



GAS DISTRIBUTION

Asset Management Plan 2018

Summary Document



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MESSAGE FROM THE CHIEF EXECUTIVE OFFICER



Dear Stakeholders

Welcome to First Gas Limited's gas distribution Asset Management Plan (AMP) for 2018. We are now into our third year of operation, building on the solid platform we have established since acquiring our networks. Our business remains focused on continuous improvement, as we build a greater understanding of the health of our assets and roll-out our asset management improvement programme.

Over the last year, we have again delivered a significant capital programme. We have undertaken extensive work to maintain and replace pipelines and upgraded a number of District Regulator Stations (DRS) to ensure we can continue to deliver gas in the safe and reliable manner expected by our customers. Our focus on customer growth saw 693 more customers using our network, and numerous main extensions and new subdivisions connected. It is pleasing to see that consumer demand for gas in the North Island remains strong.

In the year ahead, our programme of asset maintenance, replacement and upgrades will continue, including significant work replacing aging steel and pre-1985 polyethylene (PE) pipelines. We have also taken the opportunity to review our forecast spend for the remaining years of this Default Price-Quality Path (DPP) period. This review will smooth capital spend more evenly and provide a more balanced work programme.

You will notice important presentational changes in this 2018 AMP compared to previous editions. We have listened to your feedback and tried to produce an AMP that is more reader friendly, with a clearer line of sight to how our expenditure is allocated across the network and how it benefits our customers. We have produced this short summary AMP document, highlighting the key activities for the business, looking at both the previous year and year ahead. Supporting this summary document are a number of appendices, that provide a greater level of detail and commentary on our distribution network and the required regulatory schedules.

Our summary document includes new "dashboards" that describe asset health and criticality, and how our expenditure programmes are influencing overall asset health and managing risk. These dashboards are a work in progress, with this year's dashboard focusing on our gas distribution areas. We hope these dashboards will be a valued addition for our customers and we welcome your feedback on how we can make them of most use.

The last 12 months have seen an increased focus on addressing climate change, with the Government's announcement of the net zero target for 2050 and consideration of the Zero Carbon Bill. While the transition to a lower emissions economy will bring challenges, we applaud the Government for making climate change action a priority. We believe the best approach to achieving net zero emissions will involve the decarbonisation of multiple energy networks and that gas networks will be an important part of the solution, not the problem. We are seeing increased interest from coal users in switching to gas to reduce their carbon footprint, and we are also actively exploring ways to reduce the carbon impact of gas consumption. Gas networks provide a flexible, resilient way to transport and store energy, and we will continue our engagement with Government and stakeholders to discuss the role that gas can play in this transition.

We look forward to continuing to work with you all over the coming year.

A stylized, handwritten signature in blue ink that reads "Goodeve".

Paul Goodeve
Chief Executive Officer

GLOSSARY

TERM	DEFINITION
AMMAT	Asset Management Maturity Assessment Tool
AMP	Asset Management Plan
Asset grades	Grade 1: means end of service life, immediate intervention required Grade 2: means material deterioration but asset condition still within serviceable life parameters. Intervention likely to be required within 3 years Grade 3: means normal deterioration requiring regular monitoring Grade 4: means good or as new condition Grade unknown: means condition unknown or not yet assessed
Capex	Capital expenditure – the expenditure used to create new or upgrade physical assets in the network and non-network assets
CCC	Climate Change Commission, government body proposed to be established through the Zero Carbon Bill
COO	Chief Operating Officer
DPP	Default Price – Quality Path
DRS	District Regulating Station
FSP	Field Service Provider
FY2019	Financial year ending 30 September 2019
GDB	Gas Distribution Business
GIS	Geographical Information System
GMS	Gas Measurement System – commonly referred to as a gas meter
HSEQ	Health, Safety, Environment and Quality

TERM	DEFINITION
ICP	Installation Control Point – the connection point from a customer to the First Gas network
IMs	Input Methodologies – documents set by the Commerce Commission which promote certainty for suppliers and consumers in relation to the rules, requirements, and processes applying to the regulation under Part 4 of the Commerce Act 1986
IP	Intermediate pressure
IT	Information Technology
kPa	Kilo-Pascal, a unit of pressure
KPI	Key Performance Indicators
MP	Medium pressure
NZTA	New Zealand Transport Agency
NZUAG	New Zealand Utilities Access Group
Opex	Operational Expenditure – the ongoing costs directly associated with running the gas distribution system. This includes costs both directly related to the network (e.g. routine and corrective maintenance, service interruptions/incidents, land management) and non-network related expenditure (e.g. network and business support)
PE	Polyethylene
PJ	Petajoule (unit of energy). 10^{15} joules = 1,000 TJ
RTE	Response time to emergencies
scm/h	Standard cubic meters per hour (unit of gas flow rate)
TJ	Terajoule (unit of energy) = 10^{12} Joules

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1. INTRODUCTION

This is the 2018 Asset Management Plan (AMP) for First Gas Limited's (First Gas) gas distribution business.

First Gas owns and operates more than 4,600 kilometres of gas distribution pipelines that service approximately 63,000 consumers across the regions of Northland, Waikato, Central Plateau, Bay of Plenty, Gisborne and Kapiti. As the sole provider of gas distribution services in each of these regions, we are regulated by Part 4 of the Commerce Act 1986, and subject to both price-quality path and information disclosure requirements. Producing an AMP each year is one of these information disclosure requirements, as well as being a key activity guiding the operation of our business.

This section outlines the purpose, scope and structure of our 2018 AMP, and provides an overview of both our business and our gas distribution network. We also set out the key regulatory and environment changes that are influencing on our gas distribution business.



1.1 PURPOSE OF AMP

The purpose of our AMP is to describe the asset management processes that we use to manage our gas distribution system and its assets. The AMP focuses on how we intend to manage these assets over the next 10 years (the planning period) to both achieve our asset management objectives and meet stakeholder expectations. It also sets out sufficient information so that our customers and stakeholders can understand how we address key asset-related risks, the performance targets we set for our gas system, and how efficiencies and improvements are being achieved across the business.¹

We also take the opportunity to update our stakeholders on progress against the expectations set out in our 2017 AMP Update², and outline our key priorities for the coming year. This is an important part of our ongoing engagement with stakeholders and enables our customers to evaluate the value being delivered through our capital programme.

Throughout this AMP, we want to communicate how we will achieve the following important objectives for our gas distribution network:

- **Safety commitment:** Explain that the safety of our staff, service providers and the general public is paramount.
- **Engaged stakeholders:** Consult with our stakeholders, particularly on our planned investments, and inform them about how we intend to manage the gas distribution networks. This requires us to provide clear descriptions of our assets, key strategies and objectives.
- **Performance accountability:** Provide visibility to stakeholders on how we are performing and provide information on the performance of our system.
- **Investment planning:** Provide visibility of forecast investment programmes and upcoming medium-term construction works, with a clear rationale as to why planned investments are the best way to meet service requirements.
- **Informed staff and contractors:** Provide guidance and clarity on our asset management approach to staff and service providers to ensure a common understanding and suitable resourcing.
- **Regulatory compliance:** Ensure we meet our Information Disclosure obligations set by the Commerce Commission.

1.2 PERIOD COVERED BY THE AMP

The AMP covers a ten-year period from 1 October 2018 through to 30 September 2028 (the planning period). This aligns with our 1 October to 30 September financial and pricing year. The expenditure forecasts presented in this AMP are expressed in constant 2018 prices (unless otherwise stated).

The 2018 First Gas AMP was approved by our Board of Directors on 20 August 2018.

1.3 SCOPE OF THE AMP

The 2018 AMP sets out our planned investments in our gas distribution network during the planning period. It explains how we will develop our distribution networks, renew our assets and undertake maintenance to provide a safe, reliable and valued service to customers.

Expenditure forecasts and planned projects over the 10-year planning period are based on analysis of customer, system and asset information, and reflect a relatively high degree of accuracy (to the extent reasonably possible) in the descriptions and forecasts. Capital expenditure (Capex) and operational expenditure (Opex) forecasts are set out in the AMP and provide important inputs to our annual business plan.

The 2018 AMP complies with the requirements for a full Asset Management Plan, as specified in the Commerce Commission's Information Disclosure Determination.³ **Appendix M** provides a detailed reference table, detailing our compliance with each aspect of the information disclosure requirements.

1.4 STRUCTURE OF THE AMP

First Gas has adopted a different approach for our AMP this year, reflecting on the feedback we have received from our stakeholders and staff. We have produced our AMP in two parts:

- **AMP summary:** This standalone document provides a high-level overview of the gas distribution business, what we have achieved over the past 12 months, and the key activities in the coming year. It also provides a summary of our forecast expenditure over the next 10 years. We have designed this document for those customers and stakeholders who want a concise overview of our asset management plan for the planning period.
- **Supporting appendices:** The appendices support the information provided in the standalone summary and provide a greater level of detail and commentary on our distribution assets and our asset management practices. The appendices also include all of the regulatory schedules.

1. As specified in section 2.6.2 of the *Gas Distribution Information Disclosure Amendments Determination (No.1) 2017*, published 14 June 2017, Commerce Commission.

2. Gas distribution 2017 AMP update available here: <http://firstgas.co.nz/wp-content/uploads/FGL-Gas-Distribution-AMP-2017-Update.pdf>.

3. Gas distribution information disclosure determination 2012 (consolidated 3 April 2018), Commerce Commission.

The full structure of our 2018 AMP is set out in Figure 1 below.

Figure 1: Structure of our 2018 AMP

AMP SUMMARY DOCUMENT	
Provides an overview and summary of the activities we have undertaken and are planning to undertake for the planning period.	
STANDALONE APPENDICES IN ONE CONSOLIDATED DOCUMENT	
Appendix A	Glossary
Appendix B	Information Disclosure schedules
Appendix C	Network overview
Appendix D	Network maps
Appendix E	Asset fleets
Appendix F	System development
Appendix G	Network development programme
Appendix H	Asset Management approach
Appendix I	Load forecasts
Appendix J	Expenditure overview
Appendix K	Maintenance schedules
Appendix L	Significant projects
Appendix M	Regulatory compliance report
Appendix N	Directors certificate

First Gas owns and operates all of New Zealand's gas transmission system. Our system transports large volumes of natural gas from production stations to distribution networks and large customers across the North Island.

For information on our gas transmission business, please refer to our 2018 gas transmission AMP, which can be accessed on our website www.firstgas.co.nz.

2. OVERVIEW OF FIRST GAS

This section introduces our gas distribution business and provides an overview of how the organisation is structured. It also provides information on our gas distribution network, our approach to asset management and managing risk, and the key regulatory and environmental factors influencing our business over the past year.

2.1 CORPORATE STRUCTURE OF FIRST GAS

First Gas Limited is owned by First State Funds, part of the Commonwealth Bank of Australia's group of companies. First State Funds comprises two infrastructure funds managed by First State Investments. First State Investments (known in Australia as Colonial First State Global Asset Management) is a leading global infrastructure asset manager, overseeing approximately \$240 billion of infrastructure assets across across Australia, New Zealand and Europe.⁴

On 20 April 2016, First Gas took control of Vector Limited's gas transmission assets and gas distribution assets located outside of Auckland. In a separate transaction, First Gas took ownership of Maui Development Limited's gas transmission assets on 15 June 2016. The creation of First Gas has resulted in a company with a focus on gas-related assets. We believe that this focus is delivering three distinct advantages for gas industry participants and our customers:

- A strong commercial interest in maximising the competitiveness of gas, both now and into the future.
- An opportunity to add new capabilities to our team to drive growth in the use of the gas distribution network.
- An ability to operate the gas distribution network and manage our assets in ways that better serve the interests of our customers.

First Gas Board

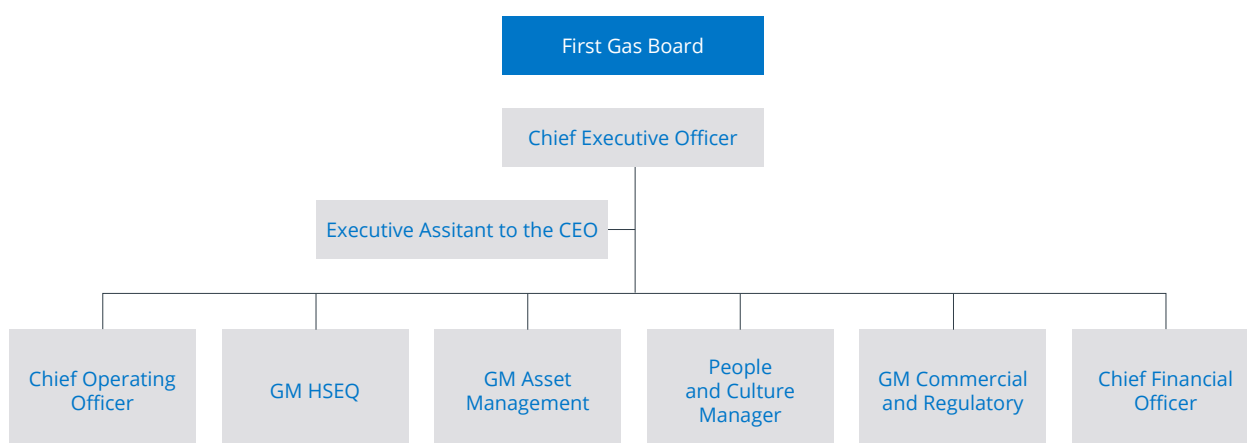
First Gas is governed by a Board of Directors, chaired by Phillippa Dunphy. The Board has a mixture of professional infrastructure experience from both sides of the Tasman. Biographies of our Board are available on our website www.firstgas.co.nz.

2.2 ORGANISATIONAL STRUCTURE

First Gas has approximately 170 staff, with most staff based in our corporate headquarters in Bell Block, New Plymouth; and small teams located in Wellington, Palmerston North and Hamilton. Our Executive team is headed by our Chief Executive Officer Paul Goodeve, with six direct reports: the Chief Operating Officer (COO), the Chief Financial Officer, the General Manager Commercial and Regulation, People and Performance Manager, General Manager Asset Management, and General Manager Health, Safety, Environment and Quality (HSEQ).⁵ Our organisational structure is illustrated in Figure 2 below.

The Executive Team was strengthened in early 2018 to add a greater strategic emphasis to the roles of Asset Management and HSEQ.

Figure 2: Organisation chart



4. More information on First State Funds is available on their website <https://www.firststateinvestments.com/global/about-us/corporate-profile.html>

5. Biographies of our Executive Team are available on our website www.firstgas.co.nz.

Delivery model for gas distribution

Field maintenance for our gas distribution business is outsourced to a field service provider (FSP), Electrix Limited. Electrix is responsible for the preventive, corrective and reactive maintenance works on the gas distribution network, and reports through to the Distribution Manager, who reports to the COO.

At the end of 2017, we re-negotiated our contract with Electrix. We have moved to a more relationship-based model, intended to strengthen this partnership and ensure we deliver an increasingly safe, reliable and cost-effective gas distribution network for our customers.

2.3 CONTINUED PUSH TO MAXIMISE COMPETITIVENESS OF GAS

Since the establishment of First Gas, we have put significant effort into promoting the benefits of natural gas to our customers and making it an attractive fuel source.

We acknowledge that for many of our customers, gas is a fuel of choice. Unlike electricity, which is universal across New Zealand households and businesses, reticulated

natural gas is often considered an option, rather than a necessity. This means we need to actively market natural gas to compete with other forms of energy available in New Zealand.

Our business' focus on gas directly influences our approach to asset management through our strong desire to investigate and convert growth opportunities across our gas distribution network. We believe that having more customers, with more diverse needs, makes our business more resilient – and ultimately leads to more competitive prices for our customers when accessing and using the distribution network.

2.4 OUR GAS DISTRIBUTION NETWORK

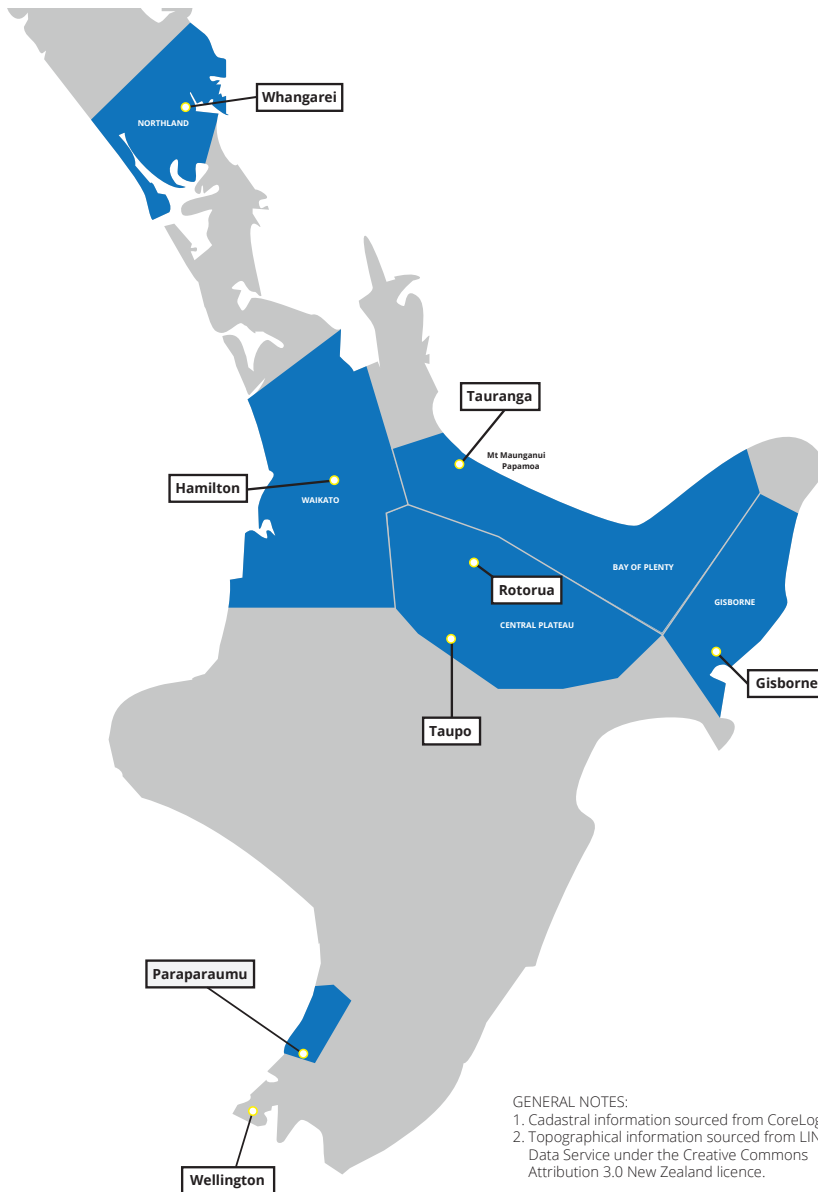
The First Gas distribution business incorporates gas distribution networks across the Northland, Waikato, the Central Plateau, Bay of Plenty, Gisborne and Kapiti regions of the North Island, as highlighted in blue in Figure 3. We provide gas distribution services to retailers who sell gas to approximately 63,000 residential, commercial and industrial customers.

The key statistics for our gas distribution networks, as at 30 June 2018, are set out in Table 1.

Table 1: Key gas distribution statistics as at 30 June 2018

STATISTIC	VALUE	CHANGE FROM 2017
Consumers connected	62,991	1.1%
System length (km)	4,673	2.1%
Consumer density (consumer/km)	13.5	-0.7%
District regulating stations (DRS)	126	+0.8%
DRS density (system km/DRS)	37.1	1.4%
DRS utilisation (consumers/DRS)	499.9	0.4%
Peak loads (scm/h)	53,460	10.9%
Gas conveyed (PJ per annum)	9.04	0.4%

Figure 3: Our gas distribution areas



Asset Categories

Gas distribution networks are made up of a number of distinct asset types. We use a number of categories to organise our asset base:

- **Distribution pipes:** This covers the network of pipes used to transport gas from the outlet valve of the gas transmission system and terminates at the inlet valve on a consumer's gas measurement system (GMS), or gas meter. Our pipes are constructed primarily from polyethylene (PE) and steel.
- **Pressure Reducing Stations:** Used to link two different pressure levels in the distribution network through pressure regulators. They are the points of input to a pressure level and are able to maintain a consistent inlet condition to that system.
- **Valves:** Used to isolate the flow of gas within the system when required or to vent gas in the event of an emergency.
- **Corrosion protection equipment:** Steel or metallic pipes and equipment installed in the gas distribution system (either above or below ground) are susceptible to corrosion. Various measures must be employed to ensure the integrity of the asset is maintained.
- **Monitoring systems:** At various strategic locations throughout our gas distribution network, monitoring systems are installed to observe and record network data.
- **Special crossings:** Special crossings are locations where a section of pipe is installed either above or below ground in order to cross over a roadway, river, railway or any area of interest with a differing risk profile from a standard installation.

Greater detail on our distribution assets is provided in [Appendix C](#).

2.5 OUR ASSET MANAGEMENT APPROACH

First Gas' approach to asset management is guided by a suite of asset management documents and practices that ensure we are meeting our performance objectives and the expectations of our stakeholders. Our approach incorporates:

- **Asset Management Framework:** This framework describes our approach to ensuring alignment between our corporate objectives and our day-to-day asset management activities. It covers our strategic plan, which guides the subsequent development of our Asset Management system, asset management policy, objectives and ultimately this AMP.
- **Asset Management System:** This system links our corporate objectives and stakeholder needs to specific asset management approaches through our Asset Management Policy. It aligns with the requirements of ISO 55001, the international standard for asset management, and seeks to reflect good practice.
- **Performance Measures:** These documents set out the overall asset management performance objectives and the key performance indicators (KPIs) that First Gas regularly monitor to ensure we provide a safe and reliable gas distribution network. Where appropriate, the targets have been developed to align with the definitions developed by the Commerce Commission for Information Disclosure.

Our AMP captures the key elements of this asset management document suite in a summarised form and explains our asset management strategy and approach to both internal and external stakeholders. Greater detail on our approach to asset management and KPIs is set out in [Appendix H](#).

Addressing risks on our distribution system

Risk management is a key component of good asset management. The consideration of risk plays a key role in our asset management decisions – from network development planning, asset replacement decisions through to operational decisions. The assessment of risk and the effectiveness of options to minimise risk is one of the main factors in our investment choices.

Key risk and review elements for First Gas include:

- **Risk Management:** Our core processes are designed to manage existing risks, and to ensure emerging risks are identified, evaluated and managed appropriately.
 - **Contingency Planning and Response:** This ensures we are prepared for and can respond quickly to a major incident that occurs or may occur on our gas distribution system.
 - **Event Management:** This provides clear definitions and guidance for all disciplines working for First Gas in order to ensure a consistent approach in recognising and reporting events.
- Given the potentially severe nature of failures in operation (particularly loss of containment), appropriate and effective risk management is integral to our day-to-day asset management approach. Our asset management information systems and our core processes are designed to manage existing risks, and to ensure emerging risks are identified, evaluated and managed appropriately. Our approach is centred around:
- **Prioritising safety:** We prioritise those risks that may impact the safety of the public, our staff and service providers.
 - **Ensuring security of supply:** Our works development and lifecycle management processes include formal evaluation of our assets against our security criteria.
 - **Addressing poor condition/non-standard equipment:** Our lifecycle management processes seek out critical items of equipment that are at a higher risk of failure or are non-standard.
 - **Formal risk review and sign-off:** Our processes include formal requirements to manage the risks identified, including mandatory treatment of high-risk items and formal management sign-off where acceptance of moderate risks is recommended.
 - **Use of structured risk management:** We use structured risk capture and management processes to ensure key residual risks are visible and signed off at an appropriate level.
- Gas industry codes require risk management to be a continuous process at all stages throughout the lifecycle of our gas distribution network. The nature of the gas distribution business is such that there are many inherent risks. In addition, safety management is one of our top operational priorities. The gas distribution business unit has a risk management system that is outlined in the *GNS0083 Safety and Operating Plan*. This document outlines the minimum requirements and ensures consistency in risk management by our business.
- Greater detail on our approach to risk management set out in [Appendix H](#).

2.6 REGULATORY ENVIRONMENT

This section provides an overview of the changes in the regulatory environment for our gas distribution business. We discuss the refinements to the Part 4 regulatory regime overseen by the Commerce Commission, and the impact this will have on our business. We also discuss the Government's increased focus on climate change.

Refinements to Part 4 regulation

There have been further refinements of the gas distribution regulatory regime over the last year. The majority of these refinements relate to information disclosure requirements and increase the level of information we will be required to disclose in future years.

In late 2017, the Commerce Commission published its decisions on outstanding matters from its 2016 review of the Input Methodologies (IMs) that applied to both gas pipelines services and electricity distribution businesses. These decisions led to subsequent changes to the information disclosure requirements, to ensure the disclosure requirements align with the IMs. These changes included:

- Changes to the cost allocation methodology for our business and increased reporting on cost allocators.
- Revised definitions for a number of financial inputs to our information disclosures and price path (cost of financing, term credit spread differential and a revised leverage rate).
- Reporting of new recoverable costs.
- New disclosure and reporting requirements for related party transactions.
- Increased audit requirements and narrative in their opinion, focusing on any key matters that have required the auditor's attention and significant judgements.⁶

These changes will take effect from 1 October 2018 for our annual information disclosure reporting and in our 2019 AMP, that will be published by 30 September 2019.

Government's climate change policy

Over the past year, we have seen a heightened focus on climate change and how New Zealand will transition to a lower emissions economy. This focus brings both challenges and opportunities for natural gas, and the role that our gas pipeline infrastructure will play in the country's transition.

The Labour-led coalition Government has set a goal of achieving net zero emissions by 2050, supported by a move towards 100% renewable electricity by 2035. To achieve these goals, the Government is introducing a Zero Carbon Bill, that will establish an independent Climate Change Commission (CCC) to set

carbon budgets, monitor process and oversee transition plans for impacted sectors. As the CCC will not be established until early 2019 when the Zero Carbon Bill is brought into legislation, the Government has appointed an Interim Climate Change Committee to progress work.

In April 2018, the Government announced that it will not issue new offshore oil and gas exploration permits. This followed a period of uncertainty on how the Government would approach the annual Block Offer process for oil and gas exploration. The policy states that existing offshore exploration and mining permits will be honoured, but that new permits will be restricted to onshore Taranaki.⁷

The increased focus on climate change and the decision on offshore exploration has created uncertainty for many parties in the gas sector. However, we firmly believe that gas has an important role to play in the shift to a lower-emissions economy, and that gas provides a low carbon solution to some of the most vexing issues of seasonal energy demands, dry year risk, and maintaining energy affordability.

First Gas' approach to addressing climate change

First Gas supports the Government's decision to make action on climate change a priority. We believe that the best approach to achieving net zero emissions will involve the decarbonisation of multiple energy networks, including gas networks. This could be achieved through the production of hydrogen, the use of biofuels, carbon sequestration, or some combination of these technologies. We consider that our gas distribution and transmission networks can be part of the solution. These networks provide a flexible, resilient way to transport energy and already connect the major industrial facilities throughout the North Island and almost 300,000 homes and businesses.

We have engaged Vivid Economics from the United Kingdom to help us understand the role that gas pipeline infrastructure could play in a low-emissions economy. Vivid Economics is looking at potential scenarios for the future use of the gas network, building on the considerable scenario work undertaken to date in New Zealand. We discussed the draft findings of this work with stakeholders during June 2018 and will release the final report later in the year. We look forward to discussing this study with our stakeholders and hope that it informs debate on the best ways to decarbonise the energy system.

We are also actively engaging with government agencies to ensure the benefits of gas pipeline infrastructure are properly incorporated into government policy development. Our June 2018 submission⁸ to the Productivity Commission, highlighted the important role that natural gas can play in our country's low carbon economy and how New Zealand should keep its options open when assessing how we will achieve the 2050 target.

6. For further information on these decisions, please refer to Amendments to information disclosure determinations for airport services, electricity distribution services, and gas pipeline services (companion paper), Commerce Commission, 21 December 2017, and the Gas distribution information disclosure determination 2012 (consolidated 3 April 2018), available here: <https://www.comcom.govt.nz/regulated-industries/gas-pipelines/gas-information-disclosure/> and the Gas distribution services input methodologies determination 2012 (consolidated 3 April 2018), available here: <https://www.comcom.govt.nz/regulated-industries/input-methodologies-2/gas-pipelines-2/>

7. New onshore Taranaki exploration permits will be issued for the next three years, but a decision on whether to continue running Block Offers will be reconsidered after that timeframe.

8. Draft report – Low-emissions economy, First Gas submission to the Productivity Commission, 8 June 2018, available here: <http://firstgas.co.nz/wp-content/uploads/First-Gas-submission-to-low-emissions-economy-inquiry.pdf>

3. YEAR IN REVIEW

This section provides an overview of First Gas' major projects and initiatives over the past year ending 30 September 2018, which was the first year of the 2017 – 2022 DPP period. We also review our forecast expenditure against the plans stated in our 2017 AMP Update and discuss the variances in activities undertaken.

3.1 EXPENDITURE SUMMARY

First Gas remains focused on building and maintaining a safe and resilient gas distribution network for our customers, whilst actively pursuing growth across our network. This focus is reflected in the work programme that was undertaken over the last 12 months. Figures 4 and 5 outline our actual expenditure for the year ended 30 September 2018⁹ and compares actual expenditures to the forecasts presented in our 2017 AMP Update.

Major variances in expenditure over the year relate to:

- Deferral of the IP20 Cambridge reinforcement project until FY2019 to align with Waipa District Council relocation project of approximately 650 metres of the IP20 network of South Waikato Expressway, to allow for future construction of a swale (\$1.7 million).
- A delay in the work programme to replace pre-1985 pipelines, as a strategy review is currently underway that will determine priority areas to address first (\$2 million).
- Rescheduling the execution of the Hamilton DRS 100 upgrade to limit the impact on the customers in the area, to predominantly FY2019 (\$0.5 million).

The variance in Opex over the past year reflects the one off efficiency gains we have achieved by optimising our business systems and processes, including efficiencies achieved through our updated contract with Electrix.

Figure 4: Total Capex in FY2018 versus forecast Capex in 2017 AMP Update

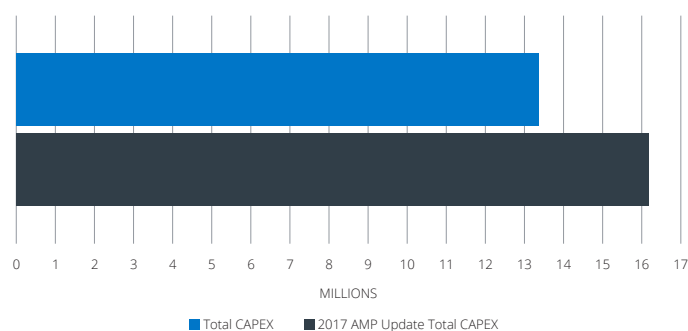
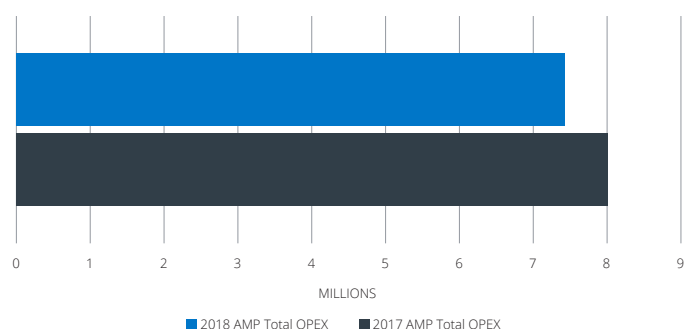


Figure 5: Total Opex in FY2018 versus forecast Opex in 2017 AMP Update



9. All data from 1 July 2018 to 30 September 2018 has been forecasted, in order to provide a complete 12 months of data.

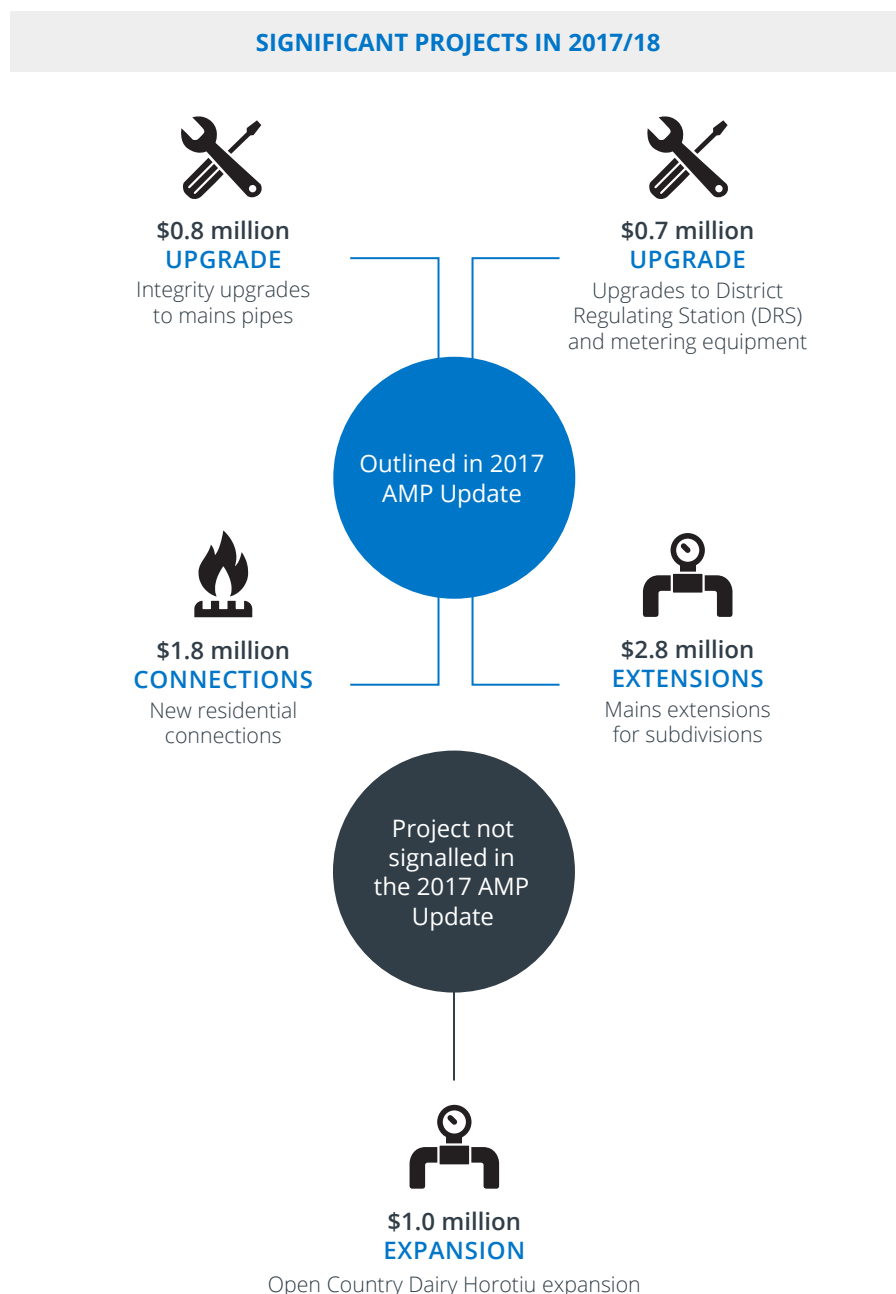
3.2 SIGNIFICANT ACTIVITIES UNDERTAKEN IN FY2018

The last year has been another busy year for First Gas, as we embedded our new business processes, and continued to deliver on the significant capital works programme for this DPP period (1 October 2017 – 30 September 2022). Figure 6 outlines the most significant projects that were delivered over the last 12 months.

Most of these projects were identified in our 2017 AMP Update, with the scope and justification provided for each project (with supporting information in the 2016 full AMP). However, one additional project was added to First Gas' work plan during the year – the upgrade of the Horotui delivery point. This additional project was initiated following a new customer connection request.

We discuss these projects on the next page, as well as the significant work we have undertaken through our asset management improvement programme.

Figure 6: Significant projects completed in 2017/2018



Integrity upgrades for main pipelines



First Gas has a number of programmes underway to maintain our existing distribution pipelines. Over the last year, the major projects addressed were:

- **Pukete Bridge pipeline replacement:** This project involves replacing an aging pipeline that passes through ducting on a foot bridge in Hamilton. Detailed design has been completed with execution planned for FY2019.
- **Mossop Road pre-1985 pipe replacement:** As outlined in prior AMPs, pre-1985 pipe is a known issue, due to the polymer that was used in the PE pipe manufacturing. Pipeline sections that have been squeezed off in the past are prone to cracking. This project in Mossop Road (a section of the main street (SH1) of Tokoroa) involves replacing this pre-1985 pipeline with a more robust pipeline.

When we schedule work programmes, we try to look for efficiencies where possible, and will carry out multiple activities within a distribution area, to limit the disruption to our customers and the local community.

Upgrades to district regulating stations and metering equipment



First Gas carries out a number of DRS upgrades each year to replace equipment that is not meeting our performance standards, or where the assets are now obsolete. Upgrades to DRS and metering equipment enable us to ensure adequate supply of pressure across our distribution networks. Over the last 12 months, we have carried out upgrades on the following assets:

- **DRS 213 Morrinsville:** Installed a new DRS in Allen Street, with a concrete kiosk and decommissioned the existing DRS 80213.
- **DRS 145 Hamilton:** An upgrade was required and completed for this DRS, as it was not code compliant, its relief valves were inadequate, and it had insufficient capacity to supply its proposed load.

▼ *This picture shows a polyethylene butt fusion piece of equipment commonly used for joining sections of PE pipe together.*



- **DRS 221 Putaruru:** Installed a new DRS in the existing enclosure in Cambridge Street.
- **DRS 095 Putaruru:** The replacement of obsolete regulators was completed during in August 2018.

First Gas had planned to upgrade the DRS 100 Hamilton in the last 12 months, but this work has now been rescheduled to FY2019. Due to the location of this DRS, we have been asked to conduct the work during the school holidays to limit the impact on the local area.

For further information DRS in our distribution system, please refer to [Appendix E](#).

Mains extensions for subdivisions and customer connections



A large component (approximately 60%) of our annual Capex is allocated to system growth and connecting new customers to our network. New connections usually involve scoping and pricing the work to be completed, engaging with the retailer and metering company, seeking the appropriate approvals from the local council, and undertaking the physical work on site. New connections are either drilled or thrust underground, or open trenches are used, then the service is installed inside of a larger pipe acting as a conduit.

Over the last 12 months, we have:

- Carried out work to connect 1,250 new customers; with a majority being residential homes. We also connected several businesses and commercial operations ranging from cafes and laundromats through to large industrial users.
- Completed work in various locations to extend our existing networks to enable future customer connections. The most significant areas of work have been in South Hamilton, Rototuna, Rotokauri and Tauranga.

The level of connections undertaken over the past 12 months was consistent with the high level of new connections achieved during FY2017.

▼ *The picture shows the construction of a new district regulator station*



OCD Horotiu dairy expansion



First Gas has extended a section of the Horotiu Intermediate Pressure (IP20, 1,000 – 2,000kPa) distribution network to support a new customer load in the region.

In April 2017, we received a new customer connection request for a new gas supply to Open Country Dairy in Horotiu. Open Country Dairy have built a new milk powder processing plant and required gas supply to the new plant by May 2018. This new customer load was not known at the time of drafting the 2017 AMP Update.

Asset Management improvement programme

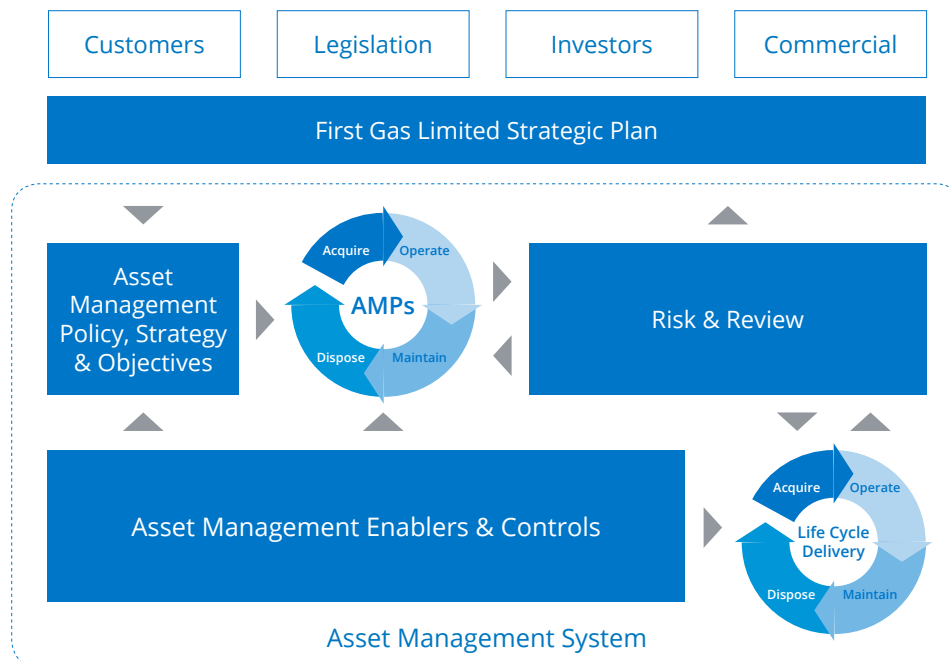
Over the last year, a number of activities have been initiated to improve our asset management practices and ensure we continue to meet our asset management objectives. This improvement programme is aligned with our increased strategic focus on asset management and included work on the following areas:

- **Review of the Asset Management framework and system:** We have reviewed and updated the core elements of the First Gas framework to reflect improved asset management

maturity and ensure a clear “line of sight” from the business’ strategic plan and goals down to the individual day to day activities. This is illustrated in Figure 7 below.

- **Updated processes for planning and scheduling:** We have reviewed and updated the short-term planning and scheduling processes and procedures for our projects. We have also aligned these new processes with the implementation of *Akwire*, a planning and scheduling tool that simplifies and enhances existing functionality of our systems (*Maximo*, our enterprise asset management system).
- **Review of cost governance:** We have reviewed, developed and deployed more robust workflows for management of Capex work programmes, starting from the initiation phase right through to the hand over to project delivery. We have aligned these new processes with the implementation of *Project Server*, a flexible on-premises solution to help quickly start projects, prioritise project portfolio investments and manage projects.
- **Maintenance optimisation:** We have reviewed maintenance plans and developed maintenance strategies based on eliminating waste and the use of technology to collect and collate information.

Figure 7: Overview of asset management framework



3.3 PERFORMANCE OF THE DISTRIBUTION NETWORK

A key premise for the AMP is that existing reliability, safety and supply quality levels will be maintained and improved. We have set targets to help drive performance improvements and measure our progress in delivering reliable, safe and high-quality service (these targets are detailed in [Appendix H](#)).

The following table shows that we have seen improvement or maintained 100% compliance across a number of areas (shown in green). We have also seen performance fall in some areas (shown in red).

Additional information regarding our KPI's and targets is contained in [Appendix H](#).

Table 2: KPIs for gas distribution network

KEY PERFORMANCE INDICATORS	2017	TREND	2018 TARGET
Safety: Lost time injuries	0	▶	0
Response time to emergencies (within one hour)	94.3%	▲	80%
Response time to emergencies (within three hours)	100%	▶	100%
Customer complaints	0.00005	▼	0.0005
Publicly reported gas escapes	39	▼	53
Third party damage	50	▼	67
Asset Management Maturity Assessment	2.7	▲	3.0
System Average Interruption Duration Index (SAIDI)	1,874	▲	1,300
Customer Average Interruption Duration Index (CAIDI)	197	▲	152
Poor pressure due to network causes	8	▲	3
Number of non-compliant odour tests	3	▶	3

4. YEAR AHEAD

This section sets out the areas of focus for First Gas over the year commencing 1 October 2018, the second year of the 2017 – 2022 DPP period. We will continue to implement growth projects and new customer connections, as well as focusing on replacing the remaining pre-1985 PE pipeline in our system.

4.1 SIGNIFICANT ACTIVITIES FOR FY2019

Figure 8 sets out the major activities we plan to undertake throughout FY2019.

The location of these significant projects is shown in Figure 9 on the next page, and we outline each of these projects below. These projects represent approximately 95% of the overall Capex programme for our gas distribution business for the coming year. Greater detail on all significant projects can be found in [Appendix L](#).

We also provide details on the next steps for our asset management improvement programme.

Figure 8: Significant projects for 2018/2019

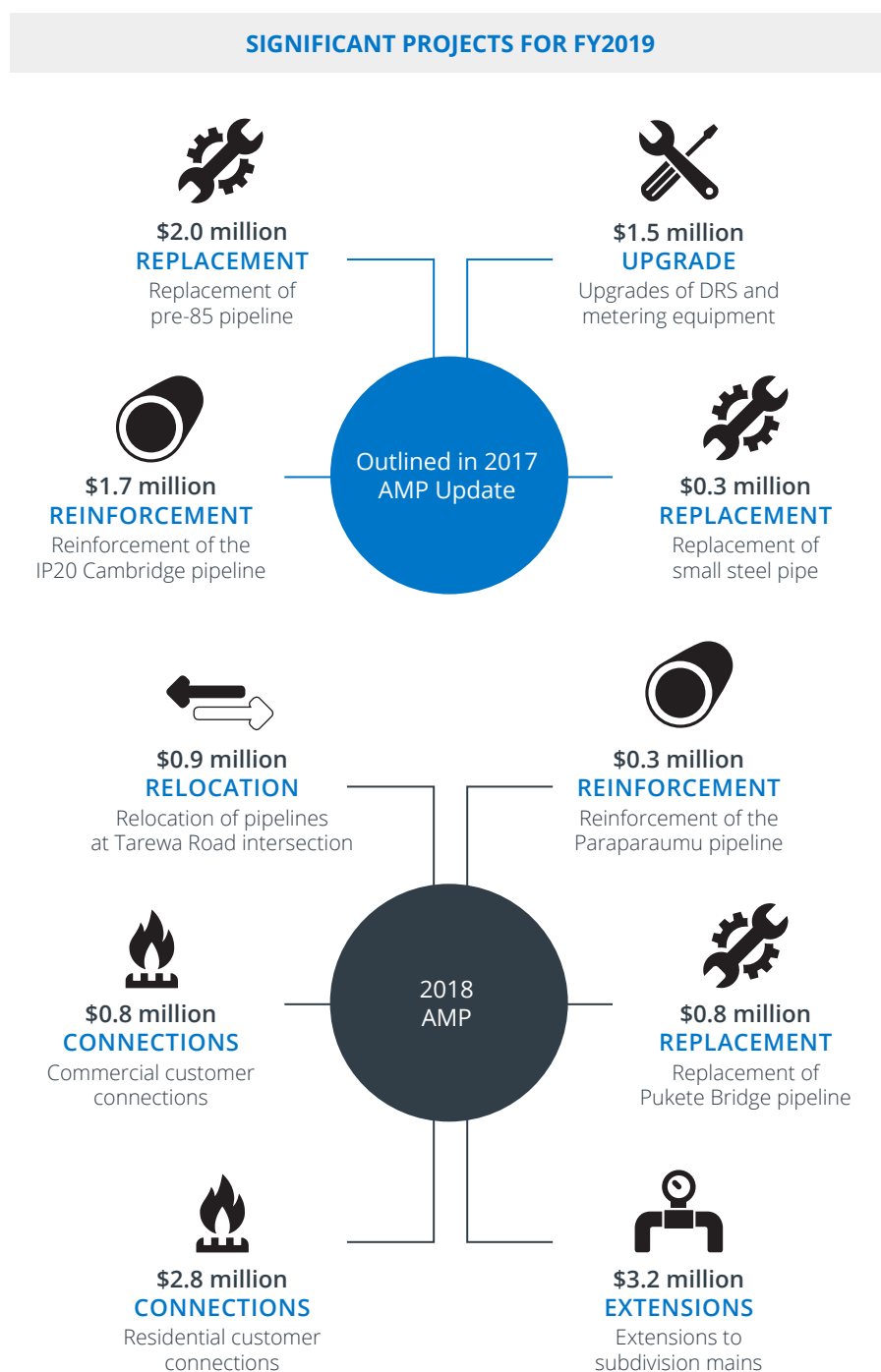
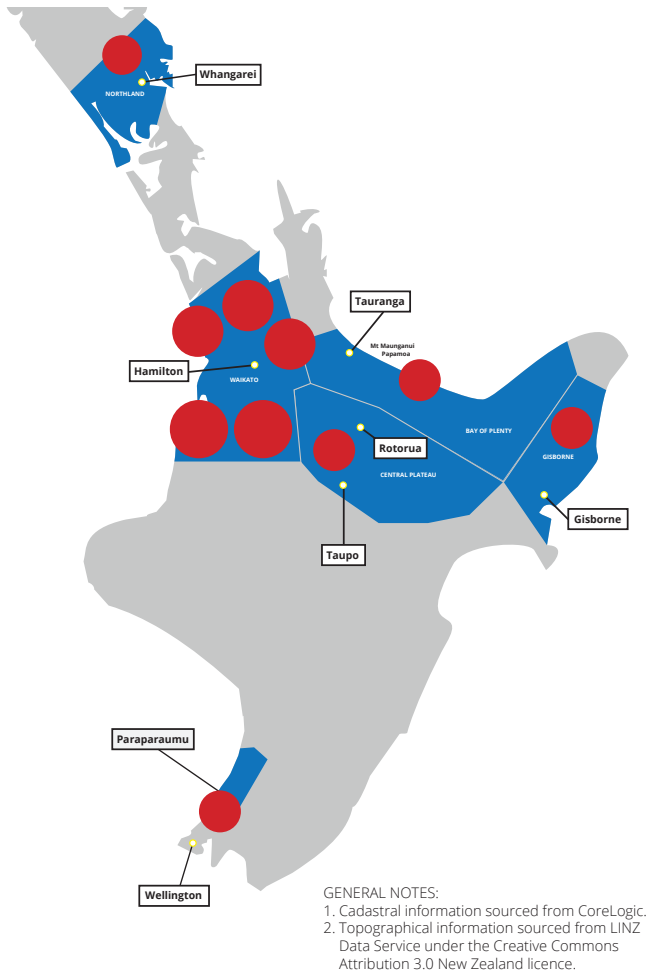


Figure 9: Location of significant projects for 2018/19



Replacement of pre-1985 pipeline



Our programme of work to replace pre-1985 pipeline will continue over the next 12 months. We currently have a study into pre-1985 pipeline strategy underway, that will identify and prioritise the assets requiring replacement during the coming year.

This programme has been prioritised based on asset condition information gathered by First Gas and summarised in schedule 12a (see [Appendix B](#)). Data shows that 14.55% of the total length of the medium pressure pipeline (approximately 418 kilometers of pre-1985 main pipes) have grade 3 rating.

Upgrades of DRS and metering equipment



As outlined in section four above, we have a significant programme work underway to upgrade our DRS and metering equipment across our distribution network. Over the next 12 months, we plan to undertake the following projects:

- **DRS 100 Hamilton replacement:** The design work on this project has been completed, and the work has been scheduled to limit the impact on customers in the area.
- **DRS 101 Hamilton:** Two options are being considered for the project. One option involves the replacement of DRS101 in situ. However, as this DRS is on a recreation reserve, time will be required to resolve the access agreement. The second option involves relocating the DRS101 on Dey Street to a position between DRS 101 and 103. DRS103 has to be relocated to suit planned council roadworks.
- **DRS 247 Waitoa:** The site of this DRS is subject to flooding, and the current DRS is located below ground. Our engineers are currently reviewing possible options for bringing this DRS above ground.
- **DRS 8002 Rotorua:** This DRS is not code compliant. To ensure compliance, we are implementing a solution that involves supplying and installing an underground DRS, together with inlet and outlet isolation valves. We are waiting for the new DRS unit to be delivered before the project can proceed.
- **DRS 241 Whangarei:** This regulator is obsolete and does not meet First Gas' standards. The solution is to link the MP4 network supplied by DRS241 with another network and decommission the DRS241.

This programme has been prioritised based on asset condition information gathered by First Gas and summarised in schedule 12a (see [Appendix B](#)). Data shows that 4.9% of the total number of intermediate pressure DRSs (approximately 5-6 DRSs) have grade 2 rating.

Replacement of small steel pipelines



We have a programme of work underway to replace selected steel pipelines within the distribution system. Steel is an older technology and it is very expensive to make connections to and maintain. First Gas intends to replace the steel pipe with PE pipes in locations where there is a high risk of delays in isolating the system for emergency situations, and the number of service connections that will be affected by the outage.

We are planning to replace steel distribution pipelines in the following locations:

- Fernleigh Road (Chartwell) where we will be replacing approximately 500 metres of pipeline.
- Corrin Road (Melville) where we will be replacing approximately 500 metres of pipeline.

This programme has been prioritised based on asset condition information gathered by First Gas and summarised in schedule 12a (see [Appendix B](#)). Data shows that 100% of the total length of the medium pressure steel service pipeline (approximately 14 kilometres) has a grade 2 rating.



Reinforcement of the IP20 Cambridge network



Reinforcement work is required on the Cambridge IP20 network as its current capacity (1,305 scm/h), will not meet the forecast increase in residential users and upcoming commercial requests discussed with developers.

To ensure we can meet future demand in this area, we will construct a new IP20 steel pipeline from the south of the Waikato Expressway to Taylor Street, near DRS245 (approximately 1,430 metres in length). This work will enable up to 1,660 scm/h of capacity into the Cambridge network.

Relocation of pipelines at the Tarewa Road intersection



First Gas will be relocating and reconstructing a section of the IP10 50mm carbon steel and 50mm MP4 PE network by the SH1/Tarewa Road intersection in Whangarei, to accommodate a roading upgrade project undertaken by the New Zealand Transport Agency (NZTA). The gas distribution network will be moved to a designated corridor provided by NZTA and a common services trench is also proposed.

Reinforcement of the Paraparaumu pipeline



The Paraparaumu network will be reinforced to support increased growth. First Gas intends to install 1900 metres of MP pipeline from the proposed MP7/MP4 DRS along Ratanui Road to Mazengarb Road.

- ▶ The picture shows a planned hydrotest of the distribution system to confirm the allowed operating pressure.
- ▶ Typical PE mains pipe installation



Replacement of the Pukete Bridge pipeline



First Gas will replace the distribution pipeline across Pukete Bridge in Hamilton in the coming year. This pipeline has extensive corrosion damage and represents both a public safety and supply risk to the network.

First Gas intends to connect the existing pipeline at both ends of the bridge to a carbon steel pipeline that is also on the bridge but does not have gas flowing through it. This solution will effectively bypass the corroded pipe and require the recommissioning of the carbon steel pipeline. This work will be undertaken around December 2018 – January 2019, when the conditions are suitable for work. The old pipeline will be left in place, with all gas removed. This solution will eliminate the risk.

A summary of the work programmes where we have identified assets as being grade 1 (meaning end of service life, immediate intervention required) include:

- **Special Crossings Intermediate Pressure** (8.7% classified as grade 1): This programme covers pipe that has extensive corrosion damage and represents both public safety and supply risk to the network. A programme is in place to replace 7.3% of these assets over the next 5 years.
- **Cathodic Protection (CP) systems** (2.90% classified as grade 1 plus 5.90% classified as grade 2): A programme to either upgrade or replace 8.40% of the CP systems is in place to improve performance and asset condition grading.

Further detail on the condition, risks and issues, and planned activities can be found in Appendix E Asset Fleets.

New customer connections



A large component (45%) of next year's Capex spend will continue to be allocated to connecting new customers and subdivision mains extensions. We are planning to connect 1,500 new customers in FY2019. Our work on extending our existing network and/or constructing new networks to enable future connections will be determined by a scoping study.

There are a number of valuable large projects on the radar, with the two most likely being:

- A 7 kilometre pipeline to Waiuku (\$4.0 million total cost with \$2.4 million from our transmission business and \$1.6 million Distribution).
- The supply of the Waharoa Dairy Factory (\$21 million in total with \$14 million from our transmission and \$7 million from distribution).

During FY2019, we will also be focusing on reducing the customer disconnection rate from our network, in order to increase the net ICP gain per annum. This will help offset the reduction in target connections we have set for our business.

Asset condition (Schedule 12A)

Schedule 12a (report on asset condition) which is included in Appendix B, provides an overview of the asset condition using the grading classifications prescribed by the Commerce Commission.¹⁰ Our asset management strategies and expenditure are targeted to addressing instances where the condition rating is falling below the required standard. Assessing asset condition is a dynamic process and gradings will change as the assets age or as specific issues are identified.

Asset Management improvement programme

Our Asset Management Maturity Assessment Tool (AMMAT)¹¹ gap analysis and other external and internal reviews demonstrate that while First Gas has improved in a number of areas since 2016, we still have opportunities for improvement. Our asset management improvement programme going forward includes a number of initiatives aimed at achieving these improvements and optimising the long-term performance of our assets. These initiatives include:

- **Maturing our risk management system and asset health:** As part of our drive to improve the way we use and communicate asset health; First Gas is developing a risk management system that evaluates and compares the different risks that the business is exposed to and translates them into a single risk profile that will provide an overall asset health index.

The asset health index and the asset criticality (an indication of the importance of the asset) are used to provide a line of sight to expenditure profiles. In other words, expenditure is linked to our assessment of asset condition, and we target spend to the areas where we believe it is needed to reduce risk and maintain asset reliability. This will allow First Gas to describe how the annual Capex and Opex programmes are influencing the overall asset health to control risk, and we can describe to customers the potential for these risks to impact overall gas supply.

We have developed the framework to calculate the overall asset index by area, which we will review before rolling out to specific distribution networks. When we are confident that the overall asset health index is a true representation of asset health, we will look at providing a dynamic dashboard that will ensure we are focusing on continuous improvement and are investing our expenditure in the right areas.

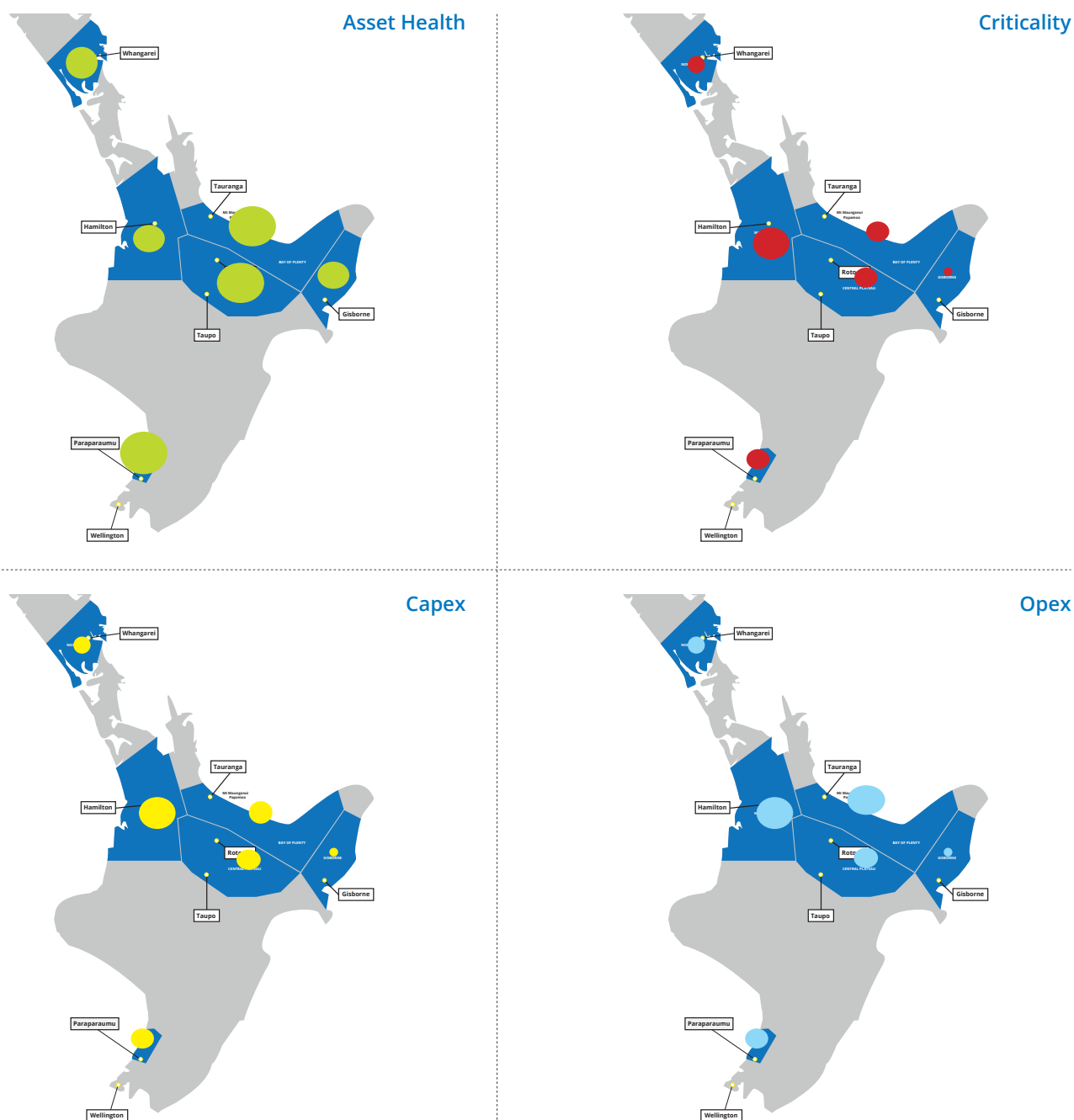
10. When First Gas assesses asset condition we consider a number of factors. This includes, but is not limited to, criticality, risk and our condition monitoring strategy for that asset or fleet. This information informs our replacement and refurbishment programmes. This means there is not an exact relationship between our view of asset condition and the Commerce Commission's grading categories which results in some variations between grading and replacement strategies.

11. See Appendix H for further detail.

- **Line of sight:** Reviewing our asset health and criticality information alongside our planned expenditure enables the business to make informed decisions about where expenditure will add the most value to the company. Opex on the asset will be driven by asset criticality –

the more critical the asset, the more emphasis will be placed on completing the maintenance activities prescribed. Capex is driven by asset health, ensuring that expenditure is targeted to the right asset to maintain performance levels.

Figure 10: Area dashboard 9



GENERAL NOTES:

1. Cadastral information sourced from CoreLogic.
2. Topographical information sourced from LINZ Data Service under the Creative Commons Attribution 3.0 New Zealand licence.

– **Embedding and evolving the Asset Management system:**

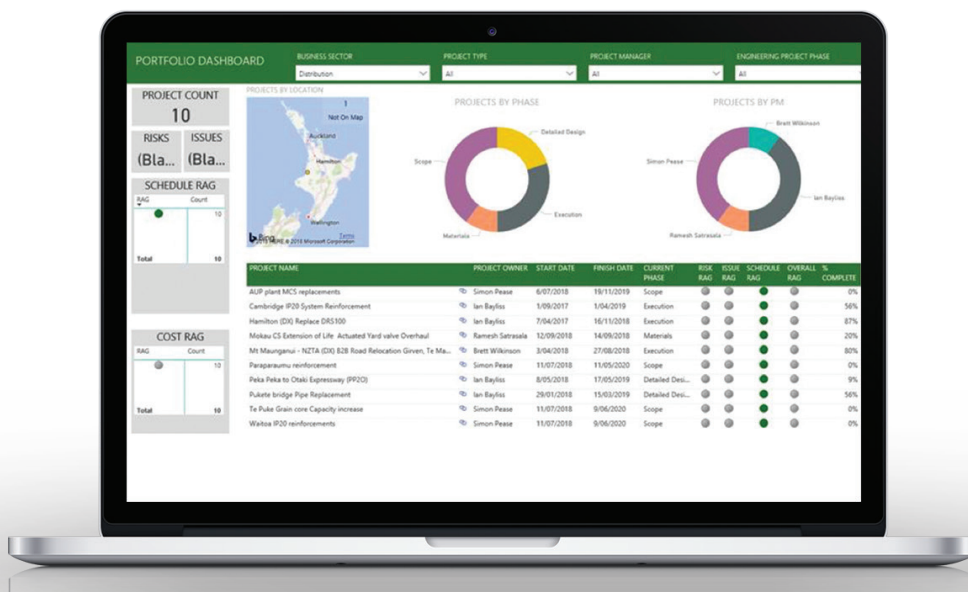
We intend to embed and further develop our overall asset management framework, asset management system elements, and ensure our documentation more closely aligns with ISO 55000 (International standard for Asset Management). Key elements of this system include:

- Asset Management plans
- Capital expenditure
- Maintenance optimisation
- Asset risk
- Planning and scheduling
- Project management

– **Optimising project management reporting:**

We are implementing a new suite of software systems to improve our project management reporting, control and monitoring. This will provide greater visibility over current projects, greater cost control and improved monitoring with near time information. An example of the portfolio summary being developed under project management is provided in Figure 11.

Figure 11: Project Server dashboard



5. EXPENDITURE FORECASTS

As First Gas is improving on our asset management approaches and systems, we are gaining a greater understanding of our risk profile and where we need to allocate our funding. Over the last 12 months, we have also had a critical review of our expenditure and delivery forecasts of our capital works plan. Subsequently, we have made some adjustments to our planned expenditure profiles to create a more stable expenditure profile and allow for better resource planning over the remainder of this DPP period.

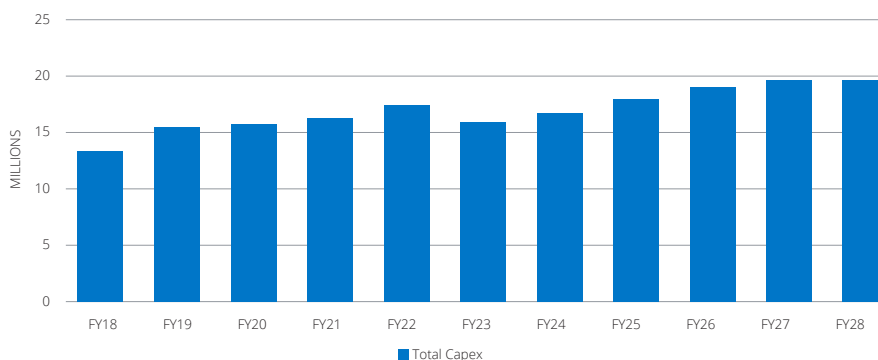
5.1 CAPEX FORECAST

Our forecast Capex spend over the next ten years is set out in Figure 12.

Within the current DPP period, the variance and lift in the Capex profile (relative to the 2017 AMP Update) relates to:

- An increase in capital spend for consumer connections, and adjustments to forecast costs to reflect the true cost of connection activity going forward.
- Rebalancing of the work programme to replace pre-1985 pipeline.

Figure 12: Total Capex forecast for the planning period (all figures in FY2018 prices)

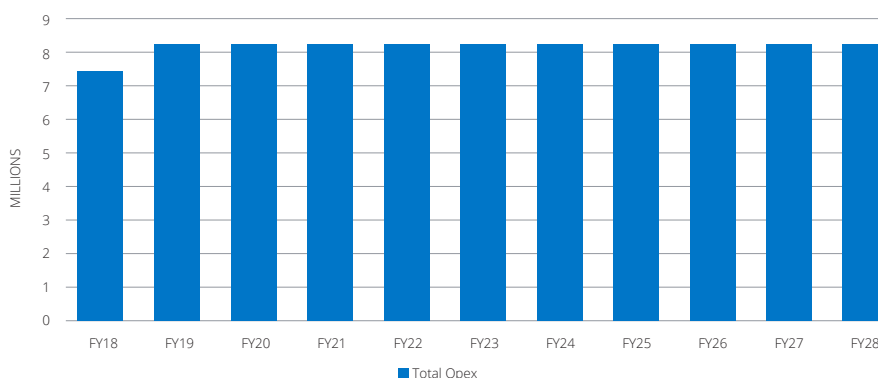


5.2 OPEX FORECAST

The forecast Opex over the planning period is set out in Figure 13. There is no significant change in ongoing Opex from that set out in 2017 AMP Update.

The reduction in OPEX for FY2018 has been the result of one-off savings and efficiency improvements in the business. For FY2019, we will be undertaking a review of the Opex activities and looking for opportunities for additional savings.

Figure 13: Total Opex forecast for the planning period (all figures in FY2018 prices)



6. STAKEHOLDER ENGAGEMENT

Regular engagement with our customers is key to our business, ensuring we can meet the needs of our residential, business and industrial customers, and promote growth in the use of natural gas across our network. During the last year, we have undertaken considerable work to establish better dialogue with our customers and the key players in the gas industry, who help us deliver gas to our customers.

In May 2018, we ran our annual gas retailers' workshop in Auckland. The focus of this year's workshop was seeking feedback on our proposed pricing, distribution pricing methodology and capital contributions for the FY2019 year. We also took the opportunity to discuss process issues the retailers and First Gas currently encounter, and the improvements we have underway to provide customers with a much smoother connection process.

First Gas has stepped up our interaction with building companies, developers and gas-fitters. We have restructured our Commercial Distribution team to have a dedicated Relationship Manager. This role will be the direct contact point for key stakeholders and work closely with those parties who influence customers to use gas in their homes and businesses. To build stronger relationships and also enable better sharing of knowledge, we have joined Master Builders, Master Plumbers and the Tauranga Development Advisory Group.

We have attended a number of home and trade shows to raise awareness of First Gas, and the benefits of connecting to natural gas. During the last year, we also attended the Master Building trade and industry forum, Home Shows in both Hamilton and Tauranga, and Field Days in Hamilton.

We have begun engagement with the New Zealand Utilities Access Group (NZUAG), a joint consultative group of road and rail owners/managers and utility companies. NZUAG is currently undertaking a review of its *National Code of Practice for Utility Operators' Access to Transport Corridors*.¹² This Code provides a provides a nationally consistent and cooperative framework to manage transport corridors, while also providing for the access rights of utility operators such as First Gas to build and maintain our assets. We consider that the national Code is a key planning document and believe a number of improvements could be made to streamline processes going forward. We intend to work more actively with the NZUAG in the coming year, to ensure improvements can be achieved and we can support growth on our distribution networks.

Our planned survey of gas distribution customers has been rescheduled to now be completed in FY2019. We are interested in understanding our customers recent interactions with

First Gas, such as requesting a new connection or billing queries. Having a research and clear understanding of what our customers value will help us improve our process and marketing going forward.

We are committed to meeting our customers' needs which was illustrated with our project to provide a gas supply to a commercial and industrial park in the Waipa District.

We welcome continued discussions with our stakeholders on the role of gas within New Zealand and the positive role it can play over coming years.

"Titanium Park Development Limited, a commercial and industrial business park in the Waipa District of Waikato region, came to a commercial agreement with First Gas in February 2017 to deliver reticulated gas to the Western Precinct on the back of a development land sale to Visy Packaging for their 36,000m² factory.

The First Gas team subsequently provided a swift delivery and met all their installation timeframes in what was a challenging project that involved the design, approvals, installation and commissioning of some 11 kilometres of new pipeline through multiple District Council roading networks and alongside the NZTA state highway. The First Gas works (design through to commissioning) were completed within 6 months from execution of the agreement. A good outcome.

Having gas supplied on time has been a critical element to enable the successful transaction with Visy and the future development of the Titanium Park Western Precinct."



12. For more information on the Code review, visit the NZUAG website here: <http://nzuag.org.nz/code-review/>

Managing Conflicting Interest

In the operation of any large organisation with numerous stakeholders and diverse interests, situations will inevitably arise where not all interests can be accommodated, or where conflicting interests exist. For example, different customers may place greater or lesser emphasis on price or quality.

From our perspective, situations of conflicting interests are best managed by:

- Clearly identifying and analysing stakeholder conflicts (existing or potential).
- Having a clear set of fundamental principles that help to guide a resolution. We are legally bound to make decisions that are consistent with the distribution operating codes (which include obligations relating to confidentiality) and we need to comply with the Gas Act 1992 and other relevant legislation.
- Seeking solutions that are consistent with the principles found in the codes and in relevant legislation or regulation.
- Communicating effectively with stakeholders so that all parties know where they stand.

In all instances of conflicting interests, we will strive to engage with stakeholders in a transparent manner to explain our decisions.

