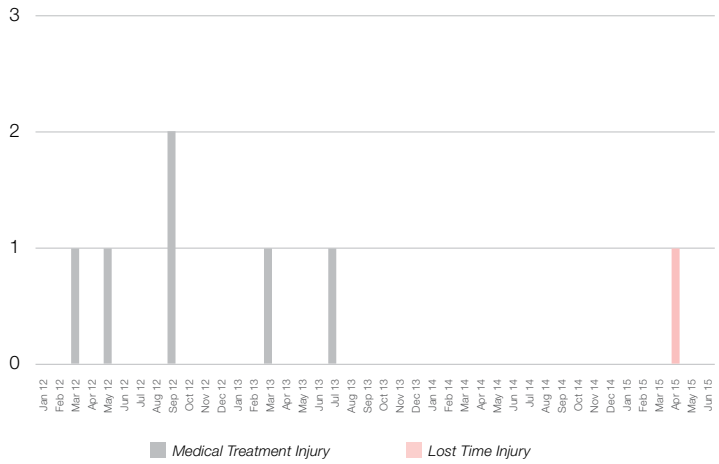
Consistent with our approach to public safety, we have one target to summarise the outcome from all these actions. Our objective is to have zero injuries to those who work on or around our networks. We strongly believe that avoiding all injuries to our employees and service providers is achievable, and so any other target is not acceptable.

Table 4.2: **People Safety Measure and Target.**

TARGET	MEASURE	VALUE	BASIS FOR THE VALUE	WHEN
No harm to our staff or contractors	Lost time injury	0	Company commitment to Safety	Throughout the period

Powerco has put a strong focus on safety in the last few years. The commitment by our staff and service providers in seeking zero harm outcomes is demonstrated by a consistently low number of medical treatment and lost-time injury rates across our business, as illustrated in the figure below.

Figure 4.5: **Medical Treatment Injuries and Lost Time Injuries (Gas Network Activities).**



In April 2015, a contractor working on our gas network suffered a lost time injury. The incident has been investigated and corrective actions implemented.

4.4 DELIVERY

Powerco strives to deliver a high-quality gas supply to its customers by ensuring that the capacity of the network allows for foreseeable demand to be met and that our networks are designed and constructed to be inherently resilient.

We have chosen to evaluate our networks against two criteria: network capacity and network resilience. Together, these measures (along with those described under the reliability objectives) demonstrate our performance in delivering assets that are both effective and efficient.

4.4.1 NETWORK CAPACITY

Capacity Objective: Ensure our networks have the capacity levels to meet our customers' needs.

To meet this objective, we must proactively manage the capacity of the network. This means understanding both the current system demand and capacity of the network under both normal and extreme conditions, and having robust forecasts of how demand will increase over our planning horizon.

The challenge is to ensure we have sufficient capacity to allow for uncertainty in demand, and allowing sufficient capacity to cater for new demand while taking into account the timeframes and constraints that impact on the development of new capacity when it's required. By way of example, our new residential customers typically want new gas connections to be available within two weeks of their commitment. To reliably meet this timeframe, the network capacity must have sufficient headroom to enable the forecast rates of connection to be accommodated.

A good indicator of whether the current capacity is appropriate for the level of customer demand is the pressure at representative points on the network. Accordingly, to assess our performance against this objective we monitor the pressure and loads at specific locations on our network and regularly validate the capacity performance against the objective criteria. Network systems that are identified as being near capacity each have a capacity management plan that is being progressively implemented, and, accordingly, we expect the risk of customers being affected by low-pressure to reduce. The associated measures for these issues are the number of poor pressure events observed on a network and the number of applications for new connections that we have to defer due to insufficient capacity.

Poor pressure events have drastically diminished since we implemented our pressure monitoring programme across the network .This is shown on Figure 4.6 below. With the completion of programme of works across our network, and more particularly within Wellington CBD, we expect the number of poor pressure events to remain under 10 per annum starting RY16.

Since we implemented the metric in 2013, we have not recorded any residential application for a new connection which had been deferred due to insufficient capacity.

Figure 4.6: **Historical and Projected Poor Pressure Events.**

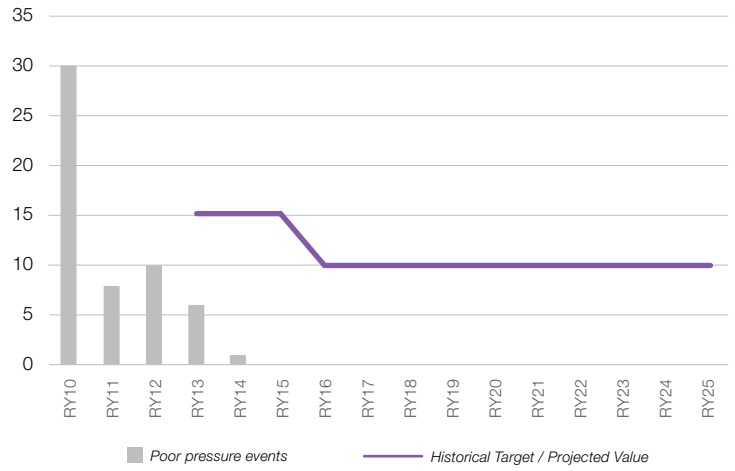


Table 4.3: **Network Capacity Measures and Targets.**

TARGET	MEASURE	VALUE	BASIS FOR THE VALUE	WHEN
Adequate network capacity	Poor pressure events under normal network configuration	<10 p.a.	Historical value	By RY15/16
Network capacity for growth	Residential applications deferred due to insufficient system capacity	0	Company commitment to customer service	Throughout the period

4.4.2 NETWORK RESILIENCE

Resilience Objective: Ensure our networks have the optimal level of inherent resilience.

Powerco strives to optimise supply security through the incorporation of system resilience where it is economically efficient to do so. An example of system resilience is the design of network loops that maintain supply to customers in the event that a section of pipe is damaged.

With most of our networks primarily configured as a grid, a simple measure of system redundancy, such as N-1, is not a good measure of resilience. Instead, the level of resilience is modelled taking account of the nature of the network or sub-network, and the likelihood and consequence of a fault condition.

It is difficult to isolate the impact that sub-optimal design may have on resilience (the outcome of the level of resilience we have in our networks is generally covered by other metrics we have established within this AMP). Target measures for resilience specifically are therefore not proposed in this AMP. However, resilience is established as an objective as it establishes an important principle for network design and operation.

4.5 RELIABILITY

Powerco strives to ensure that our gas network assets perform reliably. This means maintaining network integrity to ensure the safe containment of gas and the reliable delivery of gas to our customers. This is both expected by our customers and the wider public, and is a legislative requirement.

For electricity networks, SAIDI is the generally applied industry measure for delivery reliability. Measuring a gas networks' reliability is more difficult for a number of reasons. Gas networks, being underground, are inherently more secure but when outages occur the time to reinstate can be much longer. The process of reinstatement requires the careful purging of the network and the re-commissioning of each customer. This means that a widespread outage can disrupt supply for several weeks. This leads to a SAIDI measure that is very volatile from year to year and makes any short-term trend analysis difficult and potentially misleading.

Therefore, Powerco does not use SAIDI as a short-term measure but the long-run average is useful to demonstrate the overall reliability performance. For Powerco, the historical performance translates to greater than 99.999% availability. This is a high quality service which the vast majority of our customers indicate meets their expectation.

Within this context, reliability can be considered as consisting of two primary components:

- Network integrity
- Operational reliability

Together, these provide a more direct measure of our reliability performance across our networks and the level of service delivered to our customers.

4.5.1 NETWORK INTEGRITY

Integrity Objective: Ensure we minimise uncontrolled gas releases.

The hazardous nature of natural gas means that gas containment is a critical aspect to maintaining a safe and reliable network and to minimise harm to the environment. Reliable containment is also necessary to ensure continuous gas delivery as rectifying gas escapes may involve shutting down a section of the network. Our reliability objective therefore requires that the number of uncontrolled gas releases is as low as reasonably practicable.

Uncontrolled gas releases can occur for a number of reasons including:

- Faulty components or installation
- Gradual penetration of PE pipe by rocks
- Corrosion (steel pipelines and components)
- Operational error while working on the network
- Incorrect pressures (resulting in pressure safety devices venting)
- Damage to the pipeline by third parties

To effectively measure our performance against this objective we need to track the overall number of gas-release incidents we have on the network. Gas releases may be reported by the public or through our inspection regime. Gas releases as a result of third-party damage (such as a contractor excavating in the road) are excluded from this measure because such incidents do not relate to the condition of the asset and are already accounted for in our public safety objectives.

As discussed in the 2013 AMP, the number of public reported leaks increased from the historical values. It is due to two main factors:

- We have improved our reporting mechanisms which enable us to better track public reported escapes and system inspections on network assets
- The issue related to pre-1985 pipes lead to an increase, that we are looking to address by a planned replacement programme discussed in Section 7.

Those two measures and their targets are shown in Figures 4.7 and 4.8 below, and summarised in Table 4.4. The effect that pre-85 PE pipe will have on leakage rates is difficult to predict over the next 10 years and consequently we have retained relatively conservative targets. The targets will be reviewed as we increase our understanding of the condition and failure rates.

Figure 4.7: **Historical and Projected Leaks Identified by the Public.**

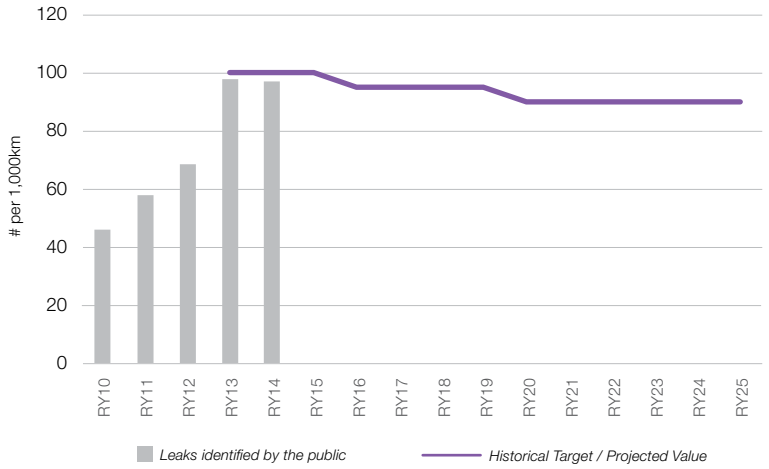


Figure 4.8: **Historical and Projected Leaks Identified by Inspection.**

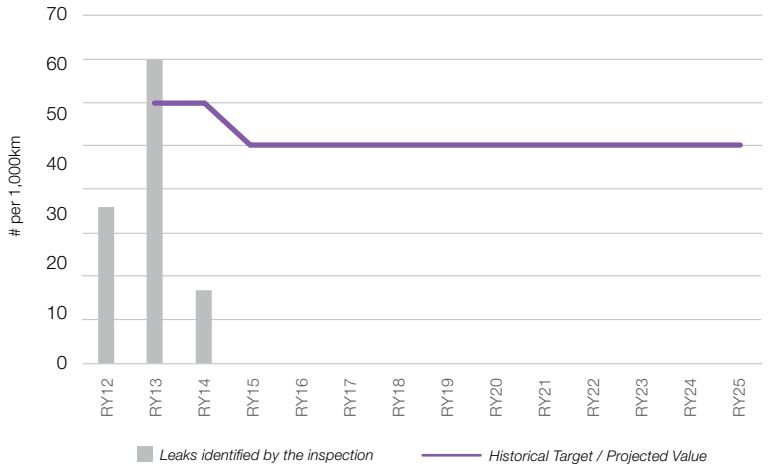


Table 4.4: **Network Integrity Measures and Targets.**

TARGET	MEASURE	VALUE	BASIS FOR THE VALUE	WHEN
Reliable network integrity	Total reported leaks (excluding third-party damage)	<90 per 1,000 km	Historical value, amended due to better reporting and potential asset condition	By RY20/21
Reliable network integrity	Number of leaks detected by routine inspection	<60 per 1,000 km	Historical value, amended due to better reporting and potential asset condition	Throughout the period

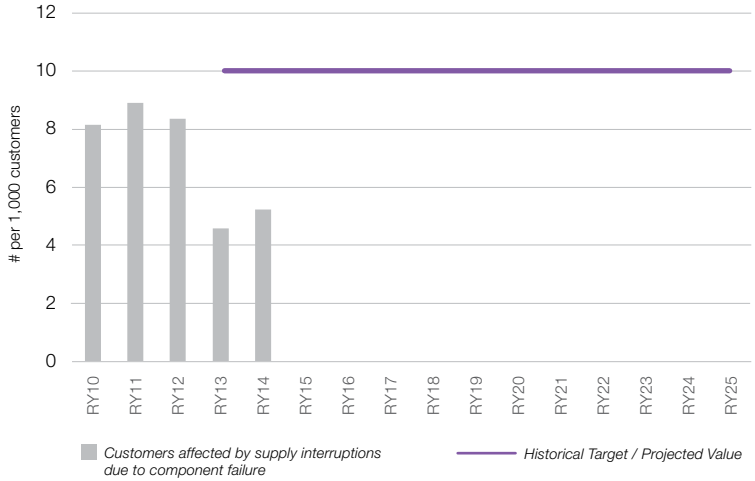
4.5.2 OPERATIONAL RELIABILITY

Operational Reliability Objective: Operating reliably to deliver gas to our customers at the right quality.

Delivering a reliable gas supply means the gas network assets (e.g. regulators and valves) must operate reliably. To meet this objective and deliver cost-effective services requires optimal design, maintenance, and monitoring of the network assets.

Figure 4.9 below shows how this commitment has resulted in a very low number of customers having their supply interrupted due to a lack of investment on the network.

Figure 4.9: **Historical and Projected Customers Interruptions due to Component Failure.**



Operational reliability also means ensuring that the gas is delivered at the right quality. In New Zealand, all gas must meet the specification requirements and be odorised as set out in NZS 5442:2008 and NZS 5263:2003 respectively. No single party has full responsibility for gas quality. Gas composition is controlled and monitored by the gas-processing facilities and transmission companies. Gas odorant is added by the transmission companies and monitored by them at gate stations.

Gas network operators, such as Powerco, are responsible for ensuring that the quality of gas delivered to the network is maintained as it travels through the network, with no degradation due to contaminants such as water, dust or oil being added. We are responsible for monitoring gas odorant levels at representative points within the network and to report on non-compliant odour readings. Depending on the actual result of the test, we have an escalation process to communicate with the rest of the gas supply chain.

The strengthening of our processes with the rest of the Gas Industry allowed us to reduce the number of non-compliant reading as shown on Figure 4.10.

Figure 4.10: **Historical and Projected Non-Compliant Odour Test Reported.**

Table 4.5: **Operational Reliability Measures and Targets.**

TARGET	MEASURE	VALUE	BASIS FOR THE VALUE	WHEN
Reliable network integrity	Non-compliant odour tests reported	<10 per annum	Historical value	Throughout the period
Operational reliability	Customers affected by supply interruptions occur due to component failure	<10 per annum	Historical value	Throughout the period

4.6 EFFICIENCY

Powerco takes pride in being a cost-effective provider of gas network services. To ensure we continue to deliver value to our customers, improving the efficiency of our operations and investment decisions are a continual focus. Ultimately, we believe that maintaining a focus on improving cost efficiency is essential for the long-term and it's an outcome to which we are committed. This commitment will ensure we are able to deliver services at a price that provides our customers with real value for money and support the on-going demand for natural gas as a cost-effective energy source.

As with any business there is no "silver bullet" to deliver cost efficiency. Costs are an inevitable part of the business we are in, with an essential service to be maintained and risks to be managed. Irrespective, improving cost efficiency requires a focus and a drive from Powerco and our service providers to improve all areas of our operations; to drive out waste, find improved ways of doing things, and to foster a culture of considered financial management.

Within this context, there are two key focus areas to guide the specific tactics we are seeking to deploy:

- Optimal investment
- Improving delivery efficiency

4.6.1 OPTIMAL INVESTMENT

Efficiency Objective: Optimise the timing, the capacity, and the resilience of our investments.

Our networks provide an important service to the community. They must be designed and configured to minimise the risks of failure and to have adequate capacity to meet peak demand with adequate levels of security. However, equally important is the timing of our investments. Increases in capacity often require step investment to accommodate incremental load growth. Investing too early or installing too much capacity at one time means our customers face higher costs than are necessary.

Investing too late means that our customers will not receive the quality of service they would expect. Therefore, efficient investments, and the subsequent utilisation of our assets, require optimal timing and sequencing of these projects. This is strongly linked to the Network Capacity objective and associated strategies (discussed in Section 6.2).

Powerco's asset management strategies and plans are developed with the objective of ensuring optimal investment timing that will drive efficient investments. Successfully delivering this objective will minimise unnecessary duplication or early replacement of assets and ultimately provide the lowest long-run cost of service.

Target measures are not proposed in this AMP but this objective is reflected in our development strategies and in the process we use to plan our investments. For more discussion on these aspects please refer to Section 6.4.

4.6.2 IMPROVING DELIVERY EFFICIENCY

Efficiency Objective: Cost-effective provider of gas network services.

Powerco has a strong incentive to be highly efficient in our construction and maintenance practises. Within this context we are working through programmes to improve delivery efficiency. These have focused on internal process definition and improvement, and the migration to new field service contracts, which occurred in 2012. Powerco is committed to on-going system and process improvements to deliver greater efficiency savings.

A key means of maintaining delivery efficiency is maintaining market-testing of maintenance and construction costs. Our field service contracts were established through a formal tendering process in 2012. The arrangements we have in place also retain competitive price drivers through the contract period by means of prescribed competitive price adjustments and the provision to tender large or complex works.

By regularly going to market, we can ensure that the rates we obtain from our suppliers represent the current best-value supply. With the new contractual arrangements now in place, we achieved almost 90% of expenditure being market tested. We aim to maintain this level throughout the planning period as shown in Figure 4.11 and Table 4.6 below.

Figure 4.11: **Historical and Projected Percentage of Market-Tested Expenditure.**

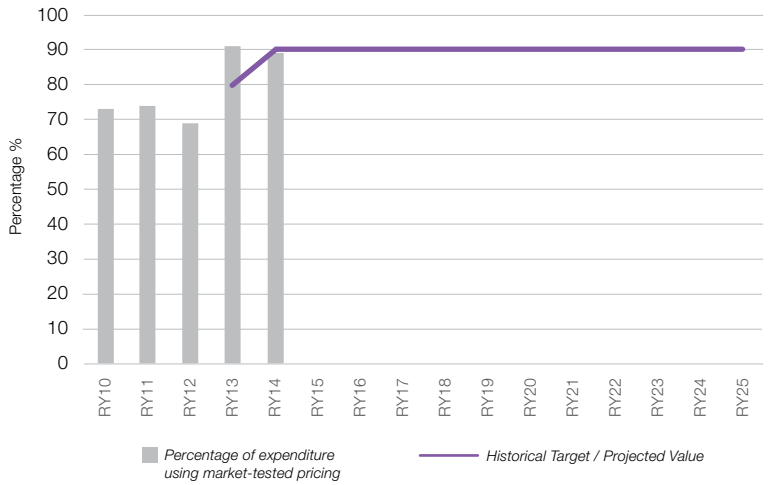


Table 4.6: **Delivery Efficiency Measure and Target.**

TARGET	MEASURE	VALUE	BASIS FOR THE VALUE	WHEN
Delivery efficiency	Percentage of expenditure using market-tested pricing	>90%	Company commitment to cost efficiency	Throughout the period

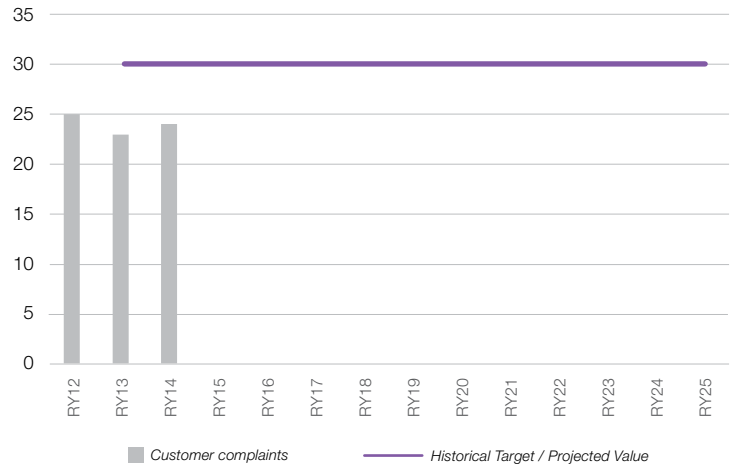
4.7 PARTNERSHIP

Powerco strives to partner with its stakeholders and be a good corporate citizen for New Zealand. Natural gas brings significant economic benefit to New Zealand and Powerco has a responsibility to ensure that the way we manage our networks and engage with our stakeholders and the wider public promotes the on-going economic supply of this resource to New Zealand's industry and homes. This is reflected through its commitment towards public safety as described earlier, but also through:

- Providing superior customer service through The Gas Hub
- Supporting New Zealand's economic development
- Being environmentally responsible
- Building partnerships with community organisations

We take customer service very seriously and actively seek to deliver superior service and outcomes. We have achieved a high level of customer satisfaction, reflected by the low number of customer complaints in the recent years as shown in Figure 4.12 below.

Figure 4.12: **Historical and Projected Number of Customer Complaints.**



We aim to maintain this commitment throughout the period, as described in Table 4.7.

Table 4.7: **Partnership Measure and Target.**

TARGET	MEASURE	VALUE	BASIS FOR THE VALUE	WHEN
Customer satisfaction	Customer complaints	<30 per annum	Historical value	Throughout the period

4.7.1 IMPROVING ENVIRONMENTAL PERFORMANCE

Efficiency Objective: Improve our environmental management

Powerco is committed to achieving and maintaining a good environmental performance. To this end, in 2011 we embarked on a programme to become certified to ISO 14001. We currently have Gold Enviro-Mark accreditation. Enviro-Mark accreditation provides stepping stones to ISO14001 certification. Our current target is to achieve a Platinum standard across our network by 2017. Powerco's progression past a Platinum level will be subject to a benefits review.

Table 4.8: **Environmental Measure and Target.**

TARGET	MEASURE	VALUE	BASIS FOR THE VALUE	WHEN
Environmental management standard	Enviro-Mark accreditation level	Platinum	Company commitment to Environment	By RY17

4.8 SUMMARY OF OBJECTIVES AND MEASURES

				ACTUALS					PROJECTED										
TARGET	TARGET	MEASURE	UNITS	RY10	RY11	RY12	RY13	RY14	RY15	RY16	RY17	RY18	RY19	RY20	RY21	RY22	RY23	RY24	RY25
Keep the public, our staff and contractors free from harm	Keep all network assets safety to the public	Number of TPD incidents	#p.a. per 1,000km	67.1	56.7	65.5	62.9	56.0	75	60	60	60	60	55	55	50	50	50	50
		Response time to emergencies	% within 1 hour	94.6	97.6	96.4	93.0	92.0	95	95	95	95	95	95	95	95	95	95	95
		Percentage of emergency calls answered	% within 30 seconds	96.0	93.6	94.7	95.4	92.3	90	90	90	90	90	90	90	90	90	90	90
	Keep our staff and contractors free from harm	Lost-time injury	#p.a.	0	0	0	0	0	1[1]	0	0	0	0	0	0	0	0	0	0
Capacity and resilience to meet the quality of supply expected by our customers	Adequate network capacity	Poor pressure events	#p.a.	30	8	10	6	1	15	10	10	10	10	10	10	10	10	10	10
	Network capacity for growth	Residential applications deferred due to insufficient system capacity	#p.a.	N/A	N/A	N/A	0	0	0	0	0	0	0	0	0	0	0	0	0
Ensure we minimise uncontrolled gas releases	Reliable network integrity	Leaks identified by the public	#p.a. per 1,000 km	45.6	57.6	68.4	97.7	97.0	100	95	95	95	95	90	90	90	90	90	90
		Leaks identified by inspection	#p.a. per 1,000 km	N/A	N/A	36	70.1	16.7	50	50	50	50	50	50	50	50	50	50	50
Operating reliably to deliver gas to our customers at the right quality	Operational reliability	Customers affected by supply interruptions due to component failure	#p.a. per 1,000 customers	8.13	8.91	8.36	4.60	5.23	10	10	10	10	10	10	10	10	10	10	10
	Ensure gas is delivered reliably and at the right quality	Non-compliant odour test reported	#p.a.	13	21	11	19	5	10	10	10	10	10	10	10	10	10	10	10
Cost-effective provider of gas network services	Maintain market –tested maintenance and construction costs	Percentage of expenditure using market-tested pricing	%	73	74	69	91	89	90	90	90	90	90	90	90	90	90	90	90
Be a responsible partner for our customers and our other stakeholders	Environmental management standard	Enviro-Mark accreditation level	Enviro-Mark standard	N/A	N/A	Bronze	Silver	Gold	Gold	Gold	Platinum	Platinum	Platinum	Platinum	Platinum	Platinum	Platinum	Platinum	Platinum
	Customer satisfaction	Customer complaints	#p.a.	N/A	N/A	25	23	24	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30

[1] As mentioned in Section 4.3.2.

MAKING GAS EASY

We believe natural gas is a good energy proposition for New Zealand. It brings more comfort in homes, puts people in control of their energy usage and enables cost-savings. We created The Gas Hub, dedicated to growing the presence of natural gas, to deliver better customer service and ultimately optimise existing infrastructure.

5. POWERCO'S ASSETS & CUSTOMERS

5.1 INTRODUCTION

The first step of asset management is to understand our assets and where they are located. Equally important is understanding our customers, how much gas is used, and is likely to be used going forward.

In describing these characteristics, this section sets the scene for the environment within which we operate. We discuss our assets by category, including age profile and a summary of their condition. We also describe our SCADA systems, non-network assets and the type and number of consumers that drive our asset management decisions.

This section focuses on:

- Powerco gas customers
- Geographical location of our network and assets
- Assets and their age profiles

Unless specified otherwise, the figures presented in this Section represent "live" assets installed before 30/09/2014.

5.2 POWERCO GAS CUSTOMERS

Powerco supplies a range of gas customers, and the provision of a safe and reliable gas network distribution service is an integral part of Powerco's business.

Powerco targets and achieves a very high level of availability, throughout its networks to all customer classes. Network safety requirements dictate our approach to system condition and reliability. Consequently different levels of quality are not offered to different customers, i.e. all customers receive the same level of service quality in terms of system reliability, system condition and integrity, and customer service. However, we maintain a classification for customers for capacity and commercial purposes.

5.2.1 CUSTOMER OVERVIEW

Powerco maintains three consumer type classifications consisting of eight network load groups. Six of these groups are defined by nominal capacity, in standard cubic meters per hour (scmh) and by annual consumption; and they are charged the standard published tariffs. The remaining two (G30 and G40) are considered non-standard customers that fall outside the definitions above because they are too large to fall into one of the categories and/or because individual pricing arrangements apply to them.

- **Residential/Small commercial consumers:** Consumers in the residential and small commercial category use around 30GJ per year with a maximum load of less than or equal to 10 scm/hr. These consumers are generally using individual hot water systems, whether instantaneous or storage cylinders, central heating systems or gas cooking equipment. This drives high demand peaks in the morning and evenings when people use these appliances at home. In comparison, consumption during the rest of the day is low. Our current network performance objectives have been set to accommodate these consumers anywhere on our network.
- **Commercial consumers:** Commercial consumers are diverse in nature and include restaurants, office buildings and small industries where the gas is used to cook, heat spaces or water at a large scale. They have a high load (between 10 and 200 scm/hr), but they mostly use their appliances during daytime. Some of these installations can be small industrial plants where gas is used in operational processes. Our current network performance objectives have been set to accommodate these consumers with a maximum load of up to 60 scm/hr without having to undertake reinforcement work. If their load is larger, we would work with the consumers to find the best way to connect them on the network at a competitive cost, with a balanced consumer contribution.
- **Industrial consumers:** These consumers usually use gas as part of their industrial processes. They are typically diary, food processing, laundry or sawmill plants. The loads tend to be large (more than 200 scm/hr) but relatively stable throughout the day. The network is generally not designed to cater for these consumers without reactive, targeted reinforcement work. We have key account managers who look after these consumers to anticipate their future needs that are then integrated into our long-term plans. We also operate at higher pressure in industrial parks to provide greater capacity, such as Bell Block in New Plymouth or Mihaere drive in Palmerston North.

The load group names and the criteria for allocating customers to these groups are described in Table 5.1.

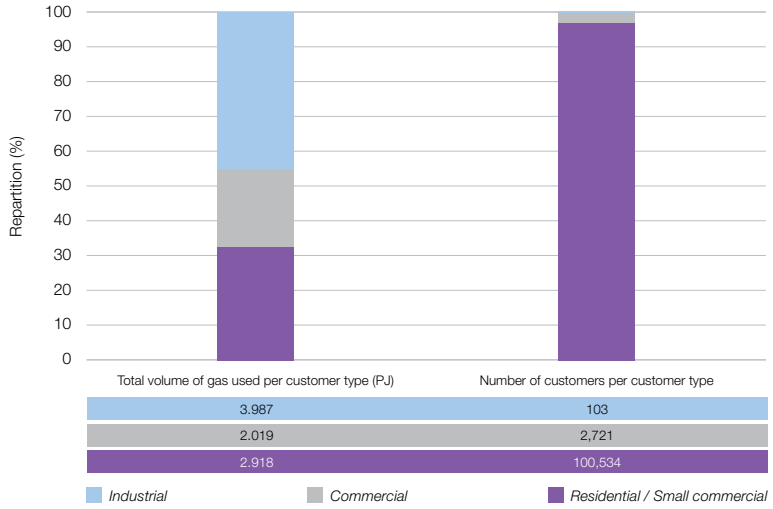
Table 5.1: Typical Characteristics of Different Load Group Customers.

LOAD GROUP	TYPICAL CUSTOMERS
Residential / Small Commercial	
G06	Low volume residential customers.
G11	Standard residential customers. Small commercial customers: Small cafes, fish and chip shops, pizza shops.
Commercial	
G12	Restaurants, small apartment / office buildings, small to mid-sized motels
G14	Hotels, large motels, shopping complexes, swimming pools
G16	Large office buildings, apartment blocks, commer-cial kitchens
G18	Commercial laundries, dry cleaners
G30	Individually priced customers who do not have a time of use (TOU) meter e.g. large commercial customers, large hotels
Industrial	
G40	Individually priced customers with a TOU meter, with an annual volume generally greater than 10TJ, such as Manufacturing and industrial businesses, such as dairy, meat or food processing plants.

5.2.2 LARGE CUSTOMERS THAT HAVE A SIGNIFICANT IMPACT ON NETWORK OPERATIONS OR ASSET MANAGEMENT PRIORITIES

As stated earlier, we operate all parts of the networks to the same level of availability regardless of customer group or volume. However, industrial customers in load group G40 have a significant potential to impact on network operations as their consumption is high. Figure 5.1 illustrates the correlation between the number of customers in each category and their annual volume.

Figure 5.1: **Comparison of Network Customer Numbers with Gas Consumption (as of 30/09/2014).**



The impact that each large customer has on our network depends on their load profile and operational requirements. For example, the available windows for maintenance are dictated by the special needs of each customer or network development based on demand forecasts.

Figure 5.2: **Breakdown of Large Customers by Region.**

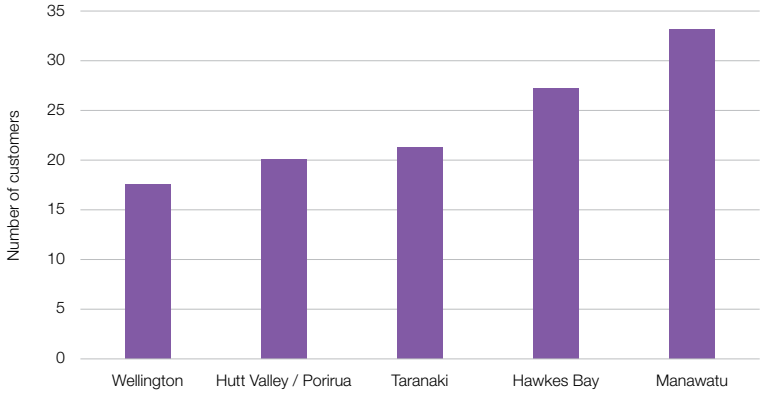
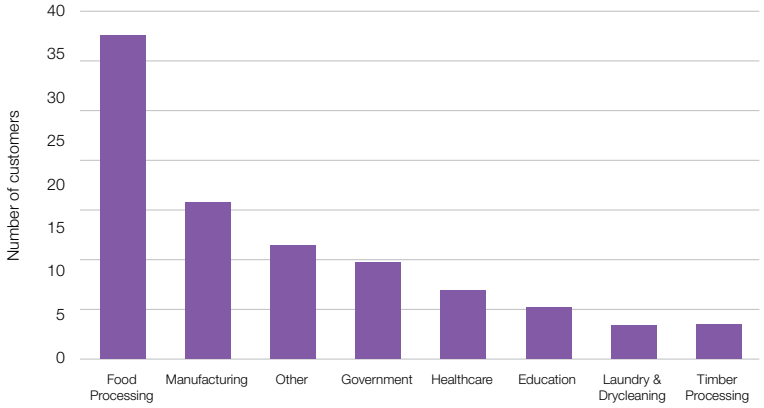


Figure 5.3: **Breakdown of Large Customers by Sector.**



5.3 NETWORK OVERVIEW

Powerco's gas network assets supply around 103,000 customers in the North Island and comprise 6,200km of pipelines and services. Our network is the second largest in NZ in terms of length and number of customers connected.

For regulatory disclosure purposes, our gas network is divided into two sub-networks referred to as the "Lower North Island" (Wellington, Hutt Valley and Porirua) and the "Central North Island" (Taranaki, Manawatu and Hawkes Bay). The Lower North Island is considered an urban area while Central North Island is predominantly rural with few urban areas. Geographic, population and load characteristics differ between areas of Powerco's supply territory, necessitating an asset management approach that accounts for the differences while seeking to deliver an equal standard of supply to all consumers. Table 5.2 provides the key statistics for the two regions.

Table 5.2: **Powerco's Gas Network Statistics.**

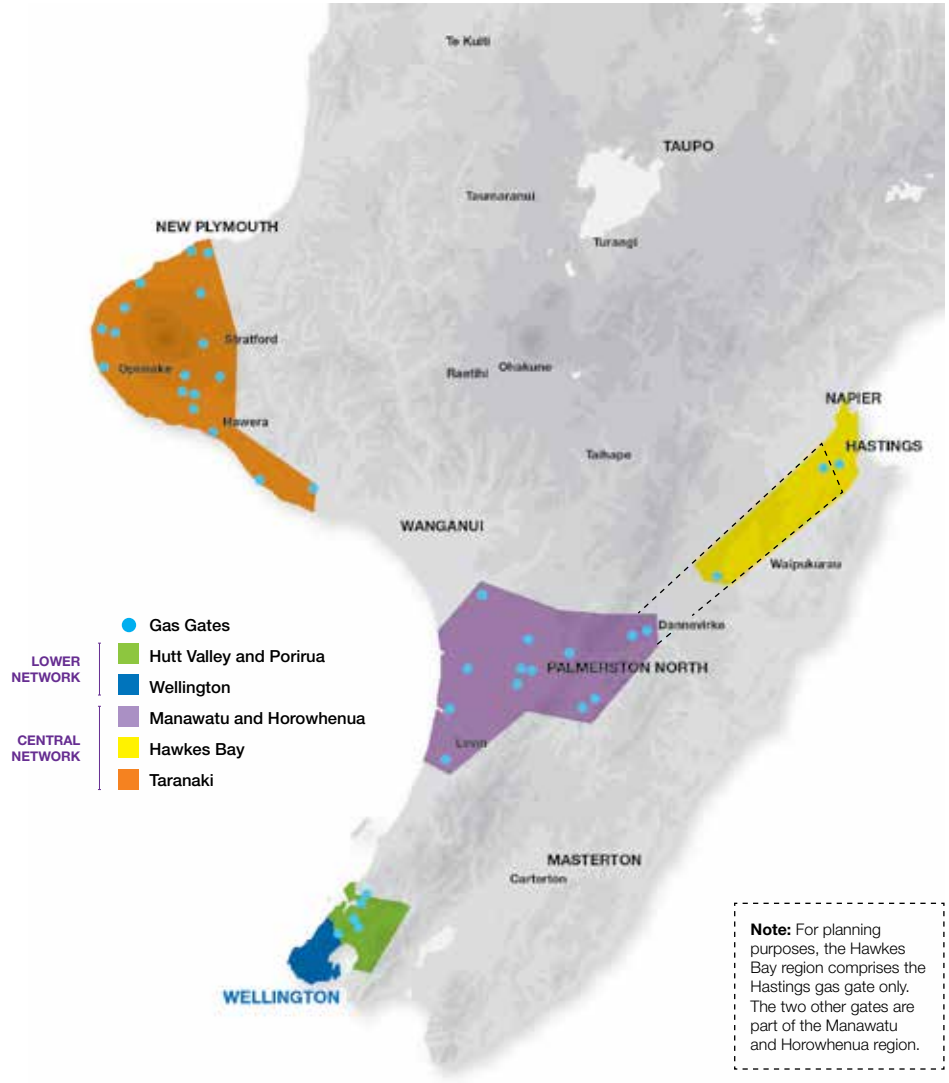
NETWORK STAT @ 30/09/2014	CENTRAL NETWORK	LOWER NETWORK	TOTAL
Main Pipes	2,060 km	1,832 km	3,892 km
Service Pipes	1,042 km	862 km	1,904 km
Line Valves	1,115	1,644	2,759
Stations	119	141	260
Special Crossings	190	110	300
Cathodic Protection Systems	16	10	26
SCADA Systems	30	33	63

5.4 NETWORK AREA DESCRIPTIONS

For asset management purposes, Powerco splits the Central and Lower sub-networks into five regions, as shown in Figure 5.4. The regions are:

- Wellington
- Hutt Valley and Porirua
- Taranaki
- Manawatu
- Hawkes Bay

Figure 5.4: **Powerco's Network Shown by Regions.**



The geographical and network asset characteristics of each region are described on the next page.

5.4.1 OUR CRITICAL NETWORKS

As the network consists of individual regions of various sizes and characteristics, different approaches and objectives are applied to reflect the diversity. We have identified six sub-regions as being critical due to representing 88% of the consumers connected to the network.

Table 5.3: **Powerco's Critical Networks' Characteristics.**

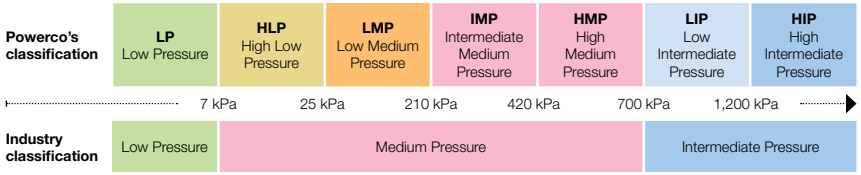
GEOGRAPHIC AREA	NETWORK (GAS GATE)	NUMBER OF CONSUMERS	PERCENTAGE OF ICPS
Wellington	Tawa	29,841	29%
Hutt Valley	Belmont	23,150	22%
Palmerston North	Palmerston North	15,212	15%
New Plymouth	New Plymouth	11,500	11%
Porirua	Waitangirua and Pautahanui	6,541	6%
Hastings and Napier	Hastings	4,608	4%
Other	Other	12,508	12%

5.4.2 PRESSURE REGIMES

Gas networks can operate at pressures ranging from 7 to 2,000kPa. With such a wide range, we have established pressure bands so that GMS owners have assurance of the pressure range supplying their assets. Our pressure systems are classified by industry standards of low, medium or intermediate pressure. These operating pressures are further broken down into seven categories. This split has been chosen to drive efficiency in the supply chain, as they align with equipment characteristics.

The following figure shows Powerco's classifications.

Figure 5.5: **Powerco's Pressure Classification.**



5.5 NETWORK CONFIGURATION

The five network regions are connected to the gas transmission network by 37 gas gates. The maps in Appendix 9 display the network configuration broken down by gas gate. This includes:

- Main pipes distinguished by operating pressure
- ICPs that have a significant impact on network operations
- Gate stations and pressure regulation stations

5.5.1 WELLINGTON – AREA DESCRIPTION

The Wellington region is supplied from the Tawa Gate (that we own and operate), located north of the city. An Intermediate Pressure pipeline runs from the gate to the suburb of Kilbirnie. Wellington CBD has the largest number of commercial buildings on a single network; it is also the only network that still has a significant quantity of mains operating at low pressure.

Table 5.4: **Wellington Region Networks.**

NETWORK (GAS GATE)	DESCRIPTION AND MAJOR CUSTOMERS	NUMBER OF CONSUMERS (PER TYPE)	TOTAL NETWORK LENGTH (BY PRESSURE CLASS)	MAXIMUM GAS GATE LOAD	MAXIMUM GAS GATE ANNUAL VOLUME
Tawa A	City network supplying a wide range of consumers, from residential to large industrials	Res./sml. com.: 29,106 Commercial: 720 Industrial: 15	IP: 33.7km MP: 971.8km LP: 54.6km	455.9GJ/h	1,945.0TJ

5.5.2 HUTT VALLEY AND PORIRUA – AREA DESCRIPTION

Hutt Valley and Porirua region encompasses the three networks located north of Wellington city. They mainly supply residential consumers and we observe an important subdivision activity in this region.

Table 5.5: **Hutt Valley and Porirua Region Networks.**

NETWORK (GAS GATE)	DESCRIPTION AND MAJOR CUSTOMERS	NUMBER OF CONSUMERS (PER TYPE)	TOTAL NETWORK LENGTH (BY PRESSURE CLASS)	MAXIMUM GAS GATE LOAD	MAXIMUM GAS GATE ANNUAL VOLUME
Belmont	City network supplying the whole Hutt Valley region, including the Industrial areas in Seaview	Res./sml. com.: 22,497 Commercial: 640 Industrial: 12	IP: 101.7km MP: 1,129.7km LP: 0.8km	323.6GJ/h	1,287.9TJ
Waitangirua & Pauatahanui #1	City network supplying the Northern part of the Wellington region, including Tawa, Porirua and Paremata. Both gas gates are linked in Paremata	Res./sml. com.: 6,348 Commercial: 184 Industrial: 4	IP: 34.6km MP: 367.5km LP: 0.1km	61.6GJ/h and 17.5GJ/h	303.0TJ
Pauatahanui #2	Rural network supplying residential consumers	Res./sml. com.: 4 Commercial: 1 Industrial: 0	IP: 0.0km MP: 0.3km LP: 0.0km	0.2GJ/h	0.5TJ

5.5.3 TARANAKI – AREA DESCRIPTION

We operate 17 networks in the Taranaki region. With the exception of New Plymouth, the majority of the networks in the Taranaki area are small, supplying less than 1,000 ICPs. They were generally built to supply large industrial consumers in the area – such as a dairy plant in Hawera. This allowed the reticulation of adjacent cities or townships. In some networks, the cornerstone industrial customer has shut down but we still ensure supply to the remaining customers.

Table 5.6: **Taranaki Region Networks.**

NETWORK (GAS GATE)	DESCRIPTION AND MAJOR CUSTOMERS	NUMBER OF CONSUMERS (PER TYPE)	TOTAL NETWORK LENGTH (BY PRESSURE CLASS)	MAXIMUM GAS GATE LOAD	MAXIMUM GAS GATE ANNUAL VOLUME
Eltham	Small township network supplying large industrial consumers: 2 dairy factories and 1 abattoir	Res./sml. com.: 328 Commercial: 5 Industrial: 3	IP: 1.6km MP: 30.1km LP: 0.0km	24.0GJ/h	131.1TJ
Hawera	A network feeding two towns and a large dairy site outside Hawera	Res./sml. com.: 2,789 Commercial: 39 Industrial: 2	IP: 3.8km MP: 165.8km LP: 0.1km	107.1GJ/h	388.5TJ
Inglewood	Town network supplying residential consumers	Res./sml. com.: 586 Commercial: 11 Industrial: 0	IP: 0.0km MP: 44.3km LP: 0.0km	6.6GJ/h	25.2TJ
Kaponga	Township network supplying residential consumers	Res./sml. com.: 2 Commercial: 1 Industrial: 1	IP: 0.0km MP: 5.8km LP: 0.0km	0.4GJ/h	1.3TJ
Kapuni	Very small township network supplying a dairy factory	Res./sml. com.: 58 Commercial: 1 Industrial: 0	IP: 0.4km MP: 1.6km LP: 0.0km	7.8GJ/h	26.9TJ
Manaia	Small township network supplying Okaiawa, Manaia and an industrial bakery	Res./sml. com.: 241 Commercial: 0 Industrial: 1	IP: 0.0km MP: 29.3km LP: 0.0km	3.9GJ/h	22.3TJ
Matapu	Rural network supplying farming installations	Res./sml. com.: 6 Commercial: 0 Industrial: 0	IP: 0.0km MP: 1.7km LP: 0.0km	0.1GJ/h	0.4TJ
New Plymouth	City network supplying a wide range of consumers, from residential to large industrials	Res./sml. com.: 11,272 Commercial: 220 Industrial: 8	IP: 19.3km MP: 651.6km LP: 1.1km	148.9GJ/h	751.4TJ
Oakura	Small township network supplying residential consumers	Res./sml. com.: 263 Commercial: 5 Industrial: 0	IP: 0.0km MP: 18.9km LP: 0.0km	1.8GJ/h	6.7TJ

Table continued on next page >

Table 5.6: **Taranaki Region Networks** continued...

NETWORK (GAS GATE)	DESCRIPTION AND MAJOR CUSTOMERS	NUMBER OF CONSUMERS (PER TYPE)	TOTAL NETWORK LENGTH (BY PRESSURE CLASS)	MAXIMUM GAS GATE LOAD	MAXIMUM GAS GATE ANNUAL VOLUME
Okato	Small township network supplying residential consumers	Res./sml. com.: 61 Commercial: 1 Industrial: 0	IP: 0.0km MP: 8.3km LP: 0.0km	0.6GJ/h	1.7TJ
Opunake	Small township network	Res./sml. com.: 175 Commercial: 8 Industrial: 0	IP: 0.0km MP: 26.2km LP: 0.0km	1.7GJ/h	7.6TJ
Patea	Small township network supplying a greenhouse	Res./sml. com.: 184 Commercial: 2 Industrial: 1	IP: 0.0km MP: 18.2km LP: 0.0km	5.3GJ/h	18.3TJ
Pungarehu 1	Very small township network built to supply a dairy plant now closed down	Res./sml. com.: Not recorded Commercial: Not recorded Industrial: Not recorded	IP: 0.0km MP: 0.2km LP: 0.0km	0.0GJ/h	0.1TJ
Pungarehu 2	Rural network supplying a single ICP since the dairy plant shut down	Res./sml. com.: 15 Commercial: 1 Industrial: 0	IP: 0.0km MP: 7.3km LP: 0.0km	0.1GJ/h	0.1TJ
Stratford	Small town network supplying residential and small commercial consumers, as well as an abattoir in the outskirts of town	Res./sml. com.: 901 Commercial: 25 Industrial: 1	IP: 5.4km MP: 88.9km LP: 0.0km	13.2GJ/h	54.1TJ
Waitara	Small town network with high density residential area (subdivisions) supplying a major food processing plant and the township of Lepperton	Res./sml. com.: 1,110 Commercial: 36 Industrial: 1	IP: 5.8km MP: 105.7km LP: 0.0km	16.8GJ/h	67.2TJ
Waverley	Very small township network supplying a major sawmill	Res./sml. com.: 5 Commercial: 0 Industrial: 1	IP: 0.0km MP: 6.0km LP: 0.0km	7.2GJ/h	36.0TJ

5.5.4 HAWKES BAY – AREA DESCRIPTION

In the Hawkes Bay region, we operate a single network in Hastings and Napier that is supplied by a single gas gate located in Hastings. The defining feature of this network is the relatively large number of major industrial customers. This network is the second largest in terms of gas conveyed and has the greatest average volume per ICP.

Table 5.7: **Hawkes Bay Region Networks.**

NETWORK (GAS GATE)	DESCRIPTION AND MAJOR CUSTOMERS	NUMBER OF CONSUMERS (PER TYPE)	TOTAL NETWORK LENGTH (BY PRESSURE CLASS)	MAXIMUM GAS GATE LOAD	MAXIMUM GAS GATE ANNUAL VOLUME
Hastings	Network supplying a large number of industrial and large commercial customers as well as the cities of Hastings and Napier	Res./sml. com.: 4,299 Commercial: 289 Industrial: 20	IP: 42.5km MP: 397.7km LP: 9.7km	324.4GJ/h	1,665.8TJ

5.5.5 MANAWATU AND HOROWHENUA – AREA DESCRIPTION

Our 13 networks in the Manawatu and Horowhenua regions are small. Only Palmerston North has a dense city network. Some of these networks were constructed to accommodate single large customers (e.g. Kairanga, Kakariki).

Table 5.8: **Manawatu and Horowhenua Region Networks.**

NETWORK (GAS GATE)	DESCRIPTION AND MAJOR CUSTOMERS	NUMBER OF CONSUMERS (PER TYPE)	TOTAL NETWORK LENGTH (BY PRESSURE CLASS)	MAXIMUM GAS GATE LOAD	MAXIMUM GAS GATE ANNUAL VOLUME
Ashhurst	A small town network	Res./sml. com.: 219 Commercial: 5 Industrial: 0	IP: 0.0km MP: 24.9km LP: 0.0km	1.8GJ/h	8.0TJ
Dannevirke	A small town network also feeding a sawmill and an abbatoir	Res./sml. com.: 95 Commercial: 15 Industrial: 2	IP: 3.4km MP: 17.6km LP: 0.0km	9.8GJ/h	43.3TJ
Feilding	A network supplying two towns, agricultural processing and an Air Force Base	Res./sml. com.: 1,667 Commercial: 57 Industrial: 5	IP: 0.0km MP: 179.8km LP: 0.0km	39.2GJ/h	159.8TJ

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Table 5.8: **Manawatu and Horowhenua Region Networks** continued...

NETWORK (GAS GATE)	DESCRIPTION AND MAJOR CUSTOMERS	NUMBER OF CONSUMERS (PER TYPE)	TOTAL NETWORK LENGTH (BY PRESSURE CLASS)	MAXIMUM GAS GATE LOAD	MAXIMUM GAS GATE ANNUAL VOLUME
Foxton	A small town network	Res./sml. com.: 290 Commercial: 8 Industrial: 1	IP: 1.4km MP: 46.2km LP: 0.1km	8.2GJ/h	26.3TJ
Kairanga	A rural network	Res./sml. com.: 3 Commercial: 0 Industrial: 1	IP: 0.0km MP: 1.9km LP: 0.0km	0.0GJ/h	0.1TJ
Kakariki	A rural network supplying a meat works	Res./sml. com.: 0 Commercial: 1 Industrial: 1	IP: 0.0km MP: 10.3km LP: 0.0km	14.1GJ/h	69.5TJ
Levin	A town network with a number of large commercial and industrial consumers	Res./sml. com.: 2,796 Commercial: 70 Industrial: 5	IP: 0.0km MP: 227.5km LP: 0.1km	54.9GJ/h	259.9TJ
Longburn	A small town network also feeding a number of industrial consumers, a prison and an army base	Res./sml. com.: 291 Commercial: 7 Industrial: 6	IP: 9.2km MP: 28.8km LP: 0.0km	61.6GJ/h	264.5TJ
Mangatainoka	A rural network supplying a brewery	Res./sml. com.: 0 Commercial: 0 Industrial: 1	IP: 0.0km MP: 1.2km LP: 0.0km	5.7GJ/h	14.6TJ
Oroua Downs	A rural network supplying a large commercial nursery	Res./sml. com.: 2 Commercial: 1 Industrial: 0	IP: 0.0km MP: 3.7km LP: 0.0km	7.5GJ/h	7.4TJ
Pahiatua	A small town network also supplying a large dairy factory	Res./sml. com.: 80 Commercial: 8 Industrial: 1	IP: 0.0km MP: 12.6km LP: 0.0km	62.9GJ/h	401.8TJ
Palmerston North	City network supplying a wide range of consumers, from residential to large industrials	Res./sml. com.: 14,848 Commercial: 355 Industrial: 9	IP: 12.8km MP: 820.3km LP: 0.7km	209.9GJ/h	837.6TJ
Takapau	A rural network supplying a meat works	Res./sml. com.: 0 Commercial: 0 Industrial: 0	IP: 4.0km MP: 0.0km LP: 0.0km	21.1GJ/h	91.3TJ

5.5.6 NETWORK CHANGES

In the period from 1 October 2013 to 30 September 2014, two changes that are considered as significant have occurred, shown below.

Table 5.9: **Significant Changes to the Network (01/10/2013 to 30/09/2014).**

PROJECT	REGION	PRESSURE CLASS	NATURE OF CHANGE	REASON
Hyderabad Road IP Main Relocation	Hawkes Bay	IP	Realignment of 211m of IP pipeline	Installation of new IP mains and removal of existing mains that were running under a building on private property.
Victoria University mains renewal	Wellington	HLP	Replacement of 270m of 150mm Cast Iron with 150mm PE	Installation of 270m of main to replace old cast iron mains.

5.6 ASSET CLASSES

This section describes the different classes of assets that Powerco owns, operates and manages on the network. Additionally, it includes the asset life for the main asset classes as a whole and by region. These are shown below in Table 5.10.

When considering the information, the following points should be noted.

- Line and service valves are grouped together as both categories have the same maintenance and operation requirements.
- Unspecified line and service valves are listed separately as their quantity is significant (around 60% of the total number of assets). Valve materials can usually be inferred from the pipe material it is connected to.

Table 5.10: **Description of Powerco's Gas Network Assets.**

ASSET CLASS	ASSET TYPE	ASSET LIFE (IN YEARS)	DESCRIPTION
Pipes (services and mains)	Steel Pipe	60 to 70	Steel pipes are mainly used on IP systems as their mechanical characteristics allow the transport of higher pressure gas. They are protected against corrosion using Cathodic Protection systems and wrapping.
	PE	50 to 60	PE is our preferred material for pipes as they are easier to assemble using electrofusion technics. PE pipes are pinchable, allowing quick isolation by squeezing off the pipe. Some of the PE used (especially installed before 1985) may have a shorter life. We are monitoring the issue to better understand if the mode of failure is actually age related.
	Galvanised steel	60 to 70	We have a few instances of galvanised steel on our networks. It is not a standard solution and only used on a case by case basis.
	Cast Iron	30	The majority of our Cast Iron has been replaced. We are investigating the remaining small quantity recorded in our GIS to check and validate the information.
Line and service valves	Steel	60 to 70	Steel valves are used to isolate a section of steel pipe. They also are protected against corrosion by the same systems as steel pipes.
	PE	50 to 60	PE valves can be easily fitted on PE pipes using electrofusion, offering a high level of reliability,
	Other material	50 to 60	This includes Cast Iron and Brass
	Unspecified material	N/A	These are the valves where the material has not been recorded properly in our systems. The majority of them should be made of PE. We are working towards increasing the accuracy of our data.
Stations	Pipework, regulators, etc.	30 to 35	Stations (DRS) are mostly above ground. They are made of several components to achieve pressure reduction. This includes regulators, filters, valves and facilities (building or enclosure). We also use underground DRS units called "cocons." They are not prone to vehicle collision and limit the visual nuisance, especially in the urban environment.
Special crossings	Bridge, railways, major roads crossings	Same as pipeline	The life of the crossed facility (bridge, railway track) is taken into account when known
Cathodic Protection	Rectifiers	30 to 35	Rectifiers impress a current on the steel pipelines to protect them from corrosion. They must be used with an impressed anode.
	Impressed anodes	30 to 35	Impressed anodes are used in conjunction with a rectifier to ensure the current flows form the pipe.
	Sacrificial anodes	30 to 35	Sacrificial anodes are used to protect steel pipelines from corrosion. They do not require impressed current.
SCADA systems	Transducers, telecommunication systems, etc.	10 to 20	Our SCADA system monitors the pressure and/or flow at key stations on the network. The information is transmitted back to Powerco's office via the cellular network. Alarms are set up to alert us of abnormal conditions.

Table continued in next column >

Figure 5.6: **Electrofusion Operation to Joint Two Pipes.**

5.7 ASSET PROFILES

Powerco's gas network has been formed through the amalgamation of multiple networks. This means that the asset profile in each region differs from other regions. For this reason we describe the asset profile in each region separately.

The data shown in the tables below is sourced from our GIS system and is based on the best information we have available to date. While we are confident with the accuracy of most data available in our GIS system, one of our primary asset management improvement initiatives is targeted at enhancing our core asset information and dataset.

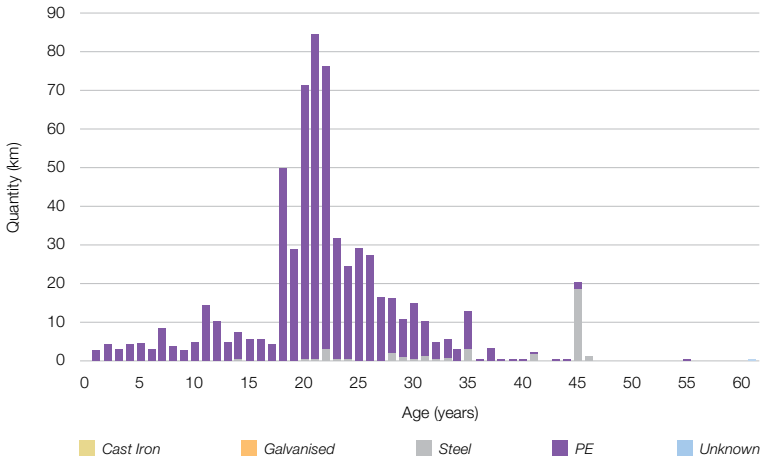
5.7.1 WELLINGTON REGION

Our networks in Wellington are primarily made of PE. The IP line coming down from Tawa is made of steel and protected by an impressed current cathodic protection system. On the age profile, we can clearly see the IP line being built first 40 years ago. The cast-iron pipes present in the CBD were progressively replaced by modern PE.

Table 5.11: **Assets Quantities and Average Age in Wellington Region.**

ASSET CLASS	ASSET TYPE	ASSET LIFE (IN YEARS)	QUANTITY	AVERAGE AGE
Pipes (services and mains)	Steel Pipe	60 to 70	46.5 km	34
	PE	50 to 60	1,011.8 km	20
	Galvanised steel	60 to 70	0.4 km	1
	Cast-iron	30	0.3 km	31
	Unspecified pipe	50 to 60	1.2 km	18
Line and service valves	Steel	60 to 70	62	8
	PE	50 to 60	192	8
	Other material	50 to 60	1	1
	Unspecified material	N/A	372	18
Stations	Pipework,regulators,etc	30 to 35	50	19
Special crossings	Bridge, railways, major roads crossings	Same as pipeline	24	20
Cathodic protection	Rectifiers	30 to 35	2	33
	Impressed anodes	30 to 35	30	40
	Sacrificial anodes	30 to 35	47	31
SCADA systems	Transducers, telecommunication systems, etc.	10 to 20	19	4

Figure 5.7: **Main Pipes Age Profile for Wellington Region.**



5.7.2 HUTT VALLEY AND PORIRUA REGION

While PE is the main material used, the networks in the Hutt Valley and Porirua region have a large quantity of steel pipes protected by impressed current cathodic protection systems. The majority of PE pipes are still in the first third of their life.

Table 5.12: **Assets Quantities and Average Age in Hutt Valley and Porirua Region.**

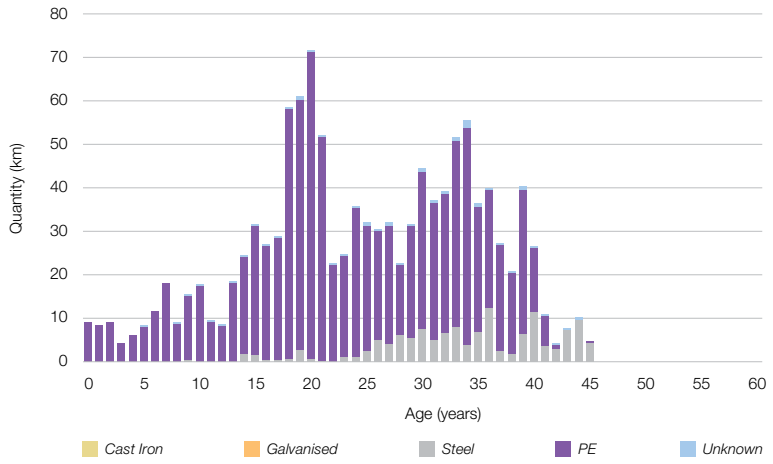
ASSET CLASS	ASSET TYPE	ASSET LIFE (IN YEARS)	QUANTITY	AVERAGE AGE
Pipes (services and mains)	Steel Pipe	60 to 70	147.6 km	34
	PE	50 to 60	1,449.2 km	23
	Galvanised steel	60 to 70	0.1 km	28
	Cast-iron	30	0.2 km	15
	Unspecified pipe	50 to 60	39.6 km	30
Line and service valves	Steel	60 to 70	543	29
	PE	50 to 60	142	15
	Other material	50 to 60	2	2
	Unspecified material	N/A	330	27

Table continued on next page >

Table 5.12: **Assets Quantities and Average Age in Hutt Valley and Porirua Region** continued...

ASSET CLASS	ASSET TYPE	ASSET LIFE (IN YEARS)	QUANTITY	AVERAGE AGE
Stations	Pipework, regulators, etc	30 to 35	91	30
Special crossings	Bridge, railways, major roads crossings	Same as pipeline	86	29
Cathodic protection	Rectifiers	30 to 35	6	25
	Impressed anodes	30 to 35	21	30
	Sacrificial anodes	30 to 35	15	29
SCADA systems	Transducers, telecommunication systems, etc.	10 to 20	14	4

Figure 5.8: **Main Pipes Age Profile for Hutt Valley and Porirua Region.**



5.7.3 TARANAKI REGION

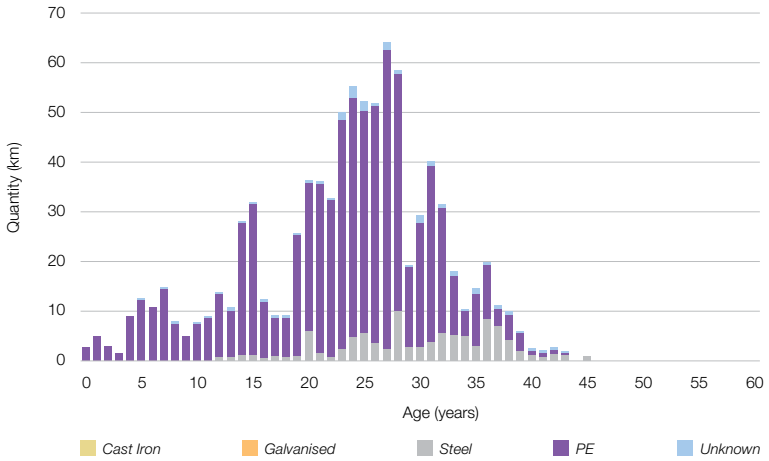
Most of the network in the Taranaki region is made of PE pipes. We still have two records of cast-iron pipes located in New Plymouth – one is a road crossing, the other is a low-pressure sub-network supplying a few residential consumers. The data shows a large number of service pipes recorded with unspecified material. Looking at the installation date, the majority of them are likely to be made of PE.

The average age of the assets is described in Table 5.13.

Table 5.13: **Assets Quantities and Average Age in Taranaki Region.**

ASSET CLASS	ASSET TYPE	ASSET LIFE (IN YEARS)	QUANTITY	AVERAGE AGE
Pipes (services and mains)	Steel Pipe	60 to 70	107.2 km	32
	PE	50 to 60	1,093.9 km	24
	Galvanised steel	60 to 70	0.7 km	30
	Cast-iron	30	0.1 km	35
	Unspecified pipe	50 to 60	46.6 km	31
Line and service valves	Steel	60 to 70	94	19
	PE	50 to 60	93	7
	Other material	50 to 60	1	9
	Unspecified material	N/A	235	23
Stations	Pipework,regulators,etc	30 to 35	22	23
Special crossings	Bridge, railways, major roads crossings	Same as pipeline	67	29
Cathodic protection	Rectifiers	30 to 35	2	31
	Impressed anodes	30 to 35	0	0
	Sacrificial anodes	30 to 35	24	21
SCADA systems	Transducers, telecommunication systems, etc.	10 to 20	10	2

Figure 5.9: **Main Pipes Age Profile for Taranaki Region.**



5.7.4 MANAWATU AND HOROWHENUA REGION

The Palmerston North network is unusual in that there are more than 40 DRSs in the city alone. This creates a multitude of pressure systems that add complexity to managing the network. In the rest of the region, we own and operate networks mainly made of PE. The cast-iron identified in the region is not thought to be live but is being investigated.

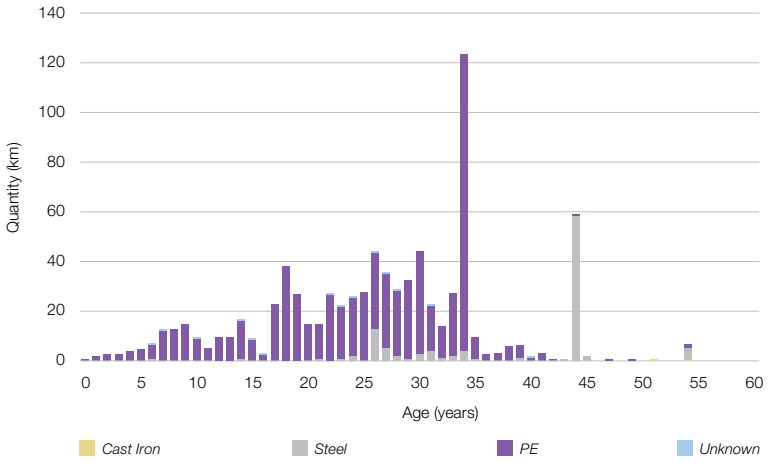
The average age of the assets is described in Table 5.14.

Table 5.14: **Assets Quantities and Average Age in Manawatu and Horowhenua Region.**

ASSET CLASS	ASSET TYPE	ASSET LIFE (IN YEARS)	QUANTITY	AVERAGE AGE
Pipes (services and mains)	Steel Pipe	60 to 70	140.7 km	38
	PE	50 to 60	1,262.7 km	24
	Galvanised steel	60 to 70	0.0 km	N/A
	Cast-iron	30	0.5 km	45
	Unspecified pipe	50 to 60	2.9 km	22
Line and service valves	Steel	60 to 70	22	5
	PE	50 to 60	48	6
	Other material	50 to 60	1	43
	Unspecified material	N/A	390	24
Stations	Pipework,regulators,etc	30 to 35	83	25
Special crossings	Bridge, railways, major roads crossings	Same as pipeline	70	29
Cathodic protection	Rectifiers	30 to 35	1	44
	Impressed anodes	30 to 35	4	44
	Sacrificial anodes	30 to 35	49	36
SCADA systems	Transducers, telecommunication systems, etc.	10 to 20	14	3

Table continued on next page >

Figure 5.10: **Main Pipes Age Profile for Manawatu and Horowhenua Region.**



5.7.5 HAWKES BAY REGION

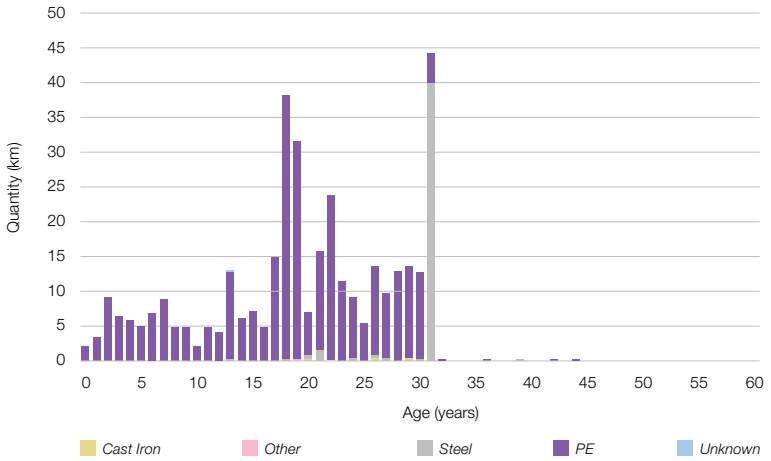
A long IP line has supplied Napier from Hastings gas gate for almost 30 years. This is reflected in the age profile with a spike of steel pipe being installed before constructing the remaining network.

The average age of the assets is described in Table 5.15.

Table 5.15: **Assets Quantities and Average Age in Hawkes Bay Region.**

ASSET CLASS	ASSET TYPE	ASSET LIFE (IN YEARS)	QUANTITY	AVERAGE AGE
Pipes (services and mains)	Steel Pipe	60 to 70	46.2 km	30
	PE	50 to 60	401.7 km	18
	Galvanised steel	60 to 70	0.0 km	N/A
	Cast-iron	30	1.0 km	25
	Unspecified pipe	50 to 60	0.4 km	80
Line and service valves	Steel	60 to 70	22	25
	PE	50 to 60	41	6
	Other material	50 to 60	0	N/A
	Unspecified material	N/A	168	23
Stations	Pipework,regulators,etc	30 to 35	14	24
Special crossings	Bridge, railways, major roads crossings	Same as pipeline	53	30
Cathodic protection	Rectifiers	30 to 35	1	31
	Impressed anodes	30 to 35	1	1
	Sacrificial anodes	30 to 35	0	N/A
SCADA systems	Transducers, telecommunication systems, etc.	10 to 20	6	2

Figure 5.11: **Main Pipes Age Profile for Hawkes Bay Region.**



5.8 NON-NETWORK ASSETS

Non-network assets include information systems, asset management systems, and other non-network fixed assets, such as motor vehicles and tools, plant and machinery. These are described below.

5.8.1 INFORMATION SYSTEMS

5.8.1.1 SYSTEMS USED TO MANAGE ASSET DATA

Powerco uses the following information systems as part of asset management, and these systems are considered non-network assets.

- ESRI Geographical Information System (GIS)
- JD Edwards (JDE) Maintenance, Work Management and Financial System
- Service Provider Application (SPA) web application and field data entry system
- Connections Works Management System (CWMS)
- Hard copy records and Engineering Drawing Management System (EDMS)
- Ancillary databases.

5.8.1.2 GEOGRAPHICAL INFORMATION SYSTEM (GIS)

Powerco uses a GIS to capture, store, manage and visualise its network assets. The GIS is built on top of a set of ESRI and Schneider Electric applications (ArcGIS, ArcFM) that deliver data in Web, desktop and service-based solutions. The system contains data about the pipes, valves, stations and protection systems on the distribution network.

GIS is the master system for current assets in the network, but it also distributes and informs other systems about the current assets via a middleware system interface (Biztalk server). The primary consumer of this data is the enterprise system (JDE), which acts as the works management and financial system that operates as a slave system off the GIS data. This integration allows calculating and managing the network fixed asset register and the network maintenance plans. The asset spatial information is also a key input into maintenance scheduling where geographical and network hierarchy factors are considered in the planning, monitoring and improvement of the asset base.

5.8.1.3 MAINTENANCE, WORKS MANAGEMENT AND FINANCIAL SYSTEM

Powerco operates a JDE system, which provides asset management and reporting capability, including financial tracking, works management, procurement and maintenance management. Powerco has centralised asset condition and maintenance programming in JDE. Within JDE, Powerco has implemented system and process improvements for defect and rotable asset management.

5.8.1.4 SERVICE PROVIDER APPLICATION (SPA)

Powerco has a mobile platform that delivers applications to field services PCs and mobile devices. This application enables field capture of asset condition, maintenance activity results and defects. Reporting on the data generated by the SPA application is delivered via a suite of reports out of both JDE and Business Objects. The defect and condition data can also be viewed spatially from the GIS.

5.8.1.5 CUSTOMER WORKS MANAGEMENT SYSTEM (CWMS) GAS

This is an online workflow management system, which facilitates/tracks the processes associated with connection applications, approvals, and works completion. Application, review and input work steps are available to Powerco-approved contractors via the internet. The primary function of the system is to manage the flow of customer-initiated work requests through Powerco's formal process, from initial request through to establishment of the Installation Control Point (ICP) in billing and reference systems.

The workflow ensures that the latest business rules are applied to all categories of connection work.

Requests for new or existing customers to carry out work on Powerco's network are covered by Powerco's Customer-Initiated Works process. This process places importance on providing new and existing consumers a direct service from Powerco, undertaken by our contractors at their connection point(s). The business rules of the process ensure that the capacity of the overall local network and the quality of supply to adjacent consumers is retained.

5.8.1.6 DRAWING MANAGEMENT SYSTEM

The drawing management system is based on IC Meridian, and works in conjunction with AutoCad drawing software. It is a database of all engineering drawings, including regulator stations, special crossings and metering stations. In addition, there is a separate vault that contains legal documents relating primarily to line routes over private property.

5.8.1.7 CUSTOMER COMPLAINTS MANAGEMENT SYSTEM

This is a workflow management system that maintains an auditable record through the lifecycle of a customer complaint. The application is designed to work within the Electricity and Gas Complaints Commission rules regarding complaints, and automatically generates the key reports required.

Another feature of the application is the integration with the GIS and ICP data sources, to provide spatial representation of complaints and gas quality issues. This will provide valuable information to the planning teams.

5.8.1.8 SAFETY MANAGER

Safety Manager is one of the systems that supports Powerco's operational risk model and workflow. As the central repository for incidents, hazards and identified risks, it acts as a platform to manage these across internal and external stakeholders at both an operational and strategic level. In addition, it supports the Health, Safety, Environment and Quality (HSEQ) Team for the management of Personal Protection Equipment (PPE) and H&S competencies for all Powerco employees.

5.8.2 OTHER NON-NETWORK ASSETS

5.8.2.1 SPECIALISTS TOOLS AND SPARE PARTS

Powerco owns tools and spare parts that are essential for the operation of the networks. These are generally high-value assets that are not used frequently on the network. This includes:

- Tools to isolate pipelines:
  - Stoppling gear
  - Clamps
  - Large squeeze off equipment
- Steel pipe
- Correctors and meters

They are made available to and located with our service providers. We keep the responsibility to maintain these assets.

5.8.2.2 OFFICE BUILDINGS, DEPOTS AND WORKSHOPS

Powerco operates from facilities located throughout our network footprint. This has many advantages, including employees with local knowledge being situated close to customers and service providers. Our facilities include a newly leased office in central Wellington, two offices in New Plymouth, a large, leased stores facility in Lower Hutt and small offices located in our service providers' depots in Hastings, Palmerston North and Lower Hutt.

As the main office has recently undergone a new fit-out, there is no plan to have further capital expenditure on this facility within the next five years. There is also no plan for capital expenditure on the critical stores facility as this is a fairly new warehouse.

5.8.2.3 OFFICE FURNITURE AND EQUIPMENT

The office facilities operated by Powerco are fitted out with work stations to accommodate nearly 40 employees. A standard workstation setup includes a height adjustable desk, chair, storage, PC and communication equipment. Offices also host meeting spaces and relevant office equipment required to effectively operate, such as printers, storage and meeting room technology.

Office areas including equipment and furniture are regularly inspected to ensure that any required repairs or maintenance are noted and addressed promptly. As new office furniture was installed with the fit-out there is no intention to replace furniture in the next few years.

5.8.2.4 MOTOR VEHICLES

Powerco has a fully maintained fleet of 12 vehicles dedicated to the Gas business, which are all currently in the first year of a three-year lease. A 2012 review of our fleet resulted in the selection of new vehicles that fit defined criteria, including that vehicles must have a five-star NCAP rating, low emissions and be fit for purpose. Powerco undertakes to have regular vehicle inspections to ensure vehicles are well maintained and serviced as per the manufacturers' recommendations.

ADOPTING NEW TECHNOLOGIES

Powerco is committed to delivering New Zealand's energy future. To do this, we are investing in new technologies to offer more choices to customers and to bring vital information to our field staff.

6. ASSET MANAGEMENT STRATEGIES

In the previous sections, we described the assets we own and operate, the governance arrangements and processes we have in place, and our asset management objectives and performance measures, aligned with our business plan. In this section, we expand on our asset management objectives and measures and show how we apply these strategically to our asset management plans. As set out in Section 4, our asset management objectives cover five areas:

Safety – Keep the public, our staff and our contractors safe from harm.

Delivery – Ensure our networks have the capacity and resilience to meet the quality of supply expected by our customers.

Reliability – Safe containment of gas and operational reliability to deliver gas to our customers at the right quality and pressure.

Efficiency – Continuously seek out and deliver cost efficiencies.

Partnership – Be a responsible partner for our customers and other stakeholders.

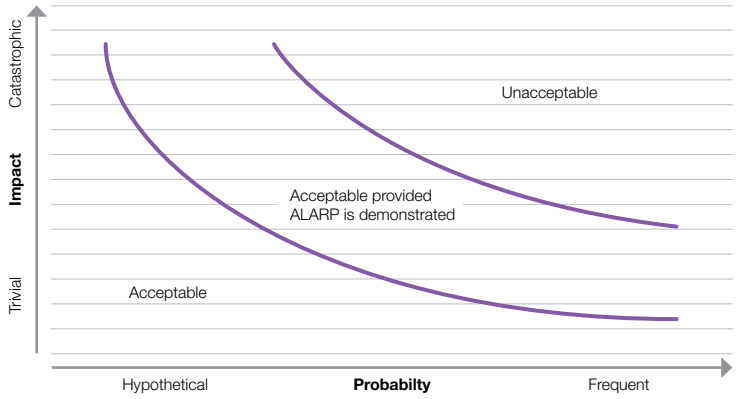
Each of these translates directly into one or more asset management strategies that we employ in the whole-of-life management of our asset fleet and network development initiatives. In addition, there is typically not a one-for-one relationship between an objective and the strategy. For example, leakage management is a fundamental component to ensuring public safety, network resilience and operational reliability.

All the strategies described in this section rely on risk management. Depending on the intensity of the risks, we class them as:

- Unacceptable
- Acceptable provided ALARP (As Low As Reasonably Practical) is demonstrated
- Acceptable

The following figure illustrates this risk-based approach to our strategies.

Figure 6.1: **Risk Management Strategy.**



An important consideration when reading through this section is that we strive to continuously improve the way we approach whole-of-life asset management and the implementation of our asset management practices. The means of assessing risk and the acceptability of safety and supply security risks will continue to evolve. As such, these strategies will likely change and improve over time.

6.1 SAFETY

6.1.1 PUBLIC SAFETY

Our objective for public safety is to ensure that none of our assets and operations present a risk to the public. As established in Section 4, our targets are:

Table 6.1: **Public Safety Measures and Targets.**

TARGET	MEASURE	VALUE	WHEN
Minimise risk caused by third-party damage	Number of TPD incidents	<50 p.a. per 1,000km	By RY20/21
Response to emergencies	Time to respond (to site) when an emergency is reported	>95% within 1 hour[1]	Throughout the period
Receive emergency calls efficiently	Percentage of emergency calls answered within 30 seconds	>90%	Throughout the period

To enable us to achieve zero harm to people or property, we have implemented a Public Safety Management System (PSMS). It is an overarching system that helps us place public safety at the core of all our activities. In May 2013, we achieved the certification to NZS 7901 Safety Management System for Public Safety.

The key strategies we utilise in managing public safety are:

- We design, construct, operate, maintain and decommission our network and assets following industry standards, primarily AS/NZS 4645:2008 and NZS 5263:2003
- We systematically assess risks to the public for all activities done on the network. This is our Formal Safety Assessment, reviewed every five years and completed by an ALARP (As Low As Reasonably Practical) assessment for risks intermediate and above
- We use safety-through-design methodologies (including physical protection) and any safety-related network enhancement programmes have higher priority in the works plan

[1] Price-Quality standard is 80% <60 minutes and 100% within 3 hours.

- We make sure gas escapes can be detected before they accumulate and reach a level that can cause a risk or concern to the public – using odorant and carrying out leak surveys with risk-based frequencies
- We maintain a response capability to faults and emergencies by implementing and maintaining an emergency response plan that defines roles and responsibilities, timeframes and procedures to be applied to make safe and restore supply
- We manage third-party damages to our underground pipelines by supplying network location, mark out and plan issues free of charge via the service "Dial before you dig". We also operate a permit system when third parties intend to work in the vicinity of strategic assets
- We monitor and solve any non-conformity with the PSMS
- We carry out safety inspections as part of our maintenance programme. The frequency of the inspections is driven by industry standards and manufacturers' specifications
- We strategically locate crews at the appropriate staffing level to effectively manage faults and emergency response to incidents

Managing public safety risks is an everyday challenge. The effectiveness of these strategies and associated activities are regularly reviewed. For example, we are currently reviewing the end-to-end process for informing others of the location and risks posed by our pipelines.

Figure 6.2: **Example of Safety Signage.**

These key strategies flow through to our approach to design, our equipment standards and how we manage the assets we have in place. Due to the nature of gas distribution, safety drives a large proportion of our operational costs. In particular, there are two fundamental components to our operations that result from these elements:

- Leakage management
- Fault response

6.1.1.1 LEAKAGE MANAGEMENT

Managing (and minimising) leaks is key to safety, network integrity (refer to Section 6.3.1), and the efficient management of the network assets (refer to Section 6.4). Gas containment is also essential for all our other activities and our assets must perform this function efficiently. When assets are designed to allow controlled gas release (e.g. through venting), we need to ensure they do so safely.

The primary mechanism we use to manage gas leakage is through the use of regular leak surveys, asset inspections and reports from the public to monitor asset performance.

We have analysed the effect of undetected leaks and the probability that they will occur, and applied this information, in conjunction with our public safety management processes and the mandatory requirements of AS/NZS 4645:2008, to identify appropriate survey frequencies for different network equipment. For example, gas gates are surveyed every month, as the safety risk associated with a leak at a gas gate is high (due to the large amount of energy that could potentially be released by such a leak). By contrast, rural networks are surveyed only every five years.

Later this year, we will start changing the frequency of our leak surveys, increasing the focus on assets classes that have been prone to leakage and reducing the frequency for new, modern electro-fused networks, which have proven to have very low leakage rates.

To ensure leakage can be detected easily, gas is odorised in accordance with New Zealand standard NZS 5263:2003. The Transmission System Operator is responsible for adding odorant before it enters the distribution systems.

The following table shows the leak survey frequency currently applied to different classes of network asset.

Table 6.2: **Leak Survey Frequencies by Asset Type.**

ASSET TYPE	MONTHLY	3 MONTHLY	ANNUAL	5 YEARLY
Gas gate	X			
Special crossings where physical movement is expected (e.g. bridge crossings)		X		
DRS			X	
Mains and services in high consequence areas			X	
Line valves			X	
Other network equipment not covered above				X

Between these formal surveys, every time an operation or inspection is carried out on equipment, it will be inspected for leaks. A last-resort leak check mechanism relies on the public reporting leaks, which we call Public Reported Escapes (PRE).

We run a 24-hour seven-day a week call centre, shared with Electricity's network operation control team. The centre answers calls on our free emergency number 0800 111 848. The calls could come from members of the public, retailers or emergency services. Calls are categorised and relayed to a faultman, who will use his best endeavours to be on any non-CBD site in less than 60 minutes from the time the call was received and 30 minutes for a CBD site.

Figure 6.3: **Pipe Repair Operation with Squeeze-off Equipment.**

6.1.1.2 FAULT MANAGEMENT

Due to the potentially hazardous nature of gas, whenever a fault (or outage) occurs, irrespective of its cause, we initially treat it as an emergency response. The initial response will always be the dispatch of a faultman to make sure the public is safe and installations are protected.

On-site fault response is provided by our service providers, who must report any problems to Powerco.

When a leak is detected, it is classified according to its location, size and impact on supply. This classification defines the degree of urgency attached to either corrective maintenance or renewal. Once the leak is precisely located, the gas supply at this location is isolated by using one of these three techniques:

- Shutting off the line valves
- Performing a squeeze-off, which involves pinching the pipe to stop the flow of gas
- Using stoppling gear to install a temporary valve on the pipe

If customers will be affected by the isolation, a bypass can be installed to ensure continuity of supply.

Our preferred choice to deal with a failed asset is to replace the section concerned.

Together, leakage management and prevention, and fault response accounts for almost 50% of our network operational costs. Section 9 sets out our expected operational costs over the AMP period.

6.1.2 PEOPLE SAFETY

Our second safety objective is to ensure the safety of our staff and contractors. As established in Section 4, our targets in respect of this are:

Table 6.3: **People Safety Measure and Target.**

TARGET	MEASURE	VALUE	WHEN
No harm to our staff or contractors	Lost time injury	0	Throughout the period

Our goal of zero lost-time injuries (LTI) is a real challenge for an organisation where the works required to construct, build, maintain, operate and decommission the assets is performed outdoors, in trenches with restricted space, in the presence of other utilities' infrastructure or other contractors, and, most of the time, in the middle of the road.

As discussed in Section 4.3, a contractor working on our network suffered a lost time injury in April 2015. This is a reminder that there is no silver bullet when it comes to Safety. We have carried out an investigation, and implemented appropriate corrective actions.

This year, we have formalised our “Safety through design” approach. This is a collaborative process in which we identify risks in the design phase of the lifecycle of the asset. By anticipating those, we can build mitigations into the design that will make the assets safer. This can include location of the asset, type of equipment chosen, or maintenance access.

We also recognise the risks and hazards in an office environment.

Powerco has put in place a Health and Safety system that enables us to deliver our “Think Safe, Work Safe, Home Safe” objective to our staff and contractors. We are using a risk approach to Health and Safety to achieve the right balance between safety and efficiency.

Our Health and Safety system encompasses:

- Systematic hazard identification and mitigation
- Committed safety leadership, with every member of our management teams required to carry out safety observation, toolbox meetings with the field staff and regular health and safety meetings
- A contractor approval system to ensure their safety systems meet or surpass Powerco’s requirements to health and safety
- Having documented processes and procedures to carry out any activity on the network
- Competency management for every person working on our network through the industry certification (e.g. Certificate of Competency)
- A systematic investigation after incidents
- An external auditing programme to ensure safety standards are properly applied in the field
- Participation and involvement with industry workgroups

6.2 DELIVERY

Our delivery objectives ensure that our networks are designed and built to meet the needs of our current and future customers. We strive to enable our customers to use their gas appliances at any time, without the need for demand-side management.

Demand-side management for gas networks is a less effective alternative than for electricity networks. Unlike electricity, switching gas loads off does not have an instantaneous effect on the network pressure due to the compressible nature of gas. Many older gas appliances cannot safely be switched off and on, due to the need to relight the pilot light. The need for demand-side management is also mitigated by the gases’ compressibility, which allows short-term peaks to be met from line-pack.

We consider that to meet the delivery objectives, the capacity of each network must be sufficient to cope with a one-in-20 year peak load. The use of one-in-20-year peak load is an indicator of the peak loading on our network and is based on common industry practice. It allows sufficient time for planning and development work to be completed prior to the occurrence of poor pressure events. Capacity also needs to be sufficient:

- During the upgrade process, otherwise the work itself will create a low-pressure event
- To allow for new residential and small commercial customers to connect in timely fashion (typically in less than two weeks) without creating a risk of poor pressure events

Figure 6.4: **Tawa Gate Upgrade to Maintain Quality of Supply in Wellington (2011).**

6.2.1 GROWTH ASSUMPTIONS AND FORECASTS

6.2.1.1 LOAD ASSUMPTIONS USED TO ASSESS PEAK NETWORK DEMAND

Currently, we use 2011 as a representative one-in-20 year demand (meteorological articles show 2011 sits in a range from 16 to 50 years, depending on the forecasters). The measured quantities from 2011 form a baseline for our forecasting of future demand.

2011 is used because:

- Gas consumption is at its highest when the weather is cold (and it was exceptionally cold in the winter of 2011)
- Our pressure monitoring programme was well deployed in the regions and allowed us to gather accurate data
- We did not record any poor pressure events at that particular time. Therefore 2011 provides a good baseline for unattenuated high-demand events

On-going pressure and flow monitoring data is then used for updating our models to most accurately represent the networks under current configuration and operating conditions. This ensures that we capture the effects of changes to the networks on a continued basis.

6.2.1.2 EXPECTED DEMAND GROWTH

In addition to peak load modelling forecasting, we forecast the mean demand growth in our networks. The primary indicator we use to forecast growth is the number of ICPs connected on our network. To forecast the number of ICPs, we use:

- Historical connection numbers
- Economic factors, including GDP and building consents (extracted from New Zealand Institute Economic Research)
- Industry reports
- Marketing and sales efforts

The last point is a key part of The Gas Hub strategy. We operate in a market where gas is competing against other energy sources, including electricity, solar, LPG, etc. The Gas Hub is our main vehicle to present and communicate the gas proposition to the public.

Over the next 10 years, we forecast a growth in the net number of ICPs on our network. It is the result of new connections, minus disconnections.

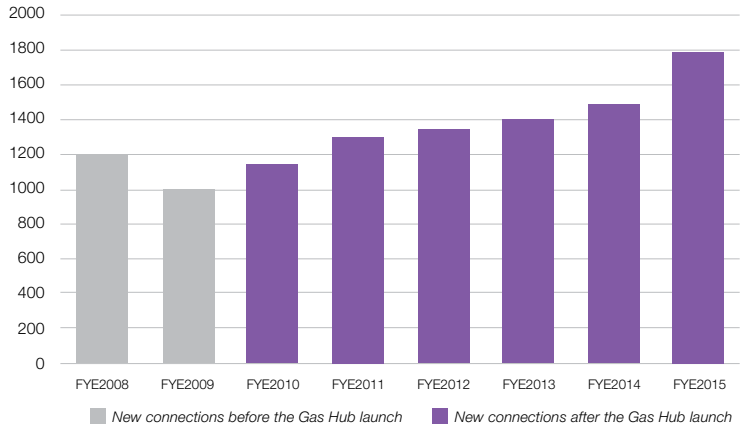
6.2.1.3 NEW CONNECTIONS

New connections are coming from three main streams:

- Subdivisions (new builds)
- Infill growth (consumers already mains-fronted)
- Reconnections

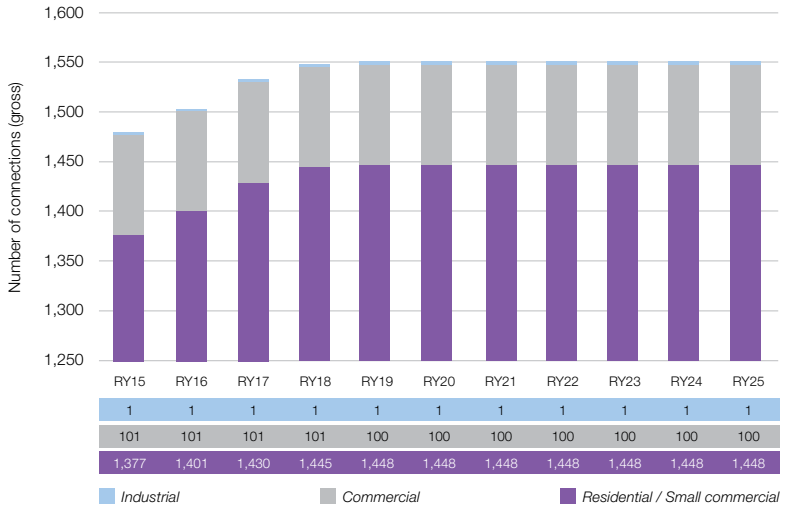
Through the 2000s, our connection numbers trended down, reaching a low point in FYE 2009. To counter this decrease, we launched The Gas Hub brand at the end of that same year and managed to lift the number of new connections and reconnections, as shown on the figure below.

Figure 6.5: **Influence of The Gas Hub Strategy on the Number of Connections.**



In the next 10 years, we forecast to maintain or increase new connections on our networks as a result of the economic context and The Gas Hub strategies as shown in the figure below.

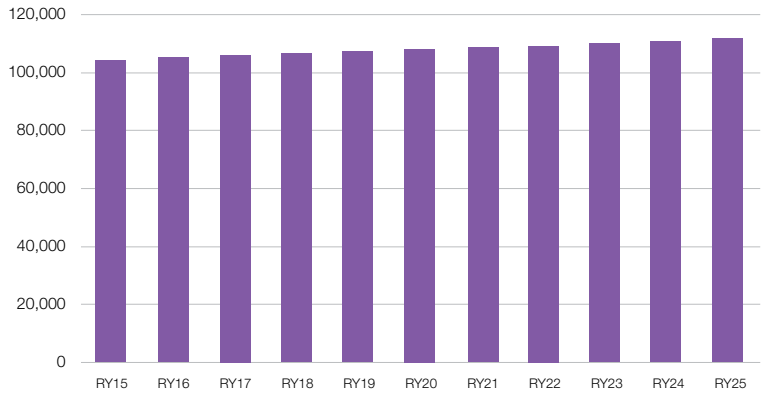
Figure 6.6: **Gross Number of New Connections Forecasted in the Next 10 Years.**



6.2.1.4 NET ICP GROWTH

With the growth in the number of connections and our continuous efforts to reinforce the gas proposition on the market through our brand, we expect to see a growth in our total number of ICPs as shown on the figure below.

Figure 6.7: **Total ICP Numbers Forecasted in the Next 10 Years.**



This growth forecast is reflected in our asset management plans presented in Sections 7 and 8. The two primary objectives under Delivery are:

- Network capacity
- Network resilience

The strategies that we employ to meet our objectives for each of these are described below.

6.2.2 NETWORK CAPACITY

Our network capacity objective is to ensure that our networks have sufficient capacity to meet our customers' needs. As set out in Section 4, the targets in relation to this objective are:

Table 6.4: **Network Capacity Measures and Targets.**

TARGET	MEASURE	VALUE	WHEN
Adequate network capacity	Poor pressure events under normal network configuration	<10 p.a.	By RY15/16
Network capacity for growth	Residential applications deferred due to insufficient system capacity	0	Throughout the period

To limit the loss of supply by poor pressure events, and allow mass-market customers to connect to our networks without major reinforcement, we have set a pressure threshold that triggers further investigation. This lower limit is a 40% pressure droop physically recorded on the network, or modelled under simulated peak conditions.

This level of droop represents around two thirds of the network capacity being utilised. This approach maintains headroom to enable us to achieve our objective during peak demand periods (guaranteeing security of supply) and not to defer any residential connection due to insufficient system capacity. We also take into account the minimum required operating pressure of the equipment connected to the network (GMS, DRS or other pressure regulation equipment), gas velocity (to limit noise), and the environment in which the network operates (e.g. pressure choice to ensure safety).

If the trigger of 40% droop is reached, we undertake a detailed analysis that potentially leads to reinforcement works on the network. Part of the analysis is a reassessment of the risk that consumers lose supply through a poor pressure event, taking into account our growth projections.

To measure pressure, we run a pressure-monitoring programme on an annual basis for our critical networks and reactively on others informed by our modelling tool or reported network issues. We have flow measurement devices at some stations on the networks and plan to install more to increase the accuracy of our modelling.

There are three approaches we use to increase capacity of the network:

- Add more points of supply on the network, which allows more gas to be injected in the system
- Construct high-capacity mains, or "strategic mains" to maximise the conveyance along a defined route
- Increase the network operating pressure within permitted limits

The choice of the approach is dependent on the specific characteristics encountered in each network, the type of end-consumers and the circumstances that lead to the pressure droop.

6.2.2.1 LARGE COMMERCIAL AND INDUSTRIAL CONSUMERS

For large commercial or industrial consumers, we adopt a reactive approach. Even by collecting intelligence from council zoning (e.g. location of industrial parks), it is difficult to design a network that will match what the consumers want without knowing what type of activities are exactly expected in the region, therefore the requirements for specific loads and usages.

6.2.2.2 RESIDENTIAL CONSUMERS

Our approach to growth with residential consumers is to have a network that can accommodate new connections without any work other than installing a service pipe. Consumers that need a new energy source are generally time-constrained and we want to offer them a competitive and timely proposition. We have a 40-metre free connection policy and guaranteed immediate access to the network. It also enables us to increase utilisation of the existing assets, which leads, in the long-term, to more competitive and efficient pricing.

We have three strategies to accommodate growth on the network:

- Reticulate new development areas (subdivisions) linked to our existing network
- Connect infill new builds or infill subdivisions (existing parcels subdivided into two to 10 dwellings)
- Connect consumers directly fronting our mains or previous consumers now disconnected

Budgets for new developments are derived from our detailed system growth budget forecast. Budgets for infill and reconnection growth are forecasted based on expected connection numbers, marketing efforts and historical values.

Our development plans are described in more detail for each region in Section 8.

6.2.3 NETWORK RESILIENCE

Our objective for network resilience is to ensure we have the appropriate level to maintain supply to our customers during the failure of network equipment. Network design is key to meeting resilience requirements. We mesh the networks and create “loops” utilising strategic mains with multiple supply points. This tactic enables us to reduce the number of customers impacted if a section of strategic main needs to be isolated as it is back-fed. To define the size of these strategic mains, the necessity to loop them and the location of supply points, we use modelling software and apply a case-by-case, risk-based approach.

To ensure the system is resilient enough to constantly deliver the demand, the pressure system points of supply (DRS) are designed following industry best practice.

We are currently implementing a Security of Supply policy that gives guidance on the level of redundancy required. The policy takes into account the number and type of consumers, the ability of the network to convey gas along trunk mains, and other point of supply onto the network.

We also look at each station’s capacity and make sure the flow under peak conditions can still be delivered on one stream, at a one, five and 10-year horizon, using the growth assumption (see Section 6.2.1). If the station is not able to deliver the suitable volumes while keeping the N-1 redundancy, we would investigate its upgrade or replacement to increase capacity.

Lastly, we use a SCADA system, with real-time monitoring and alarm capabilities to detect potential failures. We are currently building a specific strategy to evaluate which stations will benefit from being connected to our SCADA system.

The implementation of our resilience objective is entirely situation-specific. With our network being constructed over a long period, utilising independent designs and equipment standards, how we ensure resilience has to be handled on a case-by-case basis.

Figure 6.8: **Twin Stream DRS.**

6.3 RELIABILITY

As for safety, reliability is mainly ensured by the construction techniques used on the networks. AS/NZS 4645:2008 and NZS 5258:2003 are the industry standards we use as a baseline to achieve reliability. We have developed our own strategies regarding network integrity and operational reliability, as described below.

6.3.1 NETWORK INTEGRITY

Our objective for network integrity is to ensure that any uncontrolled gas releases are minimised. As noted in Section 6.1.1 above, our leakage management is a key part of achieving this objective and is closely related to our Public Safety objectives. The targets for network integrity set out in Section 4 are:

Table 6.5: Network Integrity Measures and Targets. Operational Reliability Measures and Targets.

TARGET	MEASURE	VALUE	WHEN
Reliable network integrity	Total reported leaks (excluding third-party damage)	<90 per 1,000 km	By RY20/21
Reliable network integrity	Number of leaks detected by routine inspection	<60 per 1,000 km	Throughout the period

For the gas networks, a reliable asset is one that is able to maintain containment while performing its primary function (e.g. pressure regulation for a regulator, isolation for a valve, etc.).

Currently, we use predominately time-based inspection and a combination of condition-based and run-to-failure renewal strategies for our network assets. We are working towards implementing a reliability-centred maintenance approach and have implemented processes that enable us to collect the right defect or fault information. This is how, this year, we have started developing FMEA (Failure Mode and Effect Analysis) for each asset class. It will then be used to refine our reliability strategies.

The detailed strategy employed is dependent on the asset class:

- For underground steel pipelines, we operate and maintain corrosion protection systems and carry out DCVG inspections that identify protective coating defects
- For above ground assets (stations, bridge crossings), we carry visual inspections of asset condition, including corrosion
- We utilise a time-based preventative maintenance and inspection programme. Maintenance activities and frequency of inspection are dependent on the manufacturer's information, industry standards, or legislative requirements
- When an asset fails or its condition requires attention, we record information that will allow us to analyse the mode of failure by issuing a defect against the asset
- We record all defects in a single Computerised Maintenance Management System, classified depending on their urgency
- We have processes that allow immediate fixing after a defect is discovered
- We determine asset condition at an asset class level, analysing the number of defects detected per asset class

The means of implementing our network integrity objectives for each asset class is described in Section 7.

6.3.2 OPERATIONAL RELIABILITY

Our operational reliability objective is to ensure the delivery of gas to our customers at the right quality. The targets for operational reliability set out in Section 4 are:

Table 6.6: Operational Reliability Measures and Targets.

TARGET	MEASURE	VALUE	WHEN
Reliable quality	Non-compliant odour tests reported	<10 per annum	Throughout the period
Operational reliability	Customers affected by supply interruptions occur due to component failure	<10 per annum	Throughout the period

To deliver gas with the right quality (at the right level of odorisation and free of contamination) to our customers, we use different strategies at each stage of the asset lifecycle:

- We design the networks with filters to capture any contaminant at the supply point
- We construct, operate, maintain and decommission the assets with tools, techniques and procedures that minimise the introduction of foreign elements in the network
- We apply a time-based inspection regime to monitor the level of contamination in the filters located at each station
- We monitor the odorant level on a time-based inspection regime, according to industry standards
- We have operational arrangements with the transmission system operator who controls the odorant injection to ensure we maintain the right level of odorisation on the network

These activities drive elements of our routine maintenance costs discussed in Section 9.

6.4 EFFICIENCY

Delivering value to our customers involves three aspects:

- Ensuring our network investments are optimised
- Ensuring that the delivery of our services is efficient
- Ensuring our designs and solutions are standardised

6.4.1 OPTIMAL INVESTMENT

Our first efficiency objective is to ensure that the timing of capacity, resilience and renewal investments are optimised. We are currently exploring meaningful measures to benchmark ourselves against. However, to optimise costs, time, and asset utilisation, we act with these principles:

- We take decisions on our asset classes and individual assets considering their whole-of-life costs and performance
- We primarily use standards in our design, operation, maintenance and renewal or decommissioning activities. When a standard cannot be applied, we require extra justification to demonstrate the appropriateness of the solution
- We look for opportunities to achieve greater standardisation of design and asset type where cost-effective to do so
- Before approving projects, we look at the trade-off between operational and capital expenditure

A key focus of the network plans is to optimise planning and the delivery of growth and quality of supply-related works. We see this as an area where we are still developing and where further efficiencies can be leveraged by increasing our understanding of asset utilisation. The objective of network planning being optimised is to:

- Promote a holistic approach to solving constraints
- Maximise the joint timing of investments, especially growth (network capacity), quality of supply (network resilience) and renewal (network reliability)
- Support the use of options analysis and optimise solutions where two or more constraints interact
- Focus on the specific needs, age and condition of the local network and assets, and the specific local customer requirements

We are changing from a period where network capacity has tended to be the dominant driver, addressing historical capacity issues detected through our on-going pressure monitoring programme. We are now focusing on reliability, ensuring the assets, and asset classes that are becoming too costly to maintain, are dealt with. We continue using network plans by gas gate as they allow for an optimisation of network planning by integrating the growth, quality of supply and renewal works.

6.4.1.1 DELIVERING THE PROGRAMME OF WORKS

Our programme of works is delivered using external contractors. We continually test the market to ensure our rates for this work are efficient. Our service delivery model was restructured in 2012, with new field service contracts awarded through a competitive tender process. The field service contracts include market-testing mechanisms and KPIs to ensure competitive rates throughout the contract period (3-5 years). Routine work is assigned standard activity rates to drive lower administration costs. Larger or more complex works can be market-tested through fair price provisions, and major projects are individually tendered.

The new service delivery model was developed in parallel with optimised business processes that drive efficiency through simple and flexible scheduling that deliver well-managed, consistent work flows to our contractors. The processes also promote efficient risk-based find-and-fix processes.

Powerco has moved responsibility for design in-house and increased its field supervision role to gain better control over works delivery and improve efficiency. These changes also drive better asset condition information that enables more informed and optimal asset management decisions.

This new model, started in October 2012, allowed us to achieve cost savings through greater efficiency, as well as a better control on the service providers' resources availability. That being said, the first two years of the new arrangements were proven to be challenging for the delivery of the programme of works. Our capital expenditure profile has been revised to deliver the works that have not been delivered in those two years before the end of the regulatory period.

6.4.2 UTILISING STANDARD DESIGNS

We recognise the use of standard designs and equipment, achieves efficiency. Our suite of standards set our preferred criteria, including:

- Material. For example, we use steel for IP pipelines, PE for MP and LP pipelines
- Suppliers
- Pipeline location and depth of burial
- Signage
- Risers and meter kits location

Assets currently covered by standards are:

- Pipes (part of the "Mains and Services" standard)
- Valves (part of the "Mains and Services" standard)
- DRSs
- GMSs
- Corrosion Protection systems

Our standards are defined and enhanced based on the following consideration:

- Industry best practices
- Risk levels
- Overall costs on the whole-of-life management of the asset

6.5 PARTNERSHIP

The partnership we have with our stakeholders, and our will to be a good corporate citizen, is pervasive through all our activity as a gas distribution business. We have in place several strategic initiatives that enable us to achieve this. Of paramount importance is our connection with our customers and the delivery of value to their lives. To this end, our customer-facing brand, The Gas Hub, has been and continues to be highly successful. In addition to providing a contact point for our customers, our aim is to educate the public to the benefits of natural gas for New Zealand. The second part of our partnership strategy is to ensure that our activities in the communities in which we operate meet very high environmental standards.

These strategies are described below.

6.5.1 CUSTOMER STRATEGIES

Customers are core to our business. The Gas Hub is our primary contact point and has been successful in driving up connection numbers against a backdrop of falling new house numbers post the global financial crisis. The Gas Hub strategies have also increased the use of gas (e.g. water heating and space heating) across our new and existing customer base. This outcome is beneficial for Powerco, our customers and New Zealand by driving higher utilisation of the assets to deliver greater efficiency.

Higher gas utilisation reduces demand on capacity-constrained electricity infrastructure assets and promotes positive energy efficiency outcomes through the high efficiency use of gas (relative to using gas for thermal generation) and lower transmission losses.

The Gas Hub is used by Powerco to provide direct customer engagement (in an interposed commercial model). Through The Gas Hub, we strive to promote how natural gas can bring benefits to our customers and New Zealand:

- We conduct market research to gauge customers' satisfaction with the reliability of their on-going gas supply
- We measure customers' satisfaction when they interact with us and our service providers to get connected to the network
- We promote the cost efficiency, the low environmental impact and the increase in life quality brought by natural gas through our marketing campaigns
- We provide customers with independent gas appliance advice
- We offer a 40m free connection to new customers who recognise gas as being their first choice for hot water or central heating

Customer expectations and information we gather from The Gas Hub provides good, on-going and up-to-date information that we utilise within our network development processes and asset management plans.

6.5.2 IMPROVING ENVIRONMENTAL PERFORMANCE

Our objective is to ensure that we achieve and maintain a good environmental track record. The targets we described in Section 4 are:

Table 6.7: **Environmental Measure and Target.**

TARGET	MEASURE	VALUE	WHEN
Environmental management standard	Enviro-Mark accreditation level	Platinum	By RY17

In order to achieve this, we follow the ISO 14001 principles for environmental performance. This includes the identification of our significant environmental impacts, the implementation of an environmental management plan and the regular external audit of this system.

6.6 INFORMATION STRATEGY

Underlying these strategies is a dependency on high-quality information to support operational deployment and long-term investment decision support. As such, our strategy around collecting and analysing information is critical because it supports all our asset management activities. In turn, our information systems ensure that this information is accessible at the right time and enable this to occur in an efficient manner.

Our goal with asset information is based on the following principles:

- To provide a good understanding of our assets (their condition, location and other specific attributes)
- To ensure that the right information is available to Powerco's staff and contractors

To measure how we achieve those two goals, we are in the process of implementing a programme dedicated to measure Completeness, Accuracy, and Timeliness of the data, or CAT score. This is a business wide initiative, described in Section 8.8.

As described in Section 5.8.1, we use several systems to record and retrieve information. Some data is duplicated and used for different purposes. It is essential that we have a good understanding of the main repository of data and the different ways to access it.

This is a difficult exercise that can lead to errors, and require high operating costs to ensure the systems are properly linked together. Our strategy is now to reduce the number of those systems to gain efficiency. We will implement an Enterprise Resource Planning system within the next three years to centralize this information, and ensure there is a single source of truth. This is discussed in Section 8.8.

As our assets are mainly underground, we have limited opportunities to collect and gather information. Our main means of collection is a process that records the location of the assets, as well as their main characteristics, into our GIS system at the time of construction. As such, we require structured information from field staff. We have designed standard forms (both paper-based and electronic) the field staff use to bring back the data in a useful format.

When entering data in the systems, we try to limit the number of errors by standardising the input fields using drop-down lists and structured information trees, and ensure the completeness of essential data by flagging mandatory information. For some activities, contractors are incentivised to ensure completeness of the data by provisions to withhold the payment for their activities if some fields are incorrect.

When we discover unreliable or incomplete data, our preference is to correct the data in an incremental manner. Where a dataset shows signs of inaccuracy, we also run targeted programmes to improve data quality by random sampling (e.g. for pipe location).

To ensure information is easily available for Powerco's staff and contractors, we have information systems that will allow display, input and analysis of the data. We have set up extranet tools and mobility solutions that contractors can use on the field. Our customer works management system (CWMS) is open to retailers and contractors to accelerate the connection process. We also have a data warehouse that consolidates different data sources to allow analysis and better asset management decisions.

MAINTAINING THE NETWORK

Powerco is the second largest natural gas distribution company by customer connections and in terms of network length. We spend between $5-6m each year to inspect and maintain our gas assets.

7. ASSET LIFECYCLE PLANS

This section describes how we manage our assets throughout their lifecycles. In doing so, we describe the condition of our assets, our approach to operations and maintenance, and our refurbishment and renewal programmes. To enhance the readability of this section, detailed asset condition tables are located in Appendix 2.

As described in our Asset Management Strategies (Section 6), most of our maintenance activities are driven by industry standards. They often prescribe minimum inspection frequencies and ensure the safe operation of the network, but also offer the possibility to use a risk-based approach. In recent years, our internal standards have evolved towards a risk-based approach. They follow the principles of Reliability Centred Maintenance (RCM) aimed at further improving the efficiency, and optimisation of our asset lifecycle management. This will lead to a change in frequency of leakage surveys and inspections, as discussed in Section 6. At the time of writing, these new standards have not been fully implemented, and the values in this section are currently applied to our network.

The key to our RCM is information about the actual condition of our assets and better analytical tools to identify the causes of asset failure. Improving the information sets and our analysis tools is one of our priority improvement initiatives, as discussed in our information strategy in Section 6.

In this section, we also discuss, for each asset class, their condition and our current understanding of their systemic issues. The asset classes covered in this section are:

- Mains and services pipes
- District Regulation Stations (DRS)
- Line and service valves
- Special crossings
- Monitoring and control systems
- Cathodic protection systems

7.1 CONDITION GRADING

To indicate the condition of our assets, we utilise a standardised grading system. The grades are described in the table below.

Table 7.1: **Condition Grading Definition.**

GRADE	DEFINITION
Grade 1	End of serviceable life, immediate intervention required
Grade 2	Material deterioration but asset condition still within serviceable life parameters. Intervention likely to be required within 3 years
Grade 3	Normal deterioration requiring regular monitoring
Grade 4	Good or as new condition
Grade unknown	Condition unknown or not yet assessed

With most of our assets being underground, we use several parameters, assumptions and mechanisms to assess asset condition:

- Asset age
- Number of defects identified per asset class
- Number of leaks identified
- Results of specific condition assessment (e.g., DCVG surveys described in Section 7.2.1)

7.2 MAINS AND SERVICES PIPES

Mains and service pipes are our largest asset category. Table 7.2 shows a breakdown of the types of pipe we operate and the associated lengths. The distinguishing feature of the asset class is that pipes are primarily underground and therefore condition assessment and inspection requires more innovative approaches.

Table 7.2: **Mains and Services Lifecycle Activities.**

ASSET TYPE	QUANTITY	LEAKAGE MANAGEMENT – INSPECTION FREQUENCY	OPERATION AND MAINTENANCE PLAN	RENEWAL PLAN
Cast-iron	2.0km (live) 157.1km (total)	1 to 5 years	None	Investigation in progress to check data accuracy
PE	5,239km (live) 5,405km (total)	1 to 5 years	None	Targeted programme for pre-85 PE
Steel	488.6km (live) 874.7km (total)	1 to 5 years	DCVG surveys CP readings	None
Other	93.6km (live) 117.9km (total)	1 to 5 years	None	None

7.2.1 CURRENT ASSET CONDITION

The condition of PE and steel pipes is determined using proxy measures. For example, we use DCVG (Direct Current Voltage Gradient) surveys, and readings from the Cathodic Protection systems on steel pipes to inspect pipe coating condition.

For PE pipes, the mode of failure is largely dependent on the quality of the workmanship when the pipe was constructed. The best way we have found to assess the condition of the asset is to compare current leakage against historical rates.

The condition of the PE and steel pipes is commensurate with their age, with the exception of high-density PE pipes. High-density PE pipes installed before 1985 are covered by a replacement programme, as discussed in Section 7.2.3.

The table below summarises the condition of pipes, classified by pressure regime. A detailed table with the condition of all our assets are in Appendix 2 as part of Schedule 12a.

Table 7.3: **Mains and Services Asset Condition.**

ASSET TYPE	QUANTITY	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE UNKOWN	DATA ACCURACY
Steel main (IP networks)	329km	0.00%	0.00%	79.87%	0.26%	19.80%	3
Steel services (IP networks)	43.8km	0.00%	0.02%	24.41%	0.85%	74.73%	3
PE main (MP networks)	3,418km	0.16%	0.02%	89.31%	9.74%	0.77%	3
PE services (MP networks)	1,831km	0.00%	0.08%	84.11%	11.76%	4.05%	3
Steel main (MP networks)	192km	0.00%	0.02%	80.01%	0.17%	19.80%	3
Steel services (MP networks)	210km	0.00%	0.04%	25.15%	0.10%	74.71%	3
PE main (LP networks)	41.36km	0.00%	0.01%	89.22%	10.00%	0.77%	3
PE services (LP networks)	18.44km	0.00%	0.40%	85.92%	9.63%	4.05%	3
Steel main (LP networks)	5.2km	0.00%	0.00%	80.17%	0.03%	19.80%	3
Steel services (LP networks)	7.2km	0.00%	0.00%	24.95%	0.34%	74.71%	3

While doing our regular network inspection, we can encounter some instances where the customer installations or the environment where the pipe is laid has changed.

This could happen, for example, when a homeowner decides to extend his house over one of our pipes, to install a new appliance close to the meter's exclusion zone without notifying us, or if the pipe was installed in a location that would not suit our current safety standards. We have a reactive approach to each of these instances, and part of our response is to move or renew the pipe.

7.2.2 OPERATION AND MAINTENANCE PLANS

Once constructed, our PE pipelines do not require any direct maintenance on the assets themselves. Pipeline warning signage requires ongoing maintenance and significant upgrading of signage is ongoing. Steel pipelines require corrosion protection systems (cathodic protection) using impressed current or sacrificial anodes.

Refer to Section 7.7.2 for more information on the operation of the protection systems.

The largest operational costs with mains and service pipes are associated with our regular leakage management and inspections and fault response during an event (as described within our Public Safety, and Network Integrity related strategies in Section 6). The leakage inspection cycles for pipes by type is shown in Table 7.4 below.

Table 7.4: **Mains and Services Leakage Survey Frequency.**

ASSET TYPE	MONTHLY	3 MONTHLY	ANNUAL	5 YEARLY
Mains and services in high consequence areas			X	
Steel pipeline when CP system is faulty			X	
Other pipes not covered above				X

7.2.3 RENEWAL PLAN

The majority of our mains and service pipes are in good condition, with much of the network being relatively young. This means our renewal plans for pipes are limited. In the past, we have run an extensive programme to replace all cast-iron pipes on our networks. This programme has come to an end and the remainder of the pipes labelled as cast-iron in our systems are being investigated to check the validity of this data.

In 2014, we analysed failure data on PE pipelines installed before 1985. There is industry-wide evidence that pipes which have been squeezed off tend to have a higher leakage rate. As a result of the mechanical deformation, the pipe material becomes brittle and cracks can appear along the body of the pipe.

The location of squeeze off points is rarely recorded in our systems. Further analysis showed the likelihood of leakage was high for pipes installed in certain years, and pipes that have been repaired in the past are likely to leak in the vicinity of the leak repair, whatever the region or workmanship. Manufacturer information is not considered here as most of the pipe material was sourced from a single supplier.

Some overseas operators have reduced the pressure in their pipelines to reduce the amount of gas released by leaks. We do not believe it is a viable solution and have decided to start a replacement programme. The initial phase will also collect additional data as we proactively replace those pipelines.

We have brought forward the replacement programme to RY15, initially planned from RY17. We forecast $1m per year for at least 10 years, with annual checkpoints as we develop our annual works programme, to maintain cost efficiency and validation of performance improvement.

The remainder of pipe renewal is dealt with as individual projects, where and as required. This includes modification to the pipework due to its environment or location as discussed in Section 7.2.1 above.

7.3 DISTRICT REGULATION STATIONS (DRS)

DRSs represent our second largest network asset category by value after pipelines. In 2014, we undertook a review of small, often isolated, pressure reduction equipment. Some of these were wrongly recorded as part of GMS equipment. As a result of these changes the number of DRSs recorded in our systems will increase.

Table 7.5 summarises our lifecycle plans for DRS asset class.

Table 7.5: **DRS Lifecycle Activities.**

ASSET TYPE	QUANTITY	LEAKAGE MANAGEMENT – INSPECTION FREQUENCY	OPERATION AND MAINTENANCE PLAN	RENEWAL PLAN
IP stations	172 (live) 173 (total)	Six-monthly (monthly for gas gates)	Inspections at the same time as leak surveys	Ongoing 10-yearly inspection/ refurbishment Safety risk mitigation
MP stations	88 (live) 97 (total)	Six-monthly	Inspections at the same time as leak surveys	Ongoing 10-yearly inspection/ refurbishment Safety risk mitigation

7.3.1 CURRENT ASSET CONDITION

DRSs are often above ground, making them the most visible parts of our network. Being above ground also makes them more vulnerable to external damages, such as impact by vehicles or vandalism. In high consequence areas, such as Wellington, we have initiated a protection programme.

Figure 7.1: **Artwork on Tory Street DRS in Wellington to Deter Vandalism.**

The components of DRSs (regulators, transducers, etc.) are prone to wear and obsolescence, but by modifying our maintenance programme and activities we have managed to extend the useful life of these stations. There are a few instances where we have had to replace these components because of ageing. However, our standard design uses common componentry that limits this risk.

The following summarises the condition of DRSs, classified by pressure regime.

Table 7.6: **DRS Asset Condition.**

ASSET TYPE	QUANTITY	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE UNKOWN	DATA ACCURACY
IP Stations	173	0.00%	3.47%	86.71%	9.25%	0.58%	2
MP Stations	97	0.00%	6.19%	76.29%	8.25%	9.28%	2

7.3.2 OPERATION AND MAINTENANCE PLANS

DRSs are inspected for maintenance every six months. We use this opportunity to carry out the following standard operations:

- Pressure recording, and adjustment if necessary
- Every year, changing the regulators' settings to swap the "working" and "stand-by" streams

In addition to the activities described above, we undertake the following every six months (or every year for the last item):

- Check for leaks
- Inspect for corrosion
- Undertake valve half operation and lubrication
- Check filters and clean if required
- Every year, test the over-pressure protection

To extend the lives of the stations, we have a 10-year inspection programme. The weak points of most of our stations are corrosion and regulators. Where required, we sandblast and repaint the stations, inspect the regulators and change their soft parts.

7.3.3 RENEWAL PLAN

We are reviewing options to protect the stations from external threats. We have conducted an on-site risk assessment of all our DRSs, considering what are the relevant threats and their impact on safety and delivery.

The review of risk mitigation options led us to consider three options:

- Upgrading the stations by installing physical protection (e.g. bollards to protect from a vehicle collision)
- Replacing the above ground assets with underground units (cocons)
- Removing the station by modifying gas flow in the network

Our initial assessment shows that undergrounding will be required for nine stations. Their location and criticality in terms of supply, require us to carefully plan any work on them. We are forecasting up to $1.2m every year for the entirety of the planning period.

We are improving efficiency of the network by rationalising the number of stations we operate. Through our pressure monitoring and network modelling, we have identified stations that could be rationalised without negatively impacting their networks and we are considering decommissioning these stations. Palmerston North is underway, and Porirua is on our network plans. However, we need to carefully assess the cost-benefits analysis. We will also take this opportunity to increase the level of equipment standardisation of these DRSs.

As part of our delivery strategy described in Section 6.2, we plan to install flow measurement equipment on our critical stations. This will enable us to gain better accuracy in load forecasting and monitoring, striving to achieve our delivery objective. This programme was planned to start in RY14, however the costs of the metering equipment was unexpectedly high. We are now exploring other options and have budgeted for a programme of installation.

Lastly, some of our stations have obsolete equipment which cannot be maintained anymore. Additional work is being undertaken to identify these stations and determine the best course of action. This will be by either replacing the obsolete equipment or replacing the whole station with a standard unit.

7.4 LINE AND SERVICE VALVES

Lines and service valves represent 1% of our asset base. Table 7.7 summarises our lifecycle plans for line and service valves. We carry out the same inspection, operation and maintenance plan for line and service valves. To facilitate the reading, the data presented in this section concerns only line valves.

Table 7.7: **Line and Service Valves Lifecycle Activities.**

ASSET TYPE	QUANTITY	LEAKAGE MANAGEMENT – INSPECTION FREQUENCY	OPERATION AND MAINTENANCE PLAN	RENEWAL PLAN
IP Valves	606 (live) 928 (total)	Yearly	Yearly inspections at the same time as leak surveys	None
MP Valves	1135 (live) 1716 (total)	Yearly	Yearly inspections at the same time as leak surveys	None
LP Valves	138 (live) 210 (total)	Yearly	Yearly inspections at the same time as leak surveys	None

7.4.1 CURRENT ASSET CONDITION

Most of the valves we operate on the network are located underground. As the main failure risk for pipes is leakage, we operate the valves regularly to ensure they are able to perform their isolation function should a leak occur.

In order to define asset condition, we look at the defect rate for each asset class which includes leakage and seized mechanisms. When reviewing defects, we have not encountered any instances where the valve was in such a poor condition that we needed to replace it.

The table below summarises the condition of line valves, classified by pressure regime.

Table 7.8: **Line Valves Asset Condition.**

ASSET TYPE	QUANTITY	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE UNKOWN	DATA ACCURACY
IP Valves	928	0.00%	0.41%	56.40%	8.52%	34.68%	2
MP Valves	1716	0.00%	0.59%	48.59%	16.95%	33.87%	2
MP Valves	210	0.00%	0.17%	35.08%	30.49%	34.26%	2

7.4.2 OPERATION AND MAINTENANCE PLANS

Our network configuration is fixed and valves are not operated unless there is an emergency or planned isolation activities. Isolation valves that separate different pressure systems are clearly identified and usually padlocked to prevent their operation.

Line valves are inspected on a yearly basis. As part of this inspection we make sure that:

- No gas leaks from the valves or their surroundings
- The valves are accessible and clearly located
- The valve lids are sound and do not present a risk for the public
- The valves are properly lubricated and can operate half way (if not padlocked)
- Corrosion levels are acceptable

If a valve fails, we assess whether we should replace, refurbish or permanently decommission it on a case-by-case basis.

7.4.3 RENEWAL PLAN

Based on the asset condition and very low fault rates, we have no planned replacement of line valves.

7.5 SPECIAL CROSSINGS

Special crossings assets are used to enable pipelines to cross rivers, railways, roads, whether above ground (bridges) or underground (generally using ventilated casings). Table 7.9 summarises our lifecycle plans for line and service values.

Table 7.9: **Special Crossings Lifecycle Activities.**

ASSET TYPE	QUANTITY	LEAKAGE MANAGEMENT – INSPECTION FREQUENCY	OPERATION AND MAINTENANCE PLAN	RENEWAL PLAN
IP Crossings	81 (live) 105 (total)	3-monthly to yearly	Yearly inspections	None
MP Crossings	211 (live) 286 (total)	3-monthly to yearly	Yearly inspections	None
LP Crossings	7 (live) 8 (total)	3-monthly to yearly	Yearly inspections	None

7.5.1 CURRENT ASSET CONDITION

The condition of special crossings is generally related to the pipes they carry. If we observe corrosion on pipe supports (for bridge crossings) this is dealt with within a year of its discovery through our defect process. For river crossings, if the pipe is located under the river bed, it is possible that the river erosion leads to the pipe exposure as we have experienced in Hutt Valley (refer to Section 8.3).

We are reviewing the existing standard crossing design to ensure they cater properly for thermal expansion. The result of the review could lead to additional work during the planning period.

The table below summarises the condition of special crossings, classified by pressure regime.

Table 7.10: **Special Crossings Asset Condition.**

ASSET TYPE	QUANTITY	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE UNKOWN	DATA ACCURACY
IP Crossings	105	2.85%	1.20%	72.55%	0.51%	22.89%	2
MP Crossings	286	0.00%	1.76%	69.43%	2.59%	26.23%	2
LP Crossings	7	0.00%	0.00%	90.30%	0.61%	9.09%	2

7.5.2 RENEWAL PLAN

We are not currently planning to replace any existing crossing. If renewals are required, they are handled on a case-by-case basis.

Figure 7.2: **Bridge Crossing in Hawkes Bay**

7.6 MONITORING AND CONTROL SYSTEMS

Monitoring and control systems are a key part of our network infrastructure. Utilisation of the information they provide is a fundamental part of our improvement initiatives. Table 7.11 summarises our lifecycle plans for monitoring and control systems.

Table 7.11: **Monitoring and Control Systems Lifecycle Activities.**

ASSET TYPE	QUANTITY	LEAKAGE MANAGEMENT – INSPECTION FREQUENCY	OPERATION AND MAINTENANCE PLAN	RENEWAL PLAN
Remote terminal unit	63	Inspection with the DRS	N/A	Upgrade from RY16

7.6.1 CURRENT ASSET CONDITION

We are not currently using any control functions and don't see a need to do so over the planning period, which means our system is used for real-time monitoring only.

However our system experiences intermittent faults on some transducers. Whilst we are investigating the possible causes for these issues, it reflects the lack of support for this system discussed in the 2013 AMP. The renewal plan that was to start in RY17 will be brought forward to start in the second half of RY16. This will also help us to integrate it with other tools, such as our new Outage Management System.

The table below summarises the condition of our SCADA remote terminal units.

Table 7.12: **Monitoring and Control Systems Asset Condition.**

ASSET TYPE	QUANTITY	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE UNKOWN	DATA ACCURACY
Remote Terminal Unit	63	0%	0%	41.27%	58.73%	0%	4

7.6.2 OPERATION AND MAINTENANCE PLANS

The SCADA system operation is totally autonomous and data transfer is done via the national mobile phone network. We inspect the transducers as part of the DRS inspection programme.

7.6.3 RENEWAL PLAN

Once our overall asset management strategy has been defined, we intend to identify the best option to upgrade the system. As a preliminary forecast, we will spend $750k from RY16 over four years.

7.7 CATHODIC PROTECTION SYSTEMS

Powerco has 22 cathodic protection systems deployed within our network. These assist with maintaining and monitoring the condition of our steel pipes. Table 7.13 summarises our lifecycle plans for cathodic protection systems.

Table 7.13: **Cathodic Protection Systems Lifecycle Activities.**

ASSET TYPE	QUANTITY	LEAKAGE MANAGEMENT – INSPECTION FREQUENCY	OPERATION AND MAINTENANCE PLAN	RENEWAL PLAN
Cathodic Protection	26	N/A	Monthly inspections	In progress

7.7.1 CURRENT ASSET CONDITION

We have engaged consultants to help us assess the operation of our CP systems. Their recommendation showed that, while some systems are generally operating within specification (e.g. New Plymouth), others, such as Palmerston North require renewal works.

In addition, we have experienced some abnormal operating conditions due to the presence of stray currents on the pipelines which are a posing a risk to the good operation of CP systems.

The table below summarises the condition of our cathodic protection systems.

Table 7.14: **Cathodic Protection Systems Asset Condition.**

ASSET TYPE	QUANTITY	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE UNKOWN	DATA ACCURACY
Cathodic Protection	26	0.00%	6.10%	56.61%	6.10%	31.19%	3

7.7.2 OPERATION AND MAINTENANCE PLANS

Cathodic protection systems typically require little maintenance, but this is dependent on specific ground conditions. Typical operation and maintenance activities include setting operating parameters, checking joints and, where necessary, replacing anodes.

Only systems with impressed current require operating parameters to be set. These parameters are set on a once-only basis to ensure that the ground's potential is above the pipe's potential. Changes to the settings are made only when a fault has been detected during inspections.

We check and record the potentials, current and electrical bonds at joints on a one, two, three or six-monthly basis during inspections.

Cathodic protection systems are currently maintained on a run-to-failure basis for rectifiers and bonds. Anodes are maintained based on condition: we analyse the variations we observe from the current and potentials inspections and decide on a case-by-case basis what interventions, if any, are required.

7.7.3 RENEWAL PLAN

We have commenced a renewal programme across our main IP networks to assess, reconfigure or renew our CP systems. We will spend $150k per year over the next five years to complete this programme. Once completed, we will investigate the remainder of our steel networks.

7.8 ASSET LIFECYCLE PLAN SUMMARY

The following table summarises the various maintenance and renewal activities we currently undertake, and their frequencies.

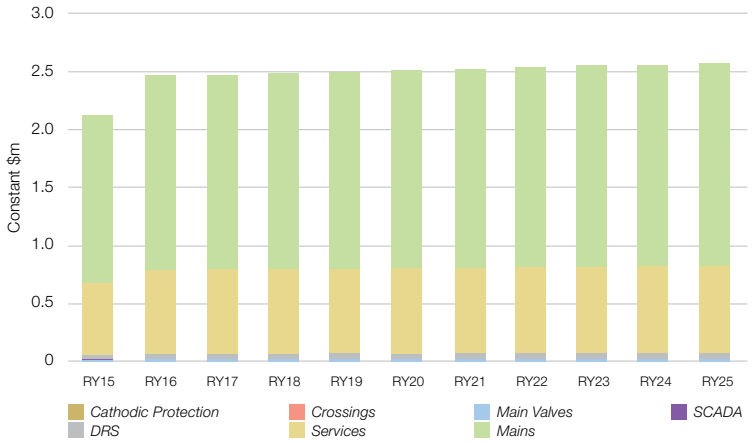
Table 7.15: **Lifecycle Activities Summary.**

ASSET TYPE	INSPECTION FREQUENCY	OPERATION AND MAINTENANCE PLAN	RENEWAL PLAN
Main and Service pipes	1-to 5-yearly	Surveyed as part of leakage management Steel pipelines are monitored through DCVG surveys, and CP system performance	Pre 85 PE
DRS	Monthly (gas gate) to yearly (other stations)	Inspections at the same time as leak surveys	Ongoing 10-yearly inspection/ refurbishment Safety risk mitigation
Line and Service valves	Yearly	Yearly inspection at the same time as leak surveys	None
Special Crossings	3-monthly to yearly	Yearly inspections	None
Monitoring and Control Systems	N/A	Inspected with DRS	Upgrade from RY16
Cathodic Protection Systems	N/A	Monthly inspections	In progress

Our annual maintenance programme has been fully completed for the last two years. Coming back to our Reliability Objective, we are starting to notice a reduction in leakage, third party damages and interruptions due to component failure. We are now emphasising on the volume and age of defects to ensure asset condition remains adequate.

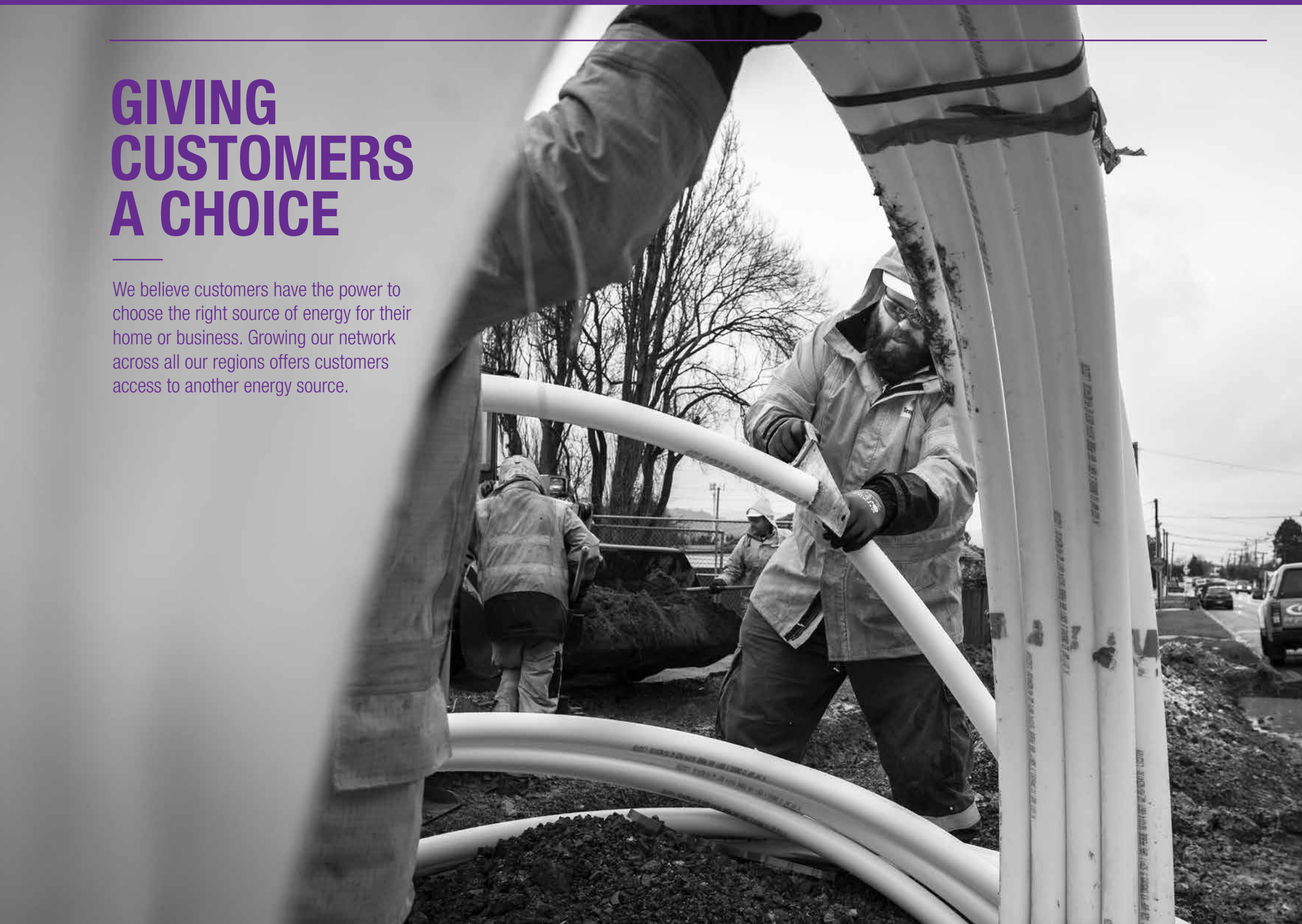
Across the planning period, we expect to spend a minimum of $2.1m every year in routine and corrective maintenance and inspection directly on the assets. This includes all costs related to leak-survey activities. The breakdown of this cost per asset category is shown in Figure 7.3 below.

Figure 7.3: **Breakdown of the Routine and Corrective Maintenance and Inspection Expenditure Forecast per Assets (excl. non-asset activities).**



GIVING CUSTOMERS A CHOICE

We believe customers have the power to choose the right source of energy for their home or business. Growing our network across all our regions offers customers access to another energy source.



8. NETWORK AND NON-NETWORK PROJECT PLANS

In the previous sections, we have described our objectives of delivering gas safely and efficiently, how our current assets enable us to achieve this, how we make our strategic decisions and develop network plans, and how we are structured to deliver them.

In this section, we describe what these decisions mean for each region covered by our network.

For each region, we will describe the major programme of works that we have forecasted. We have a strong focus on the safety and delivery objectives. You will see the options we have considered so far and those we prefer based on cost, efficiency and ability to deliver. The list of projects in this section is providing greater levels of detail on a three to five-year horizon. When possible, we extended this vision to 10 years.

The forecasts regarding future demand referenced in this section are detailed in Section 6. The network development assumptions are based on the councils, developers and commercial information, and translated into the growth projects described in each section.

8.1 SUMMARY

The two primary drivers for network development are described in Section 6 and driven by our Delivery and Efficiency strategies. These include aspects such as:

- The rate of demand growth
- Network capacity and utilisation
- Network reliability
- Efficiency and location of DRSs
- Optimisation of our investment

Together, these form the basis for our network development plans. Table 8.2 summarises the major development plans for each region within our network that are required to achieve our performance targets. It also gives the current and expected performance levels if no projects are carried out. The proposed projects are detailed in Sections 8.2 to 8.7. These projects are also summarised in the Information Disclosure schedules included in Appendix 2.

The projects included in the table do not consider post-2021. This is reflective of our current knowledge and understanding of the network performance and our planning being less accurate after a five-year horizon.

Table 8.1: **Network Status Key.**

STATUS	NETWORK PERFORMANCE AND MAXIMUM PRESSURE DROOP
●	Satisfactory (<40%)
●	Low-pressure (>40%)
●	Very low-pressure (>80%)
●	Loss of supply

Table 8.2: **Development Plan Summary.**

REGION	NETWORK	CURRENT PRESSURE PERFORMANCE AND DROOP	PLANNING PERIOD (IF STATUS QUO)	PROPOSED PROJECTS	DELIVERY TARGET AND BUDGET
Wellington (Section 8.2)	Wellington CBD	Status: ●	Status: ●	CBD upgrade	2015 – $975k
	Wellington North	Status: ●	Status: ●	Rama crescent upgrade	2016 – $25k
	Wellington 25kPa	Status: ●	Status: ●	CBD upgrade	See Above
	Karori	Status: ●	Status: ●	None – active monitoring	
	Wellington IP	Status: ●	Status: ●	Active monitoring and Karori project	2021 – 300k
	Other networks	Status: ●	Status: ●	None – routine monitoring	
Hutt Valley and Porirua (Section 8.3)	Plimmerton IP	Status: ●	Status: ●	Whitby (Mana) reinforcement	2014 – $955k
	Belmont LIP	Status: ●	Status: ●	Upper Hutt IP interconnection	2021 – $700k
	Lower Hutt LMP	Status: ●	Status: ●	None – Active monitoring	
	Other networks	Status: ●	Status: ●	None – active monitoring	

Table continued on next page >

Table 8.2: **Development Plan Summary** continued...

REGION	NETWORK	CURRENT PRESSURE PERFORMANCE AND DROOP	PLANNING PERIOD (IF STATUS QUO)	PROPOSED PROJECTS	DELIVERY TARGET AND BUDGET
Taranaki (Section 8.4)	New Plymouth MP	Status: 🟡	Status: 🔴	Huatoki St looping Ferndale southern looping	2016 – $180k 2016 – $330k
	Waitara MP	Status: 🟡	Status: 🟠	Lepperton pressure elevation	2016 – $50k
	Bell Block North (New Plymouth)	Status: 🟡	Status: 🟡	None – active monitoring	
	New Plymouth IP	Status: 🟡	Status: 🟡	None – active monitoring	
	Patea	Status: 🟡	Status: 🟡	None – active monitoring	
	Manaia	Status: 🟡	Status: 🟡	None – active monitoring	
	Other networks	Status: 🟢	Status: 🟢	None – routine monitoring	
Manawatu and Horowhenua (Section 8.5)	Palmerston North LMP	Status: 🟡	Status: 🟡	Hokowhitu reinforcement	2016 – $50k
	Palmerston North MP East	Status: 🟡	Status: 🟠	Eastern city reinforcement	2016 – $1.8m
	Palmerston North MP West	Status: 🟢	Status: 🟡	Active monitoring – will be impacted by the Eastern city reinforcement project	See above
	Awapuni LMP	Status: 🟢	Status: 🟡	None – active monitoring	
	Milson	Status: 🟡	Status: 🟡	None – active monitoring	
	Feilding	Status: 🟢	Status: 🟡	None – active monitoring	
	Foxton	Status: 🟢	Status: 🟡	None – active monitoring	
	Levin	Status: 🟢	Status: 🟡	None – active monitoring	
Hawkes Bay (Section 8.6)	All networks	Status: 🟢	Status: 🟢	None – routine monitoring	

In addition, our non-network investments described in Sections 8.7 and 8.8 are focused on increasing our performance in Safety and Hazard management, delivering and analysing more accurate information through efficient systems, as well as increasing skills and capacity of our workforce.

8.2 WELLINGTON

8.2.1 CURRENT PERFORMANCE AND FUTURE DEMAND

Wellington CBD is currently capacity constrained and restricts our ability to connect new customers. In 2013 we started a pressure elevation programme for the part of the network that has the biggest demand. This programme, due to finish in in the first months of RY16, will bring The Terrace and Kelburn to a pressure of 25kPa.The other part of the CBD, still running at a lower operating pressure, will require additional work to maintain our security of supply criteria and accommodate growth. The learnings in the upgrade project show that an elevation of the pressure is possible at a reasonable cost. This is discussed in Section 8.2.3.1.

Wellington 25kPa network currently experiences pressure droops that breach our limit of 40% droop. However we have not recorded significant growth and will maintain active monitoring. The areas concerned are:

- The Southern end of the city (Owhiro Bay and Southgate suburbs)
- Mt Cook suburb

The remainder of Wellington's networks have been upgraded in the last 10 years from low to medium pressure network and are more resilient.

In the northern suburbs, the city is expanding with new buildings and subdivisions and it is expected that the city will eventually form one continuous urban area all the way to Tawa. Some low pressure points have been identified on this part of the network and will be remedied during the planning period. Some additional work will also be required to accommodate growth as the city expands.

8.2.2 SAFETY PROJECTS

With the population concentration in the area, our risk levels are usually higher than rural areas. To mitigate these risks, we are implementing more frequent leak surveys, specific urban design with traffic protection and signage.

The use of "cocon" units such as the one shown in Figure 8.1 is one of the mitigations we use in urban areas to reduce the risk of interference with the assets.

Figure 8.1: **View of a Cocon Unit and an Above Ground Station.**

4 stations in Wellington are currently in our RY15/16 works plan: Mein St, Curtis St, Kings Wharf, and Mt Cook School.

8.2.3 DELIVERY PROJECTS

Wellington CBD used to be a cast-iron network. It has been upgraded to modern PE by inserting smaller diameter pipes in the cast-iron pipes. While the inserted PE has an MP rating, the pressure was maintained at 7kPa (LP network) to prevent the need to replace GMS equipment.

While this was a cost-effective solution at the time, the reduction in diameter means lower capacity on the network. The LP pressure has been increased to 10kPa to continue meeting demand. In 2013, we initiated a project to permanently raise the pressure to 25kPa in one section of the CBD.

8.2.3.1 QUALITY OF SUPPLY

1) CBD upgrade – project Neon

In the 2013 AMP, we described our strategy to upgrade pressure in part of the CBD to 25kPa, and lowering the remainder of the network to 7kPa. This scheme, Project Neon, will be completed during RY16.

While carrying out this project, additional pressure logging took place to increase the accuracy of our performance model of the remainder of the CBD. This highlighted that decreasing the pressure from 10kPa to 7kPa as previously considered will not be a viable option to support current demand nor to accommodate any growth.

The use of load control technologies was considered, however this will bring additional complexity for end users.

We then had two different options:

- Install high capacity mains across the city. This involves installing 300 to 500mm diameter pipes across the city. Given the saturation of the road corridors, the impact on traffic, and the cost of decommissioning the existing network, we did not pursue this option.
- Increase the capacity on our existing infrastructure by increasing the pressure.

Project Neon gave us a good understanding of the condition of the network. As most of the pipework was installed in the 1990s, we are confident the material used will withstand a pressure elevation. We plan to increase pressure to 25kPa to create a single pressure system with the surrounding suburbs. However we will carry out the necessary verifications to increase the pressure further if required in the future.

Neon also allowed us to build protocols with other GMS asset owners to ensure an efficient inspection and modification process where required.

We are presently refining the plan for this pressure elevation. In a first cut assessment, after we finish project Neon, we will sectionalise the network in three areas, creating three subprojects. Each of those subprojects should take two years to complete.

From RY16 to RY23, we forecast $500k to $1.2m per year to carry out in-depth inspection of the network and the GMS assets connected to it, and replace any asset that would not be suitable to operate at 25kPa.

To save costs and nuisance to the public, we are investigating in-pipe inspection systems that would not require systematic pipe excavation.

Refer to item 1 on Figure 8.2.

2) Queens Wharf DRS

The 12m of pipe at the outlet of Queens Wharf station restricts the flow. Replacing this pipe with bigger diameter will reduce the pressure droop along the pipe from 15% to 0.15%. The increased pressure will help improve the pressure level for a significant number of customers.

We forecast $75k in RY16.

Refer to item 2 on Figure 8.2.

3) Rama Crescent upgrade

The extremity of the 200kPa network servicing Butavas St DRS experiences pressure droop up to 70%. 70m of smaller diameter pipe, installed in Rama Crescent, create a chokepoint.

By overlaying this 25mm diameter pipeline with a 50mm diameter pipeline, the modelled pressure droop will improve to reach 42%. Increasing the pipe diameter further wouldn't materially improve pressure. Despite breaching our 40% limit, we will consider this acceptable as there is no significant growth expected in this area.

We forecast $25k to carry out this project in RY16.

Refer to item 3 on Figure 8.2.

4) Moorefield Road interconnection

In Johnsonville, we have identified an interconnection of two pipes could increase the security of supply at the corner of Moorefield Road and Helston Road. This will provide an additional back feed into this pressure system.

The works are located in a busy intersection. We forecast $50k in RY17.

Refer to item 4 on Figure 8.2.

5) Horokiwi Road West overlay

As Woodridge and Grenada slowly grow towards each other, a trunk main will be progressively built to link both parts of the networks. One part of this pipeline along Horokiwi Road West has been laid at a smaller diameter. This restricts the gas flow along this line and will eventually lead to low pressure point in this area.

We will overlay this 450m of 50mm diameter pipe by a 100mm diameter pipe. We forecast $150k in RY22.

Refer to item 5 on Figure 8.2.

6) Mark Avenue overlay

As with the two projects discussed above, we will overlay 650m of 100mm pipe to reinforce the trunk main in Mark Avenue. We will spend $250k in RY23.

Refer to item 6 on Figure 8.2.

8.2.3.2 SYSTEM GROWTH

Growth in this region is happening on the northern part of the network. Wellington City Council's urban plans show the extension of the city along the state highway to Porirua, and this aligns with the plans we have discussed with potential developers.

a) Churton Park

In 10 to 20 years, Churton Park will expand to Tawa. We will support this growth by reticulating the suburb. We forecast that in the first 10 years up to 750 lots will be fronted with gas, requiring 3,000m of strategic main.

Refer to item "a" on Figure 8.2.

b) Grenada and Lincolnshire Farm Park

On the other side of the State Highway 1, Lincolnshire Farm is being developed and will eventually link Horokiwi, Grenada and Woodridge. We forecast that we will front 700 lots over the next 20 years, at a rate of 20 to 40 per year for the next five years. At the same time, we will create strategic mains to link those new suburbs.

Refer to item "b" on Figure 8.2.

c) Woodridge

60 more lots are expected to be developed in the next 2 years. This is in line with the forecast in our 2013 AMP.

Refer to item "c" on Figure 8.2.

d) Cedarwood

400 lots are expected to be built as part of the Cedarwood extension in the next 10 years. We will grow our network, along with the development of the subdivision starting RY17.

Refer to item "d" on Figure 8.2.

e) Bellevue Estate

Previously referenced as Seagrove, Bellevue Estate will be developed off Newlands suburb. Around 50 lots will be built between RY16 and RY17.

Refer to item "e" on Figure 8.2.

f) Karori

While house numbers haven't grown significantly in Karori, the volumes of gas supply are increasing due to an increase in the use of gas appliances. One of the two DRS supplying this pressure system could fall short of capacity in the next five years at the end of the IP line if high growth were to happen. We will closely monitor the network performance to ensure we have sufficient warning of impending constraints, and forecast $500k to overlay a section of IP line in RY21.

Refer to item "f" on Figure 8.2.

8.2.3.3 RELIABILITY PROJECTS

#) Newlands disconnection from Belmont and @) Burgess Road overlay

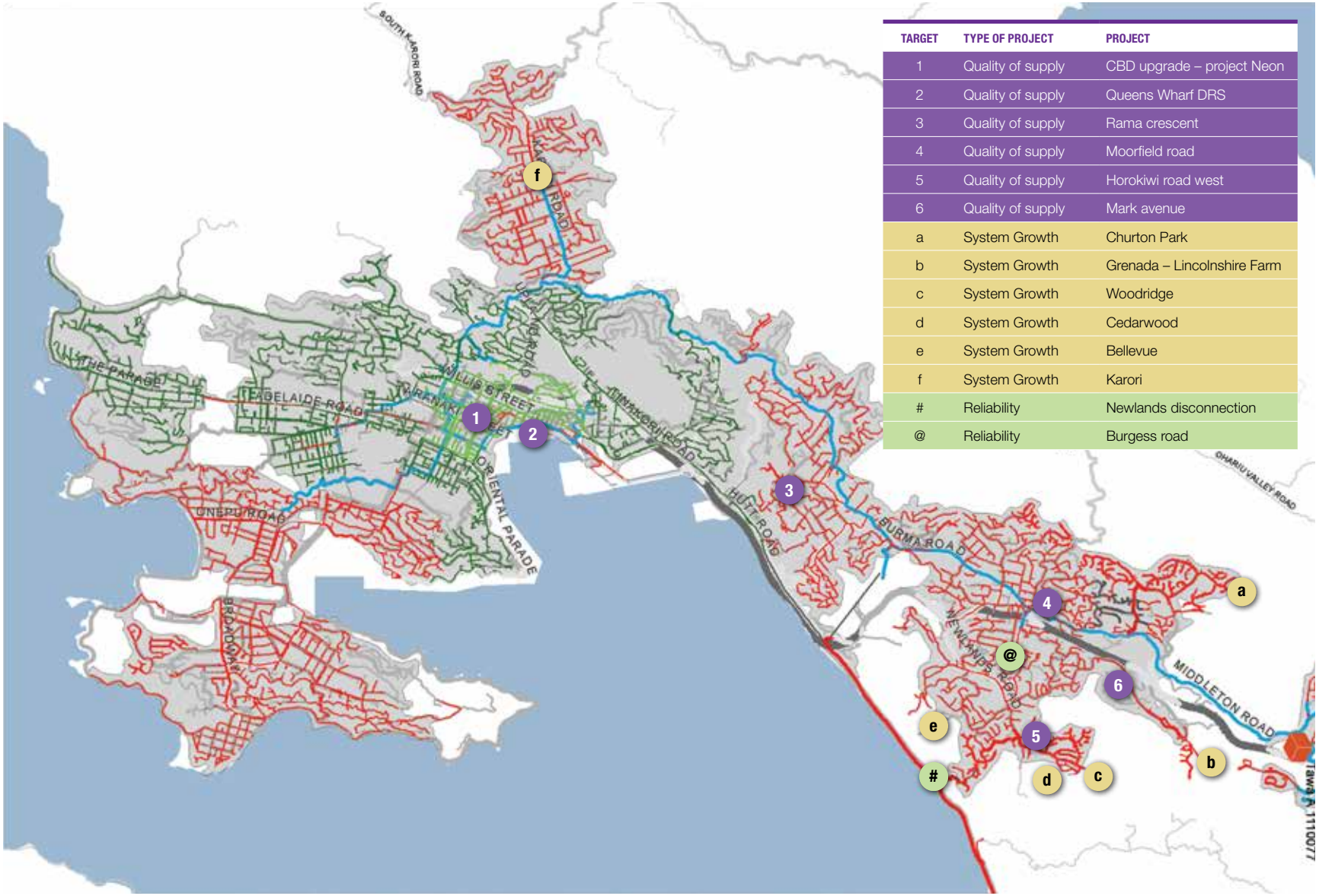
At the end of 1999, growth in Newlands suburb required additional supply to meet demand. We laid almost 250m of pipes from Hutt Road to Newlands. With the installation of a non-return valve in Newlands, one part of the suburb became supplied from Belmont gas gate network. This PE pipe is exposed in some parts, reducing its lifespan. In the short-term, we would like to disconnect the feed from Belmont.

This will change the supply configuration of the Woodridge area. In order to maintain an adequate level of pressure, the size of one of the main feeds in the area along Burgess Road will need to be increased. We will lay 220m of 100mm diameter pipe before the disconnection occurs.

We plan to do those works between RY16 and RY17 for a total cost of $140k.

Refer to items "#" and "@"on Figure 8.2.

Figure 8.2: **Network Projects in the Wellington Region.**



TARGET	TYPE OF PROJECT	PROJECT
1	Quality of supply	CBD upgrade – project Neon
2	Quality of supply	Queens Wharf DRS
3	Quality of supply	Rama crescent
4	Quality of supply	Moorfield road
5	Quality of supply	Horokiwi road west
6	Quality of supply	Mark avenue
a	System Growth	Churton Park
b	System Growth	Grenada – Lincolnshire Farm
c	System Growth	Woodridge
d	System Growth	Cedarwood
e	System Growth	Bellevue
f	System Growth	Karori
#	Reliability	Newlands disconnection
@	Reliability	Burgess road

8.3 HUTT VALLEY AND PORIRUA

8.3.1 CURRENT PERFORMANCE AND FUTURE DEMAND

Hutt Valley and Porirua networks are mainly operating in the medium pressure range, supplying residential customers. The networks in Hutt Valley run on a large geographical area, from the gas gate in Belmont as far as Upper Hutt in the North, Eastbourne and Ngauranga Gorge on the South. In Porirua, the networks are supplying an area going from Plimmerton to Whitby (Mana), including Titahi Bay.

In the last planning period, we improved the performance of the two networks that were experiencing pressure issues (Whitby and Eastbourne), and all but one of our networks in the area is currently delivering according to our standards.

Plimmerton IP, and Lower Hutt LMP systems are constrained. However we consider this situation acceptable as the growth planned won't impact those systems. We will maintain an active monitoring.

With large subdivision growth happening in this region, reinforcement work will need to be carried out on other networks approximatively five years from now.

8.3.2 SAFETY PROJECTS

#) Porirua CBD DRS rationalisation

Porirua CBD is fed by seven small, distinct pressure systems, each of them is fed by an above ground station. The large number of stations increases the chances of third party interference. Flow modelling studies showed that those seven systems could be linked, and five stations could be replaced by a single underground station. The reduction in the number of stations will also reduce the amount of maintenance required on the network.

Different options are currently being considered:

- Install new modern PE to link those networks. This will require extensive works
- Isolate, and downgrade the steel pipeline from running at intermediate pressure, to medium pressure. This will reduce the security of supply on the IP pipeline by removing a supply loop

The cost of this project will be around $450k and $750k depending on the option. As we are refining the project, we forecast to spend $250k in RY16, and $500k in RY17.

Refer to item "#" on Figure 8.3.

8.3.3 DELIVERY PROJECTS

To reach an acceptable level of performance and meet out delivery objectives, the following major projects are scheduled during the planning period in the region.

8.3.3.1 QUALITY OF SUPPLY

1) Kelson additional point of supply

Slow growth has been happening in Kelson. It is currently fed by a single point of supply with no built-in redundancy. As the number of customers increase, we will replace the ageing, above ground, single stream station with an underground station with built-in redundancy to meet our quality of supply standards.

We forecast to spend $200k in RY19.

Refer to item 1 on Figure 8.3.

2) Alexander Road additional point of supply

Alexander Road was fully reticulated in 2008 as the roading infrastructure was built for an industrial park. Little growth has happened since, and the area has been reclassified for residential development. In RY21, we forecast $200k to upgrade the point of supply in the area and offer redundancy.

Refer to item 2 on Figure 8.3.

3) Upper Hutt IP Interconnection

Growth forecasts show that the IP pipeline in Upper Hutt will become constrained due to the small diameter of the pipe along Fergusson Drive. We are considering three options:

- Laying 300 to 500m of 100mm steel pipeline. This allows us to maintain a unique type of material and allow us the possibility to increase the pressure in the future.
- Laying 300 to 500m of 100mm high pressure polyethylene pipeline. This is a cheaper option, but will restrict our ability to increase the pressure if required in the future.
- Increasing the pressure to 1,200kPa across the whole IP system. As some residential customers are connected to this network, additional studies need to take place to gauge the additional work required.

Depending on our preferred option, costs could vary from $300k to $1m. We will forecast $700k for RY21, and we will refine the approach during the planning period.

Refer to item 3 on Figure 8.3.

8.3.3.2 SYSTEM GROWTH

Porirua has relatively high predicted subdivision growth. By contrast the Hutt Valley has only a few significant subdivisions being developed, however there are plans to increase the city's footprint.

The primary areas of expected growth, for which we are planning additional supply capacity, are:

a) The Banks – Whitby (Porirua)

150 lots will be built in the next five years. We will reticulate the subdivision in a staged manner, along with the development.

Refer to item "a" on Figure 8.3.

b) Staithes Drive North (Porirua)

60 lots will be built in the subdivision in next three years.

Refer to item "b" on Figure 8.3.

c) Aotea Extension (Porirua)

Aotea subdivision is growing towards the coast at a steady rate. We expect around 200 lots to be built in the next 5-10 years at a rate of 30 per year.

Refer to item "c" on Figure 8.3.

d) Maymorn Valley (Hutt Valley)

Timing for this development is dictated by the Hutt Valley Council so we are relying on its timeframe to start the project and continue to liaise with the council.

Refer to item "d" on Figure 8.3.

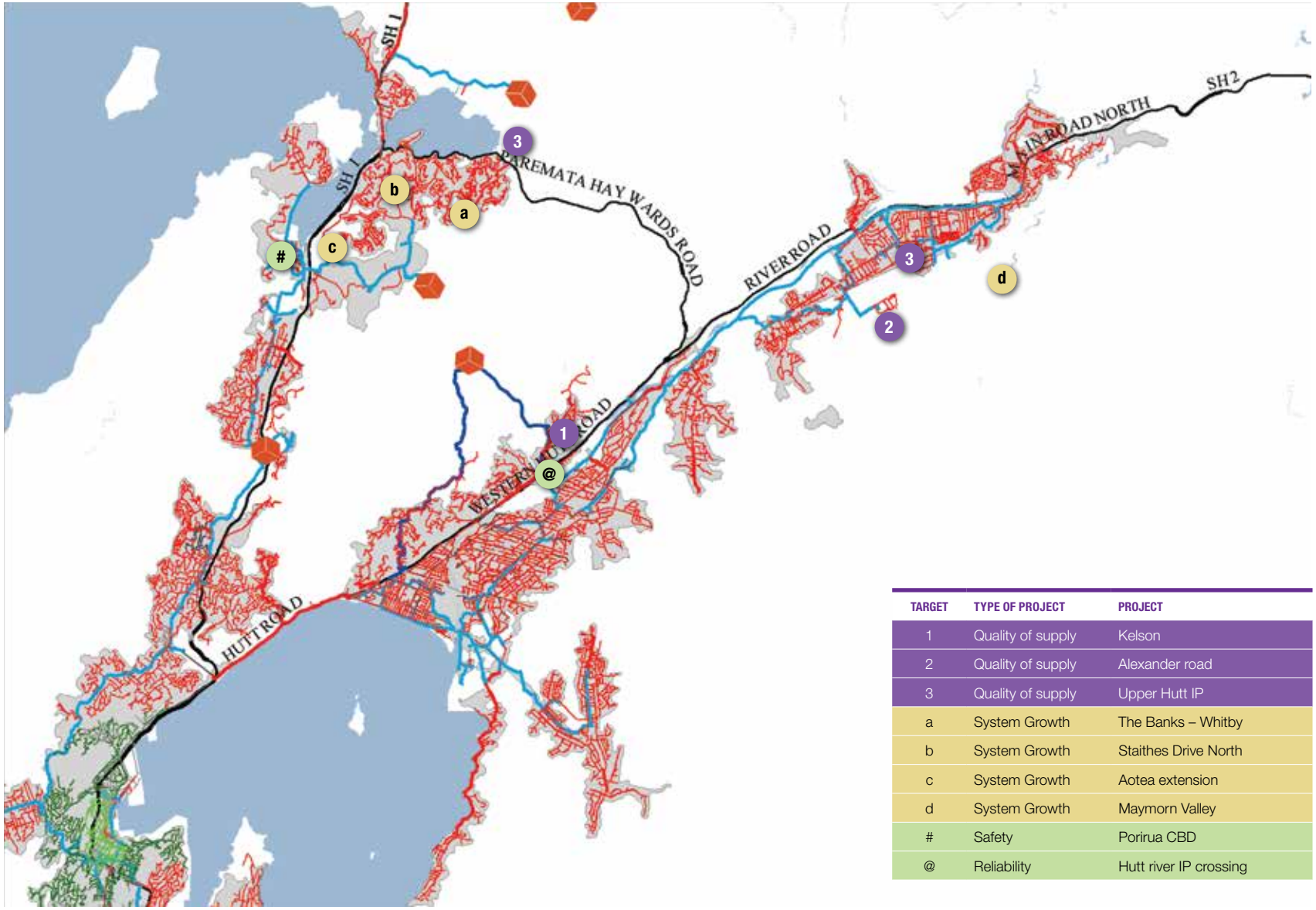
8.3.4 RELIABILITY PROJECTS

@) Hutt River IP crossing

Erosion in the Hutt River caused one of our IP pipeline crossings under the river to be exposed. We have a project underway to reroute the pipeline. Given the pressure and the location of the pipe, we forecast to spend $1m on this project in RY16.

Refer to item "@" on Figure 8.3.

Figure 8.3: **Network Projects in the Hutt Valley and Porirua Regions.**



TARGET	TYPE OF PROJECT	PROJECT
1	Quality of supply	Kelson
2	Quality of supply	Alexander road
3	Quality of supply	Upper Hutt IP
a	System Growth	The Banks – Whitby
b	System Growth	Staithes Drive North
c	System Growth	Aotea extension
d	System Growth	Maymorn Valley
#	Safety	Porirua CBD
@	Reliability	Hutt river IP crossing

8.4 TARANAKI

8.4.1 CURRENT PERFORMANCE AND FUTURE DEMAND

Our networks in the Taranaki region are of various sizes and performance. The latest results of our pressure monitoring programme show that most of the networks are within the 40% droop limit, therefore do not require any major investment in the short-term.

There are six networks that exceed 40% droop in New Plymouth (three networks), Patea, Manaia, and Waitara. Considering the decrease in consumers in Patea and Manaia, we have decided to hold reinforcement until any significant development is flagged.

In New Plymouth, our pressure-monitoring programme highlighted the pressure droop in the southern extremity of Frankleigh Park suburb was greater than the 40% target. It was further impacted by the subdivision growth in Vogeltown (Fernbrook). We are monitoring the Bell Block North and Intermediate Pressure networks which both breach our current performance requirements.

In Waitara, pressure drops have occurred in the township of Lepperton (~42%).

Looking at future demand, our high-level study in the region flags that the networks in Hawera and Stratford could reach the 40% droop in 10 years if high growth occurs. We will keep a watching brief on them as part of our pressure-monitoring programme.

In 2014, Vector, owner of the gas transmission system supplying our network, informed us of the closure of two gas gates in Pungarehu in October 2015. This means that we will have to discontinue our services in this area.

8.4.2 SAFETY PROJECTS

The network currently meets our safety standards.

8.4.3 DELIVERY PROJECTS

New Plymouth networks are all supplied from the north side of the city where the IP pipeline is located, with strategic mains going southwards along the main road infrastructure. The size of the pipes constituting these strategic mains varies from 50mm to 100mm, which creates bottlenecks in some areas. In the long-term, to increase security of supply we are looking at interconnecting these mains in the southern suburbs on both an opportunistic and planned approach as growth occurs.

8.4.3.1 QUALITY OF SUPPLY

1) Huatoki Street looping

Frankleigh Park suburb is mainly supplied from its northern end. The current pressure droops at the extremity of this suburb are a result of the network having constraints through Govett Avenue and Fernleigh Street. To allow more flow in these pipes, we have considered several options:

- Upgrading the pressure of the medium-pressure network. It currently runs at 240kPa. However, thin-wall PE was used to build the network. Increasing the pressure at a level that would relieve the network means that it would require us to replace a large amount of pipe. This option has been discarded.
- Overlay around 1,500m of pipe with a bigger diameter in these two streets. It would require decommissioning existing pipes. The cost of this work is estimated at $500k.
- Construct a new supply loop through Huatoki Street to bring a connection to the suburb from the eastern side. The street is quite steep and extra work is likely to be required to validate and increase the diameter at some road crossings. We estimate this work will cost about $180k. This option would limit the number of consumers likely to be impacted by a loss of supply to this suburb if we had to isolate a section in these streets.

Our preferred option is the third one, with a completion date targeted at RY15.

Refer to item 1 on Figure 8.4.

2) Ferndale southern looping

The New Plymouth District Council has indicated the southern end of Ferndale as being a residential growth area. As this happens, we will create a supply loop from the end of Tukapa Street to Frankley Road. Once these two are connected, we will upgrade the pipe diameter along Frankley Road all the way to Glenpark Avenue, where we have a 100mm pipe supplying the area. This will contribute to the southern looping described earlier.

This work should be split into two phases. The interconnection between both networks is targeted for RY16, at an estimated cost of $330k. The increase of pipe size is a longer-term work that should start in RY18 and will keep on going until RY19. We have a budget of $600k for this.

Refer to item 2 on Figure 8.4.

3) Base Hospital DRS installation

This project, outlined in the 2014 AMP update, has been delayed as an equipment supplier was not able to deliver on time. We now expect a delivery in RY16 and a revised cost of $200k.

Refer to item 3 on Figure 8.4.

4) Lepperton

At the southern extremity of the Waitara network, Lepperton hosts several poultry sheds. Those commercial loads put the single pipeline built between the two towns under high constraints and we need to increase the capacity of this network to maintain sufficient headroom to accommodate current demand.

Replacing the pipeline with a bigger diameter is not economically viable without significant customer contribution. We plan to increase the pressure in this area to maintain acceptable performance with the current load, but we will not be able to accommodate further work without significant investment from those users.

We will spend $50k in RY16 to carry out the investigation and modification necessary for the pressure increase.

8.4.3.2 SYSTEM GROWTH

In the next five years, we expect to reticulate several subdivisions in New Plymouth in a staged manner to align with the developments. In the longer term, we will also support the council's plans to expand the city along Smart Road.

a) Cyrus Street

Past Cyrus Street, 90 additional lots are planned to be developed between now and RY19. We will tie back the network onto Karamea Drive in RY16.

Refer to item "a" on Figure 8.4.

b) Fernbrook

About 140 lots are being built In Vogeltown as part of the Fernbrook subdivision development at a rate of 20 per year until RY23.

Refer to item "b" on Figure 8.4.

c) Bell Block – Links Drive

40 additional lots are expected to be added to this subdivision until RY19.

Refer to item "c" on Figure 8.4.

d) Bell Block – Airport Drive and Wills Road

West of Airport Drive are two designated residential growth areas that would represent about 240 lots. These areas are still to be rezoned. We expect a start date in RY17 with a five-year duration. Once the developments start, in addition to reticulating the area, we will need to build a 2,000m additional strategic main loop from Airport Drive to Wills Road.

Refer to item "d" on Figure 8.4.

e) Bell Block South

Bell Block South is an industrial park south of State Highway 3. Where development happens, we will take the opportunity to install a road crossing to add a connection with the northern network and link the southern network to Glen Avon.

Refer to item "e" on Figure 8.4.

f) Smart Road city expansion

The city's long-term plan is to grow along Smart Road. We are supportive of the development of this new part of the city. In the next 10 to 25 years, 1,000 residential lots could be developed. When this happens, we will expand the network at least 4km southwards. We are expecting to reticulate the area, starting RY19.

Refer to item "f" on Figure 8.4.

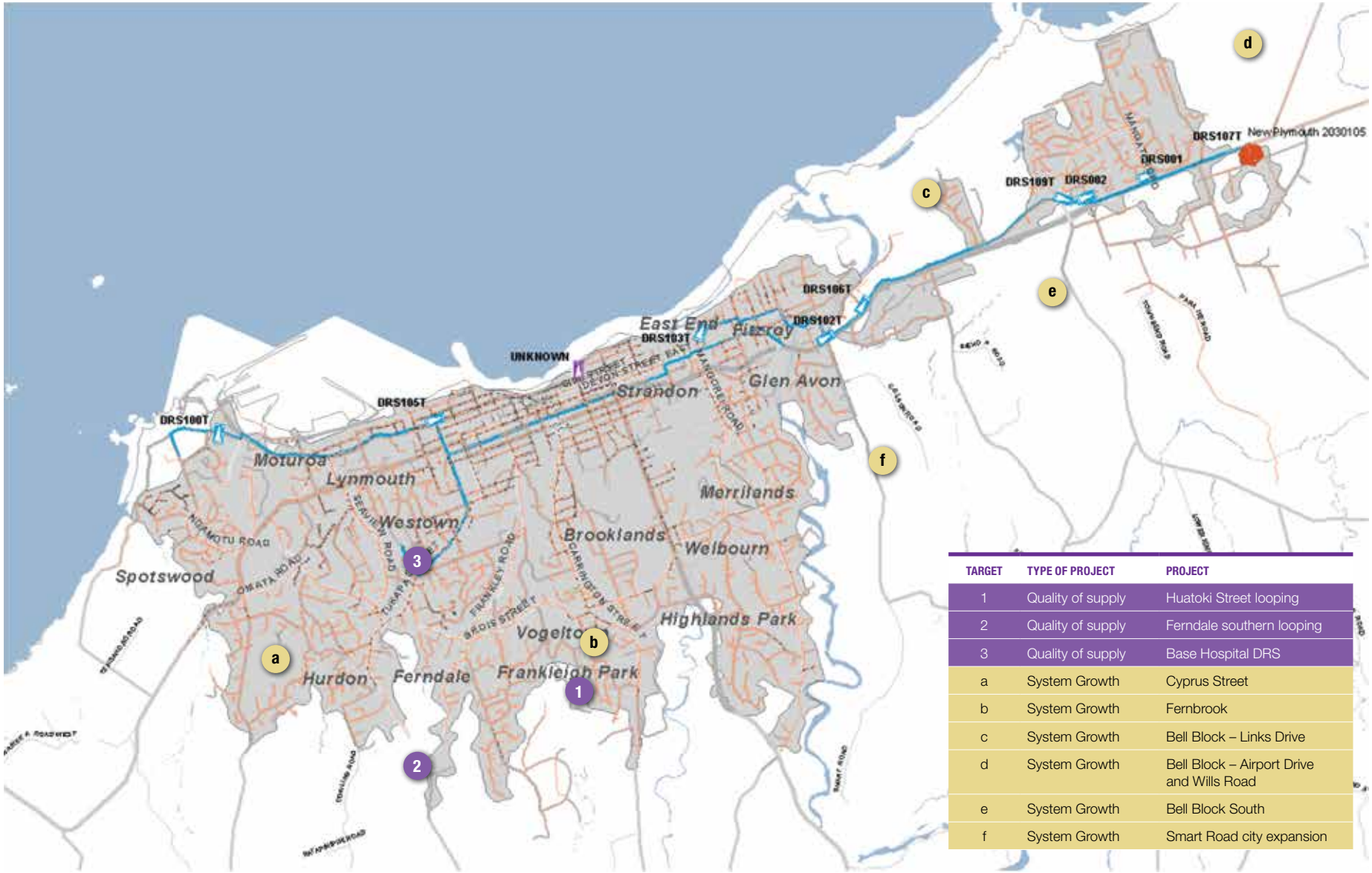
8.4.3.3 DECOMMISSIONING OF PUNGAREHU NETWORKS

Powerco is only one part of the gas supply chain to the end consumer. We rely on the transmission system to inject gas in our network.

Pungarehu 1 and 2 are two gas gates located in rural Taranaki. As Vector deems uneconomical to maintain its shipping services at those two gates, gas supply on those two networks will be interrupted in October 2015.

We do not expect that the decommissioning of those networks, which is out of our control, will materially change our service provision in the Taranaki region.

Figure 8.4: **Network Projects in New Plymouth.**



TARGET	TYPE OF PROJECT	PROJECT
1	Quality of supply	Huatoki Street looping
2	Quality of supply	Ferndale southern looping
3	Quality of supply	Base Hospital DRS
a	System Growth	Cyprus Street
b	System Growth	Fernbrook
c	System Growth	Bell Block – Links Drive
d	System Growth	Bell Block – Airport Drive and Wills Road
e	System Growth	Bell Block South
f	System Growth	Smart Road city expansion

8.5 MANAWATU AND HOROWHENUA

8.5.1 CURRENT PERFORMANCE AND FUTURE DEMAND

Our networks in the Manawatu and Horowhenua mainly comprise small-town networks, usually supplying a few large commercial or industrial customers. In Palmerston North, our third largest network in terms of customers, we have seen large commercial and industrial activity in recent years.

All networks currently operate at a satisfactory level. Additional growth is expected in Palmerston North which will require extra work. Feilding, Foxton and Levin are actively monitored for growth.

Palmerston North city is expected to grow significantly over the planning period. As well as subdivisions expanding the city, the city council is planning a major expansion on the eastern side of the city. This is accompanied by a significant industrial and commercial activity.

8.5.2 SAFETY PROJECTS

The network currently meets our safety standards.

8.5.3 DELIVERY PROJECTS

In Palmerston North, the Hokowhitu area within the city relies on small-diameter pipes. This was the last system running different operating pressures in summer (80kPa) and winter (100kPa).

Over the last planning period, we have permanently increased the pressure to 100kPa. Additional investigation showed that extra work is required to maintain performance levels when growth occurs.

8.5.3.1 QUALITY OF SUPPLY

1) James Line railway crossing

Once the eastern city expansion project described in Section 8.5.3.2 below is completed, we will bring more security of supply in the area by building a rail crossing on James Line.

We forecast $50k in RY17 to complete this work.

Refer to item 1 on Figure 8.5.

2) Tremaine Avenue station rebuild

The Tremaine Avenue station is currently approaching its design capacity. It has also been identified as a potential station to be replaced by a higher capacity, underground station, in the same way as Wellington's stations (see Section 8.2.2).

We forecast $200k to increase its capacity in RY18.

Refer to item 2 on Figure 8.5.

8.5.3.2 SYSTEM GROWTH

a) Hokowhitu reinforcement

In the 2013 AMP, we identified the need to bring more capacity into Hokowhitu after the initial pressure increase discussed in Section 8.5.3. One option envisaged is to bring a new point of supply at the intersection of Te Awe Awe Street and Albert Street. We also considered installing higher capacity mains.

A third option is to gradually increase the pressure across the network as growth occurs. Our initial investigations show that the network should be capable of sustaining small pressure increases, by 5 to 10kPa per year, subject to the requirements of pipeline standards. This would allow us to maintain adequate capacity without having to replace equipment.

We forecast $50k in RY16 for this project.

Refer to item "a" on Figure 8.5.

b) Eastern city expansion

The city council's plans are to expand the city towards the east. Up to 700 lots will be built in the next 15 years. In the 2014 AMP update, we indicated the need to expand the IP pipeline to accommodate this growth. This was also a way to increase the pressure at the Roberts Line DRS, servicing another growth area.

We have carried additional modelling and investigated multiple options:

- Extending the IP line as described in the 2014 AMP update, and adding a new point of supply into the network. This solution costs around $2m and requires specialist steel work.
- Extending the MP West network along Main St, and interconnecting it to the MP network supplying the Roberts Line DRS. This also requires the installation of a new DRS supplying the LMP network at James Line.

While carrying out detailed costings investigation, we found it was possible to use a duct formed by an old, redundant cast iron pipe along Main St to insert modern polyethylene pipe. This makes the second option easier to deliver, at an equivalent cost.

We forecast $1.8m to build this second option in RY16.

Refer to item "b" on Figure 8.5.

c) Awapuni

Residential growth on the western side of the city will require us to reinforce the supply in this area. If the growth starts as expected in RY18, in RY21 we forecast spending $200k in one of these three projects:

- Install a new point of supply with built-in redundancy to service the area
- Interconnect this isolated pressure system to the LMP pressure system on Te Wanaka Road
- Connect this system to the MP pressure system. It will likely require the upgrade of some metering assets configured to run on the LMP network

Refer to item "c" on Figure 8.5.

d) Monterey Homes

A 170-section subdivision will be built North of Napier Road. We will reticulate the area. This will start in RY15 and last for three years.

Refer to item "d" on Figure 8.5.

e) Awahuri Estate

North of the city is a plan to rezone the area to residential. If this happens, we expect that we will be reticulating this new subdivision, starting RY19. Potentially, 10km of new mains can be installed over a 10-year period.

Refer to item "e" on Figure 8.5.

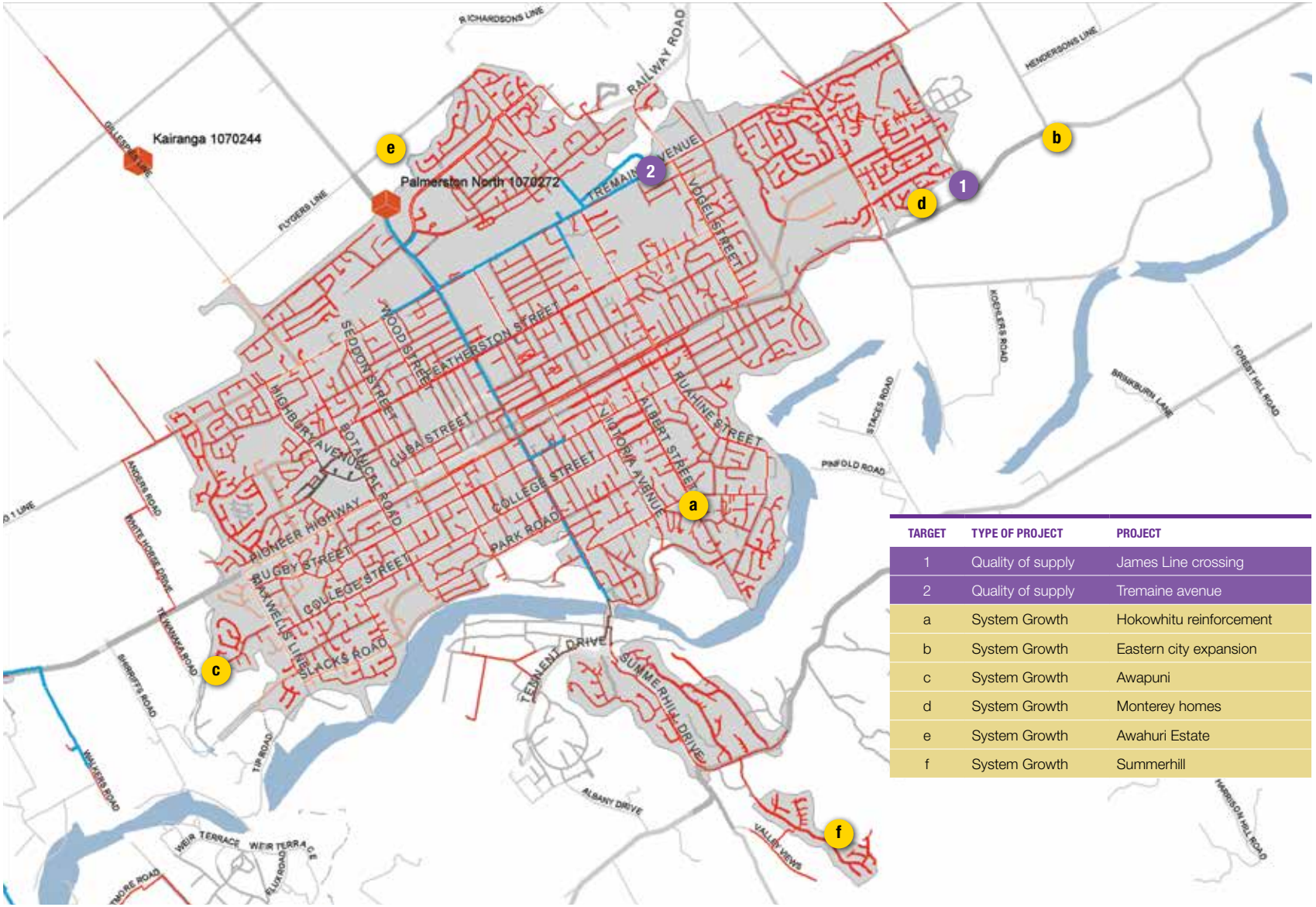
f) Summerhill

At the Southern end of the city, a new subdivision could potentially bring up to 200 lots in the next 10 years. Our current network can cater for growth in the next 5 years. After this, the only solution will be to increase the pressure in the area.

Whilst we monitor growth, we forecast $500k in RY22 to reconfigure the station and carry additional work to increase the pressure.

Refer to item "f" on Figure 8.5.

Figure 8.5: **Network Projects in Palmerston North.**



TARGET	TYPE OF PROJECT	PROJECT
1	Quality of supply	James Line crossing
2	Quality of supply	Tremaine avenue
a	System Growth	Hokowhitu reinforcement
b	System Growth	Eastern city expansion
c	System Growth	Awapuni
d	System Growth	Monterey homes
e	System Growth	Awahuri Estate
f	System Growth	Summerhill

8.6 HAWKES BAY

8.6.1 CURRENT PERFORMANCE AND FUTURE DEMAND

We operate three networks in Hawkes Bay. The network supplying Napier and Hastings conveys the highest volume of all of our networks due to the presence of large industrial customers.

These three networks in Hawkes Bay are currently able to meet the demand.

Growth in the region is supported by large subdivision activity in Napier and Hastings. The number and location of those growth areas will require reinforcement work on the network in Brooklands, Te Awa, and Hospital Hill. We are monitoring those developments and an additional point of supply or network interconnection will be looked at in due time.

8.6.2 SAFETY PROJECTS

We successfully completed the two safety related projects described in our previous AMP:

- The removal of live asbestos pipe in Westshore
- The realignment of the IP pipeline on Hyderabad Road

We are in the process of reviewing the location, and safe access of the isolation valves on the IP pipeline that links the gas gate in Hastings to Napier. There is likely some modification work to be carried to enhance safety around those assets.

We forecast to spend $100k in RY16.

8.6.3 DELIVERY PROJECTS

We have not identified any performance issues in the region today.

As described above, subdivision activity is strong in the region. In some instances, we will need to carry out some work to offer an adequate level of pressure to those newly reticulated areas. Details of those specific projects are described in the system growth section below.

8.6.3.1 QUALITY OF SUPPLY

As we implement our Security of Supply Policy, we are reviewing whether the single supply onto Havelock Road is adequate. However, at the time of writing, no quality of supply projects are expected.

8.6.3.2 SYSTEM GROWTH

a) Northwood development

In this northern part of Hastings, up to 385 lots will be developed in the next 10 years. At this stage, we anticipate to service 100 houses in the first five years.

To maintain adequate pressure levels, we will tie in the newly laid pipeline along Locchead Street as the subdivision is being developed, to the existing pipeline on Pakowhai Road.

Refer to item “a” on Figure 8.6.

b) Frimley estate

In Hastings, we have started to reticulate the current stage of this new subdivision. Progressively over the next 15 years, another 270 lots will be built and we will reticulate the area, at a rate of 15-20 new lots every year.

Refer to item “b” on Figure 8.6.

c) Parklands

On the edge of Napier city, Parklands subdivision is growing. In five years, we expect to see 100 more lots, and in 15 years, another 300 lots. We will reticulate the subdivision and construct a strategic line along Long South Road with the second stage.

Refer to item “c” on Figure 8.6.

d) Te Awa Estate

On the shore side of Napier, along Te Awa Avenue, the subdivision development will lead to 120 new lots being built over the next six years. Depending on the intake of gas in this area, we will require a new point of supply in the vicinity of Te Awa Road and Kenny Road as early as RY18. We will maintain a watching brief on this issue, and forecast $200k in RY19 to build this new point of supply.

Refer to item “d” on Figure 8.6.

e) Brooklands

North of Arataki Road, 300 lots will be developed from RY17 with a completion date on a 10-year horizon. We will reticulate the subdivision in the same staged manner as the development.

At the expected rate of growth, the pressure droop on this system could breach our security of supply criteria in five years. This will be remedied by carrying out two projects:

- Building 200m of new pipeline between Te Heipora Place and Meissner Road along Aratiki Road. This might be achieved organically as the subdivision grows.
- Increasing the pressure from 150kPa to 200kPa. This would go in the same direction as our network pressure rationalisation strategy. However if this cannot be achieved, we would need to bring a new main trunk in this area as pipe diameter is limited.

We will keep monitoring the performance of the network, and plan to spend $50k to complete these two projects in RY20.

Refer to item “e” on Figure 8.6.

f) Hospital Hill

A new development is under development in this Napier suburb. Starting FY16, 100 houses will be built over a five-year period in this area. If the intake for gas is high, we will connect the Corunna Bay network, a single pressure system running at 275kPa, to the Napier pressure system, currently at 210kPa. 220m of new pipeline will be built along Main Street.

We forecast spending $90k in RY18.

Refer to item “f” on Figure 8.6.

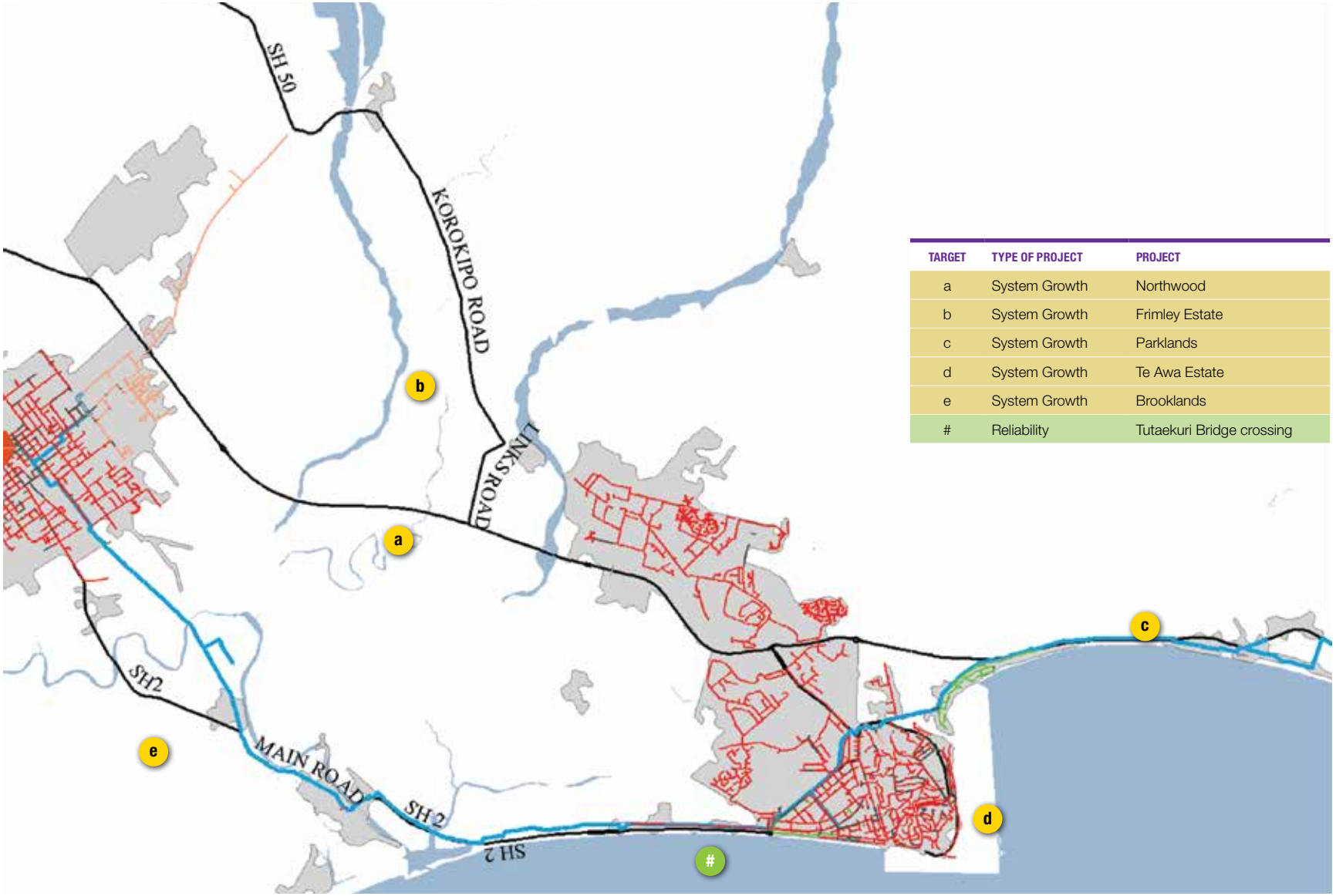
8.6.4 RELIABILITY

#) Tutaekuri Bridge crossing repair

We have detected a small leak on the flanges of this bridge crossing. To fully fix the leak, additional work is required to install expansion joints on the bridge. We will spend $150k in RY16.

Refer to item “#” on Figure 8.6.

Figure 8.6: **Network Projects in the Hawkes Bay Region.**



TARGET	TYPE OF PROJECT	PROJECT
a	System Growth	Northwood
b	System Growth	Frimley Estate
c	System Growth	Parklands
d	System Growth	Te Awa Estate
e	System Growth	Brooklands
#	Reliability	Tutaekuri Bridge crossing

8.7 BUSINESS IMPROVEMENT PROGRAMMES

As detailed in Section 6, our information strategy is a key improvement initiative. Improvement of information systems also contribute to our strategies relating to safety, delivery, reliability and efficiency. Programmes of work are in progress within our Electricity business to replace the SCADA and outage management systems with best practice and modern technology. These projects will deliver a platform that we will utilise to foster closer interaction with our customers, enable greater real-time reporting and better analysis of asset information. Automation of maintenance management practices also continues to improve asset information and data on asset condition. It has the ability to use this information to drive an optimised renewal planning and condition-based maintenance programme. Programmes of work aligned to Powerco's FY2014-2018 Business Plan have been initiated to ensure we are working on the right projects at the right time, contributing to continuous improvement of our Asset Management practices and systems.

Business improvement programmes include:

- Automated maintenance management to simplify and automate business processes to permit the delivery of consistent, timely and accurate maintenance plans and work schedules
- Enhance network improvement to provide easily accessible, timely and accurate information on network assets
- Information management to realise the capability to manage information effectively within Powerco, including the provision of end-to-end knowledge management systems and processes
- Continuous improvement to release incremental improvements to systems and processes and to embed a continuous improvement culture at Powerco

8.7.1 SAFETY AND HAZARD MANAGEMENT

The Gas Safety and Measurement Regulations require asset owners to have a Public Safety Management System that addresses how we operate our network to prevent serious harm to the public or significant damage to property. The regulations require an auditable regime for public safety management. Powerco Gas passed its first TELARC audit in May 2013. The audit process provided an opportunity for Powerco to review its existing safety management system, apply improvements where required, and set up a continuous improvement approach. An area of focus is to improve the means by which Powerco communicates about hazards to the people working on the assets.

A Gas Network Hazard Register has been established in our chosen application, Safety Manager. The register identifies the hazards applicable to Powerco employees, their contractors and the public. A copy of the register is provided to Powerco employees and their contractors. The register is reviewed and updated on a regular basis or as a result of an incident or investigation recommendations.

8.7.2 SUMMARY OF CURRENT IMPROVEMENT INITIATIVES

Various other information system improvement initiatives are being undertaken in FY2016. These include:

- Continuation of the Programme Office implementation of business-wide projects and the associated Programme Office steering group governance and regular sponsor/business owner meetings
- Establishment of a dedicated continuous improvement delivery pipeline
- Continued enhancements to the Maintenance Management system
- Continuation of Safety Manager, embedding incident and audit management practices and enabling greater reporting
- Reviewing the processes and systems that support outage management reporting
- Reviewing the processes and systems to better understand what asset data is required to effectively manage and operate our network

8.8 PROPOSED ASSET MANAGEMENT ADVANCEMENT PROJECTS

8.8.1 PROPOSED FUTURE MAJOR INFORMATION SYSTEM PROJECTS

The following is a list of planned future information system improvement initiatives to increase our asset management capabilities, in line with our AMMAT assessment discussed in Section 3.4.1. Some of these projects will be carried out in conjunction with the Electricity division.

Table 8.3: **Potential Future Major Information System Projects.**

ASSET & CUSTOMER MANAGEMENT FUTURE NEED	POTENTIAL ACTION	CRITICALITY	EST COST	INFLUENCE
Enterprise Asset Management System	Implement a new Enterprise Asset Management System to increase our efficiency in collecting, reporting and managing data	High	$10m ($1.86m for gas)	Entire business
Gas Registry Amendments	Align our systems to match the requirements of the gas registry	High	$164k	Gas business
Gas Outage Management System	Transfer the management of gas outages into the Outage Management System implemented for the electricity business	High	$255k	Entire business
Improved information disclosure reporting	Implement Data Warehouse programme	Med	$200k	Entire business
Improve quality of information on assets	Gain a clear understanding of what asset data is required to effectively manage and operation our network, then establish the best sources, outputs and repositories for that data	High	$200k pa	Network Info Team, Operations, Strategy
Contractor HSEQ Management	Activities to comply with NZS 7901 Public Safety Management System	High	$150k	All areas
Continuous Improvement Programme	Deliver incremental improvements in systems and processes	Medium	$80k	All areas

8.8.2 PERSONNEL PROJECTS

Various human resource and staff capacity building initiatives are being undertaken. These include:

Table 8.4: **Potential Future Personnel Projects.**

ASSET & CUSTOMER MANAGEMENT FUTURE NEED	POTENTIAL ACTION	CRITICALITY	EST COST	INFLUENCE
Skilled technical resources	Foster increased numbers of trainees and develop effective programmes for trainees to obtain well-rounded experience	Medium	$20k pa	Gas business
Health & Safety training	Improve H&S capacity (driver training, incident investigations)	High	$30k	Gas business
Internal and external training courses	Up-skilling of employees as guided by regular review and development plans and business needs	High	$100k	Gas business
Legal compliance capacity-building	Education of staff on legislation and recent legislative changes	High	$20k	Business-wide

BEING PART OF THE COMMUNITY

We are part of New Zealand's everyday life. Nearly three quarters of a million people live, work and play in areas where we are present. Powerco is committed to supporting communities in which it operates and last year sponsored more than 100 different events and organisations. Powerco also has an in-school safety campaign, our safety mascot Sparky educates children about the dangers of energy networks.

9. EXPENDITURE FORECAST

9.1 EXECUTIVE SUMMARY

This section sets out forecast expenditure we anticipate will be required to operate, develop and maintain our networks to support our asset management objectives.

The information provided in this section summarises the more detailed discussions provided in sections 6 and 7. To avoid duplication, we have not restated the detailed drivers of investment in this section. Instead, we have focused on providing some high-level commentary and context for the estimates and the assumptions used to derive them. Where possible, we have provided applicable cross-references for readers who require more detailed information.

In line with our 2014 AMP update, capital expenditure was underspent in the first years but this is forecast to be spent later in the planning period. This shift was the result of several factors, primarily:

- The deferral of some projects to allow more robust analysis, and needs cases to be developed
- The change in our engineering and contracting model which coincided with the start of the DPP period

A summary of forecast capital expenditure (capex) and forecast operational expenditure (opex) over the planning period is provided in the figures below. A more detailed summary of forecast expenditure is provided in the tables at the end of this section. The graphs that follow show, in constant dollar terms as of 2015, forecast expenditures through to 2024/25.

Figure 9.1: **Capital Expenditure Forecast (constant $).**

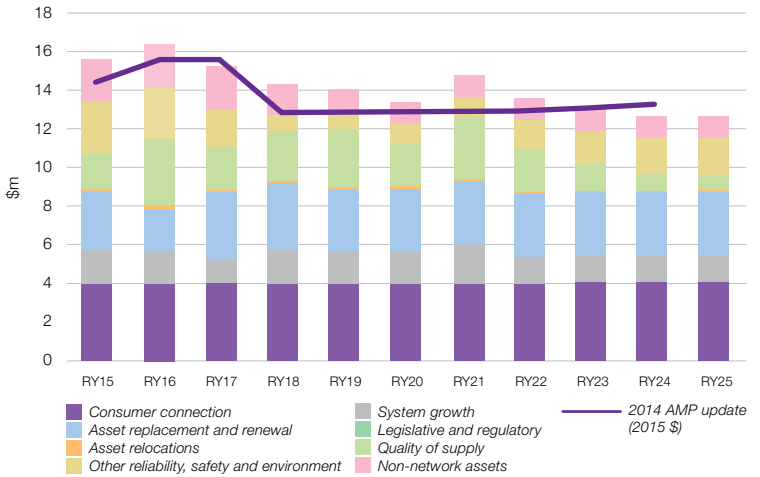
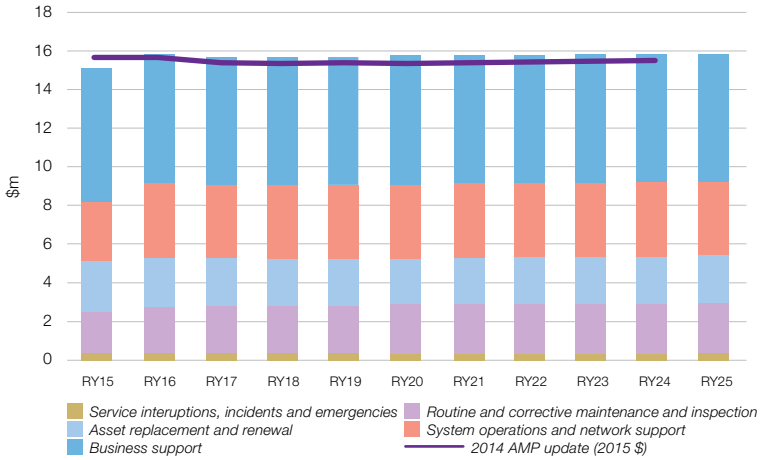


Figure 9.2: **Operating Expenditure Forecast (constant $).**



9.2 BACKGROUND

In general, the expenditure forecasts in this section have been developed using predictive forecasting techniques to estimate the work volumes that are applied to associated unit rates. The specific work to be completed is detailed in sections 7 and 8. However, the following general principles have been applied:

- In the case of maintenance and renewal-based expenditure, our estimates have been developed in response to the current and projected states of our assets as indicated by condition information, age profile and expected life, and the performance of our assets. The expenditure forecasts have been tailored to maintain asset condition and reliability performance.
- In the case of growth-related expenditure, we have undertaken a comprehensive analysis of current asset utilisation and simulated the effect of anticipated load growth on our networks to identify capacity and security-related issues that will require resolution during the planning period. Based on this analysis we have completed a regional assessment of the investments we believe will be required over the period.

9.2.1 KEY ASSUMPTIONS

Our networks are geographically diverse and the number of asset classes we operate is extensive. These factors, and the inherent uncertainty involved in making forecasts over an extended period, create significant complexity and increasing scope for variance as the planning period progresses. The key assumptions made, and the associated bases for the assumptions are summarised below:

Table 9.1: **Renewal Assumptions.**

ASSUMPTION	BASIS FOR THE ASSUMPTION
Renewal	
Asset age provides a reasonable proxy for asset deterioration and resulting expected life for forecasting purposes.	Except where specific performance issues or accelerated deterioration have been identified, it has been assumed that assets will generally reach the end of their expected lives. This assumption is considered appropriate for forecasting work on large asset populations, given that actual works will be triggered by other factors, including asset condition and safety.
Optimisation of maintenance and renewal expenditure will continue to provide acceptable risk outcomes.	Powerco tests the effectiveness of our long-term investment decisions by considering the resulting residual risk. Our analysis suggests that the investments we propose will enable us to manage risk within an acceptable range.

Specific details regarding our approach to renewal forecasting, and our specific assumptions in this area are provided in Section 7.

Table 9.2: **Growth Assumptions.**

ASSUMPTION	BASIS FOR THE ASSUMPTION
Growth	
Historical correlations between planning inputs (GDP, housing statistics, etc.) and load growth will continue over the planning period.	Powerco has developed techniques to estimate ICP and volume growth, based on a combination of high-level trends, such as economic growth, as well as local trends, such as housing statistics. While we expect to make some refinements in this area, our core assumption will remain that historical correlations will hold into the future.
The Gas Hub brand will remain an enabler for growth	The presence of The Gas Hub brand in the market has already proved that better customer service, better customer relationship, targeted marketing and sales efforts influence the number of connections.

Specific details regarding our approach to growth forecasting are provided in Section 8.

Table 9.3: **System Improvement Assumption.**

ASSUMPTION	BASIS FOR THE ASSUMPTION
System Improvement	
We will leverage from the investment planned by electricity while the company invests in core asset management and operational control systems to bring value to customers.	Our forecasts assume investment in core asset management systems discussed in the electricity AMP will benefit gas in the longer term by bringing tools and systems that would be too onerous for gas only. These improvements, in turn, should ultimately translate to improved cost outcomes for customers. We will continue to refine the scope and costs of these works to ensure targeted benefits can be delivered.

Specific details regarding our approach to system improvement and our specific assumptions in this area are provided in Section 8.

Table 9.4: **Assumptions for all Categories.**

ASSUMPTION	BASIS FOR THE ASSUMPTION
Assumptions for all Categories	
Customers are generally satisfied with the level of service they receive.	Our estimates are based on maintaining our current levels of service over the planning period. This assumption is based on discussions, survey work and market studies we have completed in preparation for this AMP.
NZIER forecasts are appropriate for inflation.	We have assumed that the published NZIER inflation forecast (as noted below) provides an appropriate basis for adjusting our forecasts into nominal.

Table 9.5: **CPI Forecasts Used to Produce the Expenditure Forecasts.**

ASSUMPTION	2015	2016	2017	2018	2019	2020
End September	1.41%	1.90%	1.99%	1.96%	2.00%	2.0%

9.2.2 ENSURING RELIABLE LONG-TERM FORECASTS

Much of the work Powerco does is routine and repeatable. The resources we use are stable and their costs are well understood. The assets we build are standardised and their construction costs are expected to be stable in the longer term.

The key aspects that underpin our ability to provide reliable long-term financial estimates are noted in the table below:

Table 9.6: **Powerco Approach to Effective Forecasting by Area.**

ASSUMPTION	BASIS FOR THE ASSUMPTION
Forecasting Area	
Maintenance	Powerco has unit rates in place for each maintenance task, and incentivises its contractors to continually enhance their cost performance in this area. As our works managers are actively involved with works delivery, we are confident that the rates we pay are well managed and provide a strong basis for reliable forecasting.
Minor Works	During 2012, Powerco implemented a unit rates structure across all minor works elements. The rates have been market tested by going to tender. This process has given us confidence these rates provide a strong basis for reliable forecasting.
Major Works	The scale of Powerco's operations is such that we routinely complete major projects such as major main extensions or DRS installation. These works are tendered and the associated processes provide real-time insights into the cost of typical works. Further, our project delivery and contract management teams have the capability to tailor estimates on a consistent basis to reflect local conditions. These factors give us the expertise needed to forecast the cost of the larger projects within our works portfolios.
Programme Methodologies	The scale and large number of projects we complete each year provide us with significant advantages with respect to forecasting. While the cost of individual projects can be subject to significant uncertainty, the average cost of projects within a programme (many projects of a similar type) is significantly more stable and will tend to balance intrinsic historical risks to provide an improved basis for forecasting.
Global Impacts	Over the past few years, a number of factors have affected our costs. Increases in commodity prices due to international demand, increases in labour prices due to strong offshore demand, and enhancements to the way we manage the safety and quality of our works have lifted overall construction costs. Our current view is that these upward pressures on prices have stabilised. Consequently, we have restricted forecast price adjustments to the CPI. However, given trends in offshore markets and the potential for the NZ dollar to devalue, this is an area we are maintaining a watching brief.

Table continued in next column >

9.2.3 ENSURING EFFICIENT COST OUTCOMES

Improving cost efficiency is an area of critical importance for Powerco, and it is an area that forms a central pillar of our asset management objectives framework. We have a range of key existing processes that are designed to improve future cost efficiency and these are noted in the table below.

Table 9.7: **Powerco Approach to Contracting to Ensure Efficient Cost Outcomes.**

ASSUMPTION	BASIS FOR THE ASSUMPTION
Forecasting Area	
Minor Works	Powerco utilises tailored contracts to maximise the benefits of scale, and minimise transaction costs for the large volume of minor works we complete each year. The contracts are incentivised to provide benefits to Powerco for smooth and effective work release, and benefits to our service providers for reducing the per unit rate of work over time. The contract negotiation periods are of three to five years' duration to ensure the costs we are paying are reflective of the market.
Major Works	Powerco competitively tenders its larger project works to enable the benefits of a competitive market to be realised. Our larger projects have scopes that are well understood, and a range of contractors who have capability in the areas we require. Strong competition and controlled pricing give us confidence that good results are being achieved.
Specialist Services	Powerco utilises a range of specialist services, such as project management, steel pipe constructions and specialist engineering services. In most cases, the costs of such services are well understood by the market. Consequently, Powerco's focus is on ensuring enduring partnerships where our specialist providers know our business and can provide maximum value while engaged. Powerco has found that this approach has provided good value in recent years.
Incentives	Powerco believes that appropriate incentives are a key supporting element to help achieve effective cost outcomes. We also employ liquidated damages in contracts for large tendered projects where timing is a critical area.

Table 9.8: **Powerco Approach to Project Delivery to Ensure Efficient Cost Outcomes.**

ASSUMPTION	BASIS FOR THE ASSUMPTION
Forecasting Area	
Design	Powerco utilises standard designs, standard equipment specifications, and standard layouts wherever possible. We are continually seeking to standardise our approach in ways that minimise complexity. The approach is designed to simplify construction (and therefore minimise costs) and optimise the long-term cost of ownership.
Tender	Powerco tenders all works of significant scale (typically > $100k), and have the ability to do the same for specialist works. Our ability to benchmark tender outcomes provides strong confidence in the costs achieved.
Materials Procurement	Powerco procures larger items (DRSs, specialist material, large quantity of pipes, etc.) directly for larger projects. Powerco also directly tenders civil works where it makes sense to do so. Procurement of minor items is left to the contractor to ensure a smooth work flow.
Risk	Powerco takes a pragmatic approach to risk allocation. We employ contract formats that seek to achieve a balanced allocation of risk, and, by doing so, avoid paying inflated risk premiums. We utilise a range of formal risk-sharing arrangements. For larger, well-defined works, we typically seek lump-sum pricing. For smaller jobs, we utilise unit rates and/or a time and material structure.
Foreign Exchange/ Commodity Exposure	Powerco seeks to lock in project value at the point of project award. Typically, we seek binding fixed costs denominated in $NZ. In cases where we procure large items directly from overseas, we hedge the currency exposure at the point of placing the order. This approach is embedded within Powerco's treasury polices.

9.3 INTERPRETING THE FORECASTS

9.3.1 EXPENDITURE CATEGORIES

The financial summaries that follow provide a summary of forecast expenditure over the planning period in our key expenditure areas. For simplicity, we have split expenditure into operational and capital expenditure areas, and provided specific projections for each subcategory. The categories and subcategories are consistent with the most recent information disclosure requirements.

The operational expenditure categories are:

- Service interruptions and emergencies
- Routine and corrective maintenance and inspection
- Asset replacement and renewal
- System operations and network support
- Business support

The capital expenditure categories are:

- Consumer connection
- System growth
- Asset replacement and renewal
- Asset relocations
- Reliability, safety and environment
- Non-network assets

9.3.2 OUR APPROACH TO ESTIMATING UNCERTAINTY

All of the financial forecasts included in this section and elsewhere in the document represent our most current expected estimates of the costs associated with operating and developing our networks.

To the extent possible, we have considered the effects of the assumptions we have made when developing our estimates and developed a view that represents the most likely outcome in cost terms.

Powerco's philosophy is to derive a P50 estimate for the estimates we produce. A P50 has a 50% likelihood that actual costs will fall at or below the estimate level. P50s are generally considered appropriate for use in a regulated utility environment, particularly for programme-based works such as asset renewal.

In practice, our actual future costs can be anticipated to fall within a range around the P50 value. However, our current estimates reflect what is, in our view, a reasonable and balanced view of future cost outcomes on our network. As part of our asset management journey, we are continuously seeking ways to enhance our forecasting systems to provide more detail on the nature and quantum of variance, which could be reasonably expected from our forecasting process.

9.3.3 INTERPRETING THE GRAPHS

The graphs that follow in this section show forecast expenditures from RY2015 to 2024/25. The expenditure forecasts are denominated in constant value terms based on 1 October 2015 dollar values.

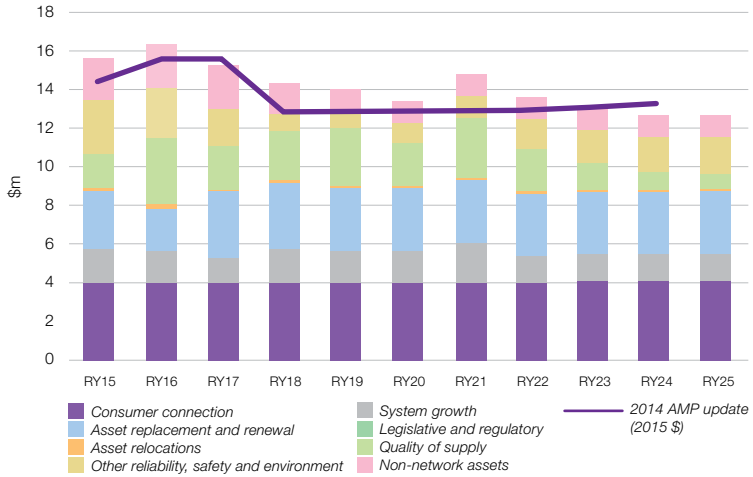
We have also provided historical actual expenditure values for RY13 and RY14 as published in our Information Disclosure document required under Part 4 of the Commerce Act, and available on our website.

9.4 HIGH-LEVEL SUMMARIES

9.4.1 CAPITAL EXPENDITURE

Capital expenditure is used to create new assets or to increase the performance or useful life of an existing asset. Capital expenditure increases the value of the asset stock and is capitalised in accordance with generally accepted accounting practice (GAAP).

Figure 9.3: **Total Capital Expenditure.**



The overall forecast expenditure for the period 2013-2017 remains aligned with the 2014 AMP Update.

Since the publication of our 2013 AMP, we have confirmed our asset management objectives are sustainable and adequate, and require continued levels of capital expenditure in certain areas. These are:

- System Growth (see Section 9.7.2 below). Review of demand forecasts on an area by area basis continues to signal an ongoing level of expenditure over the period. These investments will enable us to maintain targeted levels of service for our current and future customers.
- Reliability, Safety and Environment (see Section 9.8.1 below). With our improved capacity modelling accuracy, understanding of the gas conveyance patterns in the network, and customer needs, we are continuously identifying investment projects that will enhance the delivery of our asset management objectives. Key initiatives include the installation of some strategic mains that will primarily increase security of supply and capacity. Investment will also be carried out to increase the safety level around our assets and their operation.
- Consumer connection (see Section 9.7.1 below). To support our connection numbers over the period, a large part of our capex forecast is allocated to connecting new consumers.
- Non-network expenditure is expected to increase over the period due to our need to improve the accuracy of our data, with a step change for the replacement of our Enterprise Resource Planning system around 2017/18.

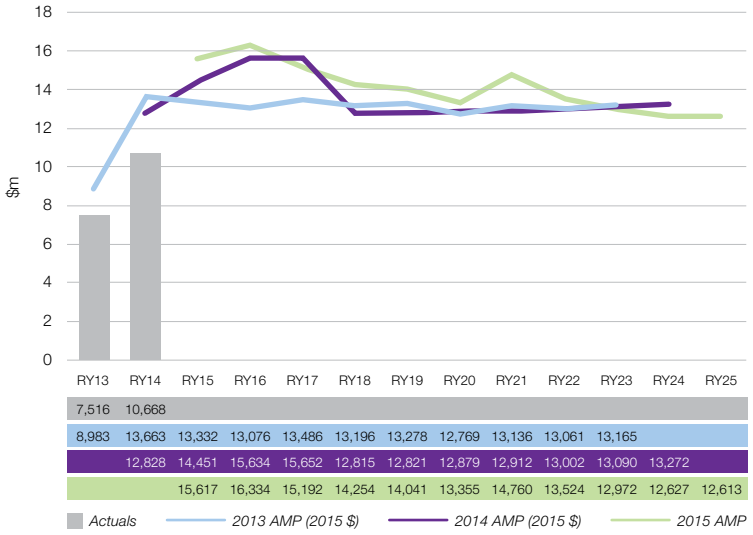
As discussed in the 2014 AMP update, the actual expenditure for the first two regulatory years has been impacted by:

- The deferral of projects to allow for more detailed analysis and needs cases to be developed
- Delays in project delivery through the transition period to new field service and engineering

The expenditure forecast allows the delivery of those projects.

The figure below compares the forecasts previously disclosed in our 2013 AMP, 2014 AMP update, 2015 AMP, and the actuals for RY13 and RY14.

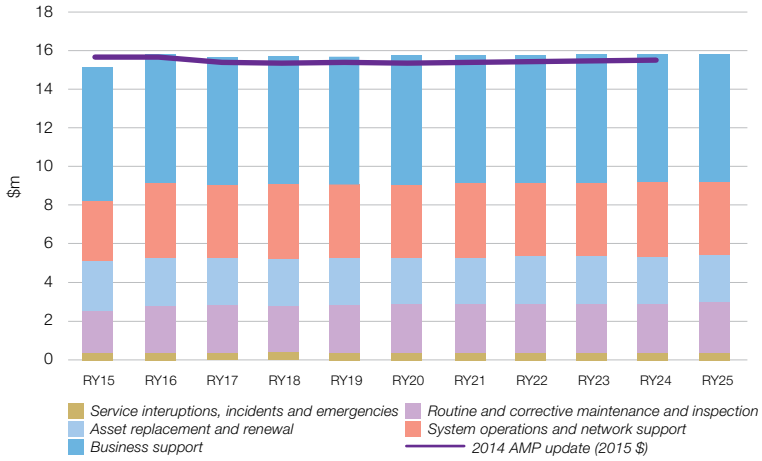
Figure 9.4: **Comparison of Capital Expenditure.**



9.4.2 OPERATING EXPENDITURE

Operating expenditure (opex) is directly associated with running the gas distribution network, and ensures it is operating safely at any time. Operating expenditure includes maintenance and inspection costs required to survey and maintain the assets to achieve their original design lives and service potentials. It also includes the expenses related to our third-party prevention programme.

Figure 9.5: **Total Network Opex.**

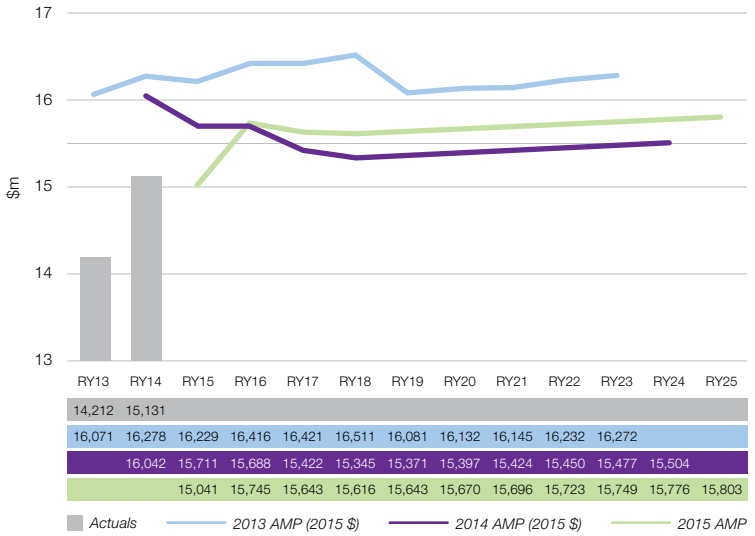


Our on-going analysis of costs has shown most of this expenditure is mandatory, dictated by legislation or accepted code of practice across the industry to operate as a prudent distribution company. The key areas for operational expenditure are:

- Routine and corrective maintenance and inspection (see Section 9.5.1 below): Most of these “minor work” type activities are based on the maintenance schedule and rates.
- Asset replacement and renewal (see Section 9.5.2 below): This category contains all the replacement and renewal jobs that can’t be capitalised. Their individual value is generally low (under $500).
- Service interruptions, incident and emergencies (see Section 9.5.3 below).

The figure below compares the forecasts previously disclosed in our 2013 AMP, 2014 AMP update, 2015 AMP, and the actuals for RY13 and RY14.

Figure 9.6: **Comparison of Operational Expenditure.**



9.5 MAINTENANCE

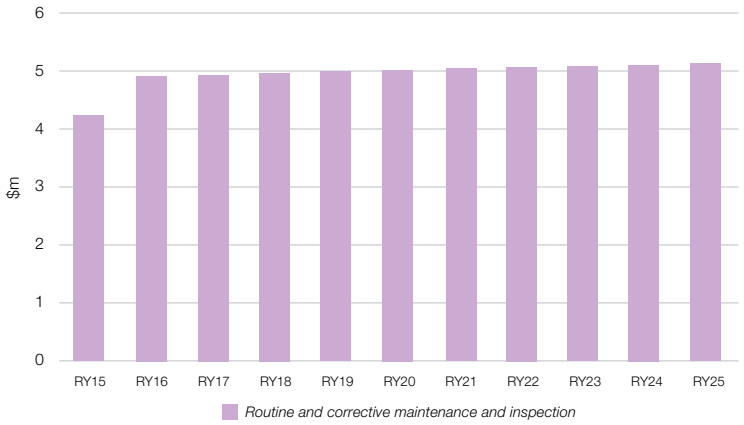
9.5.1 ROUTINE AND CORRECTIVE MAINTENANCE AND INSPECTION OPEX

Routine and Corrective Maintenance operational expenditure is driven by pre-planned work schedules. It comprises network inspections and routine servicing of equipment, as well as repair of defective equipment in accordance with the annual maintenance plan. This expenditure category also includes maintenance of a non-routine nature, such as relocations of rotable assets.

As we have historically done, pipeline location services are included in this expenditure category. The Commission revised the definition for system operations and network support in March 2015, including those services in the system operations and network support category of expenditure. These costs cannot be easily separated from our maintenance expenditure. It is our intention to reclassify this expenditure in the next iteration of our forecasts.

As outlined in section 7, most of our routine and inspection maintenance program is driven by legislation and industry standards.

Figure 9.7: **Routine and Corrective Maintenance.**



ASSUMPTIONS AND UNCERTAINTIES

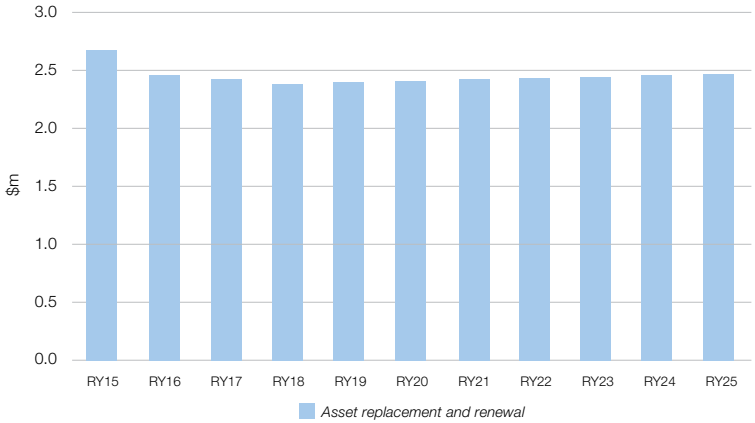
Basis	Unit rate forecasts represent our current cost base, escalated for inflation, and include consideration of local cost influences.
Supporting information	During 2012, Powerco implemented enhancements to its defect management systems that provide improved oversight of work completed in this category. This has provided a strong basis for establishing future requirements for this investment category.
Uncertainties – Third Party requests	The quantity of plan, location and standovers is driven by third party requests that we can't control or influence.

9.5.2 ASSET REPLACEMENT AND RENEWAL MAINTENANCE

Replacement and Renewal Maintenance is operating expenditure where the primary driver is the maintenance of asset integrity to address the progressive deterioration or obsolescence of particular assets, or the need to maintain physical security.

Because there is a potential cross-over between this expenditure and corrective maintenance expenditure, Powerco interprets Asset Replacement and Renewal maintenance to include defect remedy of a non-routine nature which require the replacement of a capitalised assets or subcomponent. On the other hand corrective maintenance includes renewal of subcomponents or parts that are not part of our capitalisation policy and which value is inferior to a certain threshold.

Figure 9.8: **Asset Replacement and Renewal.**



ASSUMPTIONS AND UNCERTAINTIES

Basis	Volumes have been determined based on network age and condition. Unit rate forecasts are based on historical works escalated for inflation.
Supporting information	Powerco's planning defect identification and analysis processes and data provide a good basis for future volumes.

9.5.3 SERVICE INTERRUPTIONS, INCIDENT AND EMERGENCIES MAINTENANCE

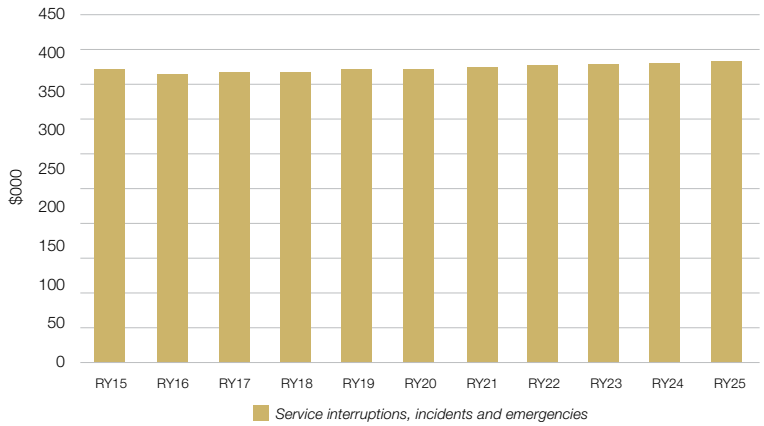
Service interruption (faults) and emergency maintenance work is completed as needed in response to supply interruptions, major leakage or public reported escapes, and generally comprises callouts to restore supply or to make the network safe.

Work comprises activities undertaken by field personnel responding to a reported failure of the network, including any back-up assistance needed at the time to restore supply or make the network safe. The work can be either temporary or permanent in nature. Where follow-up work is needed, that is deemed to be corrective in nature.

As outlined in Section 6.1.6 (operating strategy) our fault response capability is measured by the response to emergency time and closely monitored.

We have more work to do to analyse the effects of network condition and link these to our fault and emergency response volumes. However, we don't foresee any immediate need to increase the expenditure in this domain.

Figure 9.9: **Service Interruptions and Emergencies.**



ASSUMPTIONS AND UNCERTAINTIES

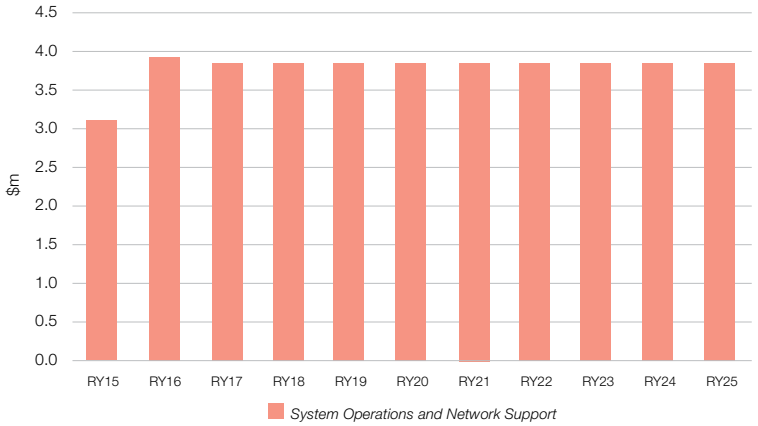
Basis	Volumes of faults are determined based on historical trends. Unit rate forecasts are our current cost basis, escalated for inflation, and include consideration of local conditions.
Supporting information	Powerco has a well-developed understanding of the requirements to respond to emergencies and ensure safety of the public and customers around our network.

9.5.4 SYSTEM OPERATIONS AND NETWORK SUPPORT EXPENDITURES

System Operations and Network Support expenditure includes the direct costs associated with managing the network – these include network planning process expenses, the non-capitalisable portion of the service provider relationship management process (contract and project management), information system management (GIS) costs and network operations expenses.

The operating and maintenance expenditure also includes management costs not directly associated with creating network assets, such as the costs of customer management, network planning, network operating and managing service provider relationships. These costs include site leases, site service charges, network insurance premiums and charter payments, and may include the costs of decommissioning existing assets (where a new asset has not been created).

Figure 9.10: **System Operations and Network Support Expenditure.**



ASSUMPTIONS AND UNCERTAINTIES

Basis	Costs have been developed based on a review of historical work volumes and the staff structures and costs required to support these work volumes. The application of technology (to minimise additional staff requirements) has been considered when developing these forecasts.
Supporting information	Powerco has a well-developed understanding of organisational requirements to support work delivery, and corporate systems and benchmarking processes, which provide us with confidence about the anticipated financial costs of these structures.

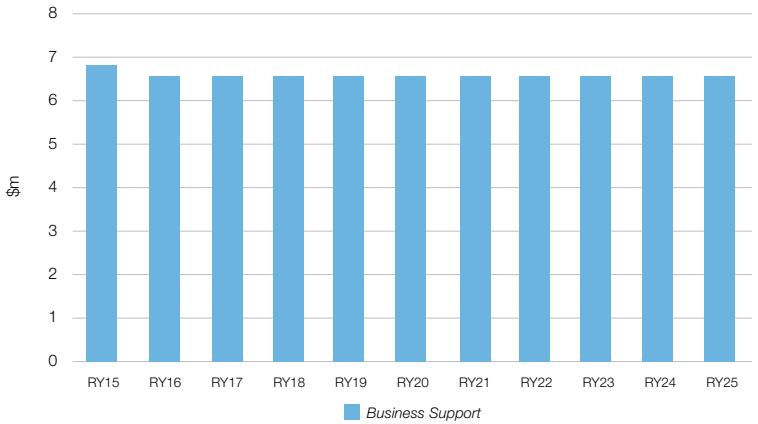
9.5.5 BUSINESS SUPPORT

Business Support expenditure represents the allocation of Powerco's corporate support activities relating to its centralised corporate functions. Key functions provided for include finance, legal, audit and compliance, pricing, human resources, health and safety, corporate communications, information services, business projects, and general administration.

Powerco has well-established functions in all of these areas, which we consider to be appropriately sized to provide effective corporate oversight and management. As a result, costs in this area are forecast to remain stable over the planning period.

We are currently forecasting our costs in this area to remain flat.

Figure 9.11: **Business Support Expenditure.**



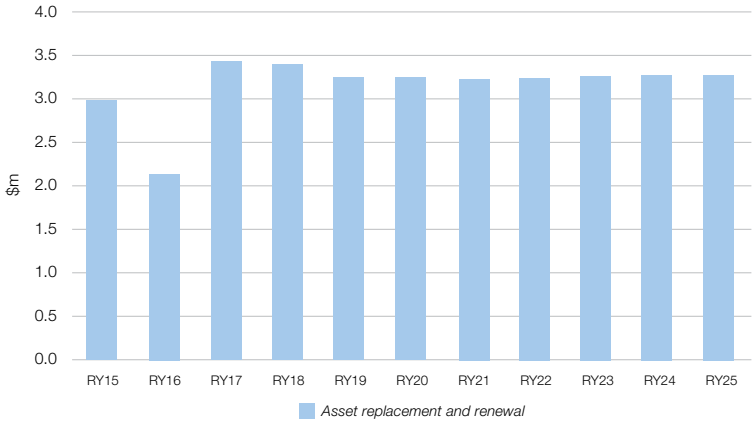
9.6 RENEWAL

9.6.1 ASSET REPLACEMENT AND RENEWAL (CAPEX)

Asset Renewal (capex) generally relates to addressing the progressive deterioration of the condition of network assets or the obsolescence of network assets. This may include replacement of existing assets where these assets have been identified as reaching their assessed criteria or trigger for replacement. These include reactive replacements following technical failure or risks associated with age, condition or obsolescence).

We have forecasted the asset replacement programmes discussed in Section 7 in our expenditure profile. This includes the replacement of pre-85 pipes, and the renewal of CP systems.

Figure 9.12: **Asset Replacement and Renewal Capital Expenditure.**



ASSUMPTIONS AND UNCERTAINTIES

Basis	The cost of replacement reflects our current unit rates escalated for inflation, and reflects localised impacts for some of our more remote areas.
Supporting information	Powerco's planning defect identification and analysis processes and data provide a good basis for future volumes.

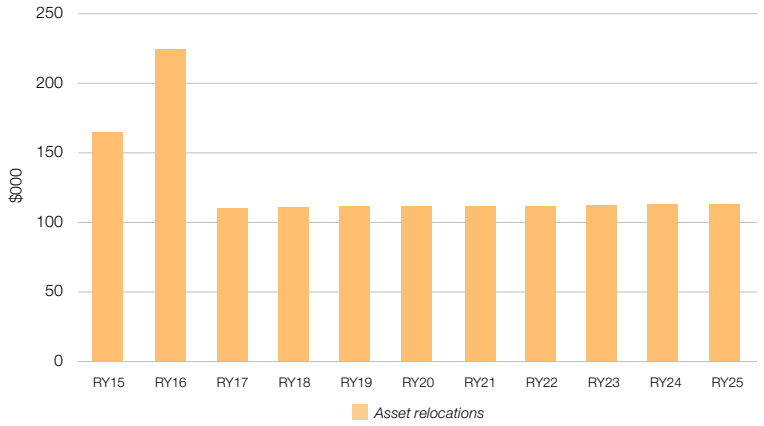
9.6.2 ASSET RELOCATIONS

Asset Relocation is capital expenditure associated with the need to move assets as a result of third-party requests. As it is a capital expenditure, the expectation is that new assets would be created as a result of the relocation: a simple relocation of an existing asset is an activity that should be expensed.

Asset relocation mainly includes new pipe constructed as part of route realignment due to a third-party request (such as road widening).

While we have seen high volatility in the level of relocation required over time, we anticipate the trends will stabilise at a level of around $300k (not including customer contribution).

Figure 9.13: **Asset Relocations Capex.**



ASSUMPTIONS AND UNCERTAINTIES

Basis	Volumes have been based on historical levels of relocation. The cost of relocation represents our current cost base, escalated for inflation.
Supporting information	Our engineers and customer teams maintain a watching brief regarding emerging relocation requirements. Where major works in excess of our forecasts are known, these are factored into our forecasts.

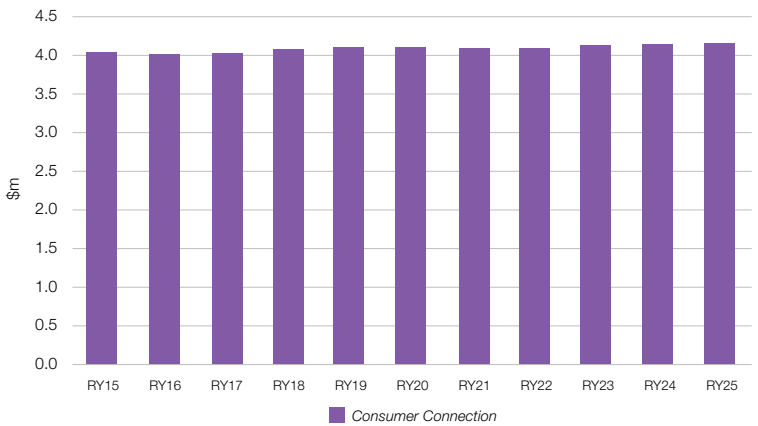
9.7 GROWTH

9.7.1 CUSTOMER CONNECTION

Customer Connection is capital expenditure primarily associated with the connection of new consumers to the network, or alterations to the connections of existing consumers, where main extension is generally not required. Consumer connection capex is shown in Figure 9.14.

The efforts put in The Gas Hub have driven growth in our connection numbers, and we expect this to continue over the period. This growth is reflected in our expenditure forecasts.

Figure 9.14: **Consumer Connection Capital Expenditure.**



ASSUMPTIONS AND UNCERTAINTIES

Basis	Volumes are based on anticipated projects, the mix and number of which reflect our current view of the level of economic and residential activity on our footprint. The cost represents our current cost base escalated for inflation.
Supporting information	Our systems utilise a range of information about future growth assumptions. Economic forecasts, council forecasts, and detailed local development knowledge from our engineers and customer teams support appropriate forecasting in this area.

9.7.2 SYSTEM GROWTH CAPEX

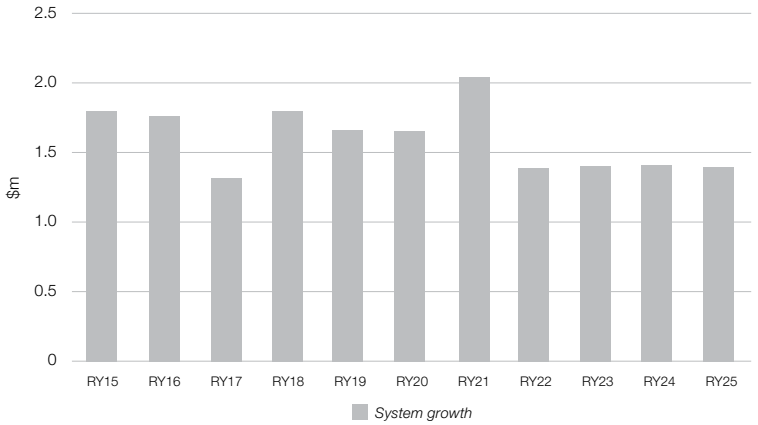
System Growth capex relates to development or enhancement of the network. This category is for work driven by:

- Growth in network load, which requires an increase in network capacity
- Mains extension or network upgrade to connect new consumers

Our forecasts for system growth capex have been developed on a bottom up basis, by considering specific area by area growth rates, and long term security outcomes. This process has provided us with appropriate confidence regarding the quantum of future expenditure for this category of capex.

The detailed region overviews provided in Section 8 provide details of the specific drivers for investment and the proposed projects. This analysis has confirmed longer term investment at near current levels.

Figure 9.15: **System Growth Capital Expenditure.**



ASSUMPTIONS AND UNCERTAINTIES

Basis	Specific volumes of projects, and the mix of projects required to deliver our asset management objectives are determined via our area planning framework. The costs of the projects identified are based on our current cost base, escalated for inflation.
Supporting information	Powerco has progressively enhanced levels of growth and security-related investment over the past decade. As a result, we have developed strong capability in delivery, and good cost benchmarks for work in this category. This information provides a good basis for forward estimating.

9.8 SYSTEM ENHANCEMENT

9.8.1 RELIABILITY, SAFETY AND ENVIRONMENT CAPEX

Reliability, Safety and Environment capex is capital expenditure that:

- maintains or improves the safety of the network for the public, employees and contractors
- improves reliability, security of supply or service standards and/or
- is needed to meet environmental standards

We have incorporated expenditure to enable us to deliver targeted asset specific investment programmes focused on reliability, and improved public safety. Our recent focus in this area has resulted in progressive identification of valuable enhancement initiatives, and we have set overall future expenditure to reflect this trend.

Figure 9.16: **Reliability, Safety and Environment Capital Expenditure.**

ASSUMPTIONS AND UNCERTAINTIES

Basis	This category of investment relates to portfolios of projects covering specific, targeted enhancement areas. The costs of specific projects and programmes are based on our recent experience in managing similar types of initiatives escalated for inflation.
Supporting information	Powerco's scale has enabled it to develop a strong information and business projects capability. This capability provides us with confidence in both forecasting delivery risk and our ability to manage that risk.

9.9 EXPENDITURE FORECAST SUMMARIES

To simplify overall presentation, full details, including tabular costs summaries for all operational and capex cost categories, are provided in Appendix 2, schedules 11a and 11b.

CARING FOR THE ENVIRONMENT

We are conscious that our activities can have an impact on the environment. We go the extra mile when it comes to the environment and in 2015 our gas environmental management programme won Environment Initiative of the Year in the Deloitte Energy Excellence Awards.

1. APPENDIX: **GLOSSARY** (KEY DEFINITIONS)

AMMAT means Asset Management Maturity Assessment Tool.

AMP means Asset Management Plan.

AMS means Asset Management System.

BCP means Business Continuity Plan.

Capital Expenditure (capex) means the expenditure used to create new assets or increase the service performance or service potential of existing assets beyond the original design service performance or service potential. Capex increases the value of the asset stock, and is capitalised in accounting terms.

CBD means Central Business District.

CPP means Customised Price-quality Path.

CWMS means Customer Workplace Management System, otherwise known as “Green”.

DPP means Default Price-quality Path.

EMT means Powerco’s Executive Management Team.

ERP in the context of the operations of the gas network, means the Emergency Response Plan. In the context of information system, means an Enterprise Resource Planning system.

FSC means Field Service Co-ordinator. It is a role introduced in the gas Contracts Management team to ensure the operational link between Powerco and the service providers (see Section 3.1.3).

FY means Financial Year ending 31 March of the year in question.

GDB means Gas Distribution Business.

GIC means the Gas Industry Company.

HDCU means High Density Community Usage.

HSEQ means Powerco’s Health, Safety, Environment and Quality team.

ICP means Installation Control Point, which is the point of connection of a customer to the Powerco network.

IP means Intermediate Pressure (700-2000kPa).

ISO 55000 refers to the International Standard Organization publication 55000.

IT means Information Technology (in terms of infrastructure).

JDE means J.D.Edwards, Powerco’s choice of enterprise resource planning application.

KPI means Key Performance Indicator.

LP means Low Pressure (0-7kPa).

MP means Medium Pressure (7-700kPa).

NOC means Network Operations Centre.

Operational Expenditure (opex) is expenditure directly associated with running the gas distribution network, and ensures it is operating safely at any time. Operating expenditures include maintenance and inspection expenditures required to survey and maintain the assets to achieve their original design lives and service potentials. It also includes the expenses related to our third-party prevention programme.

PAS55 refers to the Publicly Available Specification 55.

PE means Polytheylene, which is the material plastic gas pipes are made from.

RY means Regulatory Year ending 30 September of the year in question.

SPA means Service Provider Application.

UFB means Ultra-Fast Broadband, which is being rolled out around New Zealand.

Company Name	**Powerco Limited**
AMP Planning Period	**1 October 2015 – 30 September 2025**

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.

	for year ended	*Current Year CY* 30 Sep 15	*CY+1* 30 Sep 16	*CY+2* 30 Sep 17	*CY+3* 30 Sep 18	*CY+4* 30 Sep 19	*CY+5* 30 Sep 20	*CY+6* 30 Sep 21	*CY+7* 30 Sep 22	*CY+8* 30 Sep 23	*CY+9* 30 Sep 24	*CY+10* 30 Sep 25
11a(i): Expenditure on Assets Forecast		**$000 (nominal dollars)**										
Consumer connection		4,038	4,067	4,151	4,300	4,405	4,494	4,564	4,665	4,798	4,916	5,012
System growth		1,787	1,778	1,350	1,885	1,777	1,806	2,270	1,577	1,622	1,662	1,683
Asset replacement and renewal		2,981	2,167	3,538	3,580	3,481	3,551	3,606	3,686	3,791	3,885	3,961
Asset relocations		165	227	114	117	120	122	124	127	131	134	137
Reliability, safety and environment:												
Quality of supply		1,743	3,526	2,332	2,700	3,119	2,388	3,543	2,479	1,631	1,005	1,024
Legislative and regulatory		-	-	-	-	-	-	-	-	-	-	-
Other reliability, safety and environment		2,859	2,615	2,053	925	1,015	1,120	1,241	1,712	1,917	2,157	2,199
Total reliability, safety and environment		4,602	6,141	4,384	3,625	4,134	3,508	4,784	4,191	3,548	3,161	3,223
Expenditure on network assets		13,572	14,380	13,538	13,508	13,917	13,481	15,349	14,247	13,890	13,758	14,016
Expenditure on non-network assets		2,045	2,183	2,160	1,513	1,171	1,156	1,152	1,175	1,198	1,222	1,247
Expenditure on assets		15,617	16,563	15,697	15,021	15,088	14,637	16,501	15,422	15,088	14,980	15,263
plus Cost of financing		15	38	47	42	45	47	50	53	58	61	62
less Value of capital contributions		619	626	639	652	665	678	691	705	719	734	748
plus Value of vested assets		-	-	-	-	-	-	-	-	-	-	-
Capital expenditure forecast		15,014	15,974	15,105	14,411	14,468	14,007	15,859	14,769	14,426	14,307	14,576
Assets commissioned		14,263	15,926	15,148	14,446	14,465	14,030	15,767	14,824	14,443	14,313	14,536

	for year ended	*Current Year CY* 30 Sep 15	*CY+1* 30 Sep 16	*CY+2* 30 Sep 17	*CY+3* 30 Sep 18	*CY+4* 30 Sep 19	*CY+5* 30 Sep 20	*CY+6* 30 Sep 21	*CY+7* 30 Sep 22	*CY+8* 30 Sep 23	*CY+9* 30 Sep 24	*CY+10* 30 Sep 25
		$000 (in constant prices)										
Consumer connection		4,038	4,010	4,017	4,081	4,099	4,100	4,082	4,091	4,125	4,144	4,142
System growth		1,787	1,753	1,307	1,789	1,654	1,648	2,031	1,383	1,395	1,401	1,391
Asset replacement and renewal		2,981	2,137	3,424	3,397	3,239	3,240	3,226	3,233	3,259	3,274	3,273
Asset relocations		165	224	111	111	112	112	111	111	112	113	113
Reliability, safety and environment:												
Quality of supply		1,743	3,478	2,257	2,562	2,902	2,179	3,170	2,174	1,402	847	847
Legislative and regulatory		-	-	-	-	-	-	-	-	-	-	-
Other reliability, safety and environment		2,859	2,579	1,987	878	945	1,022	1,110	1,502	1,648	1,818	1,817
Total reliability, safety and environment		4,602	6,056	4,243	3,440	3,847	3,201	4,279	3,676	3,051	2,665	2,664
Expenditure on network assets		13,572	14,181	13,102	12,818	12,951	12,300	13,730	12,494	11,942	11,597	11,583
Expenditure on non-network assets		2,045	2,153	2,090	1,436	1,090	1,055	1,030	1,030	1,030	1,030	1,030
Expenditure on assets		15,617	16,334	15,192	14,254	14,041	13,355	14,760	13,524	12,972	12,627	12,613
Subcomponents of expenditure on assets (where known)												
Research and development		-	-	-	-	-	-	-	-	-	-	-

	for year ended	*Current Year CY* 30 Sep 15	*CY+1* 30 Sep 16	*CY+2* 30 Sep 17	*CY+3* 30 Sep 18	*CY+4* 30 Sep 19	*CY+5* 30 Sep 20	*CY+6* 30 Sep 21	*CY+7* 30 Sep 22	*CY+8* 30 Sep 23	*CY+9* 30 Sep 24	*CY+10* 30 Sep 25
Difference between nominal and constant price forecasts		**$000**										
Consumer connection		-	56	134	220	306	394	481	574	673	772	870
System growth		-	25	43	96	123	158	240	194	227	261	292
Asset replacement and renewal		-	30	114	183	241	311	380	454	532	610	688
Asset relocations		-	3	4	6	8	11	13	16	18	21	24
Reliability, safety and environment:												
Quality of supply		-	49	75	138	216	209	374	305	229	158	178
Legislative and regulatory		-	-	-	-	-	-	-	-	-	-	-
Other reliability, safety and environment		-	36	66	47	70	98	131	211	269	339	382
Total reliability, safety and environment		-	85	141	185	287	307	505	516	498	497	560
Expenditure on network assets		-	199	436	690	965	1,181	1,619	1,753	1,948	2,161	2,433
Expenditure on non-network assets		-	30	70	77	81	101	122	145	168	192	216
Expenditure on assets		-	230	505	767	1,046	1,282	1,741	1,897	2,116	2,353	2,650

11a(ii): Consumer Connection

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended		30 Sep 15	30 Sep 16	30 Sep 17	30 Sep 18	30 Sep 19	30 Sep 20
*Consumer types defined by GDB**		$000 (in constant prices)					
Residential / Small Commercial		3,567	3,572	3,556	3,616	3,633	3,634
Commercial		387	354	379	381	382	382
Industrial		84	83	83	84	84	84
** include additional rows if needed*							
Consumer connection expenditure		4,038	4,010	4,017	4,081	4,099	4,100
less Capital contributions funding consumer connection		479	427	525	524	523	523
Consumer connection less capital contributions		3,558	3,583	3,492	3,557	3,576	3,577

11a(iii): System Growth

Intermediate pressure							
Main pipe		-	-	-	-	-	195
Service pipe		-	-	-	-	-	-
Stations		-	-	-	-	-	-
Line valve		-	-	-	-	-	-
Special crossings		-	-	-	-	-	-
Intermediate Pressure total		-	-	-	-	-	195
Medium pressure							
Main pipe		1,224	1,306	894	1,223	1,131	993
Service pipe		527	419	387	530	490	430
Stations		-	-	-	-	-	-
Line valve		12	10	9	12	11	10
Special crossings		2	2	1	2	2	2
Medium Pressure total		1,766	1,736	1,291	1,767	1,634	1,435
Low Pressure							
Main pipe		15	12	11	15	14	12
Service pipe		6	5	5	7	6	5
Line valve		0	0	0	0	0	0
Special crossings		0	0	0	0	0	0
Low Pressure total		22	17	16	22	20	18
Other network assets							
Monitoring and control systems		-	-	-	-	-	-
Cathodic protection systems		-	-	-	-	-	-
Other assets (other than above)		-	-	-	-	-	-
Other network assets total		-	-	-	-	-	-
System growth expenditure		1,787	1,753	1,307	1,789	1,654	1,648
less Capital contributions funding system growth							
System growth less capital contributions		1,787	1,753	1,307	1,789	1,654	1,648

11a(iv): Asset Replacement and Renewal

for year ended	Current Year CY 30 Sep 15	CY+1 30 Sep 16	CY+2 30 Sep 17	CY+3 30 Sep 18	CY+4 30 Sep 19	CY+5 30 Sep 20
Intermediate pressure	**$000 (in constant prices)**					
Main pipe	66	30	59	71	71	71
Service pipe	29	13	26	31	31	31
Stations	-	-	-	-	-	-
Line valve	10	0	1	1	1	1
Special crossings	0	0	0	0	0	0
Intermediate Pressure total	104	43	85	102	102	102
Medium pressure						
Main pipe	1,658	1,430	1,978	2,155	2,161	2,161
Service pipe	718	619	856	933	936	936
Station	-	-	-	-	-	-
Line valve	13	6	11	14	14	14
Special crossings	19	1	2	2	2	2
Medium Pressure total	2,408	2,055	2,847	3,104	3,112	3,113
Low Pressure						
Main pipe	16	7	14	17	17	17
Service pipe	289	3	6	7	7	7
Line valve	0	0	0	0	0	0
Special crossings	0	0	0	0	0	0
Low Pressure total	305	10	20	25	25	25
Other network assets						
Monitoring and control systems	-	-	-	-	-	-
Cathodic protection systems	163	27	471	167	-	-
Other assets (other than above)	-	-	-	-	-	-
Other network assets total	163	27	471	167	-	-
Asset replacement and renewal expenditure	2,981	2,137	3,424	3,397	3,239	3,240
less Capital contributions funding asset replacement and renewal	-	-	-	-	-	-
Asset replacement and renewal less capital contributions	2,981	2,137	3,424	3,397	3,239	3,240

11a(v): Asset Relocations

*Project or programme**						
Northgate Road	-	113	-	-	-	-

** include additional rows if needed*

All other projects or programmes - asset relocations	165	111	111	111	112	112
Asset relocations expenditure	165	224	111	111	112	112
less Capital contributions funding asset relocations	140	191	94	95	95	95
Asset relocations less capital contributions	25	34	17	17	17	17

11a(vi): Quality of Supply

for year ended	Current Year CY 30 Sep 15	CY+1 30 Sep 16	CY+2 30 Sep 17	CY+3 30 Sep 18	CY+4 30 Sep 19	CY+5 30 Sep 20
*Project or programme**	$000 (in constant prices)					
Huatoki Interconnection (Taranaki)	86	117	-	-	-	-
Westown Capacity Reinforcement - Ferndale (Taranaki)	28	306	-	167	501	-
Base Hospital DRS installation (Taranaki)	122	-	-	-	-	-
Wellington CBD (Neon)	89	339	-	-	-	-
Wellington CBD - Phase 2	-	549	1,106	1,337	1,340	1,341
Tremaine Ave station rebuild (Manawatu)	-	-	-	223	-	-
Palmerston North Eastern Reinforcement (Manawatu)	78	1,711	266	-	-	-
Kelson additional point of supply (HVP)	-	-	-	-	223	-
Hutt Floor Stage 2 reinforcement (HVP)	296	-	-	-	-	-
Kelburn HLP reinforcement (Wellington)	845	-	-	-	-	-
DRS Flow measurement	72	137	277	278	279	279
* include additional rows if needed						
All other projects or programmes - quality of supply	128	320	608	557	558	559
Quality of supply expenditure	1,743	3,478	2,257	2,562	2,902	2,179
less Capital contributions funding quality of supply	-	-	-	-	-	-
Quality of supply less capital contributions	1,743	3,478	2,257	2,562	2,902	2,179

11a(vii): Legislative and Regulatory

Project or programme						
None						
* 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**						
Hutt River Crossing (HVP)	122	1,129	-	-	-	-
DRS Protection prorgramme (All regions)	774	577	1,106	557	558	559
Porirua CBD DRS Rationalisation (HVP)	42	274	549	-	-	-
Tutaekuri Bridge crossing repair (HB)	-	169	-	-	-	-
IP Isolation Plan (HB)	376	56	-	-	-	-
Hyderabad road IP mains relocation (HB)	957	-	-	-	-	-
Waitara Bridge Crossing (Taranaki)	49	-	-	-	-	-
* include additional rows if needed						
All other projects or programmes - other reliability, safety and environment	539	373	331	321	386	463
Other reliability, safety and environment expenditure	2,859	2,579	1,987	878	945	1,022
less Capital contributions funding other reliability, safety and environment	-	-	-	-	-	-
Other Reliability, safety and environment less capital contributions	2,859	2,579	1,987	878	945	1,022

11a(ix): Non-Network Assets

Routine expenditure

*Project or programme**

None						

** include additional rows if needed*

All other projects or programmes - routine expenditure	858	858	858	858	858	858
Routine expenditure	858	858	858	858	858	858

Atypical expenditure

*Project or programme**

Entreprise Asset Management System	-	477	763	524	143	-

** include additional rows if needed*

All other projects or programmes - atypical expenditure	1,187	818	470	54	89	197
Atypical expenditure	1,187	1,295	1,232	578	232	197
Expenditure on non-network assets	2,045	2,153	2,090	1,436	1,090	1,055

Company Name	**Powerco Limited**
AMP Planning Period	**1 October 2015 – 30 September 2025**

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.

	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 Sep 15**	**30 Sep 16**	**30 Sep 17**	**30 Sep 18**	**30 Sep 19**	**30 Sep 20**	**30 Sep 21**	**30 Sep 22**	**30 Sep 23**	**30 Sep 24**	**30 Sep 25**
Operational Expenditure Forecast	**$000 (in nominal dollars)**										
Service interruptions, incidents and emergencies	378	377	387	396	406	416	427	437	448	460	471
Routine and corrective maintenance and inspection	2,119	2,492	2,551	2,615	2,680	2,747	2,816	2,887	2,959	3,034	3,110
Asset replacement and renewal	2,661	2,487	2,495	2,505	2,567	2,631	2,697	2,765	2,834	2,905	2,978
Network opex	5,159	5,356	5,433	5,516	5,653	5,795	5,940	6,089	6,242	6,399	6,559
System operations and network support	3,110	3,969	3,978	4,058	4,138	4,221	4,305	4,391	4,479	4,569	4,660
Business support	6,772	6,641	6,752	6,883	7,018	7,159	7,302	7,448	7,597	7,749	7,904
Non-network opex	9,882	10,610	10,730	10,941	11,156	11,380	11,607	11,840	12,076	12,318	12,564
Operational expenditure	15,041	15,966	16,164	16,457	16,809	17,174	17,547	17,929	18,318	18,716	19,123

	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 Sep 15**	**30 Sep 16**	**30 Sep 17**	**30 Sep 18**	**30 Sep 19**	**30 Sep 20**	**30 Sep 21**	**30 Sep 22**	**30 Sep 23**	**30 Sep 24**	**30 Sep 25**
	$000 (in constant prices)										
Service interruptions, incidents and emergencies	378	372	374	376	378	380	382	384	385	387	389
Routine and corrective maintenance and inspection	2,119	2,457	2,469	2,482	2,494	2,507	2,519	2,532	2,544	2,557	2,570
Asset replacement and renewal	2,661	2,452	2,415	2,377	2,389	2,401	2,413	2,425	2,437	2,449	2,461
Network opex	5,159	5,282	5,258	5,234	5,261	5,287	5,313	5,340	5,367	5,393	5,420
System operations and network support	3,110	3,914	3,850	3,850	3,851	3,851	3,851	3,851	3,851	3,851	3,851
Business support	6,772	6,549	6,535	6,531	6,532	6,532	6,532	6,532	6,532	6,532	6,532
Non-network opex	9,882	10,463	10,385	10,382	10,382	10,383	10,383	10,383	10,383	10,383	10,383
Operational expenditure	15,041	15,745	15,643	15,616	15,643	15,670	15,696	15,723	15,749	15,776	15,803
Subcomponents of operational expenditure (where known)											
Research and development	-	-	-	-	-	-	-	-	-	-	-
Insurance	125	127	129	132	134	137	140	143	145	148	151

	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 Sep 15**	**30 Sep 16**	**30 Sep 17**	**30 Sep 18**	**30 Sep 19**	**30 Sep 20**	**30 Sep 21**	**30 Sep 22**	**30 Sep 23**	**30 Sep 24**	**30 Sep 25**
Difference between nominal and real forecasts	**$000**										
Service interruptions, incidents and emergencies	-	5	12	20	28	36	45	54	63	72	82
Routine and corrective maintenance and inspection	-	35	82	134	186	241	297	355	415	477	540
Asset replacement and renewal	-	34	80	128	178	231	285	340	397	456	517
Network opex	-	74	175	282	392	508	627	749	875	1,005	1,139
System operations and network support	-	55	128	207	287	370	454	540	628	718	809
Business support	-	92	217	352	487	627	770	916	1,065	1,217	1,372
Non-network opex	-	147	346	559	774	997	1,225	1,457	1,694	1,935	2,181
Operational expenditure	-	221	520	841	1,166	1,505	1,851	2,206	2,569	2,940	3,320

Company Name	**Powerco Limited**
AMP Planning Period	**1 October 2015 – 30 September 2025**

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.

				Asset condition at start of planning period (percentage of units by grade)						
Operating Pressure	**Asset category**	**Asset class**	**Units**	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade unknown**	**Data accuracy (1–4)**	**% of asset forecast to be replaced in next 5 years**
Intermediate Pressure	Main pipe	IP PE main pipe	km	-	-	10.64%	88.59%	0.77%	3	-
Intermediate Pressure	Main pipe	IP steel main pipe	km	0.07%	-	79.87%	0.26%	19.80%	3	0.07%
Intermediate Pressure	Main pipe	IP other main pipe	km	-	-	23.63%	0.24%	76.13%	3	-
Intermediate Pressure	Service pipe	IP PE service pipe	km	-	-	69.00%	26.95%	4.05%	3	-
Intermediate Pressure	Service pipe	IP steel service pipe	km	-	0.02%	24.41%	0.85%	74.73%	3	0.02%
Intermediate Pressure	Service pipe	IP other service pipe	km	-	-	93.83%	1.79%	4.38%	3	-
Intermediate Pressure	Stations	Intermediate pressure DRS	No.	-	3.47%	86.71%	9.25%	0.58%	2	3.47%
Intermediate Pressure	Line valve	IP line valves	No.	-	0.41%	56.40%	8.52%	34.68%	2	0.20%
Intermediate Pressure	Special crossings	IP crossings	No.	2.85%	1.20%	72.55%	0.51%	22.89%	2	3.44%
Medium Pressure	Main pipe	MP PE main pipe	km	0.16%	0.02%	89.31%	9.74%	0.77%	3	0.18%
Medium Pressure	Main pipe	MP steel main pipe	km	-	0.02%	80.01%	0.17%	19.80%	3	0.02%
Medium Pressure	Main pipe	MP other main pipe	km	-	-	23.50%	0.37%	76.13%	3	-
Medium Pressure	Service pipe	MP PE service pipe	km	-	0.08%	84.11%	11.76%	4.05%	3	0.08%
Medium Pressure	Service pipe	MP steel service pipe	km	-	0.04%	25.15%	0.10%	74.71%	3	0.04%
Medium Pressure	Service pipe	MP other service pipe	km	-	0.02%	92.73%	2.88%	4.38%	3	0.02%
Medium Pressure	Stations	Medium pressure DRS	No.	-	6.19%	76.29%	8.25%	9.28%	2	6.19%
Medium Pressure	Line valve	MP line valves	No.	-	0.59%	48.59%	16.95%	33.87%	2	0.29%
Medium Pressure	Special crossings	MP special crossings	No.	-	1.76%	69.43%	2.59%	26.23%	2	0.88%
Low Pressure	Main pipe	LP PE main pipe	km	-	0.01%	89.22%	10.00%	0.77%	3	0.01%
Low Pressure	Main pipe	LP steel main pipe	km	-	-	80.17%	0.03%	19.80%	3	-
Low Pressure	Main pipe	LP other main pipe	km	-	-	23.84%	0.03%	76.13%	3	-
Low Pressure	Service pipe	LP PE service pipe	km	-	0.40%	85.92%	9.63%	4.05%	3	0.40%
Low Pressure	Service pipe	LP steel service pipe	km	-	-	24.95%	0.34%	74.71%	3	-
Low Pressure	Service pipe	LP other service pipe	km	-	-	89.87%	5.76%	4.38%	3	-
Low Pressure	Line valve	LP line valves	No.	-	0.17%	35.08%	30.49%	34.26%	2	0.09%
Low Pressure	Special crossings	LP special crossings	No.	-	-	90.30%	0.61%	9.09%	2	-
All	Monitoring and control systems	Remote terminal units	No.	-	-	41.27%	58.73%	-	4	-
All	Cathodic protection systems	Cathodic protection	No.	-	6.10%	56.61%	6.10%	31.19%	3	3.05%

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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.

Forecast Utilisation of Heavily Utilised Pipelines

Utilisation

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	*Current Year CY* y/e 30 Sep 15	*CY+1* y/e 30 Sep 16	*CY+2* y/e 30 Sep 17	*CY+3* y/e 30 Sep 18	*CY+4* y/e 30 Sep 19	*CY+5* y/e 30 Sep 20	Comment
Hutt Valley/Porirua	Waitangirua/ Pauatahanui	Plimmerton IP	1,200	300	946	92	scmh	793	819	850	876	892	907	The Whitby project which took place last year increased the capacity of this system. Studies are underway to confirm the MinOP.
							kPa	658	641	621	602	589	577	
Hutt Valley/Porirua	Belmont	Lower Hutt LMP	135	81	5,706	38	scmh	5713	5719	5719	5719	5719	5719	We will keep an eye on whether growth on this network will occur. We will actively monitor the performance of that pressure system.
							kPa	71	71	71	71	71	71	
Manawatu	Palmerston North	Palmerston North LMP	100	60	5,702	92	scmh	5732	5732	5744	5756	5768	5780	This forecast shows the effect of the pressure elevation described as Hokowhitu reinforcement in Section 8.
							kPa	48	54	60	72	77	82	
Manawatu	Palmerston North	Palmerston North MP East	400	150	2,618	530	scmh	2825	2825	4797	4821	4844	4868	This Pressure system feeds multiple DRSes as well as some large commercial consumers. The Minimum Operating Pressure indicated here is the minimum pressure required at the extremity of the pressure system to ensure the good operation of the downstream LMP system. We decided to include this pressure system in this schedule as it breaches our 40% pressure threshold. The interconnection with the MP East and extension to James Line through the Palmerston North Eastern Reinforcement project will increase performance on this network.
							kPa	214	214	221	219	217	215	
Manawatu	Palmerston North	Awapuni LMP	100	60	162	46	scmh	160	160	160	172	184	196	Growth in this network is expected to begin in RY18. Customer numbers and network pressures will be monitored to trigger the installation of a new point of supply (expected in RY18).
							kPa	62	62	62	61	58	56	
Manawatu	Palmerston North	Milson	100	60	679	88	scmh	708	708	708	708	708	708	We will keep an eye on whether growth on this network will occur. We will actively monitor the performance of that pressure system.
							kPa	50	50	50	50	50	50	
Taranaki	Waitara	Waitara MP	250	150	731	84	scmh	734	734	734	734	734	734	This network is underperforming in the southern part of the network (Lepperton) due to the increased usage of consumers in the area. Reinforcement work is being investigated. We will actively monitor the performance of that pressure system.
							kPa	146	146	146	146	146	146	
Taranaki	Manaia	Manaia	340	204	147	60	scmh	169	169	169	169	169	169	This pressure system is dependent on a single commercial consumer. We do not expect any increase in the demand on this network, but we will actively monitor the performance of that pressure system.
							kPa	149	149	149	149	149	149	
Taranaki	New Plymouth	Bell Block South	350	210	979	84	scmh	994	994	994	994	994	994	This network mainly serves industrial customers. No known future industrial loads is known at this time. We will actively monitor the performance of that pressure system.
							kPa	188	188	188	188	188	188	
Taranaki	New Plymouth	New Plymouth MP	250	150	5,747	136	scmh	5773	5819	5866	5909	5939	5949	Pressure levels on this network are to remain low in isolated parts of the network. A new point of supply will be installed close to the hospital in RY16. The Huatoki looping project completed in RY16 will increase the pressure delivered on the network. In the longer term, Ferndale Southern looping project will increase the performance in RY17.
							kPa	137	176	175	174	174	174	
Taranaki	New Plymouth	New Plymouth IP	1,250	750	8,519	1,270	scmh	8389	8468	8569	8655	8727	8778	The low point on this network is currently at the west end at the Centennial Drive DRS inlet. The commissioning of the Base Hospital DRS in RY 16 will shift a significant amount of load to the central part of the city, greatly improving the performance of the MP network. THe IP low point will shift to the Base Hospital DRS, that will be connected to SCADA to ensure continuous monitoring. Despite breaching our 40% pressure droop threshold, we consider this pressure acceptable, and we will confirm the minimum operating pressure.
							kPa	781	654	642	632	623	621	
Taranaki	Patea	Patea	350	210	199	79	scmh	244	241	238	235	232	229	This pressure system is expected to see its performance increasing due to the decrease of demand forecasted over the period. We will actively monitor the performance of that pressure system.
							kPa	132	138	145	151	157	163	

Wellington	Tawa A	Wellington CBD	10	6	6,210	166	scmh	6263	4374	4374	4374	4374	4374	Wellington CBD pressure system is currently under constraints and we are working towards a solution that will enable us to meet demand. As part of the CBD Upgrade Project, a new point of supply was added in RY14, and in RY15 we will isolate and upgrade Kelburn and The Terrace areas. This will increase the performance on the CBD network, however we are currently investigating the possibility to increase the pressure on this pressure system.
							kPa	5	7	7	7	7	7	
Wellington	Tawa A	Wellington 25 kPa	25	15	6,566	70	scmh	6584	8473	8473	8473	8473	8473	The Wellington 25kPa will be affected by the transfer of the Terrace and Kelburn areas from the Wellington CBD pressure system in RY15. In RY16, a new regulation station will be commissioned and increase the pressure on the network.
							kPa	13	12	12	12	12	12	
Wellington	Tawa A	Wellington North	185	111	3,948	229	scmh	3998	4047	4396	4488	4580	4672	The demand on this network will increase due to the subdivision activity in the region. In RY16, a section of the network serviced in the Newlands area will be transferred onto the Tawa A network. Reinforcement work is scheduled to accommodate this transfer as well as future growth in the area. The low pressure point is currently located away from the growth areas, specifically at the Butavas St DRS inlet. The Rama Crescent overlay will resolve this issue as discussed in Section 8.
							kPa	61	119	72	59	117	116	
Wellington	Tawa A	Wellington IP	1,200	300	25,307	936	scmh	24986	25031	25395	25502	25609	25715	The Wellington IP network is currently performing at the required standard. The Minimum operating pressure prescribed in this table is monitored at the inlet of Karori DRS as described in section 8.2.3.2.
							kPa	418	406	392	387	383	378	
Wellington	Tawa A	Karori	130	78	1,135	35	scmh	1142	1142	1142	1142	1142	1142	This network is underperforming during the cold winter periods. We will actively monitor the performance of that pressure system, and consider some reinforcement work in RY21 if more growth occurs.
							kPa	71	71	71	71	71	71	

** 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

The information in this table contains modelled estimates of utilisation and capacity. Any interested party seeking to invest in supply from Powerco's distribution networks should contact Powerco or their retailer and confirm availability of capacity.

Notes and assumptions

Growth patterns used were outlined in the 2015 Gas AMP, revised with our current knowledge.
If the growth was expected to spread over multiple years, it was uniformly spread over life.
The number of lots identified in the 2015 Gas AMP was multiplied by 0.6scm/h to calculate a diversified load per connection. This was summed and placed at a single point in the model where the load is expected to occur.
If the growth specified in the 2015 Gas AMP was inferior to our supply forecasts, we would reconcile these by adding the load at one extremity of the network.

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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.

12c(i) Consumer Connections

Number of ICPs connected in year by consumer type

Consumer types defined by GDB	*Current year CY* **30 Sep 15**	*CY+1* **30 Sep 16**	*CY+2* **30 Sep 17**	*CY+3* **30 Sep 18**	*CY+4* **30 Sep 19**	*CY+5* **30 Sep 20**
Residential / Small Commercial	1,377	1,401	1,430	1,445	1,448	1,448
Commercial	101	101	101	101	100	100
Industrial	1	1	1	1	1	1
Total	1,479	1,503	1,532	1,547	1,549	1,549

12c(ii): Gas Delivered

	Current year CY **30 Sep 15**	*CY+1* **30 Sep 16**	*CY+2* **30 Sep 17**	*CY+3* **30 Sep 18**	*CY+4* **30 Sep 19**	*CY+5* **30 Sep 20**
Number of ICPs at year end (at year end)	104,100	104,790	105,509	106,228	106,947	107,671
Maximum daily load (GJ per day)	41,764	41,979	42,417	42,865	43,319	43,784
Maximum monthly load (GJ per month)	997,850	1,002,995	1,013,468	1,024,159	1,035,021	1,046,111
Number of directly billed ICPs (at year end)	-	-	-	-	-	-
Total gas conveyed (GJ per annum)	9,056,142	9,126,833	9,222,628	9,320,179	9,419,533	9,519,947
Average daily delivery (GJ per day)	24,811	24,937	25,267	25,535	25,807	26,011
Load factor	75.63%	75.83%	75.83%	75.84%	75.84%	75.84%

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Asset Management Standard Applied	**PAS 55:2008 (Transition to ISO 55000 in progress)**

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	Why	Who	Record/documented Information
3	Asset management policy	To what extent has an asset management policy been documented, authorised and communicated?	3	Powerco has a company-wide published Asset Management Policy (updated in 2015), which has been approved by the Chief Executive Officer. It is circulated inside the company, and published in the Gas Asset Management Plan. The policy has guided the development of our Asset Management System and Objectives, and Plan.	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	Our Asset Management Strategy exists as a stand-alone document and is described in Section 2 of our AMP. The Asset Management Strategy is aligned to our Asset Management Objectives that fall out of our Organisational Strategic Plan. Internal and external requirements have guided its development. It is predominantly driven by the needs from a safety and asset management perspective.	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 polices, strategies and stakeholder requirements as covered in drafting the asset management policy but at a greater level of detail.	Top management. The organisation's strategic planning team. The management team that has overall responsibility for asset management.	The organisation's asset management strategy document and other related organisational policies and strategies. Other than the organisation's strategic plan, these could include those relating to health and safety, environmental, etc. Results of stakeholder consultation.
11	Asset management strategy	In what way does the organisation's asset management strategy take account of the lifecycle of the assets, asset types and asset systems over which the organisation has stewardship?	2	The Asset Management Strategy delivers our asset management objectives, one of which is Reliability. The Reliability element of the asset management strategy is developed from the Reliability-Centred, Maintenance-based approach that we are implementing to improve the efficiency of our asset lifecycle management.	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?	2	With the publication of the 2013 AMP, we produced high level asset lifecycle plans. They helped revisit our maintenance programme. We are now developing detailed asset life cycle plans for our main asset classes based on asset class strategies that will allow us to refine our maintenance programme.	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 optimize 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).

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Asset Management Standard Applied	**PAS 55:2008 (Transition to ISO 55000 in progress)**

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.

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SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Score	Evidence—Summary	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 2013 Gas AMP used Powerco's established Electricity AMP process for communicating the AMPs and associated documents to relevant parties. For example, the GM Gas will have responsibility for communication to the Gas Division. The Corporate Affairs Manager is responsible for distributing the plan to external stakeholders. All key documents are published in Powerco's document management system and advised to all staff. The AMP is also available to the public, including via the internet. We have also presented the AMP to our key service providers.	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	Designated responsibilities for asset management plan delivery are described from a strategic level across Section 3 of the AMP, i.e. network planning and work delivery responsibilities. From an operational view point, further detail of responsibility is documented across the business and including the Business Plan, business unit tactical plans, position descriptions and employees' annual review and development forms. Powerco has detailed documents on responsibilities of service providers as well.	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)	2	We are able to use different service providers for delivery. Internally, Powerco has developed processes to ensure we have the skills and competencies needed in roles to deliver cost-effective and efficient services. Additional improvement work in outsourced field services operations occurred in 2012, which has resulted in changes to our service provision contract model from a mix of alliance and network management models to a field service agreement. This provides cost-effective improvements by internalising control and knowledge of assets, reduce planning, design and project management costs and increases competitive pressure on overall delivery costs. We are undertaking work to look at our ability to deliver network projects efficiently, this includes moving away from projects that are currently sized by budget rather than effort.	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?	2	Well developed and established procedures for dealing with network incidents and emergencies are in place and managed centrally by our Network Operations Centre. Our dedicated Risk and Assurance Team is the custodian of our ISO31000-based Risk and Compliance Management Policy. A Safety and Operating Plan and the Emergency Response plan exists and is reviewed on a regular basis. A comprehensive approach to staff training is taken with a range of courses offered though a planned approach annually. The current implementation of an isolation strategy and isolation plans is another tool that we developed as part of the continuous improvement of our systems.	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.

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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
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.

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SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Score	Evidence—Summary	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	Section 3 provides an overview of responsibilities and delegations, with a dedicated gas division, led by the General Manager Gas, to provide an end-to-end process. Responsibilities are detailed in the Asset Policy, then reflected in the Business Plan, tactical plans, position descriptions and personal objectives. A recent gas division restructure has made asset management-related responsibilities clearer to the business and ensured role descriptions reflect and cover all areas of the end-to-end asset management process. Examples of changes driven by the restructure are that project work now goes through a sign-off process taking into account the new organisation structure and delegated Financial Authorities have also been reviewed to enable staff to be fully responsible.	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	The gas division restructure reviewed human resource needs and subsequently reallocated role tasks and introduced new roles to optimally deliver the asset management strategy. These resources are reviewed annually as part of the annual planning process, and a pool of engineering consultants, and service providers have been constituted to increase the volume of work delivered. We are also securing procurement arrangement to deal with the availability of materials critical for the delivery of the work programme.	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	A range of activities are undertaken to communicate the importance of meeting asset management requirements. The requirements are reflected in the Business Plan, which has a comprehensive communication process via road shows, KPI reporting and emails from the CEO. The GM Gas also provides regular briefings on progress. Specific asset management objectives are set up for the business from a board level and reported back. The Gas division has an internal communications process that ensures all staff are aware of asset management targets and actuals. For tactical projects, a more formal process to engage with the wider audience in the company (Finance, Programme office, etc.) is being developed.	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 4.4.1 g).	Top management. The management team that has overall responsibility for asset management. People involved in the delivery of the asset management requirements.	Evidence of such activities as road shows, written bulletins, workshops, team talks and management walk-abouts would assist an organisation to demonstrate it is meeting this requirement of PAS 55.
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?	2	Contractual arrangements are in place to provide a clear and accountable set of standards and work instructions, to agree, instruct and review field work. Dedicated roles exist within the Powerco operations team to manage the relationship and work. The Operations Manager has the responsibility of ensuring the overall delivery is achieved in line with guiding documentation. For health and safety matters, every contractor should go through a contractor approval process prior to executing works on the network to ensure they have the appropriate systems to follow our requirements.	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	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	Powerco's Human Resources Division has undertaken a range of analysis, in conjunction with the Gas Team, on training and competence needs required to deliver our services, and there is a structured approach to training in Powerco. As part of the process to retender service provider contracts, we considered what training and competence is required in delivering field services.	There is a need for an organisation to demonstrate that it has considered what resources are required to develop and implement its asset management system. There is also a need for the organisation to demonstrate that it has assessed what development plan(s) are required to provide its human resources with the skills and competencies to develop and implement its asset management systems. The timescales over which the plan(s) are relevant should be commensurate with the planning horizons within the asset management strategy considers e.g. if the asset management strategy considers 5, 10 and 15 year time scales then the human resources development plan(s) should align with these. Resources include both 'in house' and external resources who undertake asset management activities.	Senior management responsible for agreement of plan(s). Managers responsible for developing asset management strategy and plan(s). Managers with responsibility for development and recruitment of staff (including HR functions). Staff responsible for training. Procurement officers. Contracted service providers.	Evidence of analysis of future work load plan(s) in terms of human resources. Document(s) containing analysis of the organisation's own direct resources and contractors resource capability over suitable timescales. Evidence, such as minutes of meetings, that suitable management forums are monitoring human resource development plan(s). Training plan(s), personal development plan(s), contract and service level agreements.
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	Powerco has a strong focus on training and development, supported by a structured annual review and development process. All employees have individual development plans that align with Powerco's competency standard, and a generous training budget is available. In the coming year we are looking to further refine our skills and competencies, assessments and training to align with our asset management expectations.	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	Powerco's has clearly developed competence requirements for internal employees and contractors, including qualifications and training requirements that are based on industry standards (COC) frameworks. These are fully enforced and audited for health and safety reasons. For non-standard activities on the network, work instructions are developed and implemented with our service providers. In addition, every contractor should go through a contractor approval process prior to executing works on the network to ensure they have the appropriate systems to follow our requirements.	A critical success factor for the effective development and implementation of an asset management system is the competence of persons undertaking these activities. organisations should have effective means in place for ensuring the competence of employees to carry out their designated asset management function(s). Where an organisation has contracted service providers undertaking elements of its asset management system then the organisation shall assure itself that the outsourced service provider also has suitable arrangements in place to manage the competencies of its employees. The organisation should ensure that the individual and corporate competencies it requires are in place and actively monitor, develop and maintain an appropriate balance of these competencies.	Managers, supervisors, persons responsible for developing training programmes. Staff responsible for procurement and service agreements. HR staff and those responsible for recruitment.	Evidence of a competency assessment framework that aligns with established frameworks such as the asset management Competencies Requirements Framework (Version 2.0); National Occupational Standards for Management and Leadership; UK Standard for Professional Engineering Competence, Engineering Council, 2005.
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?	3	Powerco's Asset Management Policy and AMP are available to all employees, service providers, and the public. The AMP was also presented to all service providers. Powerco's progress on KPIs is reported on the intranet for all staff to view and specific KPIs for service providers are made available through the gas contractor portal. We also seek a range of ways for staff to feedback into the asset management process, e.g. via discussions on the Business Plan. As a high priority, safety related discussion are regularly held and communicated to staff and contractors.	Widely used AM practice standards require that pertinent asset management information is effectively communicated to and from employees and other stakeholders including contracted service providers. Pertinent information refers to information required in order to effectively and efficiently comply with and deliver asset management strategy, plan(s) and objectives. This will include for example the communication of the asset management policy, asset performance information, and planning information as appropriate to contractors.	Top management and senior management representative(s), 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	Why	Who	Record/documented Information
59	Asset Management System documentation	What documentation has the organisation established to describe the main elements of its asset management system and interactions between them?	2	Powerco has an extensive range of documentation to support its asset management, such as standards, approval documentation and process mapping. With the roll out of ISO 55 000, we will need to ensure end-to-end comprehensive and coherent documentation is aligned with this new standard. As described in Section 2, our asset management policy presides over all our asset management activities. Our asset management system; objectives and strategies all reference the policy and/or the organisational strategy.	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 4.5 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	Powerco has a comprehensive suite of core systems to support our end-to-end asset management processes. However, we recognise that there are limitations on the information these systems contain, which has been reinforced through the development of this AMP. As a result, we have committed resources to focusing on incremental improvements on data quality and depth. Section 8.8 provides a detailed look at nine projects that we believe will address the issue.	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	Powerco has a range of controls to ensure data is accurate and there is an adequate process of change management, for example, security controls, off-site back up and restricted fields. We have invested in an internal assurance team, to provide increased checks on data accuracy. However, this is an area we are always seeking to improve.	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?	2	Powerco is going through two major initiatives to enhance asset data and systems. Projects are in place to quanitatively assess the quality of asset data. As we are on the look to replace our core entreprise resource planning system, we have build a company-wide capability plan looking at our future system needs.	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	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	Powerco has a formal, documented process for risk management and a structured approach across the business for identifying risks, and a detailed risk register. Specific asset-related risks during their lifecycle are also taking place in the form of a Failure Mode and Effect Analysis, and Formal Safety Assessment. Planned activities that drive our work plans are based on a risk management methodology that focuses on whether risk levels are acceptable or not in terms or safety, reliability or delivery.	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.
79	Use and maintenance of asset risk information	How does the organisation ensure that the results of risk assessments provide input into the identification of adequate resources and training and competency needs?	2	Powerco has a structured approach to how risks are managed, and actions, including monitoring that reports to the Board Risk and Assurance sub-committee. Risk assessment processes are currently drafted, and this process can be improved. Currently we are working more on a reactive basis than a risk approach to asset management for day-to-day operations and will be looking at this further in the short term. Training is currently predominantly focused on safety.	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	Powerco has invested significant resources in all aspects of legal and regulatory compliance. The Risk and Assurance and Regulatory teams monitor changes and update the business. Given the high level of compliance impacting gas distribution, this is always an area we are looking to improve by developing expertise. The team plays an active role in annual asset management planning and is responsible for ensuring requirements are communicated and understood by the Gas team.	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?	2	Powerco recognises how essential it is to have documented and communicated processes. We are continually reviewing our process and systems and have recently updated our project approval process, electronic reporting of completion of the maintenance programme and As-built process. New processes are signed off by senior management and added to our Standards library.	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.

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SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Score	Evidence—Summary	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	Powerco has a clearly structured process for controlling the implementation of asset management plans. This includes dedicated regional resources to liaise with service providers, and prescribed work instructions agreed with service providers. A field audit programme is in place that is implemented through independent auditors who report non-compliance. Service provider KPIs are strongly linked to the proper application of work instructions. The KPIs are made available through the Gas Contractor Portal, and discussed on a monthly basis in contracts meetings.	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	Section 4 outlines the objectives and associated targets that are embedded in our asset management policy and strategies. Many of these provide indications of our asset performance and condition.The condition of assets is critical for the deployment of the asset strategy have been identified through risks analysis. Additionally, processes, such as the Defect process, provide us with essential detailed information on assets.	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?	2	Powerco has invested in expanding its Health and Safety team and in environmental compliance. However, given the level of importance of this area, we are still aiming to improve internal communication and making sure responsibilities for investigating incidents and their authorities are absolutely clear throughout the organisation. For example, improving information on asset failures is one area we plan to improve. We currently have a process in place where investigations are held on a case-by-case basis by the Gas Operations team, with the support of our internal Health, Safety, Environment and Quality team. The appointment of an Asset Reliability Engineer will help build our investigation capabilities.	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))?	2	Powerco currently audits only the field activities and public safety activities. This is currently achieved through independent auditors who report non-compliance of work instructions. We will be looking to expand auditing across other appropriate asset-related activities in the short to medium term.	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 performance?	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.

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SCHEDULE 13: REPORT ON ASSET MANAGEMENT MATURITY (cont)

Question No.	Function	Question	Score	Evidence—Summary	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 conformance?	2	Powerco has established processes that identify and address safety and field audit issues. Identified issues are assessed for risk levels and, if required, appropriate actions are programmed. Further work needs to be done around rolling the process out to asset failures. The appointment of an Asset Reliability Engineer will help build our investigation capabilities.	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
113	Continual Improvement	How does the organisation achieve continual improvement in the optimal combination of costs, asset related risks and the performance and condition of assets and asset systems across the whole life cycle?	3	Current asset management performance is assessed and gaps used to drive improvement programmes. An example of this is the suite of improvement projects that have been planned as a result of the assessments identifying that an improvement in asset information is needed. Additionally, our service provider arrangements have been driven by identification of opportunities to reduce costs and improve asset management delivery. Powerco has a strong culture of continuous improvement supported by a dedicated team. As a result improvement opportunities are looked for in all areas of our asset management processes continually.	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	Powerco has good systems for seeking out new asset management technology and practices. We are active in the Gas Association of New Zealand (GANZ) and Gas industry Co (GIC) and regularly talk with our peers. Staff regularly attend and present at conferences and we consider that our recruitment has led us to have knowledgeable and respected industry specialists. We have the ability to control and drive the assets and technology on our network. We have a Research and Development division that leads research into this area.	One important aspect of continual improvement is where an organisation looks beyond its existing boundaries and knowledge base to look at what 'new things are on the market'. These new things can include equipment, process(es), tools, etc. An organisation which does this (eg, by the PAS 55 s 4.6 standards) will be able to demonstrate that it continually seeks to expand its knowledge of all things affecting its asset management approach and capabilities. The organisation will be able to demonstrate that it identifies any such opportunities to improve, evaluates them for suitability to its own organisation and implements them as appropriate. This question explores an organisation's approach to this activity.	The top management of the organisation. The manager/team responsible for managing the organisation's asset management system, including its continual improvement. People who monitor the various items that require monitoring for 'change'. People that implement changes to the organisation's policy, strategy, etc. People within an organisation with responsibility for investigating, evaluating, recommending and implementing new tools and techniques, etc.	Research and development projects and records, benchmarking and participation knowledge exchange professional forums. Evidence of correspondence relating to knowledge acquisition. Examples of change implementation and evaluation of new tools, and techniques linked to asset management strategy and objectives.

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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.

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SCHEDULE 14A: MANDATORY EXPLANATORY NOTES ON FORECAST INFORMATION

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 the 10 year planning period, as disclosed in Schedule 11a.

Box 1: Commentary on difference between nominal and constant price capital expenditure forecasts

The index used to translate nominal $ forecasts into constant $ forecasts is the Statistics NZ CPI (All Groups). The CPI index applied is the annual average rate of increase based on the CPI index predictions included in the NZIER Quarterly Predictions from June 2015.

For example, the index used for the year ending 30 September 2016 is based on the annual average movement using CPI predictions (actuals where available) as follows:

(Q1 RY16 + Q2 RY16 + Q3 RY16 + Q4 RY16)/(Q1 RY15 + Q2 RY15 + Q3 RY15 + Q4 RY15).

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 the 10 year planning period, as disclosed in Schedule 11b.

Box 2: Commentary on difference between nominal and constant price operational expenditure forecasts

The index used to translate nominal $ forecasts into constant $ forecasts is the Statistics NZ CPI (All Groups). The CPI index applied is the annual average rate of increase based on the CPI index predictions included in the NZIER Quarterly Predictions from June 2015.

For example, the index used for the year ending 30 September 2016 is based on the annual average movement using CPI predictions (actuals where available) as follows:

(Q1 RY16 + Q2 RY16 + Q3 RY16 + Q4 RY16)/(Q1 RY15 + Q2 RY15 + Q3 RY15 + Q4 RY15).

3. APPENDIX: **GAS ASSET MANAGEMENT POLICY** (19 DECEMBER 2014)

Powerco vision is:

To be a reliable partner,
delivering New Zealand's energy future.

Effective asset management is the cornerstone for the delivery of our vision and underpins our approach at all levels of the organisation.

We will strive to achieve the following asset management outcomes:

- Positioning the safety of the public, our staff and contractors as paramount
- Developing our networks in a way that reflects the evolving needs of our customers
- Delivering a cost effective service by optimising asset cost and performance
- Be proactive, transparent, and authentic in our interactions with our stakeholders
- Meeting all statutory and regulatory obligations

We will achieve these asset management outcomes by:

- Aligning corporate and asset management governance to ensure a singular focus
- Underpinning asset management decisions with structured processes and systems
- Ensuring asset management decisions are supported by accurate information / data
- Managing data as an asset, via structured development over time
- Continually enhancing our asset management capability and skills over time
- Aligning to the best international approach via ISO 55000
- Recognising the importance of people and their development to the process

We strive to be New Zealand's leading asset manager, enabling us to provide excellent customer service, and a consistently safe, reliable and cost effective service.

Authorised by: **Nigel Barbour** (Chief Executive Officer)

4. APPENDIX: **RELEVANT LEGISLATION**

Powerco is accountable for complying with a certain number of Acts and regulations that impact our asset management approach, including the Gas Act 1992, the Gas Safety and Measurements Regulations 1992 and the Gas Default Quality Price Path. These are:

- Gas Act 1992
- Gas (Safety and Measurement) Regulations 2010
- Gas (Statistics) Regulations 1997
- Gas (Levy of Industry Participants) Regulations 2012
- Gas Governance (Compliance) Regulations 2008
- Gas Governance (Critical Contingency Management) Regulations 2008
- Gas (Switching Arrangement) Rules 2008
- Gas (Downstream Reconciliation) Rules 2008
- Gas Industry Company Determinations, Guidelines and Notices
- Commerce Act 1986 (Part 4)
- Consumer Guarantees Act 1993
- Electricity and Gas Complaints Commissioner Scheme
- Fair Trading Act 1986
- Government Roading Powers Act 1989
- Utilities Access Act 2010
- Railways Act 2005
- Cadastral Survey Act 2002
- Health and Safety in Employment Act 1992
- Resource Management Act 1991
- Civil Defence Emergency Management Act 2002
- Local Government Act 2002

The Executive Management Team (comprised of the Chief Executive and his direct reports), is accountable for the organisation to fulfil compliance and issue an annual compliance statement.

5. APPENDIX: **GENERAL NETWORK RISK ISSUES**

In this section, for each hazard described in the table below, we describe what are the risks associated, their controls and risk level after mitigation.

HAZARDS	DETAILS
Gas release	Gas is released into the atmosphere (this is associated with the loss of structural integrity)
Gas release in an insufficient ventilated location	Gas is released and reaches a critical concentration that can cause asphyxiation or have the potential to be ignited if an energy source is present
Fire and explosion	Gas is released, reaches a critical concentration and additional energy source is present (i.e. ignition source)
Electricity	People are harmed due to the usage of electrical equipment (e.g. Scada cabinet) or the presence of stray currents on metallic pipes
Pneumatic energy	The gas conveyed through the network is pressurised
Third party interference	Assets are damaged or operated by an unauthorised person, including vandalism
Environmental conditions and natural disasters	Assets are damaged during earthquakes, volcanic eruptions, lahars, thunderstorms, flooding, tsunami or landslides
Heights	People are harmed by falling, slipping or tripping on the asset
Hazardous material	Assets are made of hazardous material
Confined spaces	Assets are located in a confined space

Risks are rated against six different levels that are dependent of their likelihood and their consequence as per the following table:

		CONSEQUENCE						
		1. Negligible	**2. Minor**	**3. Moderate**	**4. Serious**	**5. Major**	**6. Severe**	**7. Catastrophic**
Likelihood	**10. Daily**	Low	Medium	Extreme	Extreme	Extreme	Extreme	Extreme
	9. Weekly	Low	Low	Very High	Extreme	Extreme	Extreme	Extreme
	8. Monthly	Very Low	Low	High	Very High	Extreme	Extreme	Extreme
	7. Probable	Very Low	Very Low	Medium	High	Very High	Extreme	Extreme
	6. Possible	Very Low	Very Low	Medium	High	High	Very High	Extreme
	5. Unlikely	Very Low	Very Low	Low	Medium	High	Very High	Extreme
	4. Rare	Very Low	Very Low	Low	Medium	Medium	High	Very High
	3. Improbable	Very Low	Very Low	Low	Low	Medium	High	Very High
	2. Highly improbable	Very Low	Very Low	Very Low	Low	Low	Medium	High
	1. Barely credible	Very Low	Very Low	Very Low	Very Low	Low	Low	Medium

5.1 RISKS ASSOCIATED WITH GAS RELEASE

#	RISK	DESCRIPTION	CONTROLS	CONTROLLED LIKELIHOOD	CONTROLLED CONSEQUENCE	CONTROLLED RISK
1	GMS equipment venting	Overpressure on the inlet that causes physical damage to the equipment	Overpressure protection installed at DRS Regulators and DRS settings, inspection and maintenance plans	3. Improbable	3. Moderate	Low
2	Faulty GMS equipment	Due to a fault (e.g. seat or diaphragm failure), GMS equipment releases gas	Equipment choice (token relief or full release equipment) Regular inspection and maintenance of venting equipment	4. Rare	2. Minor	Very Low
3	Contamination	Presence of contamination on the network preventing the good operation of regulators	Equipment choice (token relief or full release equipment) Regulator maintenance on GMS and DRS (filter inspection) Construction procedures	3. Improbable	2. Minor	Very Low
4	DRS equipment venting	Overpressure on the inlet that causes physical damage to the equipment	Equipment rating Pressure control and protection on upstream networks Regulators and DRS settings, inspection and maintenance plans Operational agreement with TSO	3. Improbable	3. Moderate	Low
5	Faulty DRS equipment	Due to a fault (e.g. seat or diaphragm failure), DRS equipment releases gas	Equipment choice (token relief or full release equipment) Regular inspection and maintenance of equipment	3. Improbable	3. Moderate	Low
6	Corrosion on IP steel pipeline	Leak on an IP steel pipeline due to corrosion	Wall thickness Corrosion protection (wrapping, cathodic protection) Steel pipeline integrity plan	5. Unlikely	3. Moderate	Low
7	Corrosion on MP or LP steel pipeline	Leak on an MP or LP steel pipeline due to corrosion	Wall thickness Corrosion protection (wrapping, cathodic protection) Steel pipeline integrity plan	7. Probable	2. Minor	Very Low
8	Deterioration on PE 80 pipeline	Leak on a PE pipeline due to wear or brittle material	Wall thickness Material choice	3. Improbable	2. Minor	Very Low
9	Deterioration on PE 100 pipeline	Leak on a PE pipeline due to wear or brittle material	Wall thickness Material choice	3. Improbable	3. Moderate	Low
10	Slow plastic deformation of a PE pipeline	Leak on a PE pipeline due to deformation related to pressure cycles	Material choices	2. Highly	2. Minor	Very Low
11	Sudden deformation of a PE pipeline	Leak on a PE pipeline due to overpressure on the network creating a permanent deformation of the pipe	Material choice (pipe rating) DRS design, maintenance and inspection to prevent overpressure	2. Highly improbable	4. Serious	Low
12	Squeeze-off on PE pipeline	Leak on a PE pipeline due to a plastic deformation following a squeeze-off	Isolation procedures and equipment Backfill material Clearance standards Stand-over, work permit and preparation standards	6. Possible	2. Minor	Very Low

#	RISK	DESCRIPTION	CONTROLS	CONTROLLED LIKELIHOOD	CONTROLLED CONSEQUENCE	CONTROLLED RISK
13	Stress point failure on pipeline	Leak on a PE pipeline due to stones, vegetation, other utilities, etc.	Backfill material Clearance standards Stand-over, work permit and preparation standards	8. Monthly	2. Minor	Low
14	Mechanical joint degradation	Leak on a mechanical joint due to age	Construction standards recommending electrofusion, flange joints, fully automatic butt joining and the limitation of joints Replacement policy for mechanical joints Pipeline integrity plan	6. Possible	2. Minor	Very Low
15	Stress on mechanical joint	Leak at a mechanical joint due to stress created by ground movement (temperature cycles, traffic, etc.)	Construction standards recommending electrofusion, flange joints, fully automatic butt joining and the limitation of joints Pipeline integrity plan	5. Unlikely	3. Moderate	Low
16	Plastic fused joint degradation	Leak at plastic fused joint due to age	Jointing techniques and procedures (including pressure testing) Pipeline integrity plan	6. Possible	2. Minor	Low
17	Steel welded joint degradation	Leak at steel welded joint due to age	Jointing techniques and procedures (including non-destructive testing) Pipeline integrity plan	3. Improbable	4. Serious	Low
18	Electro-fusion joint degradation	Leak at plastic electro-fusion joint due to age	Jointing techniques and procedures (including pressure testing) Pipeline integrity plan	3. Improbable	2. Minor	Very Low
19	Valve degradation	Leak at a valve due to wear or age	Regular inspection and lubrication	8. Monthly	2. Minor	Low
20	Third-party damage on IP pipeline	Leak on a network asset running at IP after third-party damage. The asset didn't leak at the time, it created a dent on the pipeline or a damage to the coating.	Location and record of underground assets Depth of burial Physical protection Signage TPD prevention	5. Unlikely	4. Serious	Medium
21	Third-party damage on LP or MP	Leak on a network asset running at LP or MP after third-party damage. The asset didn't leak at the time, it created a dent on the pipeline or a damage to the coating.	Location and record of underground assets Depth of burial Physical protection Signage TPD prevention	8. Monthly	2. Minor	Low

5.2 RISKS ASSOCIATED WITH GAS RELEASE IN AN INSUFFICIENT VENTILATED LOCATION

#	RISK	DESCRIPTION	CONTROLS	CONTROLLED LIKELIHOOD	CONTROLLED CONSEQUENCE	CONTROLLED RISK
1	Undetected gas release by venting (see gas release)	An equipment vents gas that is not detected until it reaches high concentration in air	Gas odorisation Regulators, DRS and equipment maintenance Response time to emergency Public education, including signage on gas assets and retailer safety messages Discharge point design	3. Improbable	4. Serious	Low
2	Undetected gas release by leakage (see gas release)	A leak is undetected until it reaches high concentration in air	Gas odorisation Regulators, DRS and equipment maintenance Response time to emergency Leakage path determination Leak survey	3. Improbable	5. Major	Medium
3	Enclosed spaces	Undetected gas release in a space that is not adequately ventilated in regards to the quantity of gas released	Gas odorisation Location standards Discharge point design Leak survey	4. Rare	5. Major	Medium
4	Gas outage	Gas supply reinstated to the consumer without checking the effective operation of the downstream equipment	Outage and relight management plan (shutdown supply, doorknob notices, etc.)	2. Highly improbable	4. Serious	Low
5	Damage on intermediate-pressure pipeline	High-energy gas release after impact	Physical protection TPD management Pressure choice on the networks	4. Rare	5. Major	Medium

5.3 RISKS ASSOCIATED WITH FIRE AND EXPLOSION

#	RISK	DESCRIPTION	CONTROLS	CONTROLLED LIKELIHOOD	CONTROLLED CONSEQUENCE	CONTROLLED RISK
1	Electrical appliances or electricity assets	Electrical appliance present at a gas build-up site, acting as an ignition source	Clearance around gas equipment Signage on gas assets	2. Highly improbable	5. Major	Low
2	Naked flame	Naked flame (e.g. from a member of public) present close to a gas build-up site, acting as an ignition source	Signage on gas assets Public education	3. Improbable	5. Major	Medium
3	Potential difference of above-ground station	The potential difference between the assets and workers acts as an ignition source	Usage of earthing mats Bonding continuity on assets	2. Highly improbable	5. Major	Low

5.4 RISKS ASSOCIATED WITH ELECTRICITY

#	RISK	DESCRIPTION	CONTROLS	CONTROLLED LIKELIHOOD	CONTROLLED CONSEQUENCE	CONTROLLED RISK
1	Stray and inducted currents	Electrical appliance present at a gas build-up site, acting as an ignition source	Procedures to work on steel pipelines at risk (including gloves) Installing of earthing mats Installation of PCR (Polarisation Cells Replacement) Installation of isolation points	4. Rare	5. Major	Medium
2	Live lines	Direct contact between a steel pipeline and a live electricity line	Clearance standards	3. Improbable	5. Major	Medium
3	Electrical appliances	Electrical appliances bonded to the network by electrician	Electrical isolation of the network Bonding procedures	3. Improbable	4. Serious	Low
4	Electrical network equipment	Presence of electrical equipment on the network (e.g. SCADA)	Construction to standards Usage of competent electrician Signage	3. Improbable	4. Serious	Low

5.5 RISKS ASSOCIATED WITH PNEUMATIC ENERGY

#	RISK	DESCRIPTION	CONTROLS	CONTROLLED LIKELIHOOD	CONTROLLED CONSEQUENCE	CONTROLLED RISK
1	Asset failure	The pressure within the network cause assets to fail and to act as projectile	Material standards Isolation procedures Physical protection Choice of operating pressure	4. Rare	3. Moderate	Low

5.6 RISKS ASSOCIATED WITH THIRD PARTY INTERFERENCE

#	RISK	DESCRIPTION	CONTROLS	CONTROLLED LIKELIHOOD	CONTROLLED CONSEQUENCE	CONTROLLED RISK
1	Third-party excavations (LP or MP pipeline)	Hit on underground asset running at LP or MP by machinery (e.g. digger) leading to a pipeline rupture	TPD prevention plan Work permits, stand-overs, plan issues Depth of burial Physical protection Separation Signage	10. Daily	2. Minor	Medium
2	Third-party excavations (IP pipeline)	Hit on underground asset running at IP by machinery (e.g. digger) leading to a pipeline rupture	TPD prevention plan Work permits, stand-overs, plan issues Depth of burial Physical protection Separation Signage	5. Unlikely	4. Serious	Medium
3	Vehicles	Hit on above-ground asset by a vehicle	Location Physical protection Pipe material	5. Unlikely	4. Serious	Medium
4	Usage of tools	Hit on underground asset by tools	TPD prevention plan Work permits, stand-overs, plan issues Depth of burial Physical protection Separation Signage	8. Monthly	2. Minor	Low
5	Light vehicles	Hit on above-ground asset by a “light” vehicle (e.g. cyclist)	Location Physical protection Pipe material	4. Rare	3. Moderate	Low
6	Vandalism	Vegetation damaging assets	Location Physical protection	5. Unlikely	2. Minor	Very Low
7	Terrorism	Assets damaged in a terrorist action	Physical protection Emergency management plan	1. Barely credible	6. Severe	Low

#	RISK	DESCRIPTION	CONTROLS	CONTROLLED LIKELIHOOD	CONTROLLED CONSEQUENCE	CONTROLLED RISK
8	Vegetation	Vegetation damaging assets	Location Physical protection	5. Unlikely	2. Minor	Very Low
9	Landslips and rock falls	Foreign objects falling on above-ground assets	Location Design (e.g. crib walls, retaining walls, material selection)	4. Rare	2. Minor	Very Low
10	Other utilities	Water leak blasting on underground assets	Clearance from other utilities	4. Rare	3. Moderate	Low
11	Access to an asset	Intrusion into an asset site and operation	Site security Usage of special tools	2. Highly improbable	3. Moderate	Very Low
12	Other assets in the vicinity	Other asset owner changing the operating conditions (e.g. gate station pressure) or altering asset configuration	SCADA monitoring Physical protection and locks	2. Highly improbable	5. Major	Low
13	Operator error	Network configuration (e.g. pressure) altered because of an operator error	Works procedures Training	3. Improbable	3. Moderate	Low
14	Incorrect information	Network information is wrong and leads to a wrong operation	Network records management	3. Improbable	2. Minor	Very Low

5.7 RISKS ASSOCIATED WITH ENVIRONMENTAL CONDITIONS AND NATURAL DISASTERS

#	RISK	DESCRIPTION	CONTROLS	CONTROLLED LIKELIHOOD	CONTROLLED CONSEQUENCE	CONTROLLED RISK
1	Asset crossing fault line	Asset gets damaged by the fault line movement	Isolation valve on lines crossing the fault line Pipeline route assessment Emergency response plan	4. Rare	5. Major	Medium
2	Earth movement during an earthquake	Asset gets damaged by the earth movement	Material choice at design stage Emergency response plan	4. Rare	3. Moderate	Low
3	External damage during an earthquake	Foreign objects falling on and damaging above-ground assets	Physical protection Clearances Emergency response plan	3. Improbable	2. Minor	Very Low
4	Liquefaction	Liquefaction after an earthquake causing network displacement	Anchoring Emergency response plan	4. Rare	2. Minor	Very Low
5	Volcanic eruption	Foreign objects and/or ashes falling on above-ground assets	Physical protection Clearances Emergency response plan	2. Highly improbable	2. Minor	Very Low
6	Lahar	Above-ground assets damaged by lahars	Construction standards Isolation valves Bridge inspections	2. Highly improbable	2. Minor	Very Low
7	Lightning	Above-ground assets hit by lightning	Surge diverters Polarisation cells Tracing wire termination Earthing stations	3. Improbable	5. Major	Medium
8	Flooding	Above-ground or underground assets damaged by flooding	Physical protection (above-ground assets) Clearance and location Material choice (steel crossings)	3. Improbable	2. Minor	Very Low
9	Tsunami	Above-ground asset damaged and underground assets flooded	Location Emergency response plan	3. Improbable	4. Serious	Low

5.8 RISKS ASSOCIATED WITH HEIGHTS

#	RISK	DESCRIPTION	CONTROLS	CONTROLLED LIKELIHOOD	CONTROLLED CONSEQUENCE	CONTROLLED RISK
1	Above-ground assets in the public space	Assets can be unnoticed because of their location	Location Physical protection	5. Unlikely	3. Moderate	Low
2	Asset with sharp edge	Assets might have sharp edges that can lead to harm to the public	Physical protection Assets buried Inspections as part of the maintenance programme	5. Unlikely	3. Moderate	Low
3	Uneven ground	Uneven ground or surface due to the presence of assets (e.g. valve lid)	Inspections as part of the maintenance programme	5. Unlikely	3. Moderate	Low

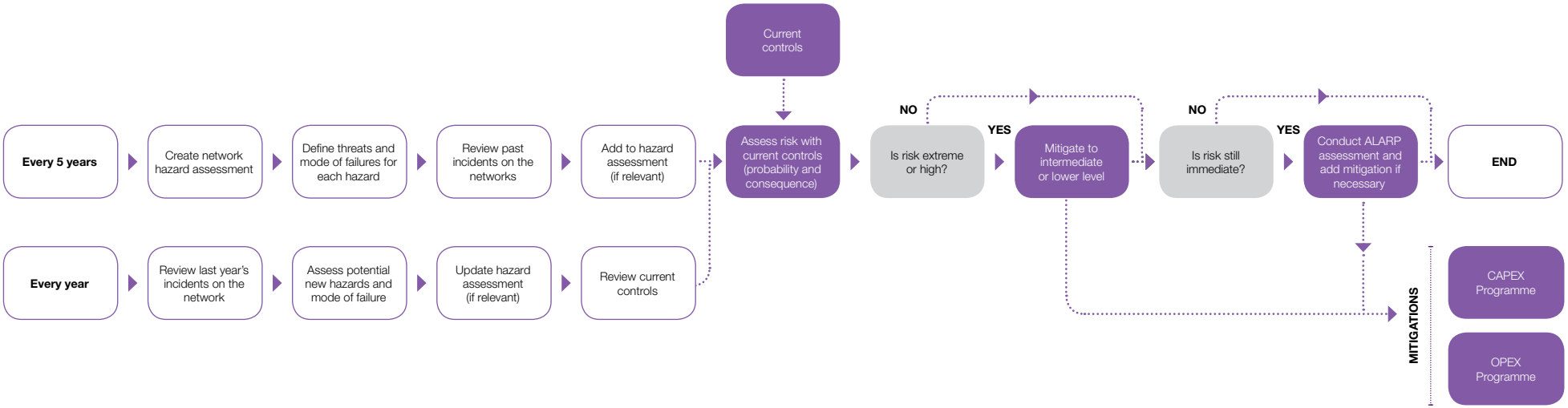
5.9 RISKS ASSOCIATED WITH HAZARDOUS MATERIALS

#	RISK	DESCRIPTION	CONTROLS	CONTROLLED LIKELIHOOD	CONTROLLED CONSEQUENCE	CONTROLLED RISK
1	Live pipe is made of hazardous material	The carrier pipe is made of hazardous material. Contractors can be exposed if they work on the asset.	Material standards Replacement programme Hazard identification process Work instructions	2. Highly improbable	5. Major	Low
2	Duct made of hazardous material	The carrier pipe is made of hazardous material. People can be exposed if they expose the duct	Material standards Work instructions Record management (Hazardous material is recorded in GIS) Hazard identification process Information to the wider public (including plan issuing)	3. Improbable	5. Major	Medium

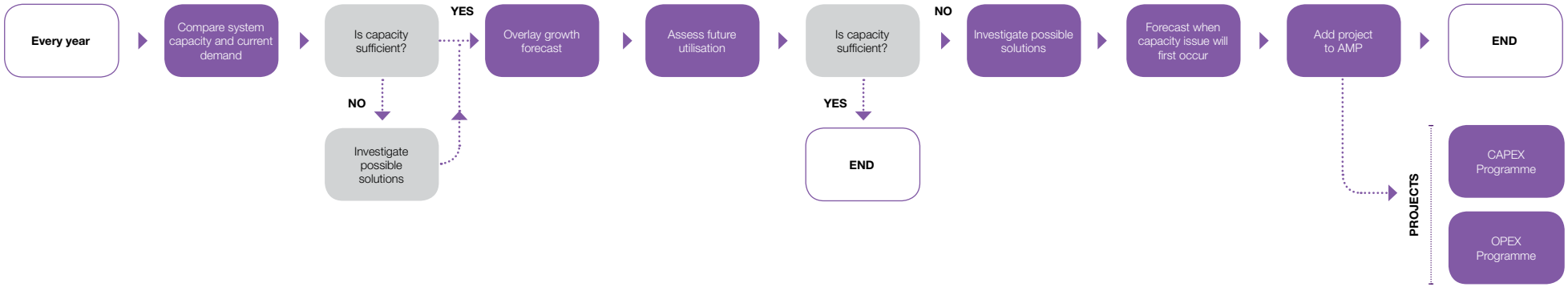
5.10 RISKS ASSOCIATED WITH CONFINED SPACES

#	RISK	DESCRIPTION	CONTROLS	CONTROLLED LIKELIHOOD	CONTROLLED CONSEQUENCE	CONTROLLED RISK
1	Assets are located in confined spaces	Operations and inspections of assets take place in a confined space. (NB: the risk of asphyxiation due to the presence of natural gas is already covered under “Gas release in an insufficient ventilated space”)	Location standards (including access restriction) Hazard identification process Work instructions and specific PPE Improvement programme	2. Highly improbable	5. Major	Low

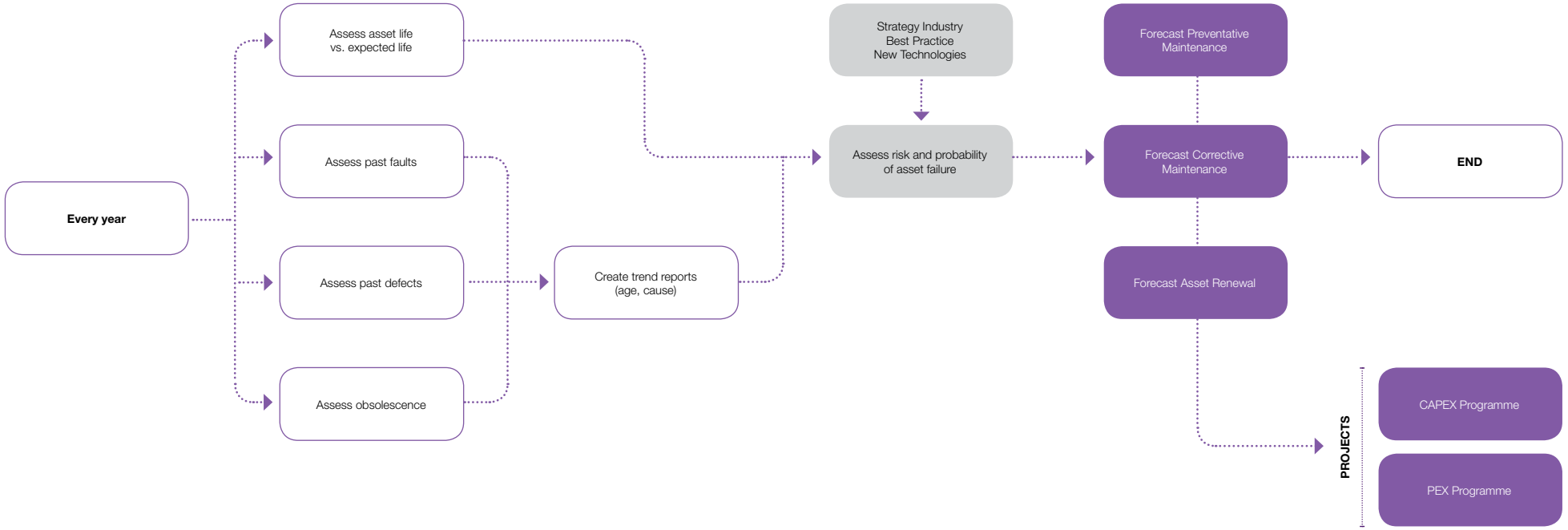
6. APPENDIX: **FORMAL SAFETY ASSESSMENT PROCESS MAP**



7. APPENDIX: **CAPACITY ASSESSMENT FORECAST PROCESS MAP**

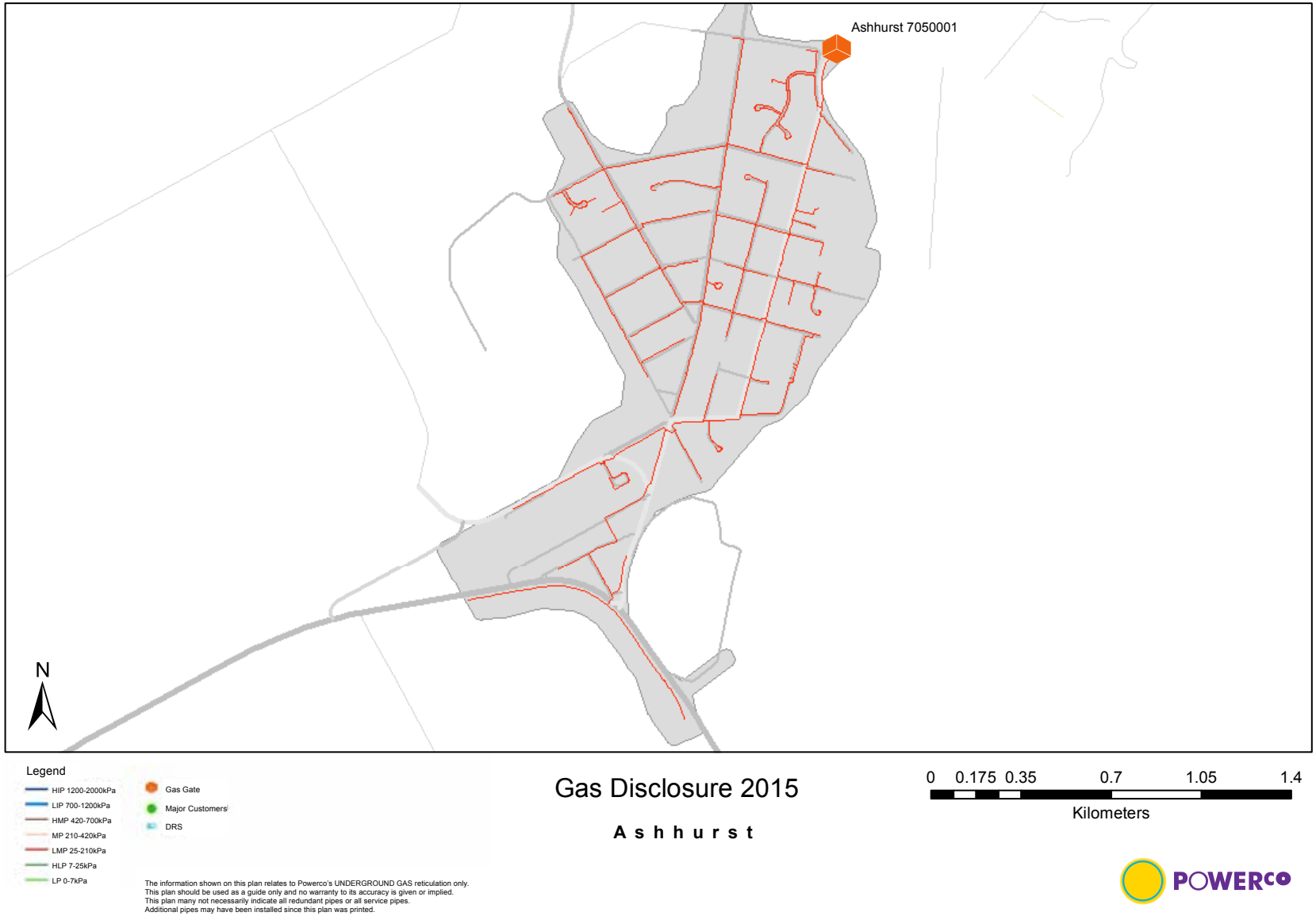


8. APPENDIX: **RELIABILITY ASSESSMENT PROCESS MAP**

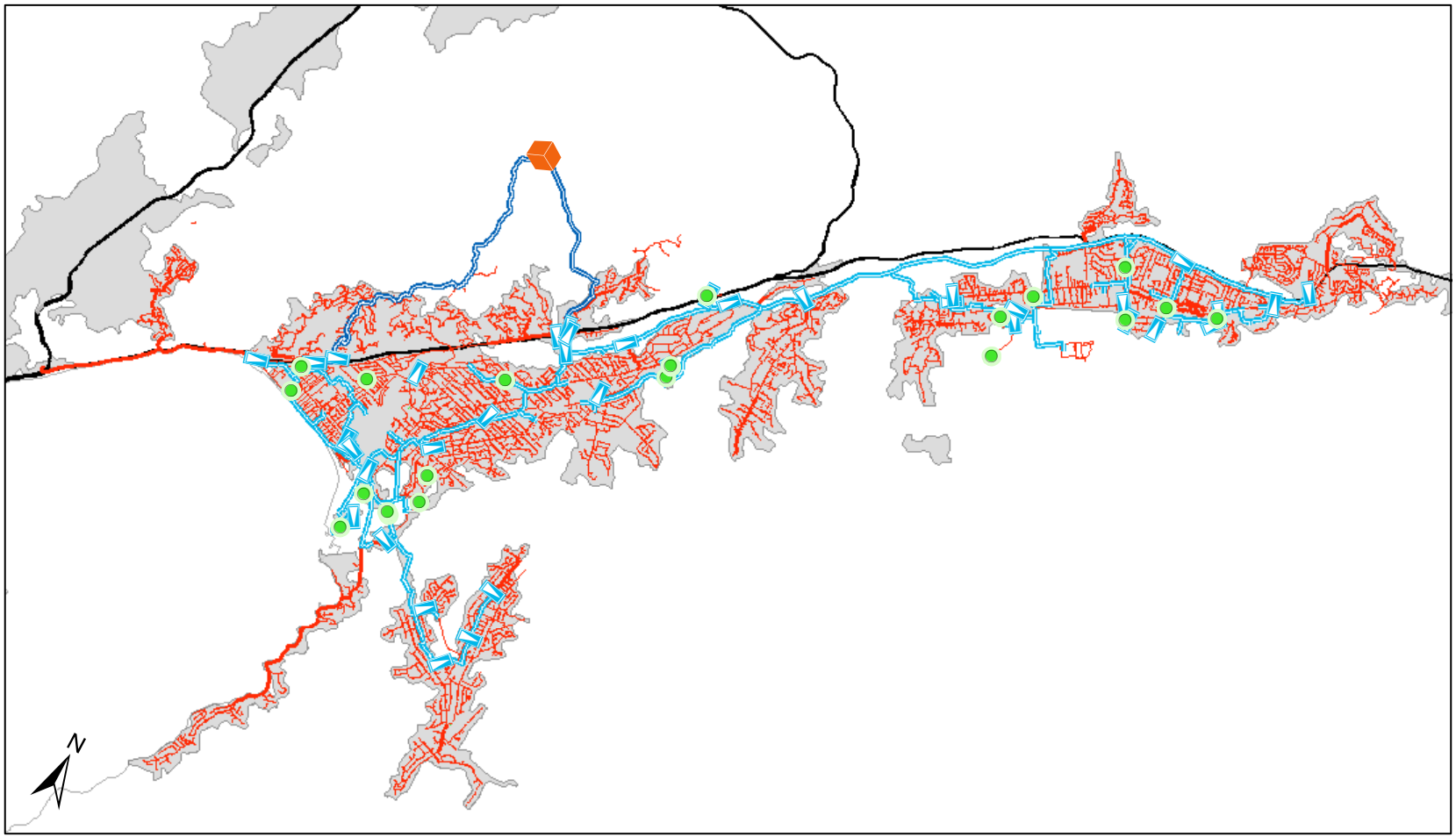


9. APPENDIX: **NETWORK MAPS BY GAS GATE**

9.1 GAS GATE – ASHHURST



9.2 GAS GATE – BELMONT



Legend

- HIP 1200-2000kPa
- LIP 700-1200kPa
- HMP 420-700kPa
- MP 210-420kPa
- LMP 25-210kPa
- HLP 7-25kPa
- LP 0-7kPa
- Gas Gate
- Major Customers
- DRS

The information shown on this plan relates to Powerco's UNDERGROUND GAS reticulation only.
This plan should be used as a guide only and no warranty to its accuracy is given or implied.
This plan many not necessarily indicate all redundant pipes or all service pipes.
Additional pipes may have been installed since this plan was printed.

Gas Disclosure 2015

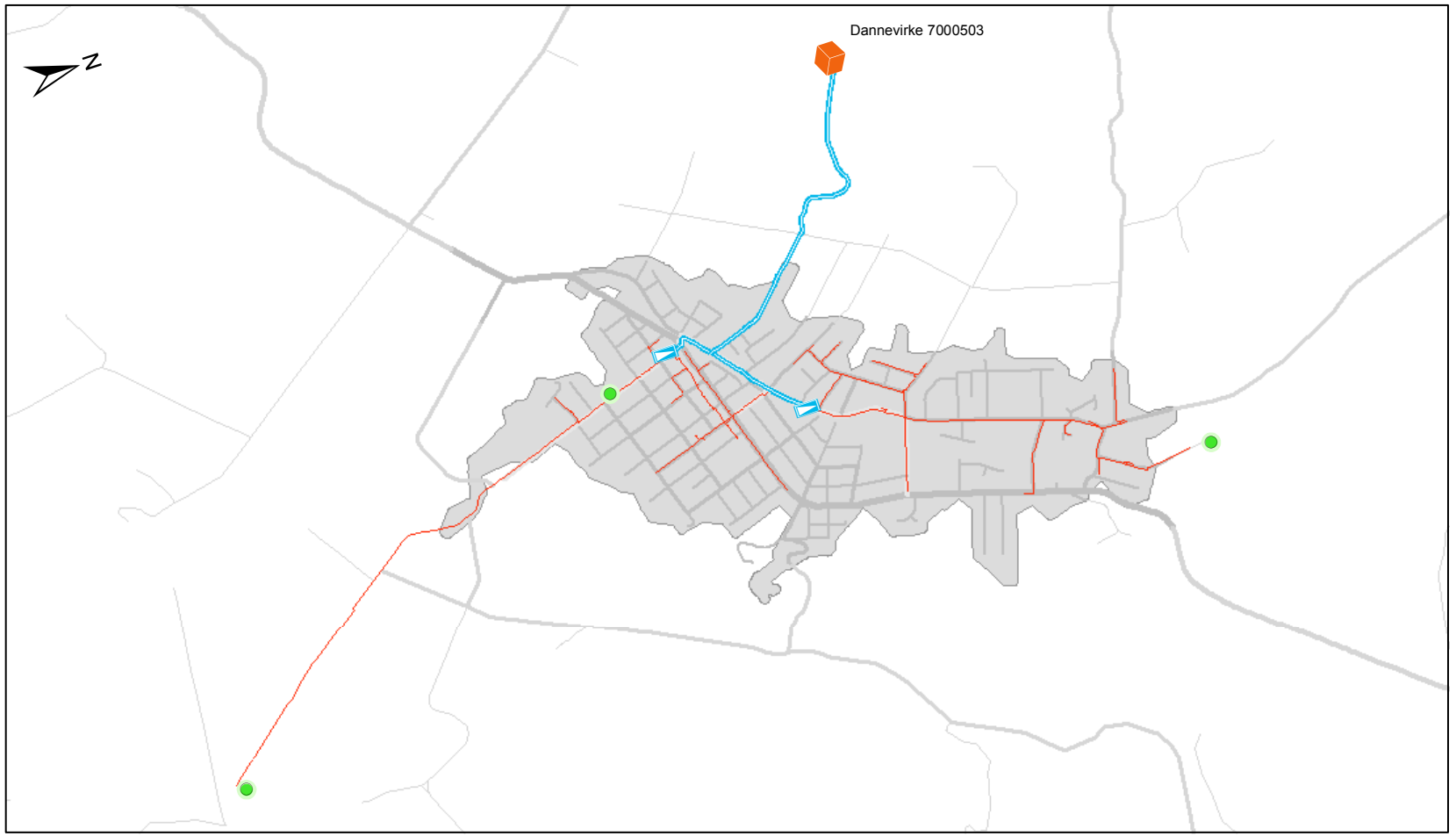
B e l m o n t

0 1 2 4 6 8

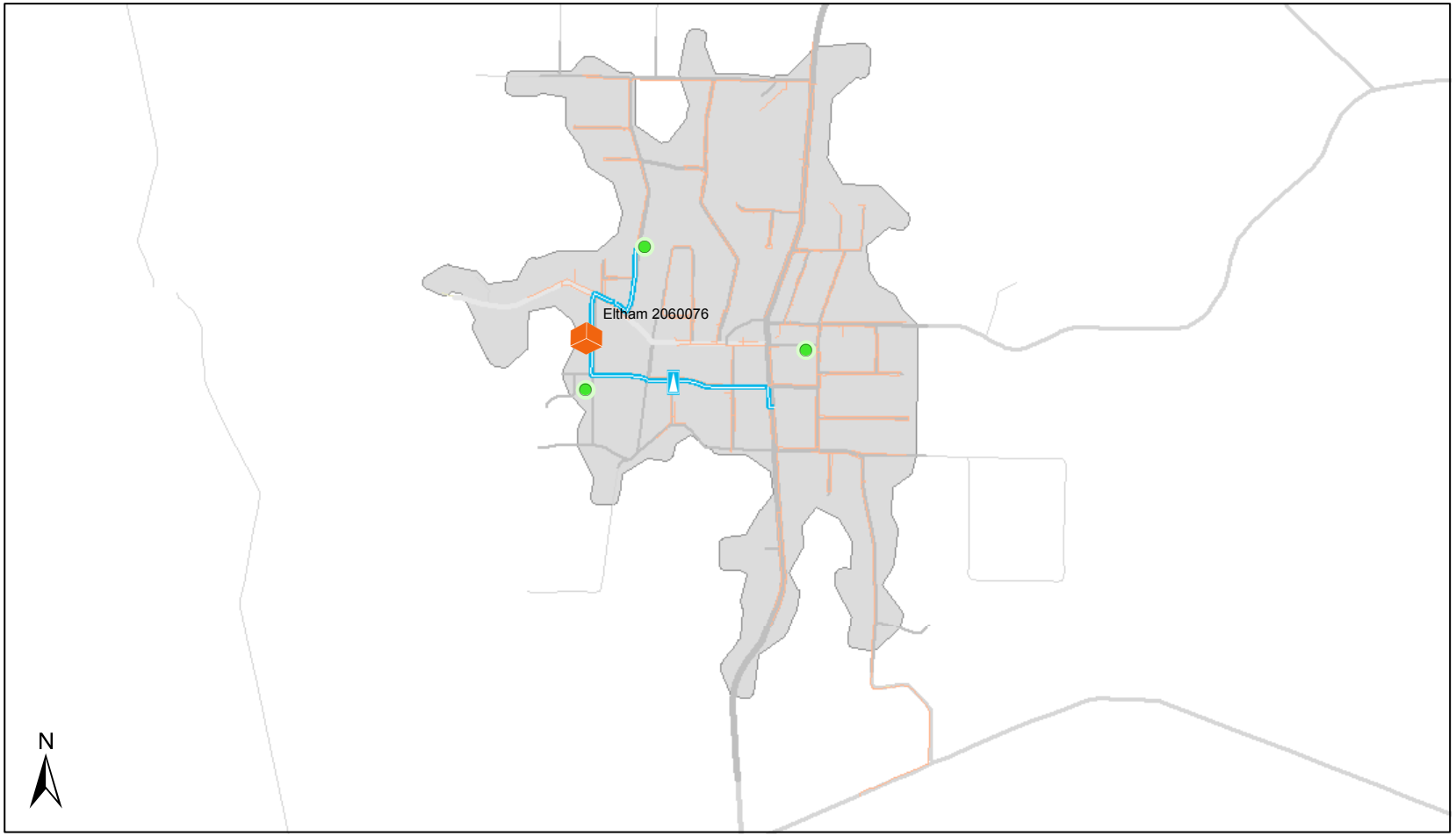
Kilometers

POWERCO

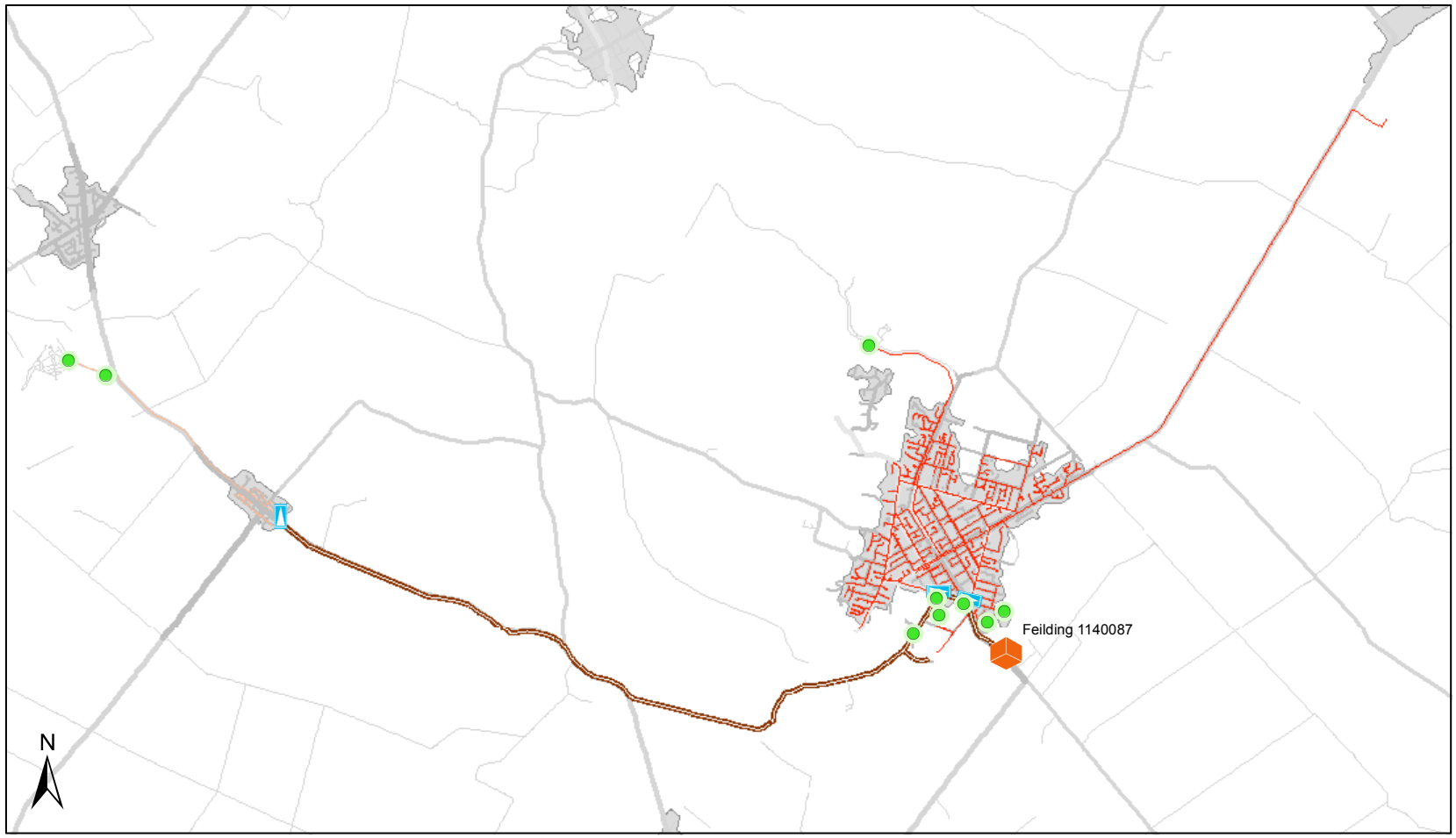
9.3 GAS GATE – DANNEVIRKE



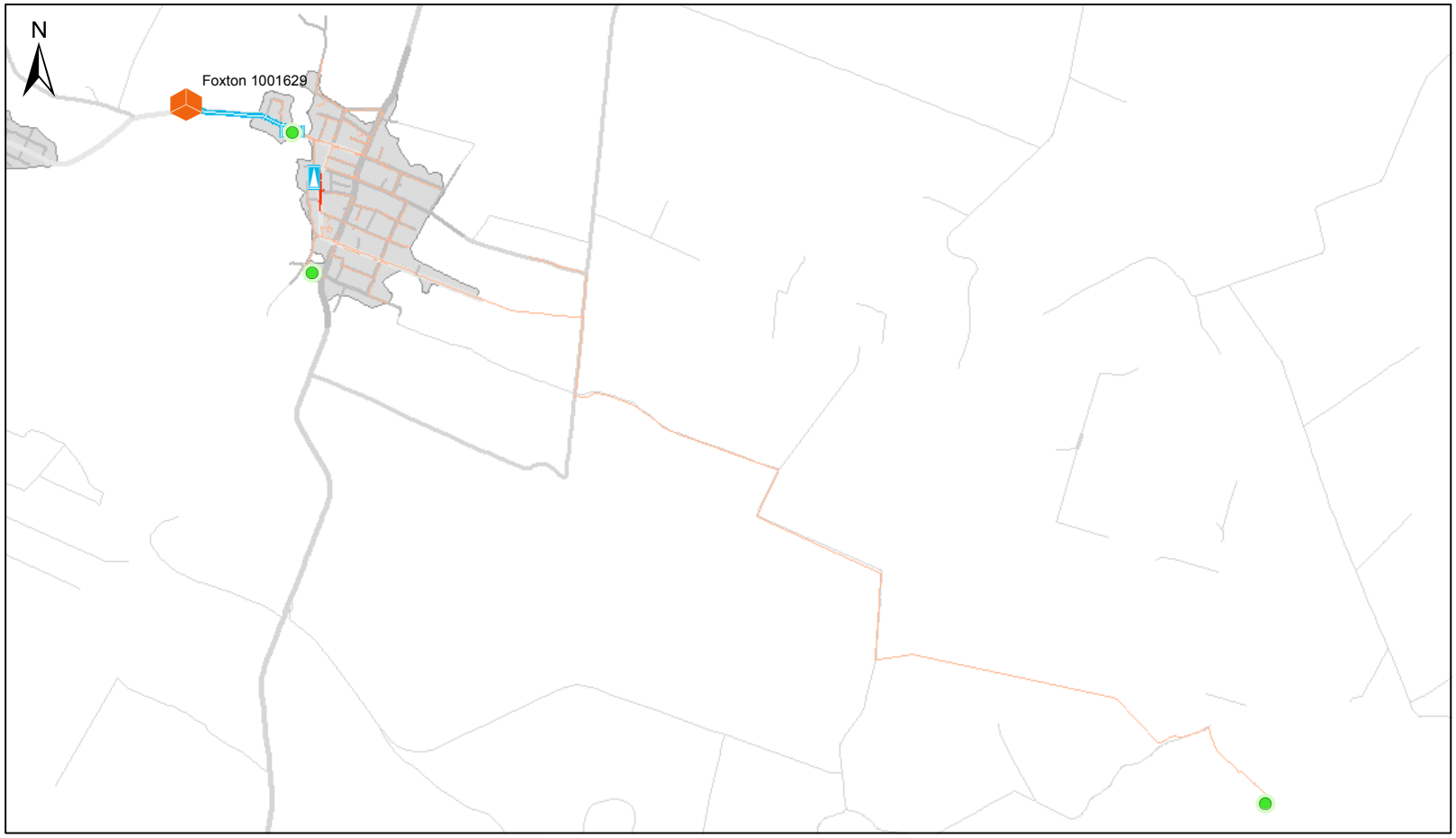
9.4 GAS GATE – ELTHAM



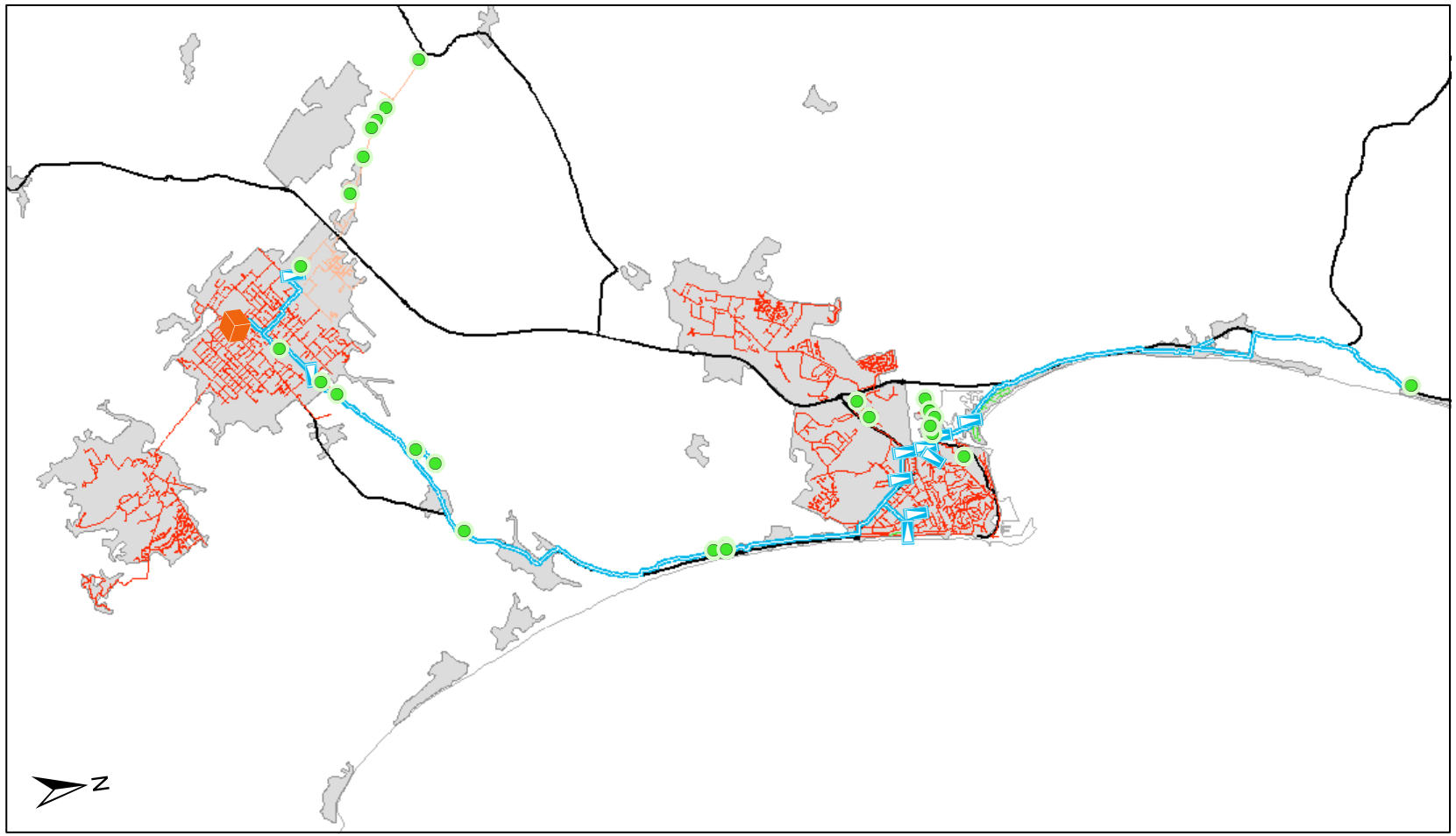
9.5 GAS GATE – FEILDING



9.6 GAS GATE – FOXTON



9.7 GAS GATE – HASTINGS



9.8 GAS GATE – HAWERA

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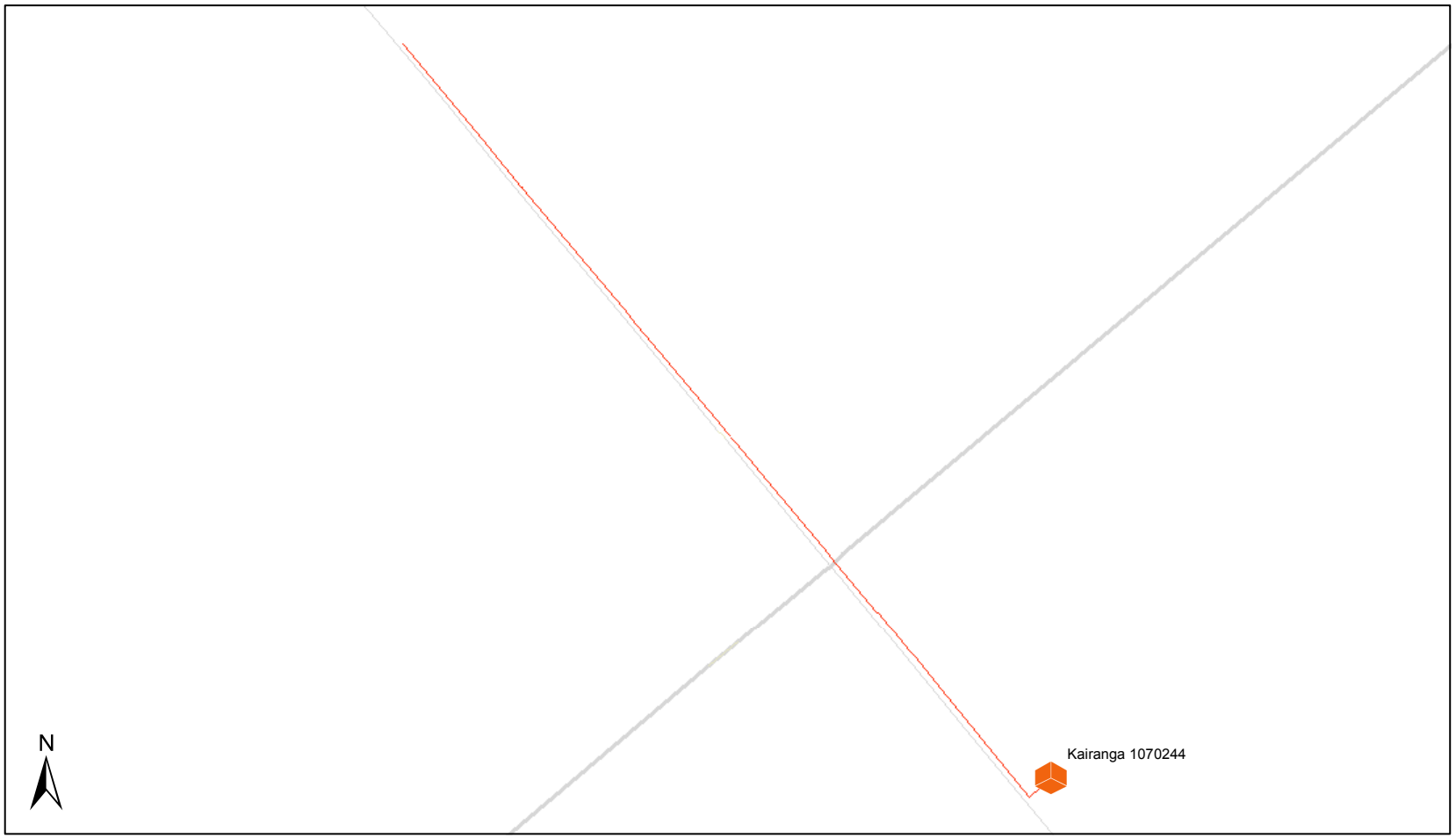
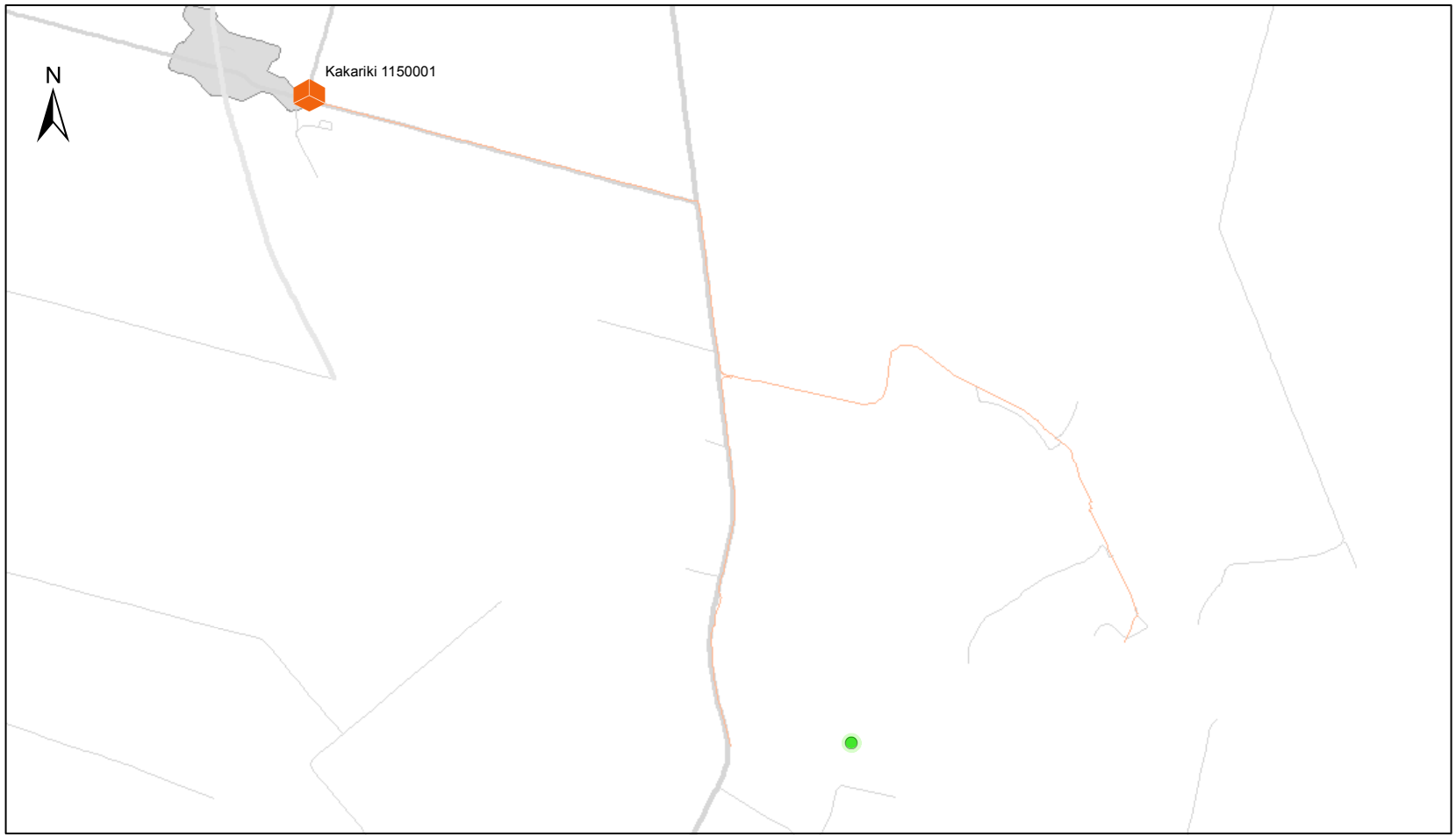
9.9 GAS GATE – INGLEWOOD

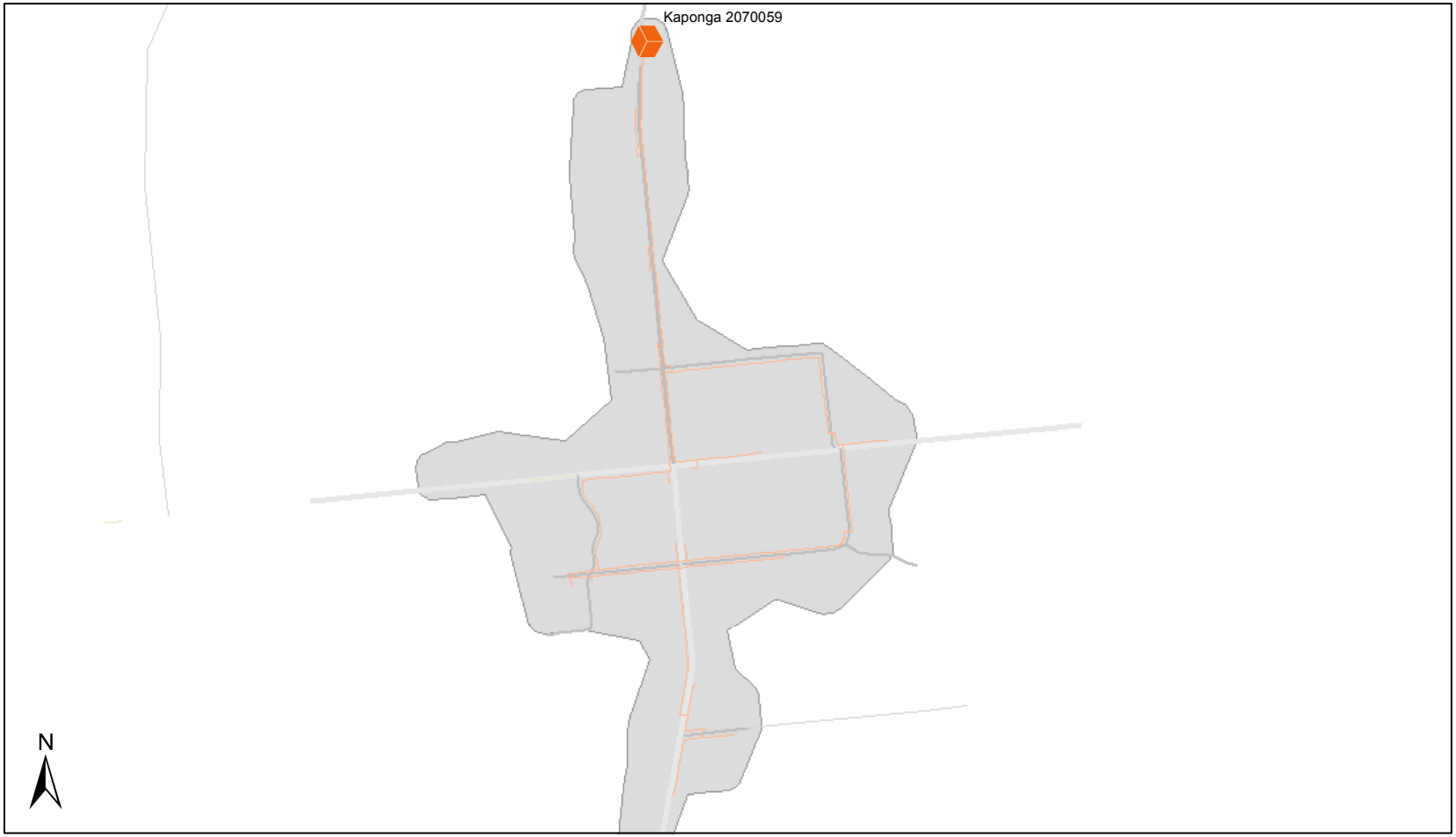
9.10 GAS GATE – KAIRANGA



9.11 GAS GATE – KAKARIKI



9.12 GAS GATE – KAPONGA



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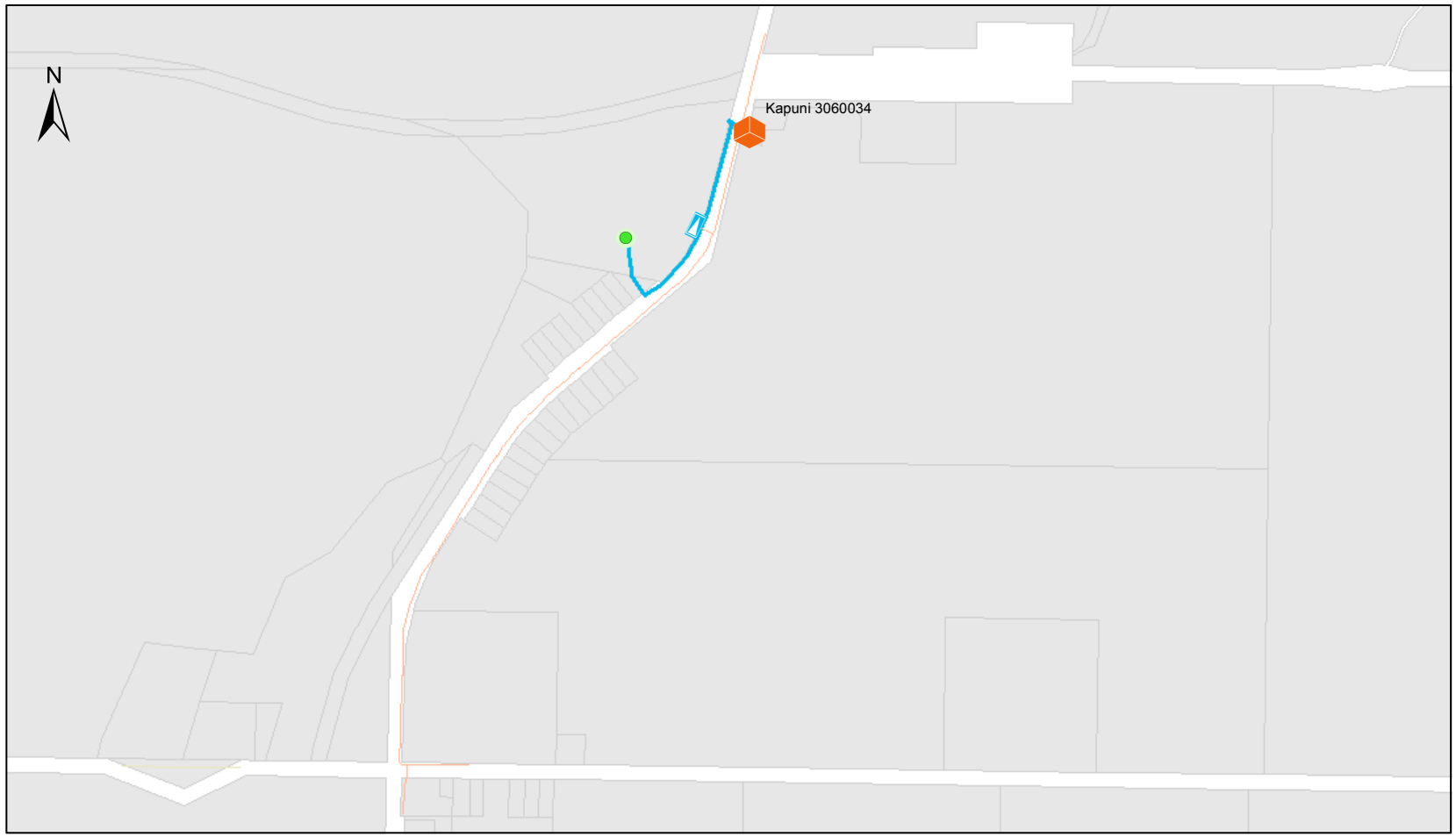
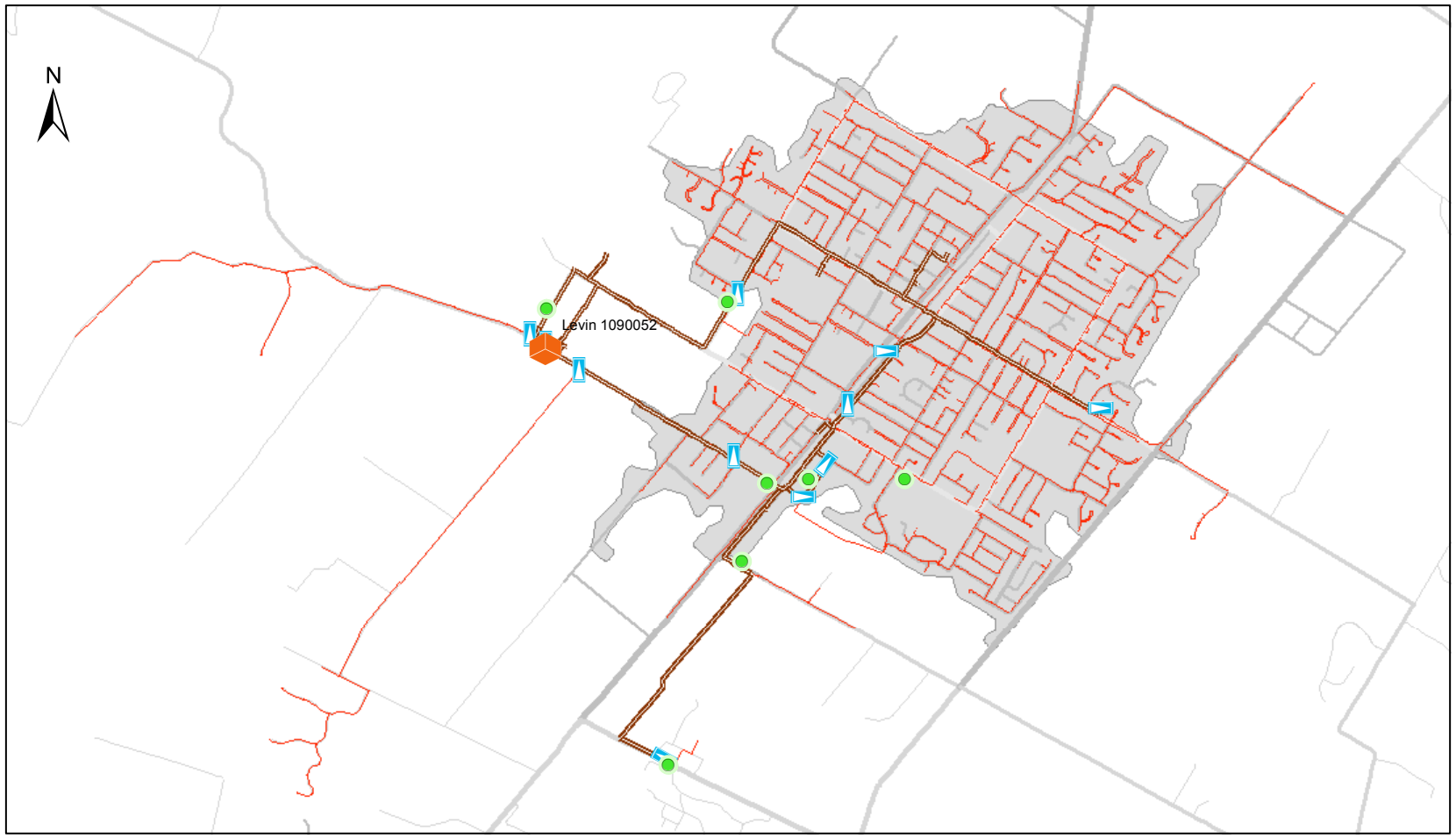
9.13 GAS GATE – KAPUNI



9.14 GAS GATE – LEVIN



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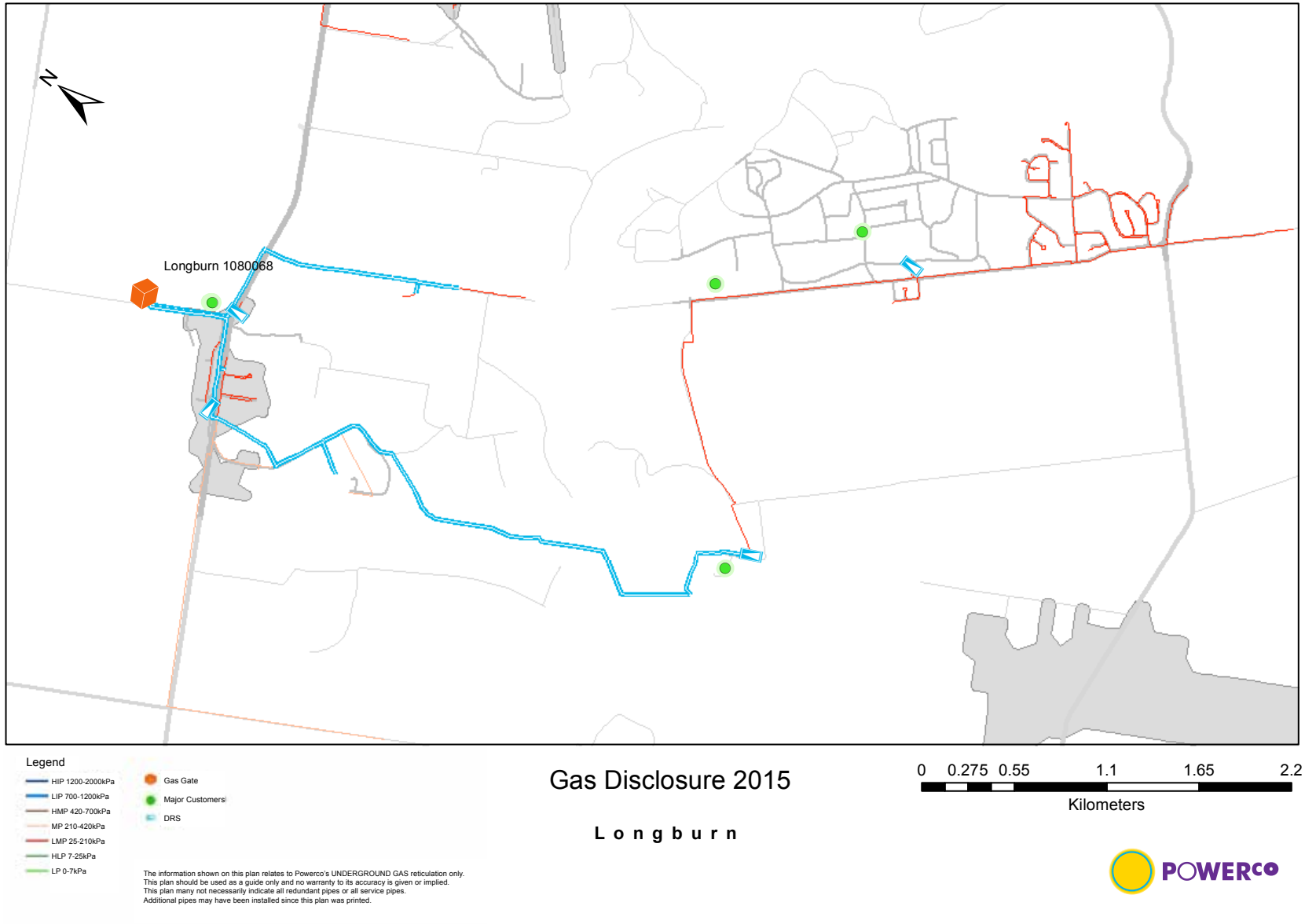
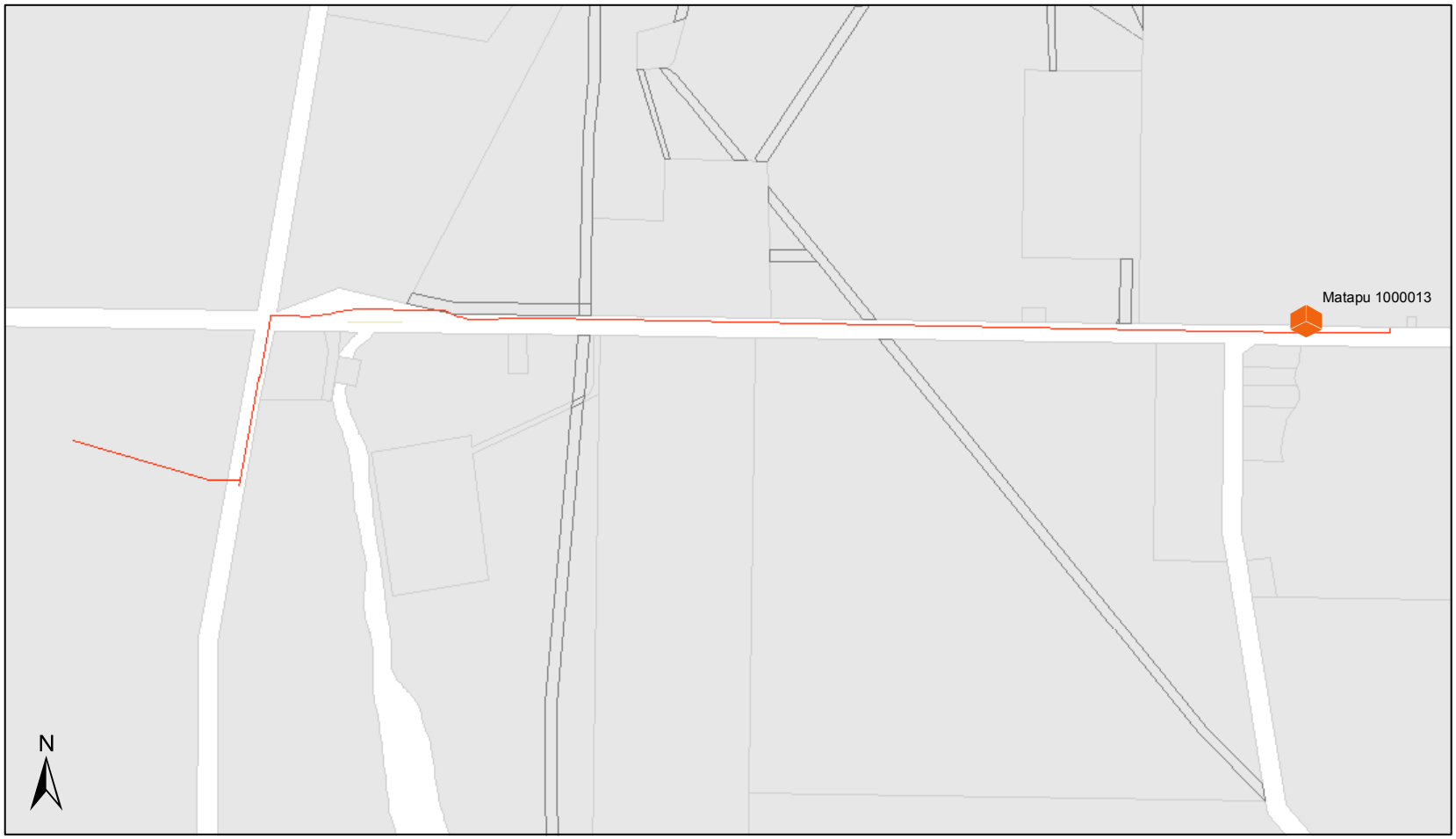
9.15 GAS GATE – LONGBURN



9.16 GAS GATE – MANAIA

9.17 GAS GATE – MANGATAINOKA

9.18 GAS GATE – MATAPU



Legend

- HIP 1200-2000kPa
- LIP 700-1200kPa
- HMP 420-700kPa
- MP 210-420kPa
- LMP 25-210kPa
- HLP 7-25kPa
- LP 0-7kPa
- Gas Gate
- Major Customers
- DRS

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Additional pipes may have been installed since this plan was printed.

Gas Disclosure 2015

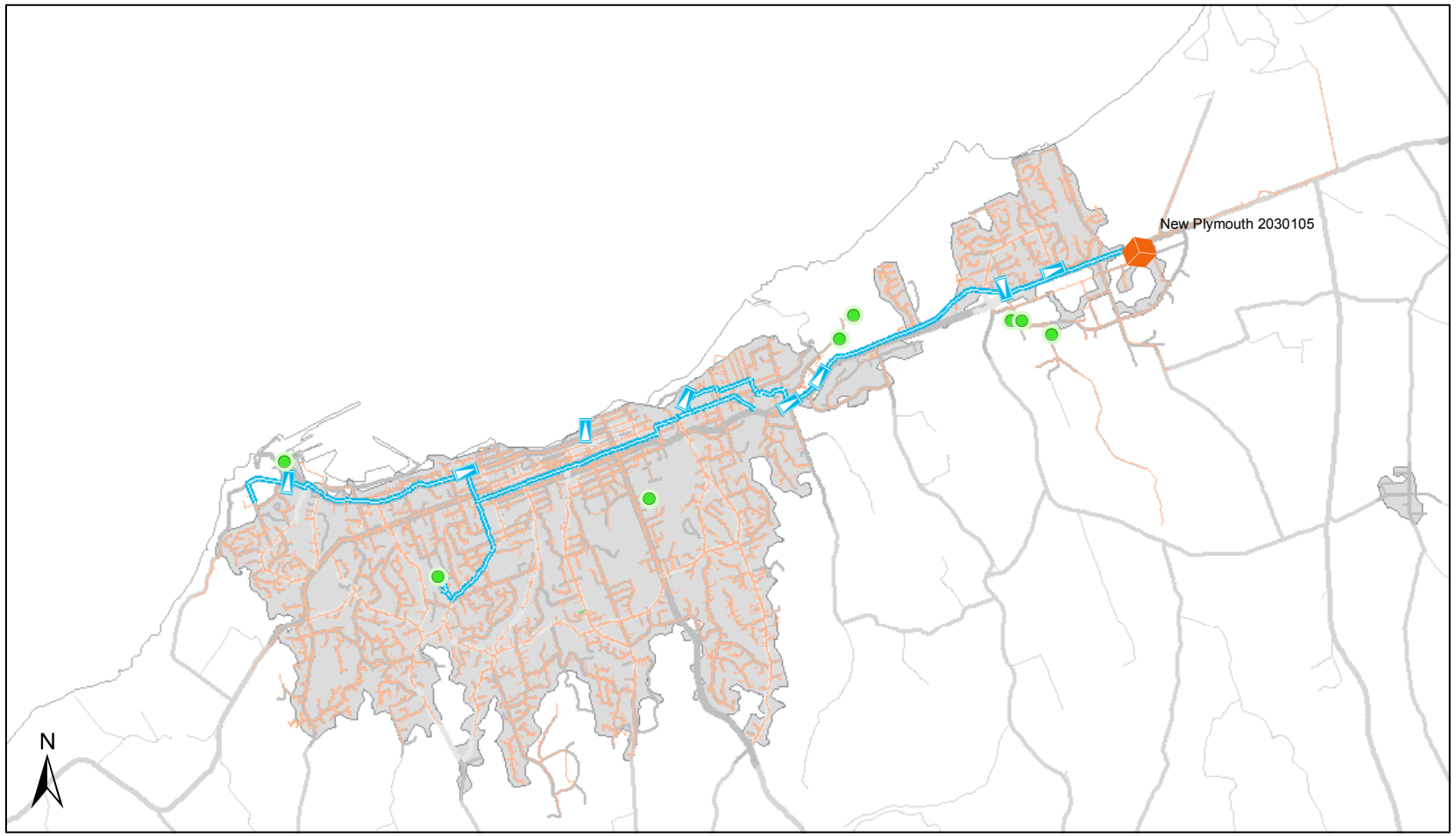
M a t a p u

0 0.05 0.1 0.2 0.3 0.4

Kilometers

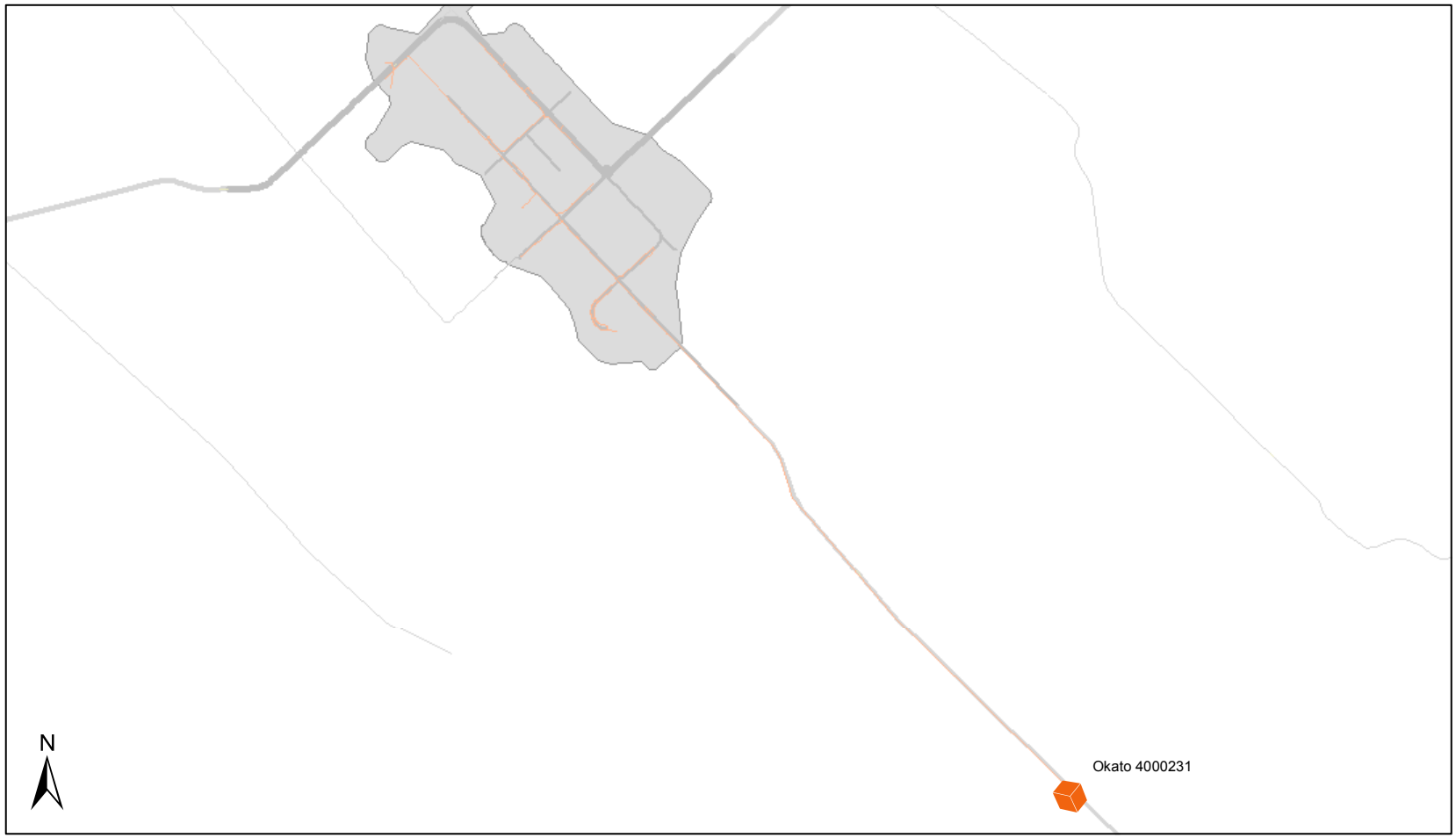
POWERCO

9.19 GAS GATE – NEW PLYMOUTH



9.20 GAS GATE – OAKURA

9.21 GAS GATE – OKATO



9.22 GAS GATE – OPUNAKE

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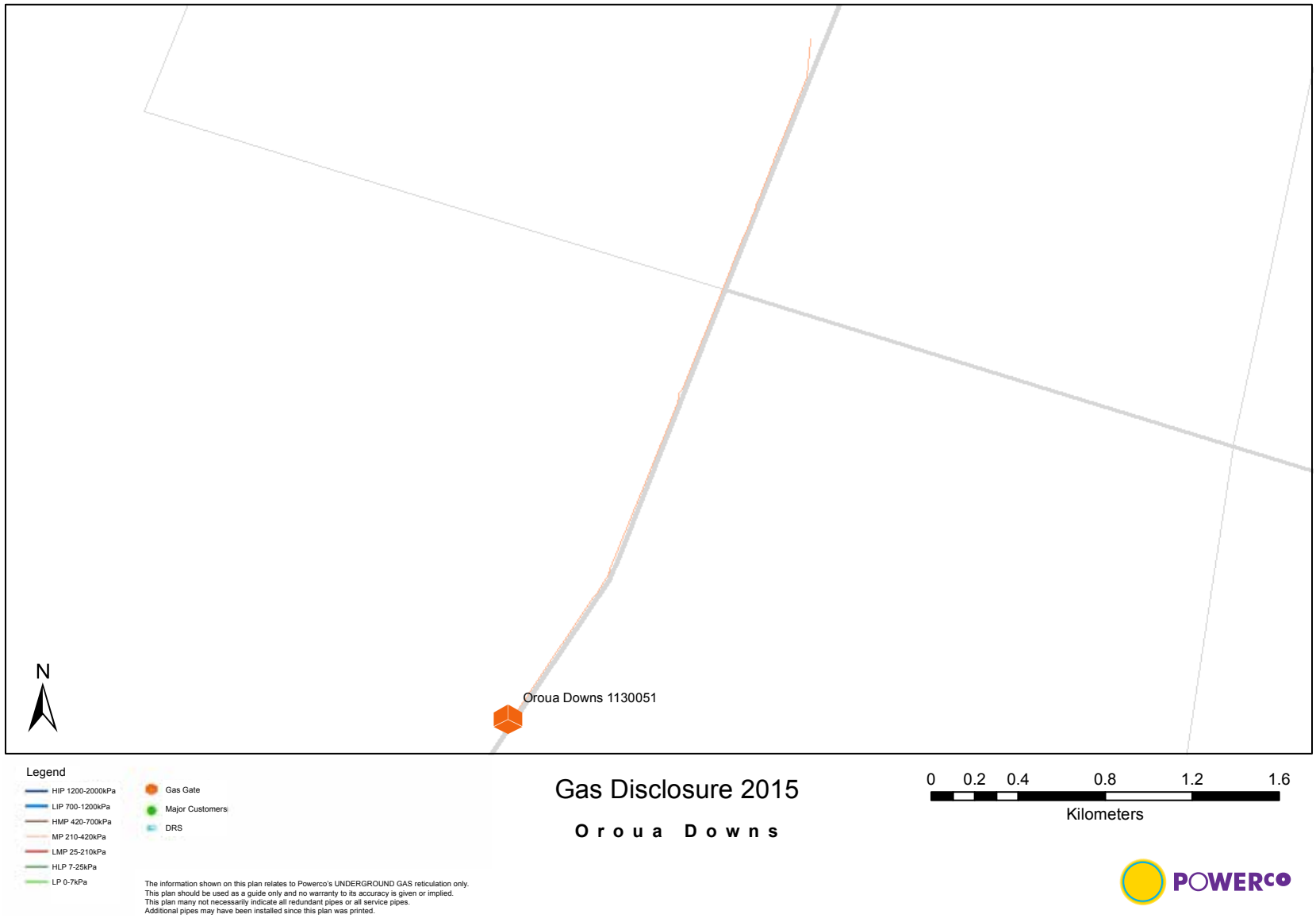
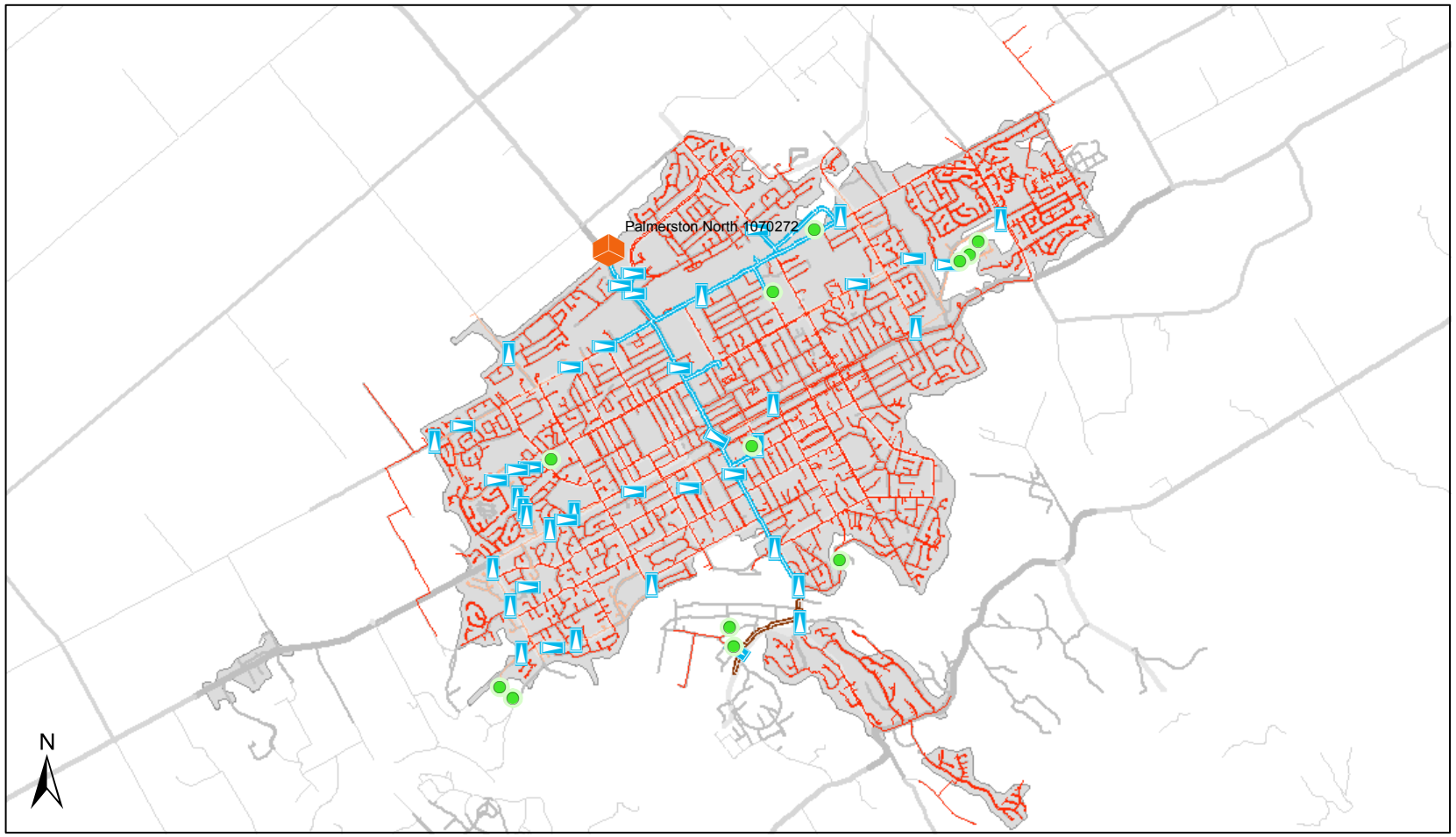
9.23 GAS GATE – OROUA DOWNS

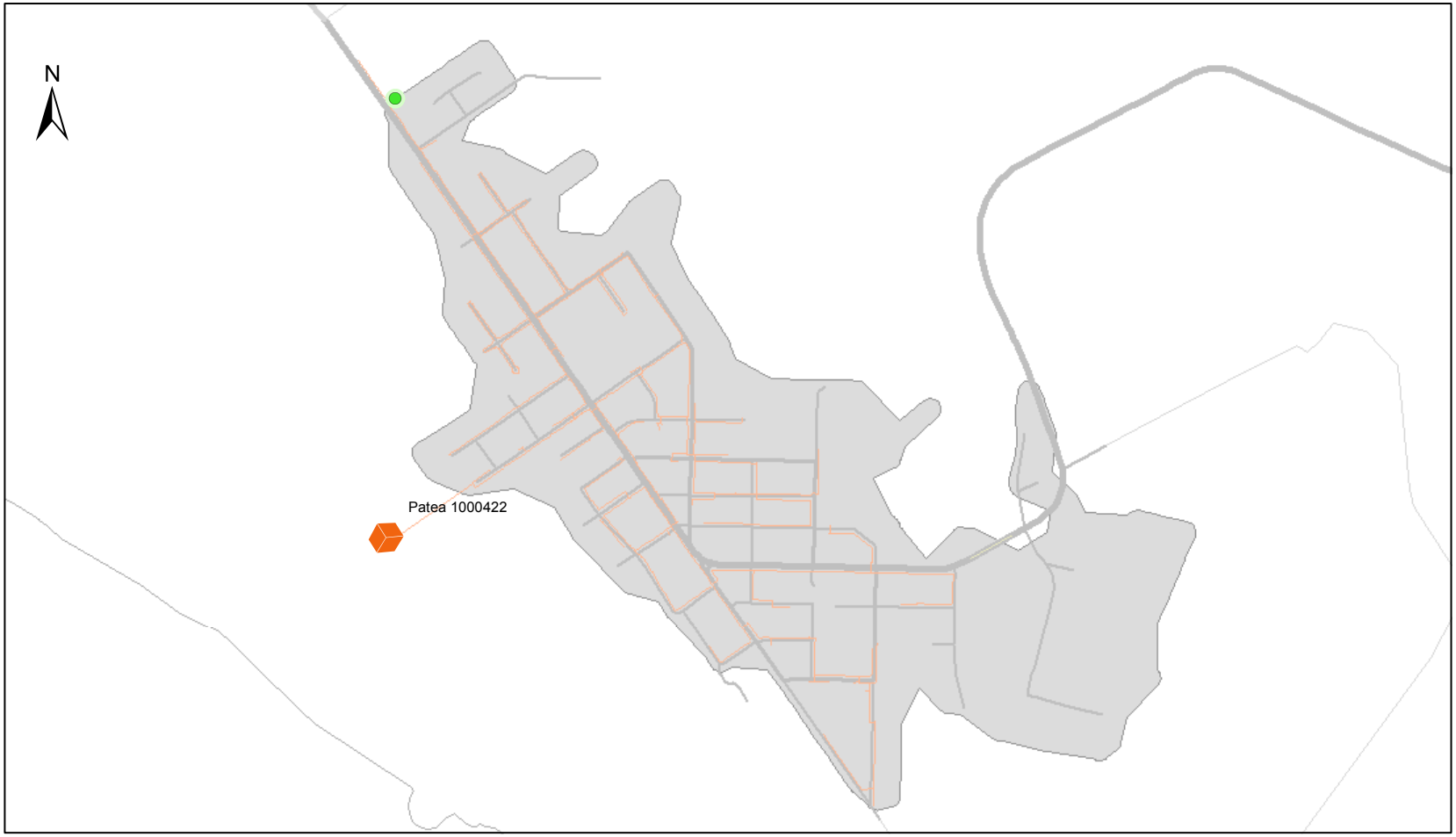


9.24 GAS GATE – PAHIATUA

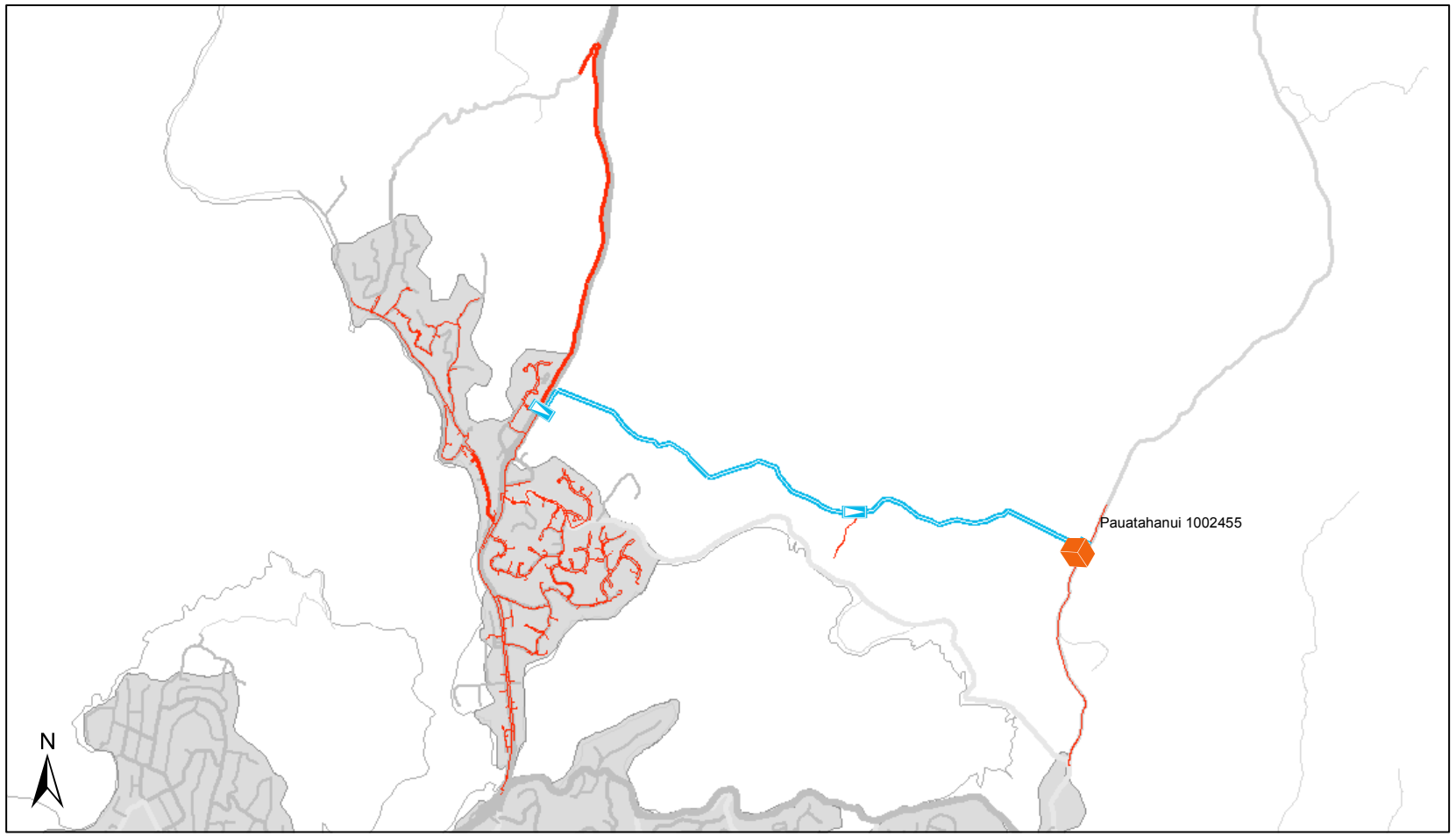
9.25 GAS GATE – PALMERSTON NORTH



9.26 GAS GATE – PATEA



9.27 GAS GATE – PAUATAHANUI NO. 1



9.28 GAS GATE – PAUATAHANUI NO. 2

Legend

- HIP 1200-2000kPa
- LIP 700-1200kPa
- HMP 420-700kPa
- MP 210-420kPa
- LMP 25-210kPa
- HLP 7-25kPa
- LP 0-7kPa
- Gas Gate
- Major Customers
- DRS

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Gas Disclosure 2015

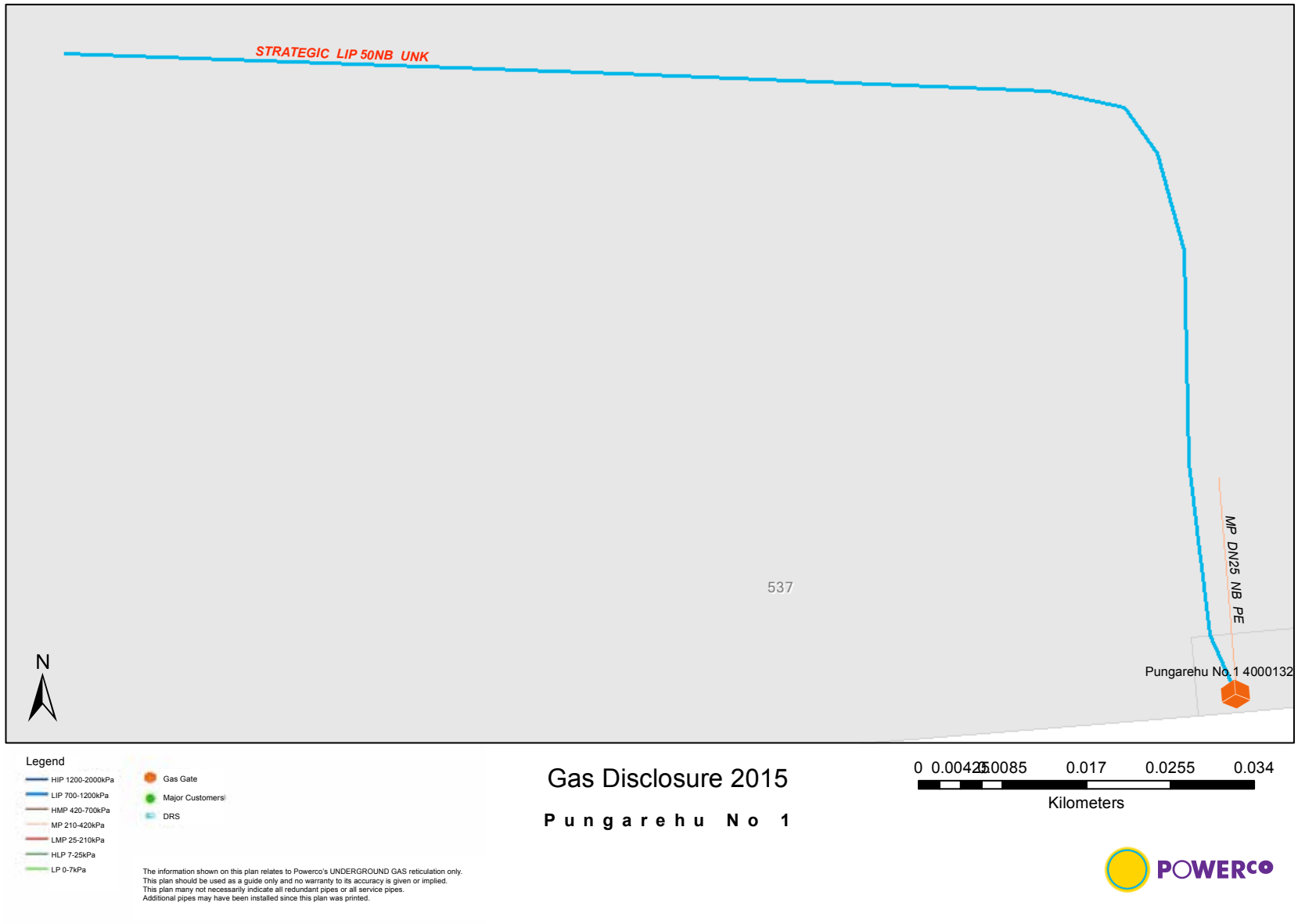
P a u a t a h a n u i N o 2

0 0.01250.025 0.05 0.075 0.1

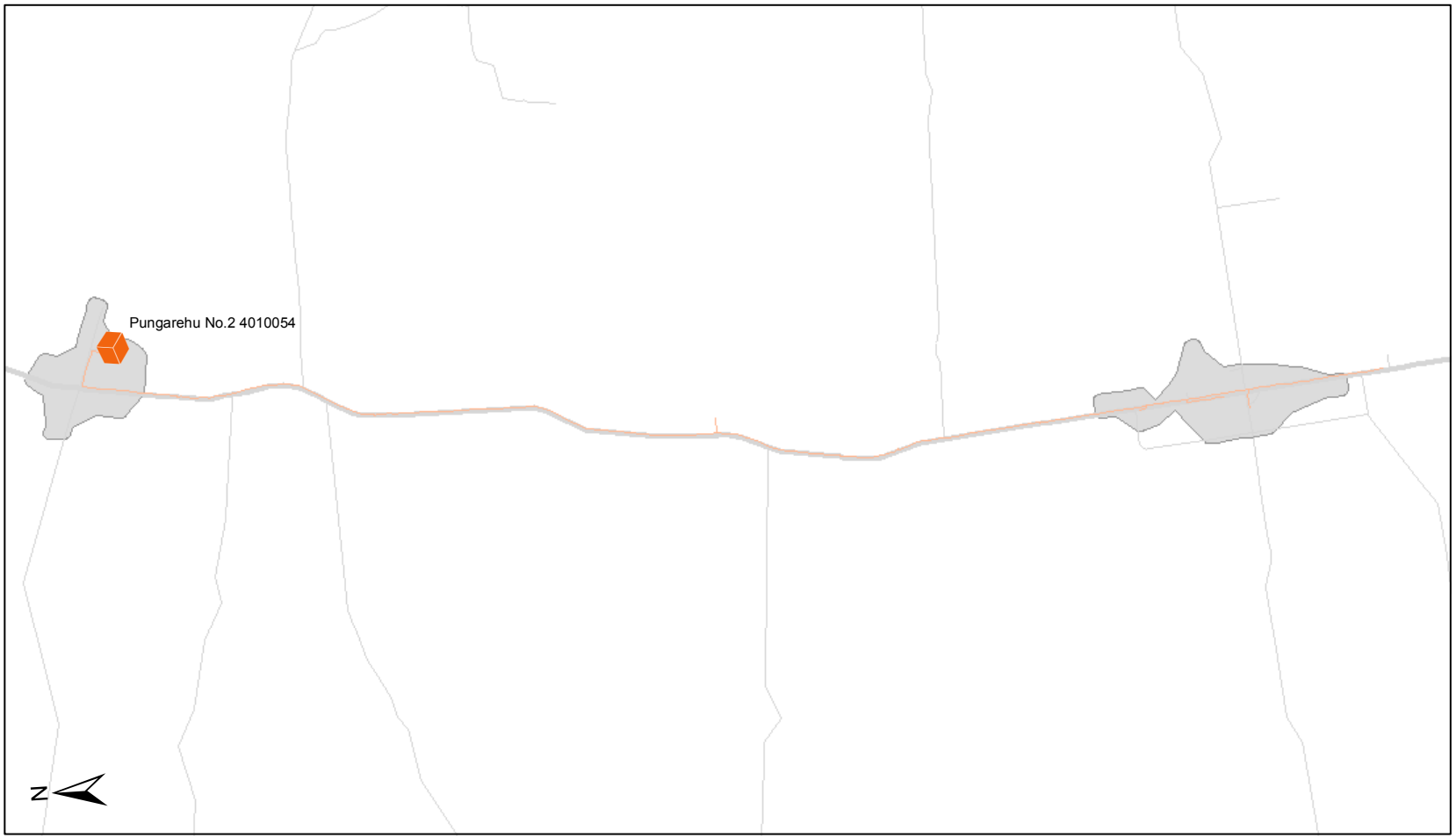
Kilometers

POWERCO

9.29 GAS GATE – PUNGAREHU NO. 1



9.30 GAS GATE – PUNGAREHU NO. 2



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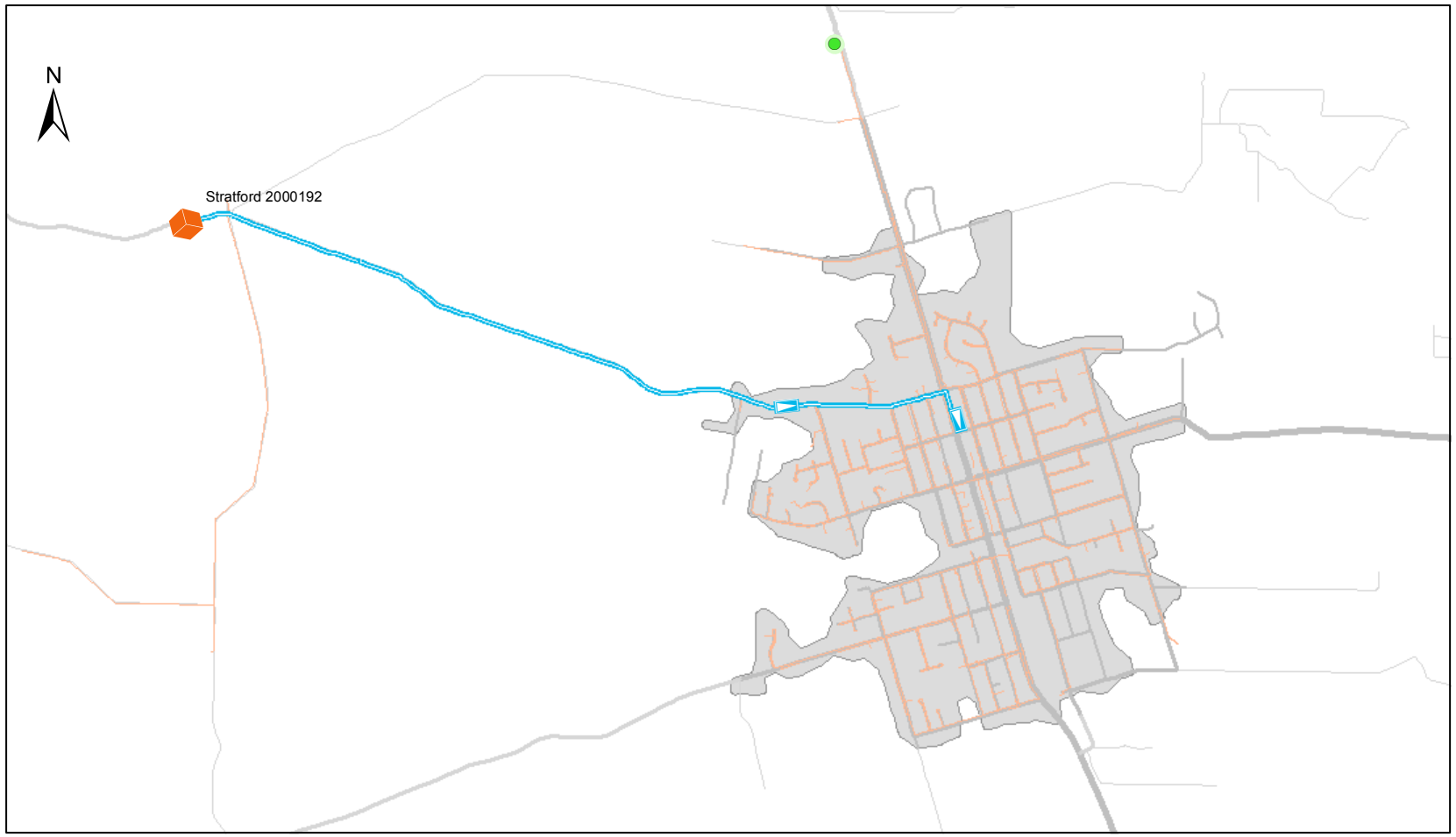
9.31 GAS GATE – STRATFORD



9.32 GAS GATE – TAKAPAU

Legend

- HIP 1200-2000kPa
- LIP 700-1200kPa
- HMP 420-700kPa
- MP 210-420kPa
- LMP 25-210kPa
- HLP 7-25kPa
- LP 0-7kPa
- Gas Gate
- Major Customers
- DRS

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Gas Disclosure 2015

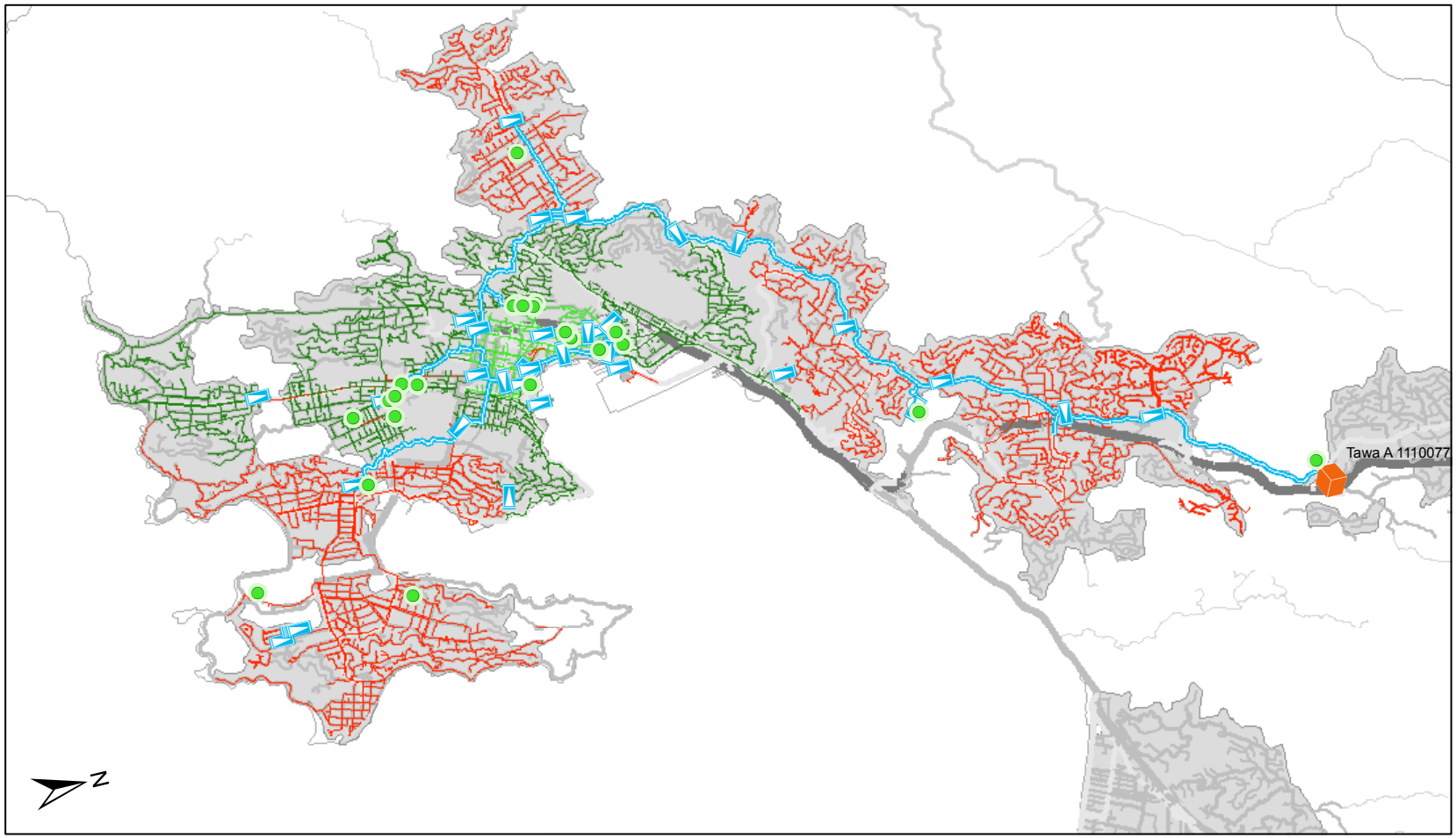
T a k a p a u

0 0.125 0.25 0.5 0.75 1

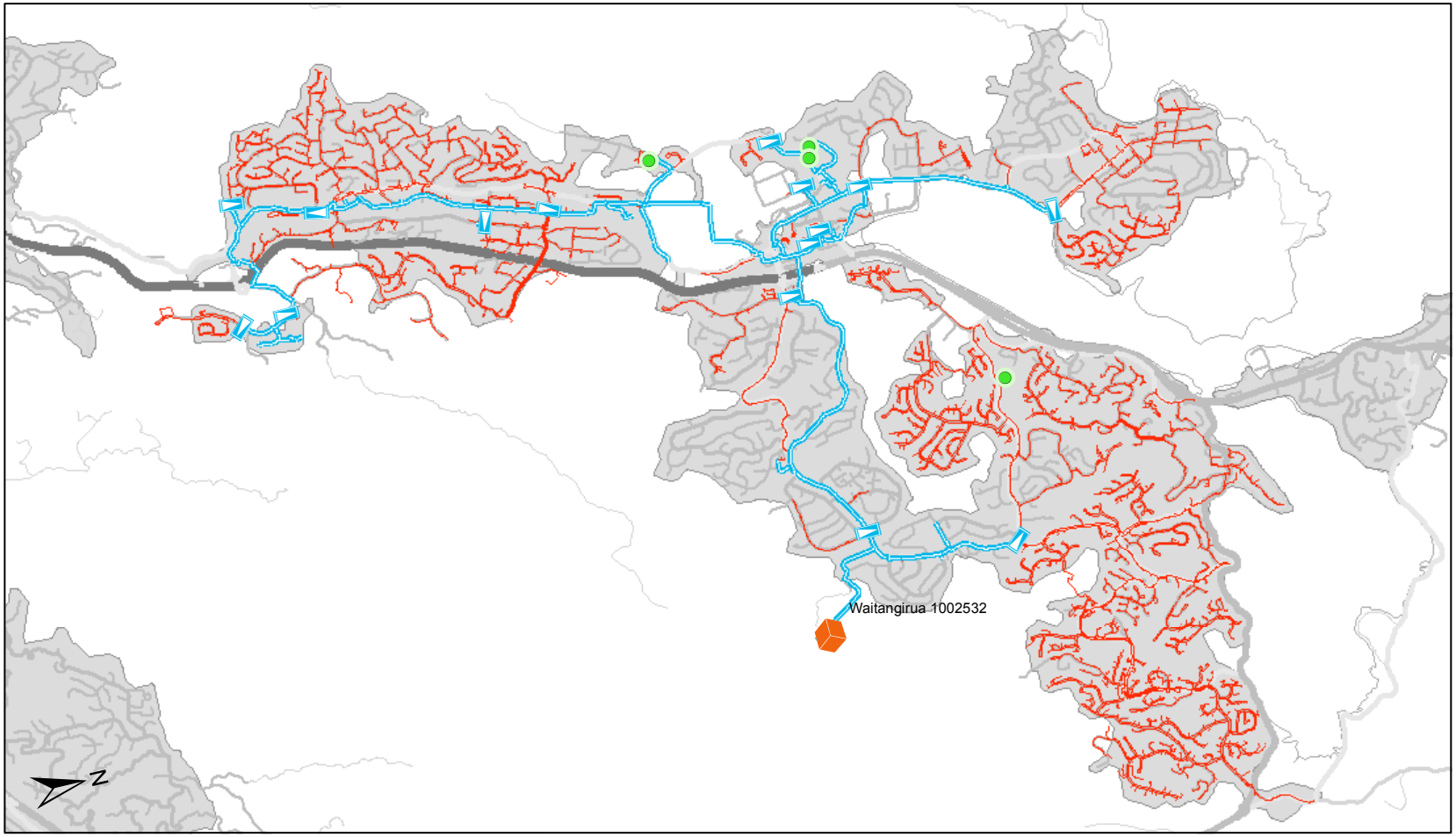
Kilometers

POWERCO

9.33 GAS GATE – TAWA A



9.34 GAS GATE – WAITANGARUA



9.35 GAS GATE – WAITARA

9.36 GAS GATE – WAVERLEY

Legend

- HIP 1200-2000kPa
- LIP 700-1200kPa
- HMP 420-700kPa
- MP 210-420kPa
- LMP 25-210kPa
- HLP 7-25kPa
- LP 0-7kPa
- Gas Gate
- Major Customers
- DRS

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Gas Disclosure 2015

W a v e r l e y

0 0.175 0.35 0.7 1.05 1.4

Kilometers

POWERCO

10. APPENDIX: **REGULATORY REQUIREMENT LOOK-UP**

This table provides a look-up reference for each of the Commerce Commission's information disclosure requirements described in the Gas Information Disclosure Determination 2012 – (consolidated in 2015).

2.6 ASSET MANAGEMENT PLANS AND FORECAST INFORMATION	AMP SECTION WHERE ADDRESSED
Disclosure relating to asset management plans and forecast information	
2.6.1 Subject to clauses 2.6.3 and 2.13, before the start of each disclosure year commencing with the disclosure year 2014, every GDB must – (1) Complete an AMP that – (a) relates to the gas distribution services supplied by the GDB; (b) meets the purposes of AMP disclosure set out in clause 2.6.2; (c) has been prepared in accordance with Attachment A to this determination; Gas Distribution Information Disclosure Determination 2012 – (consolidated in 2015) (d) contains the information set out in in the schedules described in clause 2.6.6; (e) contains the Report on Asset Management Maturity as described in Schedule 13; (2) Complete the Report on Asset Management Maturity in accordance with the requirements specified in Schedule 13; and (3) Publicly disclose the AMP.	(a) The AMP relates to gas distribution services, as stated in the second paragraph of Section 1. (b) Compliance with 2.6.2 is outlined in the box below. (c) Compliance with Attachment A is outlined in Appendix 10. (d) The tables required by clause 2.6.6 are in Appendix 2 and the MS Excel schedules have been supplied to the Commission. (e) The report required is in Appendix 2 and the MS Excel schedules have been supplied to the Commission. (2) Schedule 13 is provided in Appendix 2 and is also discussed in Section 3.4.1. (3) This Asset Management Plan and its appendices are publicly available on Powerco's website (www.powerco.co.nz), and sent to the Commission.
2.6.2 The purposes of AMP disclosure referred to in subclause 2.6.1(1)(b) are that the AMP – (1) Must provide sufficient information for in-terested persons to assess whether – (a) assets are being managed for the long term; (b) the required level of performance is being delivered; and (c) costs are efficient and performance efficiencies are being achieved; (2) Must be capable of being understood by interested persons with a reasonable un-derstanding of the management of infrastructure assets; (3) Should provide a sound basis for the ongoing assessment of asset-related risks, particularly high impact asset-related risks.	(1) & (2): Powerco recognises that AMPs are large and com-plicated documents. To assist ease of understanding we have: • Structured the AMP, as described in section 2.5; • Included our Network Asset Management Policy in Appendix 3 to reiterate our commitment to be cost efficient; and • Provided a glossary in Appendix 1 to assist understanding. (3) Risks are discussed in sections 3.2.2.2, 3.3.3 and Appendix 5.
Clauses 2.6.3 to 2.6.5 relate to AMP updates	Not relevant
2.6.6 Subject to clause 2.13.2, before the start of each disclosure year, each GDB must complete and publicly disclose each of the following reports by inserting all information relating to the gas distribution services supplied by the GDB for the disclosure years provided for in the following reports – (1) the Report on Forecast Capital Expenditure in Schedule 11a; (2) the Report on Forecast Operational Expenditure in Schedule 11b; (3) the Report on Asset Condition in Schedule 12a; (4) the Report on Forecast Utilisation in Schedule 12b; (5) the Report on Forecast Demand in Schedule 12c.	Those reports are included in Appendix 2. They are publicly available on Powerco's website (www.powerco.co.nz) as part of the Asset Management Plan, and sent to the Commission by 30 September 2015.

ATTACHMENT A: ASSET MANAGEMENT PLANS	AMP SECTION WHERE ADDRESSED
AMP Design	
1. The core elements of asset management – 1.1. A focus on measuring network performance, and managing the assets to achieve performance targets; 1.2. Monitoring and continuously improving asset management practices; 1.3. Close alignment with corporate vision and strategy; 1.4. That asset management is driven by clearly defined strategies, business objectives and service level targets; 1.5. That responsibilities and accountabilities for asset management are clearly assigned; 1.6. An emphasis on knowledge of what assets are owned and why, the location of the assets and the condition of the assets; 1.7. An emphasis on optimising asset utilisation and performance; 1.8. That a total life cycle approach should be taken to asset management; 1.9. That the use of 'non-network' solutions and demand management techniques as alternatives to asset acquisition is considered.	1.1 Section 4 outlines objectives, sections 2,3,6,7 and 8 describe the framework to manage assets to meet these targets; 1.2 Sections 2.3.6 and 3.4.1 provide comment on the AMMAT. Section 3.4 provides detail on Powerco's approach to continuous improvement. 1.3 Section 2.1, Section 4 & Section 6, and Appendix 3. 1.4 Section 2.1, Section 4 & Section 6, and Appendix 3. 1.5 Section 3.1 describes accountabilities. 1.6 Section 5.3 provides an overview of Powerco's assets. Section 5.4 and 5.5 provide details on location. Section 5.6 provides condition information for each asset class. The asset lifecycle plans in Section 7 also have a more detailed description. 1.7 Sections 4.6, 6.4, 8.1 discuss performance and Sections 4.4 and 5.5 discuss asset capacity. 1.8 This is discussed throughout sections 2, 3 and 7. Each asset lifecycle plan has a renewal strategy which considers the whole-of-life cost of each asset and therefore optimal replacement timing. 1.9 This is discussed in Section 6.2.

2.	The disclosure requirements are designed to produce AMPs that –	2.1 This is discussed throughout the AMP.
2.1	Are based on, but are not limited to, the core elements of asset management identified in clause 1;	2.2 This AMP is widely distributed to Powerco's stakeholders. Section 3.1.5 describes our Asset Management communication process.
2.2	Are clearly documented and made available to all stakeholders;	2.3 Powerco's self assessment against the AMMAT is provided in sections 2.3.7 and 3.4.1 and Appendix 2.
2.3	Contain sufficient information to allow interested persons to make an informed judgement about the extent to which the GDB's asset management processes meet best practice criteria and outcomes are consistent with outcomes produced in competitive markets;	2.4 Powerco's service objectives are discussed in Section 4.
2.4	Specifically support the achievement of disclosed service level targets;	2.5 This is discussed in sections 3.2.1, 3.3.3 and 6. Risks are presented in Appendix 5.
2.5	Emphasise knowledge of the performance and risks of assets and identify opportunities to improve performance and provide a sound basis for ongoing risk assessment;	2.6 is discussed in section 3.2.4.
2.6	Consider the mechanics of delivery including resourcing;	2.7 is discussed in section 3.1.
2.7	Consider the organisational structure and capability necessary to deliver the AMP;	2.8 is discussed in section 3.3.1.1.
2.8	Consider the organisational and contractor competencies and any training requirements;	2.9 is discussed in section 3.3.2 & 5.8.1 & 6.6 & 8.8.1.
2.9	Consider the systems, integration and information management necessary to deliver the plans;	2.10 Powerco has used terminology in line with this appendix, and also provided a glossary in Appendix 1.
2.10	To the extent practical, use unambiguous and consistent definitions of asset management processes and terminology consistent with the terms used in this attachment to enhance comparability of asset management practices over time and between GDBs; and	2.11 Section 1.2 provides an overview of the focus for continual improvement. Section 3.4.1 comments on the AMMAT and Section 8.7 details continuous improvement projects. Section 3.4.1.3 provides detail on Powerco's approach to continuous improvement.
2.11	Promote continual improvements to asset management practices. *Disclosing an AMP does not constrain an GDB from managing its assets in a way that differs from the AMP if its circumstances change af-ter preparing the plan or if the GDB adopts improved asset management practices.*	

3. 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;	Section 1 is an executive summary and provides a brief overview and the key messages and themes in the AMP.
3.2	Details of the background and objectives of the GDB's asset management and planning processes; and	The background to Powerco's asset management and planning process is provided in sections 2.3 & 3.2. This describes the context in which Powerco operates. The objectives of Powerco's asset management and planning process are provided in Section 4.
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; (b) states the corporate mission or vision as it relates to asset management; (c) identifies the documented plans produced as outputs of the annual business planning process adopted by the GDB; (d) states how the different documented plans relate to one another, with particular reference to any plans specifically dealing with asset management; and (e) includes a description of the interaction between the objectives of the AMP and other corporate goals, business planning processes, and plans The purpose statement should be consistent with the GDB's vision and mission statements, and show a clear recognition of stakeholder interest.	(a) The purpose statement is in Section 1.1 and Section 2's introduction. (b) Powerco's corporate vision, mission and values and their relationship with the AM process is discussed in section 2.1, and is part of the Network Asset Management Policy provided in Appendix 3. (c) Sections 2.3 & 8 (d) See sections 2.1, 2.3, and 6. (e) This is described in sections 2.1 – 2.3. The purpose statement in Section 2 introduction aligns with Powerco's vision and mission and includes the need of stakeholders, such as customers and owners.
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 Good asset management practice recognises the greater accuracy of short-to-medium term planning, and will allow for this in the AMP. The asset management planning information for the second 5 years of the AMP planning period need not be presented in the same detail as the first 5 years.	Powerco's AMP planning period is from 1 October 2015 – 31 September 2025, as described in sections 1.1 & 2.
3.5	The date that it was approved by the directors	The AMP was approved on the 24 September 2015.
3.6	A description of each of the legislative requirements directly affecting management of the assets, and details of: (a) how the GDB meets the requirements; and (b) the impact on asset management	(a) Sections 2.3.7, 2.3.8 and Appendix 4. (b) Section 2.3.7 and Appendix 4.
3.7	A description of stakeholder interests (owners, consumers etc.) which identifies important stakeholders and indicates: (a) how the interests of stakeholders are identified; b) what these interests are; (c) how these interests are accommodated in asset management practices; and (d) how conflicting interests are managed	An overview of Powerco's stakeholders is in 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; (b) executive – an indication of how the in-house asset management and planning organisation is structured; and (c) field operations – an overview of how field operations are managed, including a description of the extent to which field work is undertaken inhouse and the areas where outsourced contractors are used.	(a) Refer to section 3.1.1. (b) Refer to sections 3.1.2. (c) Section 3.1.3 discusses field operations in detail.
3.9	All significant assumptions (a) quantified where possible; (b) clearly identified in a manner that makes their significance understandable to interested persons, including (c) a description of changes proposed where the information is not based on the GDB's existing business; (d) the sources of uncertainty and the potential effect of the uncertainty on the prospective information; and (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 & the Report on Forecast Operational Expenditure set out in Schedule 11b.	(a) Refer to sections 6, 8 and 9.2. (b) Section 2.4 provides key assumptions in the development of the AMP. Section 9.2 describes assumptions for each expenditure category forecast. Section 7.2.1 provides planning assumptions. (c) Non-relevant (d) Section 9.2 (e) Table 9.5
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	This is discussed throughout Section 9.
3.11	An overview of asset management strategy and delivery *To support the Report on Asset Management Maturity disclosure and assist interested persons to assess the maturity of asset management strategy and delivery, the AMP should identify:* (a) how the asset management strategy is consistent with the GDB's other strategy and policies; (b) how the asset strategy takes into account the life cycle of the assets; (c) the link between the asset management strategy and the AMP; and (d) processes that ensure costs, risks and system performance will be effectively controlled when the AMP is implemented.	(a) Refer to Section 2.3 (b) Section 6. (c) Section 2.3.9 describes the relationship. (d) Section 3 describes the processes to ensure costs, risks and system performance is effectively controlled. Section 7 describes the life cycle considerations of each asset class.
3.12	An overview of systems and information management data *To support the AMMAT disclosure and assist interested persons to assess the maturity of systems and information management, the AMP should describe:* (a) the processes used to identify asset management data requirements that cover the whole of life cycle of the assets; (b) the systems used to manage asset data and where the data is used, including an overview of the systems to record asset conditions and operation capacity and to monitor the performance of assets; (c) the systems and controls to ensure the quality and accuracy of asset management information; and (d) the extent to which these systems, processes and controls are integrated.	Section 3.3.2 provides information on systems and information management data. (a) Specifically Section 3.3.2.1 discusses processes to identify data. (b) Section 5.8.1 provides details of systems and how they manage our data. (c) Refer to Section 3.3.2.2. (d) Refer to Section 3.3.2.3.
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 *Discussion of the limitations of asset management data is intended to enhance the transparency of the AMP and identify gaps in the asset management system.*	Limitations are described in Section 3.3.2.4 and Section 5.7. Initiatives are discussed in Section 8.8.1.
3.14	A description of the processes used within the GDB for: (a) managing routine asset inspections and network maintenance; (b) planning and implementing network development projects; and (c) measuring network performance.	(a) Refer Section 3.2. (b) Refer Section 3.2. (c) Refer Section 6.2.2
3.15	An overview of asset management documentation, controls and review processes *To support the Report on Asset Management Maturity disclosure and assist interested persons to assess the maturity of asset management documentation, controls and review processes, the AMP should:* *(a) identify the documentation that describes the key components of the asset management system and the links between the key components;* *(b) describe the processes developed around documentation, control and review of key components of the asset management system;* *(c) where the GDB outsources components of the asset management system, the processes and controls that the GDB uses to ensure efficient and cost effective delivery of its asset management strategy;* *(d) where the GDB outsources components of the asset management system, the systems it uses to retain core asset knowledge in-house; and* *(e) audit or review procedures undertaken in respect of the asset management system.*	(a) is discussed in Section 2.3. (b) is discussed in sections 2.3 and 3.1.5.1. (c) is discussed in Section 3.1.3. (d) is discussed in Section 3.3.1.2. (e) is discussed in sections 3.3.3 and 2.3.7.

3.16 An overview of communication and participation processes *To support the Report on Asset Management Maturity disclosure and assist interested persons to assess the maturity of asset management documentation, controls and review processes, the AMP should:* (a) communicate asset management strategies, objectives, policies and plans to stakeholders involved in the delivery of the asset management requirements, including contractors and consultants; and (b) demonstrate staff engagement in the efficient and cost effective delivery of the asset management requirements.	This is discussed in Section 3.1.5.
3.17 The AMP must present all financial values in constant price New Zealand dollars except where specified otherwise;	All figures are constant October 2015 dollars.
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.	Since 2013, Powerco has structured its AMP to be easier to follow and for an interested person to understand. This includes a flow which better covers the total life cycle approach of assets, efficient delivery of services and reaching an appropriate performance level.
4. Assets Covered	
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	A map and high-level description of sub-networks and regions are shown in sections 1.3, 5.3, 5.4 and 5.5
4.2 A description of the network configuration, including: – if sub-networks exist, the network configuration information should be disclosed for each sub-network. (a) A map or maps, with any cross-referenced information contained in an accompanying schedule, showing the physical location of: (i) All main pipes, distinguished by operating pressure; (ii) All ICPs that have a significant impact on network operations or asset management priorities, and a description of that impact; (iii) All gate stations; (iv) All pressure regulation stations; and (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) above, including: (i) a description of the parts of the network that are affected by the change; and (ii) a description of the nature of the change.	Maps displaying the physical location of all required network elements are located in Appendix 9. Network changes are described in Section 5.6

Network Assets by Category	
5. The AMP must describe the network assets by providing the following information for each asset category: 5.1 pressure; 5.2 description and quantity of assets; 5.3 age profiles; and 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 5.6 provides an overview of categories of assets, with information on age profiles, quantities and pressure. Section 7 then provides a lifecycle plans for each category of asset that discusses the condition and risk assessments.
6. The asset categories discussed in clause 5 above should include at least the following: 6.1 the categories listed in the Report on Forecast Capital Expenditure in Schedule 11a(iii); and 6.2 assets owned by the GDB but installed at gate stations owned by others.	The assets discussed in clause 5 include those specified in clause 6.1 and 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 4 details the AMP performance objectives and how they are consistent with the business strategies and asset management objectives.
8. Performance indicators for which targets have been 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; 8.2 consumer oriented indicators that preferably differentiate between different consumer types; 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 8.4 the performance indicators disclosed in Schedule 10b of the determination.	Section 4 provides the required indicators, including DPP requirements and customer-orientated indicators across our objectives. Section 4.8 provides a summary of the measures required under clauses 8.3 and 8.4.

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.	This is discussed in Section 4. Also see sections 2.2 and 3.2.1.
10.	Targets should be compared to historic values where available to provide context and scale to the reader.	Section 4 provides historical performance.
11.	Where forecast expenditure is expected to materially affect performance against a target defined in clause 7 above, the target should be consistent with the expected change in the level of performance.	Non-relevant
Network Development Planning		
12.	AMPs must provide a detailed description of network development plans, including –	Network development planning is discussed in Section 8 and provides detail on all network development plans.
12.1	A description of the planning criteria and assumptions for network development;	The criteria are discussed in sections 3.2 and specifically in sections 6.2 and 8.
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	The criteria are discussed in sections 3.2 and specifically in Section 8.
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 (b) the approach used to identify standard designs.	Refer to Section 6.4.2.
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. The criteria described should relate to the GDB's philosophy in managing planning risks.	This is discussed in sections 3.2.2 & 3.3.3 & introduction to Section 6.
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 2.3 outlines how the over-all asset management process aligns with the corporate vision and mission. Section 4 explains how the objectives align with the corporate objectives that relate to the use of reliability and security criteria and this is used in Section 7 for asset life cycle plans. The process is also described in Section 5.2.2.
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; a) explain the load forecasting methodology and indicate all the factors used in preparing the load estimates; b) provide separate forecasts to at least the 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 c) identify any network or equipment constraints that may arise due to the anticipated growth in demand during the AMP planning period. The AMP should include a description of the methodology and assumptions used to produce the utilisation and capacity forecasts and a discussion of the limitations of the forecasts, methodology and as-sumptions. The AMP should also discuss any capaci-ty limitations identified or resolved in years during which an AMP was not disclosed.	(a) The methodology is provided in Section 6.2 (b) Section 8 describes future demand by regions and projects that are impacted by this. (c) Table 8.2 in Section 8.1 shows the networks where constraints are anticipated to occur during the planning period.
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; (b) the alternative options considered for projects that are planned to start in the next five years; and (c) consideration of planned innovations that improve efficiencies within the network, such as improved utilisation, extended asset lives, and deferred investment.	Section 8 describes projects and rational for decisions by region. Section 6.4 describes how we optimise investment.
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: (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; (b) a summary description of the programmes and projects planned for the following four years (where known); and (c) an overview of the material projects being considered for the remainder of the AMP planning period. *For projects included in the AMP where decisions have been made, the reasons for choosing the selected option should be stated which should include how target levels of service will be impacted. For other projects planned to start in the next five years, alternative options should be discussed.*	Section 8 describes the development programme by region with a focus over the 5 year horizon and where possible 10 years.

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;	The drivers and key challenges are in Section 7.
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- (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; (b) any systemic problems identified with any particular asset types and the proposed actions to address these problems; and (c) budgets for maintenance activities broken down by asset category for the AMP planning period;	Powerco's maintenance strategy is discussed in Section 3.2 and forecasts in Section 9. (a) Each asset class has strategy, tasks and frequencies outlined in Section 7. (b) Refer to Section 7. (c) Breakdown of the routine and corrective maintenance and inspection budgets by asset class is in Section 7.8
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; (b) a description of innovations made that have deferred asset replacement; (c) a description of the projects currently underway or planned for the next 12 months; (d) a summary of the projects planned for the following four years (where known); and (e) an overview of other work being considered for the remainder of the AMP planning period; and	13.3: Powerco's renewal strategy is discussed in the asset life cycle plans in Section 7. Refer to Sections 6.4, 7 and 8 for further detail on projects and rational.
13.4	The asset categories discussed in clauses 13.2 and 13.3 should include at least the categories in clause 6 above.	The fleet plans in Section 7 and include this material.

Non-Network Development, Maintenance and Renewal		
14	AMPs must provide a summary description of material non-network development, maintenance and renewal plans, including-	
14.1	A description of non-network assets;	Section 5.8 describes non-network assets.
14.2	development, maintenance and renewal policies that cover them;	Sections 8.7 and 8.8 describe these.
14.3	a description of material capital expenditure projects (where known) planned for the next five years; and	Section 8.8.1 describes the proposed projects
14.4	a description of material maintenance and renewal projects (where known) planned for the next five years.	There is no major project planned in the next five years.
Risk Management		
15	AMPs must provide details of risk policies, assessment, and mitigation, including -	Section 3.3.3 provides an overview of risk management, including details on Powerco's policies and processes for assessment and mitigation.
15.1	Methods, details and conclusions of risk analysis;	Methods are discussed in section 3.3.3 and 6. The details of risks are provided in section 3.2.2 (in rela-tion to identifying activities through risk management pro-cesses) and Appendix 5. Conclusions are in section 3.3.3.4.
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;	This is discussed in section 3.3.3.
15.3	A description of the policies to mitigate or manage the risks of events identified in clause 15.2; and	This is discussed in section 3.3.3.1, emergency management proce-dures are detailed in section 3.3.3.5
15.4	Details of emergency response and contingency plans. *Asset risk management forms a component of an EDB's overall risk management plan or policy, focusing on the risks to assets and maintaining service levels. AMPs should demonstrate how the GDB identifies and assesses asset related risks and describe the main risks within the network. The focus should be on credible low-probability, high-impact risks. Risk evaluation may highlight the need for specific development projects or maintenance programmes. Where this is the case, the resulting projects or actions should be discussed, linking back to the development plan or maintenance programme.*	This is discussed in section 3.3.3.5.

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; (a) referring to the most recent disclosures made under clause 2.5.1 of this determination, discussing any significant differences and highlighting reasons for substantial variances; (b) commenting on the progress of development projects against that planned in the previous AMP and provide reasons for substantial variances along with any significant construction or other problems experienced; and (c) commenting on progress against maintenance initiatives and programmes and discuss the effec-tiveness of these programmes noted.	Section 4 discusses the performance of our objectives, and the rationale for these targets 4. Section 9 discusses our historical expenditure targets. Section 8 describes the progress of previous projects and changes that occurred where relevant. Section 7 comments on the effectiveness of our maintenance initiatives.
16.2	An evaluation and comparison of actual service level performance against targeted performance (a) in particular, comparing the actual and target service level performance for all the targets dis-cussed in the previous AMP under clause 7 and ex-plain any significant variances.	Section 4 shows the actual service levels over the previous years. Section 8.1 shows the current and forecasted performance of the networks if no projects are carried out (status quo).
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.	Refer to Section 2.3.7.
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.	Sections 2.3.7 and 8.8 describe Powerco's planned initiatives to improve AMMAT scores.
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	Sections 3.1.4 and 3.2.1 describe how Powerco ensures the AMP is realistic and objectives can be achieved.
17.2	The organisation structure and the processes for authorisation and business capabilities will support the implementation of the AMP plans.	Section 3.1 describes the processes and organisational structure Powerco uses for implementing the AMP.

11. APPENDIX: **COMPLIANCE CERTIFICATION**

CERTIFICATE FOR YEAR-BEGINNING DISCLOSURES

Pursuant to clause 2.9.1 of Section 2.9

We, John Loughlin and Murray Bain, being directors of Powerco Limited certify that, having made all reasonable enquiry, to the best of our knowledge:

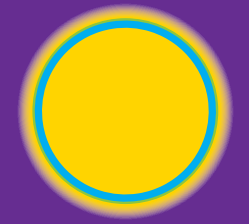
a) the following attached information of Powerco Limited prepared for the purposes of clauses 2.6.1, 2.6.6 and 2.7.2 of the Gas Distribution Information Disclosure Determination 2012 in all material respects complies with that determination.

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 Powerco Limited's corporate vision and strategy and are documented in retained records.

John Loughlin
Director
24 September 2015

Murray Bain
Director
24 September 2015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