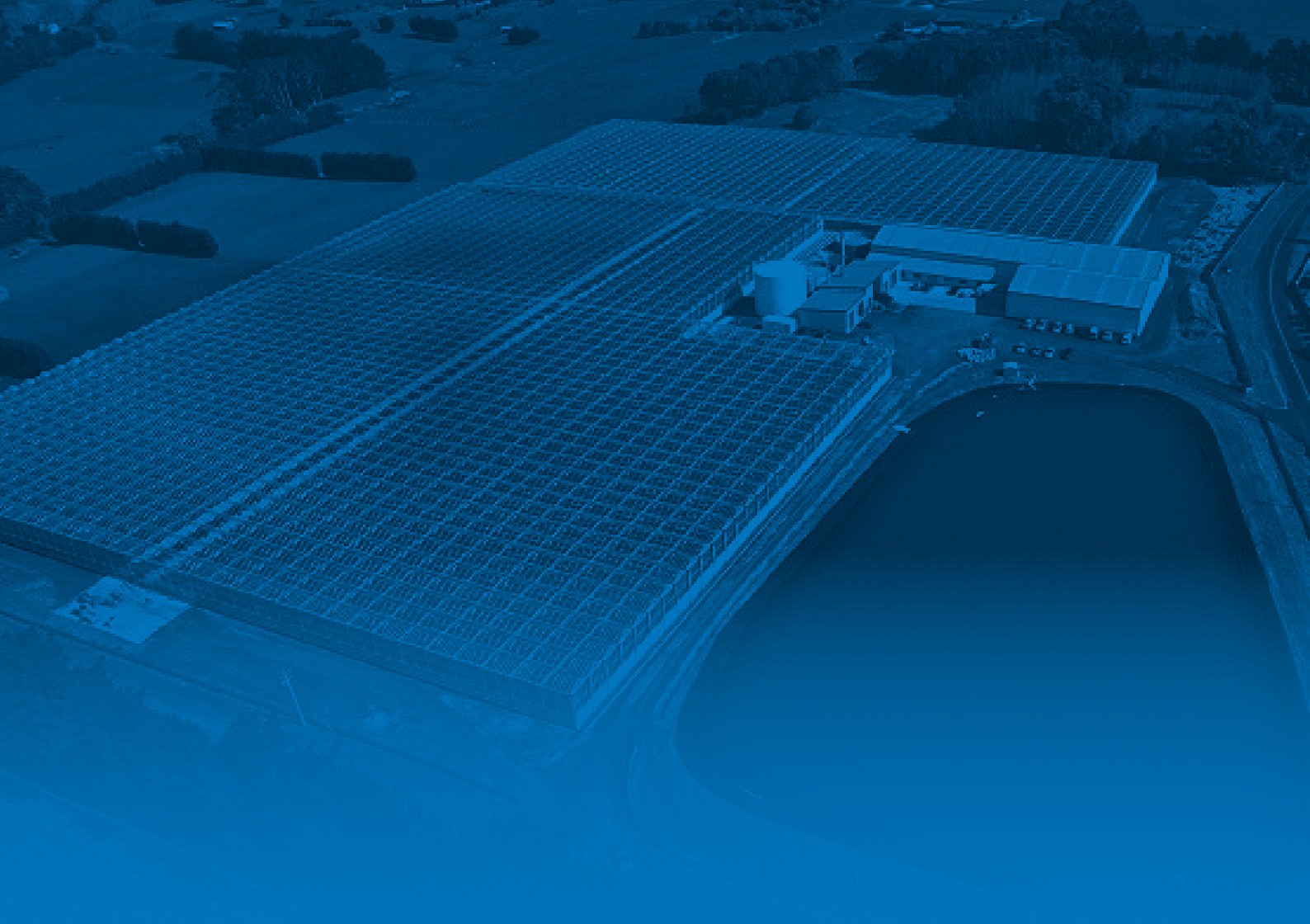

Firstgas

GAS DISTRIBUTION BUSINESS

Asset Management Plan Update

Year commencing 1 October 2019

First Gas Limited
September 2019

MESSAGE FROM THE CHIEF EXECUTIVE OFFICER

Dear Stakeholders

Welcome to First Gas Limited's gas distribution Asset Management Plan (AMP) Update for 2019. Our business remains focused on promoting the benefits of natural gas to our customers and ensuring that it is an attractive fuel source. Over the last 12 months, we have continued our focus on continuous improvement across the business and are now making great progress on our asset management improvement programme.

Over the last year, we have again delivered a significant capital programme that was aligned with what we forecast in our 2018 AMP. We are continuing our programme of replacing the pre-1985 polyethylene (PE) pipelines across our network and have reinforced the pipeline servicing the growing area of Cambridge. We have also continued to focus our capital expenditure spend on mains extension to growing subdivisions and connecting residential customers.

A key achievement for the team over the last year has been the expansion of our network to serve the Gourmet Waiuku business, south-west of Auckland. The completion of this 8.5-kilometre pipeline project will link Waiuku to the main gas transmission pipeline at Glenbrook and will initially power Gourmet Waiuku's capsicum growing operation. The provision of natural gas will allow this business to heat their glasshouse more cleanly and efficiently and move away from the use of coal.

In the coming year, our programme of asset maintenance, replacement and upgrades will continue, including further work replacing pre-1985 PE pipelines. A substantial proportion of our expenditure will continue to be focused on system growth and customers connections, alongside a number of pipeline relocations to meet stakeholders needs.

Following the launch of the new look 2018 AMPs, we have continued to develop the "dashboards" that describe asset health and criticality on our networks and show how our expenditure programmes are influencing overall asset health and managing risk.

The Commerce Commission is currently undertaking a review of gas pipeline businesses' practices around risk management and asset criticality. First Gas intends to use the findings of this review to improve our AMP dashboards and how we communicate our overall asset management approach. The findings of this review and our subsequent changes will be included within our 2020 full AMP.

Finally, the past year has seen a continued heightened effort on addressing climate change, with the Government progressing work to support the goal of net zero emissions by 2050. At the time of writing, the Climate Change Response (Zero Carbon) Amendment Bill was before Parliament, a new National Energy Development Centre has been announced for New Plymouth, and discussion is increasing on the role hydrogen can play within New Zealand.

First Gas supports the Government's desire to transition to a low carbon future and believes that gas can help that happen. Gas networks provide a flexible and resilient way to transport and store energy. In addition, the Vivid Economics report we commissioned with Powerco, highlighted that natural gas and gas infrastructure have high option value to address hard-to-treat sectors such as process heat. We will continue to proactively engage with Government and stakeholders to promote the important role that gas can play in this transition.

We look forward to continuing to work with you all.

Paul Goodeve
Chief Executive Officer

GLOSSARY

TERM	DEFINITION
AMMAT	Asset Management Maturity Assessment Tool. Results of the AMMAT are published in a full AMP. Any material changes to the asset management maturity rating results between AMPs are published in the AMP update
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 three 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 Climate Change Response (Zero Carbon) Amendment Bill currently before the Select Committee and expected to come into force in late 2019
COO	Chief Operating Officer
Data accuracy	Grade 1: means that good quality data is not available for any of the assets in the category and estimates are likely to contain significant error Grade 2: means that good quality data is available for some assets but not for others and the data provided includes estimates of uncounted assets within the category Grade 3: means that data is available for all assets but includes a level of estimation where there is understood to be some poor quality data for some of the assets within the category Grade 4: means that good quality data is available for all so the assets in the category
DPP	Default Price – Quality Path
DRS	District Regulating Station
FSP	Field Service Provider
FY2019	Financial year ending 30 September 2019

TERM	DEFINITION
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
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
NB	Nominal Bore of the pipe
NEDC	National Energy Development Centre
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
RCMI	Routine and Corrective Maintenance and Inspection
RTE	Response time to emergencies
scm/h	Standard cubic meters per hour (unit of gas flow rate)

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1. INTRODUCTION

This is the 2019 Asset Management Plan (AMP) Update for First Gas Limited's (First Gas) gas distribution business.

First Gas owns and operates more than 4,700 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 or AMP Update 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 2019 AMP Update, 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 our gas distribution business.

1.1 PURPOSE OF THE AMP UPDATE

This AMP Update focuses on the material changes from the 2018 AMP that influence our planned expenditure and the growth of our gas distribution business over the coming years. We also see this AMP Update as an important planning tool for our operational (Opex) and capital expenditure (Capex) over the next ten years. While priorities may change over this planning period, we consider it essential that we clearly outline our plans for the distribution network, while maintaining flexibility to adapt and respond to customer requests as the year progresses.

In addition, we are using this opportunity to update all our stakeholders and customers on our progress against the plans stated in the 2018 AMP, and to outline our focus areas for the year ahead. We see the release of this document as one part of our ongoing engagement with our customers, and it provides an important way for our customers to evaluate the value being delivered by our capital programme.

Alignment with regulatory requirements

Our AMP Update aligns with regulatory requirements, as it:

1. Relates to the gas distribution services supplied by the GDB.
2. Identifies any material changes to the network development plans disclosed in the last AMP under clause 12 of Attachment A or in the last AMP update disclosed under this clause.
3. Identifies any material changes to the lifecycle asset management (maintenance and renewal) plans disclosed in the last AMP pursuant to clause 13 of Attachment A or in the last AMP update disclosed under this clause.
4. Provides the reasons for any material changes to the previous disclosures in the Report on Forecast Capital Expenditure set out in Schedule 11a and Report on Forecast Operational Expenditure set out in Schedule 11b.
5. Identifies any changes to the asset management practice of the GDB that would affect a Schedule 13 Report on Asset Management Maturity disclosure.
6. Contains the information set out in the schedules described in clause 2.6.6 (Schedules 11a, 11b, 12a, 12b, and 12c).[1]

For a complete understanding of the basis for our asset management decisions over the planning period, we recommend that this AMP Update is read in conjunction with our 2018 AMP summary document and appendices which is available on our website here.

Objectives for our gas distribution network

Throughout this AMP Update, we describe 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. As set out in clause 2.6.5 of the *Gas Distribution Information Disclosure Determination 2012*, consolidating all amendments as of 3 April 2018, Commerce Commission

1.2 PERIOD COVERED BY THE AMP

The AMP Update covers the ten-year period from 1 October 2019 through to 30 September 2029 (the planning period). This aligns with our 1 October to 30 September financial and pricing year. The expenditure forecasts presented in this AMP Update are expressed in constant 2019 prices (unless otherwise stated).

The 2019 First Gas AMP Update was approved by our Board of Directors on 14 August 2019.

1.3 STRUCTURE OF THE AMP

The structure of the AMP Update is based on the full AMP summary and is a standalone document that provides a high-level overview of the material changes from the 2018 AMP. It outlines 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 ten 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.

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.**

The First Gas Group also owns energy infrastructure assets across New Zealand through our affiliate Gas Services NZ Limited (GSNZ), a separate business with common shareholders that owns the Ahuroa gas storage facility and Rockgas. These businesses were both added to the First Gas Group in the past 12 months, providing valuable perspectives from different parts of the gas supply chain.

The Ahuroa gas storage facility (trading as Flex Gas Limited) can store up to 18PJ of gas, with expansion planned over the next two years to increase the injection and withdrawal rates of the facility. Visit the website **www.flexgas.co.nz.**

Rockgas has over 80 years' experience providing LPG to 100,000 customers throughout New Zealand.
Visit the website **www.rockgas.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[2] 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 Australia, New Zealand and Europe.

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; and
- 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

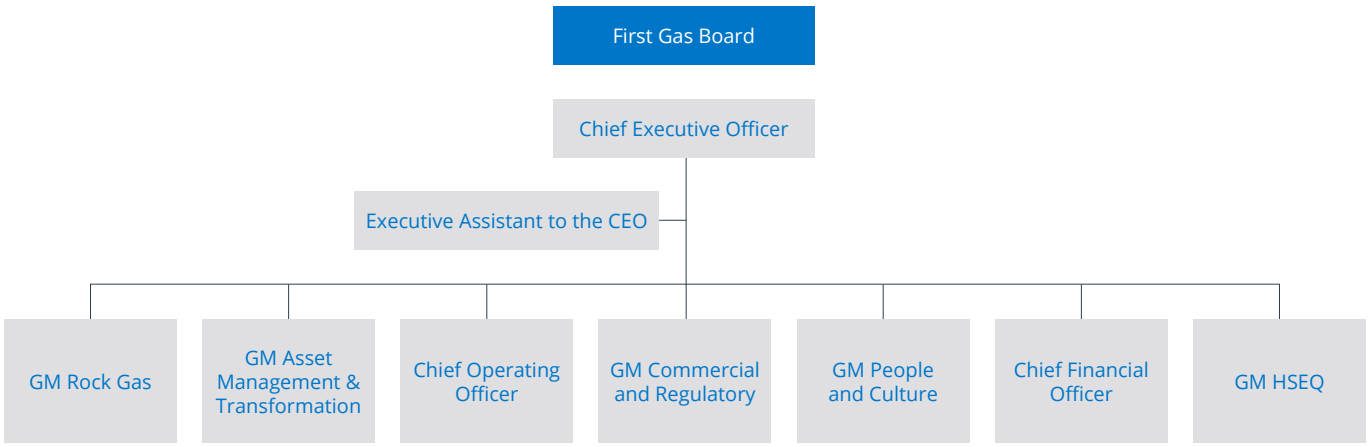
First Gas is governed by a Board of Directors, chaired by Philippa Dunphy. The Board has a mixture of professional infrastructure experience from both sides of the Tasman. Biographies of our Board are available on our website **www.firstgas.co.nz**.

2.2 ORGANISATIONAL STRUCTURE

First Gas employs approximately 180 staff in our corporate centres and pipelines business. Most staff are based in our headquarters in Bell Block, New Plymouth; with small teams located in Wellington, Palmerston North and Hamilton. Our Executive team is headed by Chief Executive Officer Paul Goodeve, with seven direct reports: Chief Operating Officer (COO), Chief Financial Officer, General Manager Commercial and Regulation, General Manager People and Performance, General Manager Asset Management and Transformation, General Manager Health, Safety, Environment and Quality (HSEQ) and General Manager Rockgas[3].

Our organisational structure is illustrated in Figure 1 below.

Figure 1: Organisation chart



2. More information on First State Funds is available on their website https://www.firststateinvestments.com/global/about-us/corporate-profile.html
3. 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 leading 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 Northland, Waikato, the Central Plateau, Bay of Plenty, Gisborne and Kapiti regions of the North Island, as highlighted in blue in Figure 2. We provide gas distribution services to retailers who sell gas to approximately 63,000 residential, commercial and industrial customers.

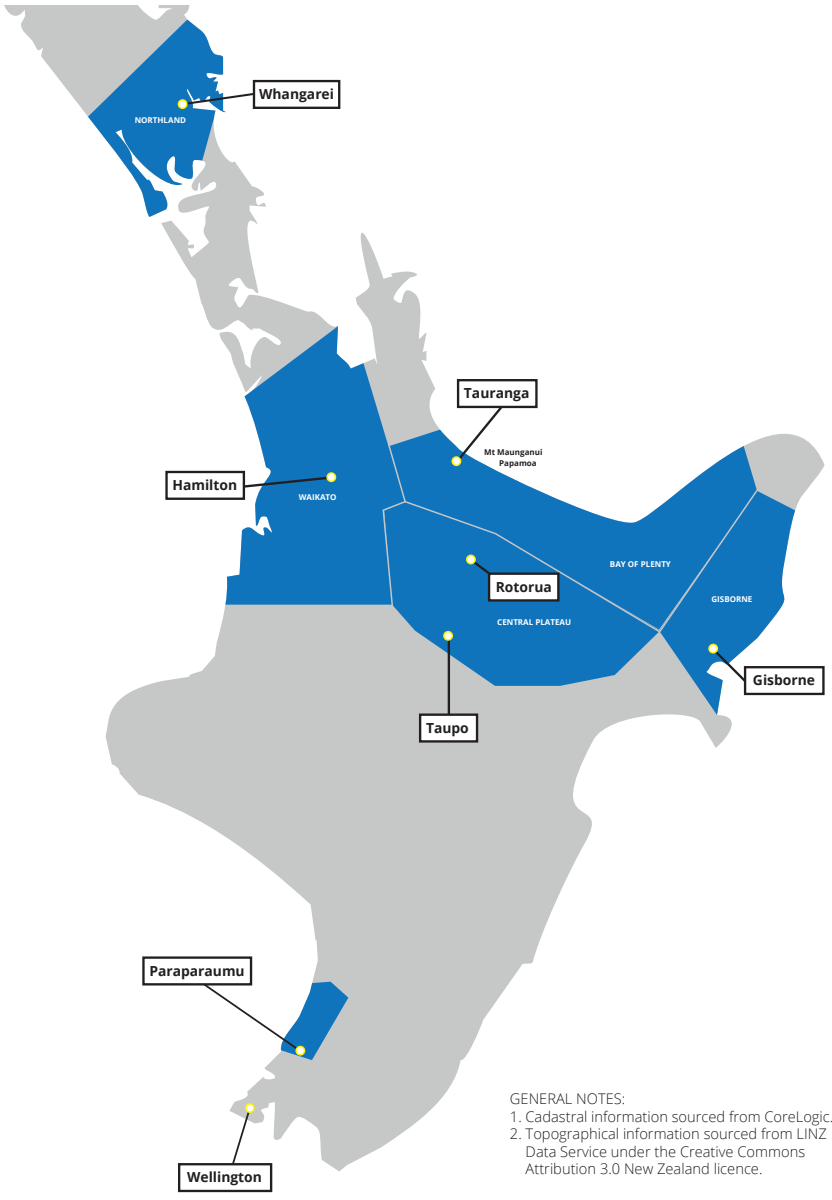
The key statistics for our gas distribution network, as at 30 June 2019, are set out in Table 1.

Table 1: Key gas distribution statistics as at 30 June 2019

STATISTIC	VALUE	CHANGE FROM 2018
Consumers connected	64,356	2.1%
System length (km)	4,767	1.97%
Consumer density (consumer/km)	13.5	0%
District regulating stations (DRS)	125	-0.8%
DRS density (system km/DRS)	38.1	2.62%
DRS utilisation (consumers/DRS)	514.9	2.91%
Peak loads (scm/h)	55,224	3.3%
Gas conveyed (PJ per annum)	9.31	2.98%

The reduction in the total number of district regulating stations (DRS) relates to a DRS (DR-80103-HM) being removed from the site to allow for the Cobham Dr/Wairere Drive intersection widening.

Figure 2: Our gas distribution areas



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.

Asset Categories

Gas distribution networks are made up of several 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 the 2018 AMP in **Appendix C**.

Pressures across the distribution system

Our gas distribution networks operate on a number of different pressure levels across the system. The standard pressure levels are set out in Table 2.

Table 2: Distribution Pressure Systems

PRESSURE LEVEL	RANGE
Intermediate Pressure 20 (IP20)	1,000-2,000 kPa
Intermediate Pressure 10 (IP10)	700-1,000 kPa
Medium Pressure 7 (MP7)	420-700 kPa
Medium Pressure 4 (MP4)	210-420 kPa
Medium Pressure 2 (MP2)	110-210 kPa
Medium Pressure 1 (MP1)	7-110 kPa
Low Pressure (LP)	2 -7 kPa

The intermediate pressure (IP) systems generally form the 'backbone' of the distribution networks with laterals diverging from pipes to supply adjacent areas. The IP systems are all constructed to a high technical standard from welded steel and they are protected against corrosion by a combination of coating and Cathodic Protection systems.

The medium pressure (MP system) makes up the majority of our distribution assets. The pipes in the MP system generally form the greater mesh network and are used to directly supply gas consumers.

The MP systems are constructed mostly of polyethylene (PE) pipe and as such require no corrosion protection.

Low pressure (LP) systems typically represent the oldest part of the distribution network, supplying residential and commercial loads. LP systems typically consist of polyethylene main pipes.

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 update (and full AMPs).
- **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 AMPs and AMP Updates capture 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 our 2018 AMP 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 risk 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 is set out in our 2018 AMP in **Appendix H**.

Improving how we communicate asset health and criticality information

In our 2018 AMPs, we introduced "dashboards" that described asset health and criticality, and how our expenditure programmes are influencing overall asset health and managing risk. These dashboards were in response to customer feedback that they asked for greater clarity around our expenditure and are driven by our asset management improvements.

In late 2018, the Commission commenced a review of all gas pipeline businesses' Asset Management Plans. The review focused on two aspects:

- A review of all businesses' asset risk management and associated practices, looking at matters such as asset criticality, resilience, use of cost-benefit analysis, asset data accuracy and consideration of customer expectations.
- A review of First Gas' management of geotechnical risks on the transmission network.

The AMP review involved a desk top review of the AMPs and supporting documentation by independent experts, as well as meetings with staff in mid-March 2019. At the time of writing, the findings of the Commission's review were expected to be finalised by September 2019. We intend to use these findings to improve how we:

- Demonstrate the link between asset health, asset criticality with expenditure.
- Demonstrate how we manage high impact low probability (HLP) events.
- Show how we manage network risk on behalf of customers, which demonstrates the trade-off between cost and risk mitigation.

We plan to discuss these improvements with both internal and external customers in the coming year and will incorporate the updated dashboards in our 2020 AMP (the next full AMP).

2.6 REGULATORY AND POLICY ENVIRONMENT

This section provides an overview of the regulatory environment that our gas distribution business operates within. We have seen a reasonably stable year for regulatory settings, with the business focused on implementing the information disclosure amendments introduced by the Commerce Commission in late 2017.

We also discuss below the recent changes in policy for the gas sector, and the Government's increased focus on climate change and its intention to introduce a net zero carbon target into legislation. We set out how First Gas is responding to this changing environment and demonstrating the important role that natural gas has to play in assisting New Zealand's transition to a lower-emissions economy.

Refinements to Part 4 regulation

The regulatory environment for the gas distribution business has been relatively stable over the past year, with First Gas now moving into the third year of the 2017 – 2022 DPP regulatory control period. We have been focused on implementing the changes to the information disclosure requirements, that were introduced by the Commerce Commission in December 2017. These changes were driven by the decisions from the 2016 review of gas Input Methodologies.

The key changes particularly relevant to First Gas were:

- Increased audit requirements and narrative in the Auditor's opinion, focusing on any key matters that have required the auditor's attention and significant judgements;
- New disclosure and reporting requirements for related party transactions; and
- Changes to the cost allocation methodology for our business.

These changes will be incorporated into our information disclosure reporting for the year ending 30 September 2019, that we will publish in March 2020. We have elected to incorporate some of the disclosure information required under the new related party transaction rules into this year's AMP Updates, in addition to our annual information disclosures at the end of the disclosure year. Section 5.1 sets out the new maps of anticipated network expenditure and network constraints. These maps highlight our top ten Opex and top ten Capex projects for the AMP period, along with their timing, value and location.

Learnings from other regulated sectors

The electricity distribution businesses (EDBs) and Transpower are currently going through a reset of their price quality paths with the Commerce Commission to determine their allowable revenue for the next five years.

First Gas is following this process, to identify any learnings that may apply to our next price-quality path reset for gas distribution for 2022 – 2027. We are particularly interested in the proposed introduction of mechanism to fund innovation projects. The Commission[4] has proposed a new recoverable cost for innovation costs, with EDBs required to show any proposed project will potentially benefit consumers. We support the Commission exploring options to encourage innovation across New Zealand's regulated energy businesses. We would welcome a similar mechanism for gas pipeline businesses to support innovative projects and enable the sharing of sector knowledge.

Changes in the broader gas sector

There have also been increased work in the broader gas sector to review the overarching legislation and the information disclosed on the operation of the gas market.

Focus on greater information disclosure

The Gas Industry Company is currently consulting on options to increase the level of information disclosed on the gas market. This new workstream for 2018/2019 was driven by a request by the Minister of Energy, following the recent spring outages at Pohokura. The workstream explores the potential information issues, the different approaches to information disclosure (from voluntary through to regulated options) and ways of publishing this information.

First Gas believes that the main information gaps relate to planned and unplanned outages at major gas production and user facilities. These information gaps would be best addressed through a regulated option. Next steps on this workstream are expected later in 2019.

Review of the Gas Act

The Government is also reviewing the Gas Act 1992, focusing on three key areas:

- Emerging challenges for the Act with the expected introduction of alternative fuels (such as hydrogen and biogas);
- Potential changes to the penalty regime; and
- Information disclosure requirements (to enable regulated options to be introduced by the GIC, as above, if required).

First Gas supports this timely review of the Gas Act. We advocate for regulations and standards to support the development of emerging fuels such hydrogen and biogas, while also ensuring that gas remains of a specification that it can transported safely within New Zealand's gas infrastructure and safely and reliably used by consumers.

Government's climate change policy

The past year has seen a heightened focus on climate change and the role of the energy sector, as the Labour-led coalition Government enters into its second year. The Government has introduced the *Climate Change Response (Zero Carbon) Amendment Bill* into Parliament, a key policy in its work to address climate change. The Bill[5] will:

- Set a new greenhouse gas emissions reduction targets – reducing all greenhouse gases (except biogenic methane) to net zero by 2050 and reducing emissions of biogenic methane.
- Set a series of emissions budgets to act as stepping stones towards the long-term target.
- Establish a new, independent Climate Change Commission to provide expert advice and monitoring.
- Require the Government to develop and implement policies for climate change adaptation and mitigation.

At the time of writing, this Bill was currently before Select Committee, with the Government expecting the Bill to come into force in late 2019. Alongside this key Bill, the Government has an extensive programme of work addressing the role that the energy sector plays in the country's transition to a net zero economy.

One workstream of immediate interest to First Gas, is the Interim Climate Change Committee's final report[6], setting out its recommendations to Government on the "transition to 100% renewable electricity by 2035 (which includes geothermal) in a normal hydrological year". Gas currently plays a key role within the electricity sector, maintaining security of energy supply as it can fill supply shortfalls created by the weather and seasonal dependency of renewable sources. Natural gas supply is also resilient to hazards like earthquakes and can keep energy prices down while the price of renewable generation steadily falls.

Alongside central government action, there has been increasing activity on the local front. A number of local councils have declared a climate change emergency and there is an increased public activity calling for action on climate change.

4. *Default price-quality paths for electricity distribution businesses from 1 April 2020 – Draft decision,* Commerce Commission reasons paper, 29 May 2019, https://comcom.govt.nz/__data/assets/pdf_file/0023/149801/Default-price-quality-paths-for-electricity-distribution-businesses-from-1-April-2020-Draft-Reasons-paper-29-May-2019.pdf
5. Information on the Bill is available on the Ministry for the Environment's website here.
6. https://www.iccc.mfe.govt.nz/what-we-do/energy/

Announcement of new National Energy Development Centre

During the Just Transition Summit held in May 2019 in New Plymouth, the Prime Minister took the opportunity to announce the establishment of a new National Energy Development Centre (NEDC) in Taranaki.[7]

The Government intend to invest $27 million to set up the centre and $20 million over four years to establish a new science research fund for cutting edge energy technology.

The NEDC is intended to create new business and jobs in Taranaki while helping New Zealand move towards clean, affordable, renewable energy to achieve the aim of net zero emissions. The NEDC will look at the full range of emerging clean energy options such as offshore wind, solar batteries, hydrogen and new forms of energy storage.

First Gas' role in the country's transition towards net zero

First Gas supports the Government taking action on climate change and committing to a net zero emissions target by 2050. As a business, we are committed to exploring the distribution of alternative fuels such as green hydrogen, biogas and gas blends, that will reduce New Zealand's carbon emissions. Our gas transmission and distribution networks cover much of the North Island and are ideally placed to support the development, transfer and use of emerging fuels.

The big question is how the nation transitions steadily towards 100% renewable energy, keeping energy prices down while renewable sources are built and their output gets cheaper to use, and providing supply for winter demand peaks, dry years, electric vehicle use, and during natural disasters. We can lower emissions right now by switching things like industrial boilers and dryers from coal to gas and switching cars to electricity.

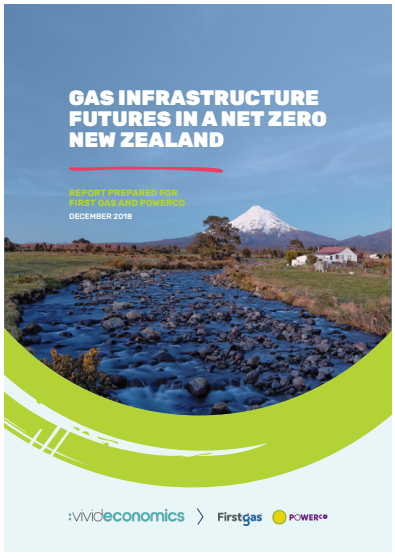
We recognise that action on climate change has created some uncertainty around the long-term future of gas supply, and the willingness of industries to invest in making coal to gas conversions. However, we believe that with the establishment of government policies that set a steady reduction path (that takes account of the nation's practical and financial constraints), Government and industry can work together to achieve the opportunities from a low carbon economy.

Understanding the future use of gas and gas infrastructure

First Gas and Powerco commissioned Vivid Economics in 2018 to explore the potential scenarios for future use of the gas infrastructure, as New Zealand moves to a low-carbon economy. The report explores three different scenarios – a diversified energy mix, a green gas (hydrogen and/or biogas) option and an all-electric future – and the impact of these scenarios on gas infrastructure use and affordability. The cost to New Zealand in dollars and GDP of the three scenarios is illustrated in Figure 3.

Vivid Economics' report finds that there are many uncertainties in New Zealand's changing policy environment, and it is too early to pick one preferred energy source for a low-carbon economy. The report recommended further research into the potential for hydrogen and electrification options, the feasibility of carbon capture and storage in New Zealand and the impacts of large-scale afforestation.

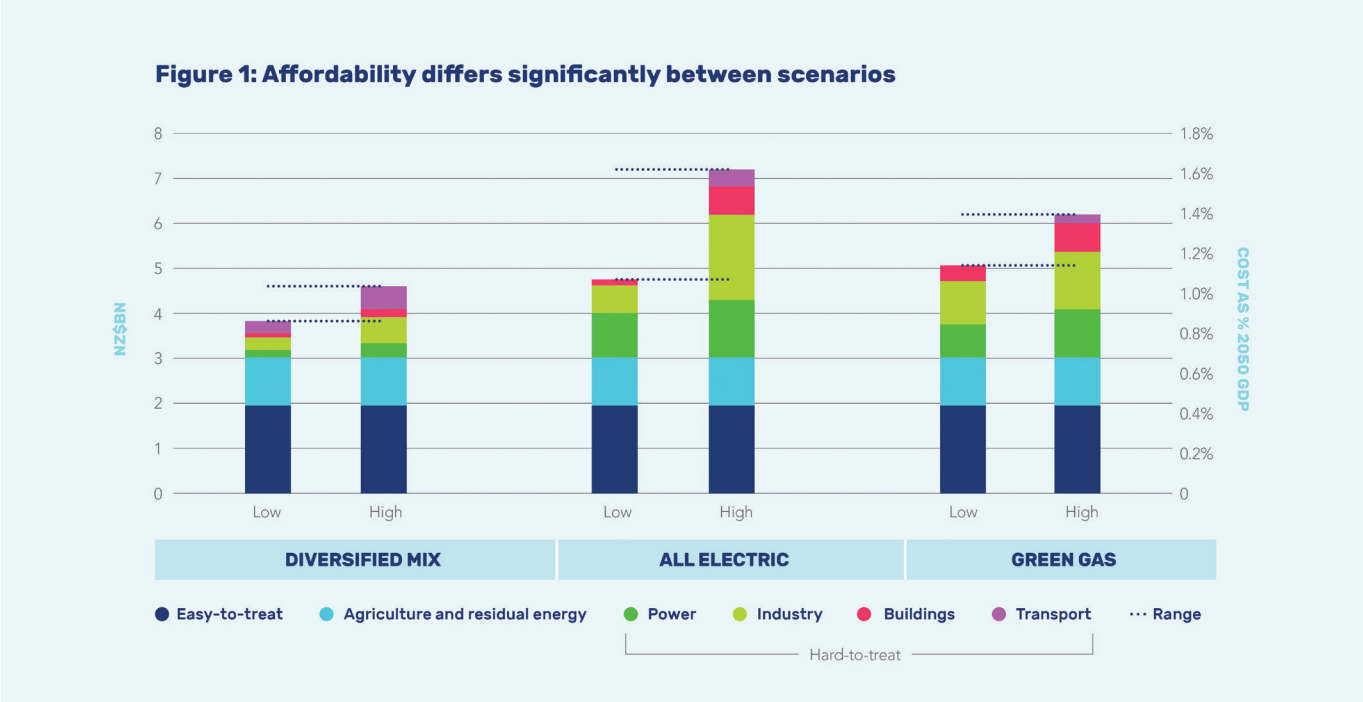
The full report was completed in December 2018 and is available on our website.[8]



This picture shows the front cover of the 2018 Vivid Economics report

7. https://www.beehive.govt.nz/release/government-invests-clean-energy-centre-help-power-new-zealand%E2%80%99s-economy
8. Vivid Economics report, press release and supporting video are available here: https://firstgas.co.nz/news/gas-infrastructure-futures-in-a-net-zero-new-zealand/

Figure 3: Affordability differs significantly between scenarios



▲ *Affordability differs between scenarios, and a decision now to completely decarbonise using electricity would risk unnecessary costs. The total annual cost of meeting the net zero target could be around $3.8–$4.6 billion, equivalent to 0.9–1.0% of national income if forestry is used to offset residual gas emissions (expressed differently, the annual cost could be around $1,700 per household, with incomes projected to rise around 35% over this period). However, this cost could rise to $6.2–7.2 billion, equivalent to around 1.4–1.6% of national income (or around $2,700 per household), if hydrogen or electrification is needed to address hard-to-treat sectors.*

Hydrogen trial announced

In May 2019, First Gas announced our hydrogen-pipeline trial as one of the first projects likely to start at the National Energy Development Centre being set up in Taranaki. We welcome the opportunity to work on a piece of the puzzle for New Zealand's energy future.

We intend to base staff at the centre to design and run a trial of transmission and end use of hydrogen or hydrogen-blend gas. The first task is to identify the best part of the pipeline network to use to test a range of assets on various blends of hydrogen gas, the best sources of hydrogen at those locations, how to measure and meter energy flows, if there are any regulatory issues that need to be addressed and ensure end-users can safely and efficiently use the gas for their energy needs.

The feasibility assessment and network selection has started this year. This work establishes a timeframe and work programme to tool up a section of the network to start transporting hydrogen to participating end users. Hydrogen sources are available locally, and local expertise and technology could provide a dedicated source using wind or other renewable generation to power an electrolyser that splits water into hydrogen and oxygen.

3. YEAR IN REVIEW

This section provides an overview of First Gas' major projects and initiatives over the past year ending 30 September 2019. We review our forecast expenditure against the plans stated in our 2018 AMP 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 2019 , and compares actual expenditure to the forecasts presented in our 2018 AMP.

There is very little variance for both Capex and Opex levels compared to what was published in our 2018 AMP.

Figure 4: Total Capex in FY2019 versus 2019 Capex forecast in the 2018 AMP

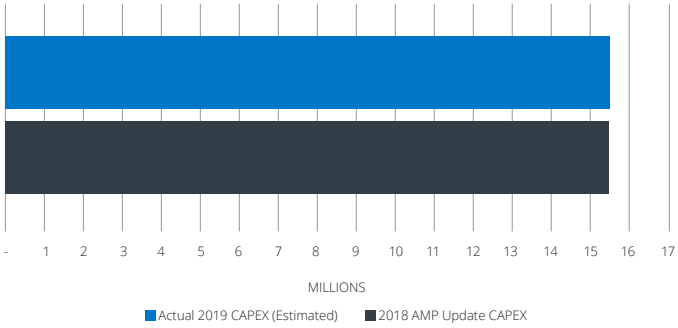
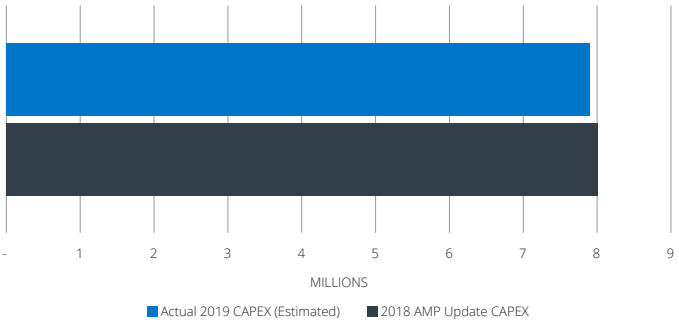


Figure 5: Total Opex in FY2019 versus 2019 Opex forecast in the 2018 AMP



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

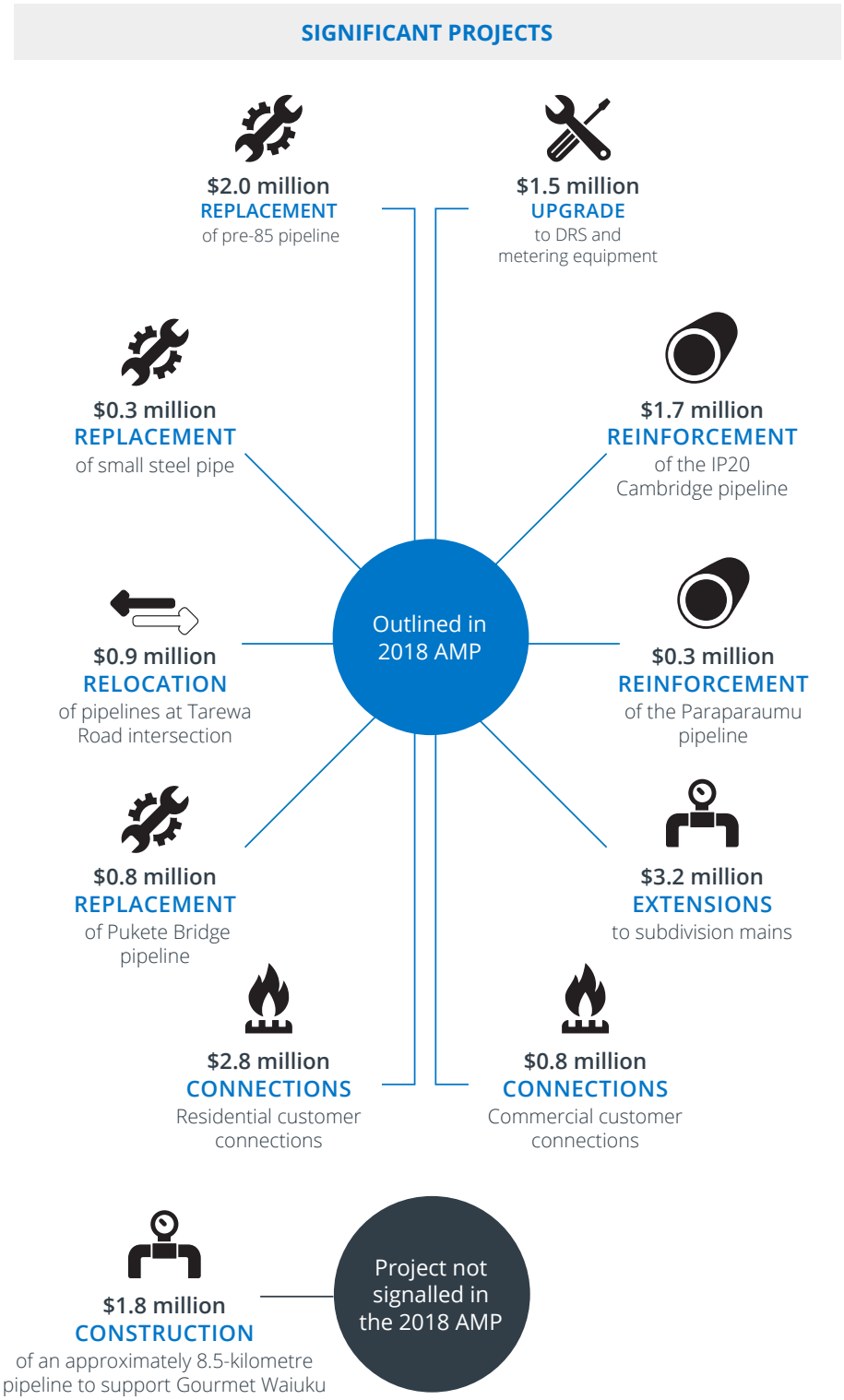
3.2 SIGNIFICANT ACTIVITIES UNDERTAKEN IN FY2019

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 2018 AMP, with the scope and justification provided for each project. However, one additional project was added to First Gas' work plan during the year – the new distribution pipeline for Gourmet Waiuku in South Auckland. This additional project was initiated following a new customer connection request.

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

Figure 6: Significant projects completed in FY2019



Replacement of pre-1985 polyethylene (PE) pipeline

Our analysis of the PE mains network identified that approximately 406 kilometres of pre-1985 pipeline of varying vintage is installed within our network. The majority of this is installed within Hamilton/Waikato region. We have used the pre-1985 pipeline strategy report to prioritise the replacement programme across our network. This year, we have completed 16 projects, replacing approximately 8.2 kilometres of pre 1985 pipeline, including all extreme risk items as identified in the pre-1985 pipeline strategy report.

Upgrades to district regulating stations and metering equipment

First Gas carries out several upgrades to district regulating stations (DRS) 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 100 Hamilton:** We installed a new DRS at the road-side garden between Dey Street and Wairere drive.
- **DRS 8002 Rotorua:** We replaced and installed a new underground DRS, together with the inlet and outlet isolation valves. This new DRS is now code compliant.

Replacement of small steel pipeline

We have replaced approximately 500 metres of 25mm NB MP4 carbon steel pipeline in Fernleigh Street and Cascade place with 50mm NB PE pipeline. This replacement project will now mitigate the risk of delays in isolating the supply in emergency situations and the number of service connections affected by an outage.

Reinforced the IP20 Cambridge network

Reinforcement work has been completed on the Cambridge IP20 network to ensure we can meet future demand in this area. A new IP20 steel pipeline has been constructed from the south of the Waikato Expressway to Taylor Street, near DRS245 (approximately 1,430 metres in length). This will provide up to 1,660 scm/h capacity into the Cambridge network through the IP20 system;

Relocation of pipelines at the Tarewa Road intersection

First Gas has completed the relocating and reconstruction of a section of the IP10 50mm carbon steel and 50mm MP4 PE network by the SH1/Tarewa Road intersection in Whangarei. This project was done to accommodate a roading upgrade project undertaken by the New Zealand Transport Agency (NZTA). The gas distribution network has been successfully moved to a designated corridor provided by NZTA, with a common services trench also proposed.

Reinforced the Paraparaumu pipeline

We have completed reinforcement work on Paraparaumu network to support the increased growth in this area. The work included installation of 1900 metres of 100mm PE pipeline from the MP7/MP4 DRS along Ratanui Road to Mazengarb Road. This project is one of the four projects that have been identified to mitigate the risk of reduced operating pressure in the Paraparaumu area. First Gas distribution standards require that the minimum operating pressure "shall be no less than 50% of Nominal Operating Pressure". During the winter of 2011, the Paraparaumu system pressure dropped to 35% of nominal operating pressure at one point.

This picture shows the new IP20 steel tie into existing IP20 gas pipeline in Cambridge

One of the sections of 80NB Carbon Steel pipeline at Pukete Bridge with severe corrosion

The new section of 80NB Carbon Steel pipeline which replaced the coroded pipe in the picture above

Pukete Bridge pipeline replacement

First Gas has successfully repaired and replaced the corroded sections of the distribution pipeline across Pukete Bridge in Hamilton. The work entailed connecting the existing 150NB pipeline at both ends of the bridge to a 80NB carbon steel pipeline that was located on the bridge but had never been commissioned on gas. This solution effectively bypassed the corroded 150NB pipe and eliminated the risks to public safety and eliminated the risk of supply disruption to the network.

Mains extensions for subdivisions and customer connections

A large component (approximately 45%) 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.

Customer connections are either drilled or thrusted 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 in line with the 2018 AMP forecast for customer connections; 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 Hamilton, Taupo, Kapiti and Tauranga.
- Delivered a new 8.5-kilometre distribution pipeline to Gourmet Waiuku located southwest of Auckland.

The level of connections undertaken over the past 12 months was consistent with the high level of new connections achieved during FY2018.

J A Bell Building[10]

"For me, using gas in my projects is an obvious choice. Clients get all the lifestyle benefits and First Gas make connecting to gas really simple and work in well with my schedule."

– Justin Bell

10. http://www.jabellbuilding.co.nz

New customer connections

A key achievement this year was the delivery of gas infrastructure to Gourmet Waiuku, a capsicum growing operation in the Waiuku area, southwest of Auckland. This required building a new seven barg gas distribution pipeline and re-establishing the Waiuku gas transmission gate to service the heating and carbon enrichment load for Gourmet Waiuku Limited. This new distribution pipeline is 8.5 kilometres in length and is required to deliver at least 500 SCMH.

The project will link Waiuku to the main gas transmission pipeline at Glenbrook and will initially power Gourmet Waiuku's capsicum growing operation. A key benefit and outcome of this project is that the company will no longer need to use coal to heat its 4.7-hectare glasshouse. Our natural gas will enable them to heat their glasshouse more cleanly and efficiently, which is great for the environment in terms of minimal carbon footprint. There is also the potential to provide gas to other businesses in the area.

▲ *This picture shows Gourmet Waiuku 5ha of capsicum operation in a glasshouse operation located west of Waiuku.*

▼ *Rolled PE mains delivered on site*

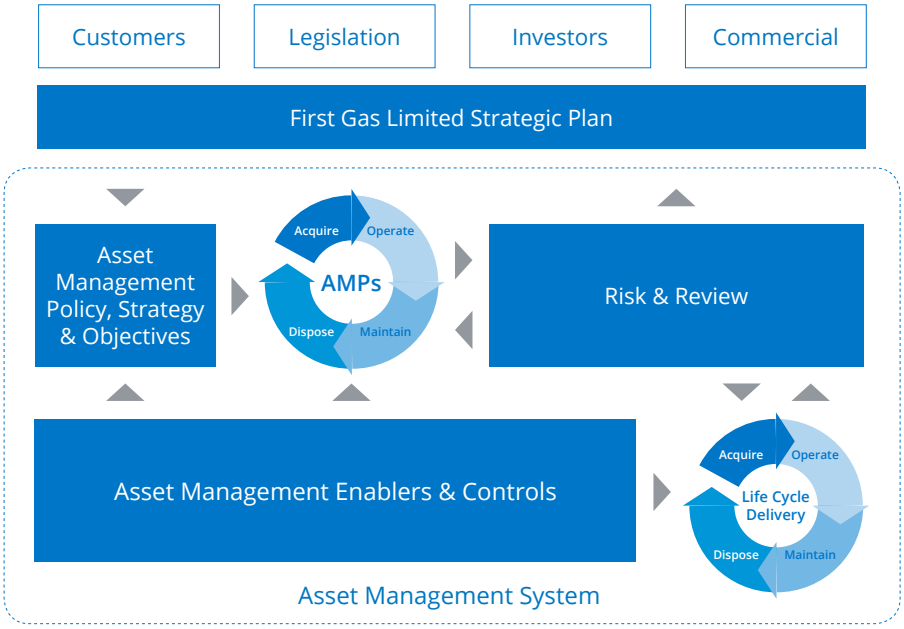
▼ *New PE pipe in the ground*

Asset Management improvement programme

Over the last year, the focus has been on embedding and further developing our overall asset management framework, asset management system elements and relative documentation as illustrated in Figure 7. This improvement programme is aligned with our increased strategic focus on asset management and included work on the following areas:

- Capital expenditure
- Maintenance optimisation
- Risk management
- Planning and scheduling
- Project management
- Programme delivery
- Documents and records management

Figure 7: Overview of asset management framework



3.3 PERFORMANCE OF THE DISTRIBUTION

A key premise for the AMP and AMP Updates 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 our 2018 AMP in **Appendix H**). To align with regulatory disclosures, the data presented below covers the year ending September 2018.

The table below refers to some of the key KPI's that we report on for Information Disclosure as part of the Commerce Commission requirements.

- Our KPI scores for FY2018 are reported in the first column of the table;
- The trend column represents the movement in the KPI between FY2017 and FY2018; and
- The target column refers to the score we would like to achieve over the next 12 months.

Table 3: KPIs for gas distribution network

KEY PERFORMANCE INDICATORS	2018	TREND	2020 TARGET
Safety: Lost time injuries	0	▶	**0**
Response time to emergencies (within one hour)*	88.9%	▲	**>80%**
Response time to emergencies (within three hours)*	100%	▶	**100%**
Customer complaints	0	▼	**0.0005**
Publicly reported gas escapes/system length	32	▼	**53**
Third party damage events/system length	25	▼	**67**
Asset Management Maturity Assessment	2.7	▲	**3.0**
System Average Interruption Duration Index (SAIDI)	664	▼	**1,300**
Customer Average Interruption Duration Index (CAIDI)	143	▼	**152**
Poor pressure due to network causes	5	▼	**3**
Number of non-compliant odour tests	2	▼	**<3**

** Quality measure under Default Price-quality Path (DPP) 2017 – 2022*

4. YEAR AHEAD

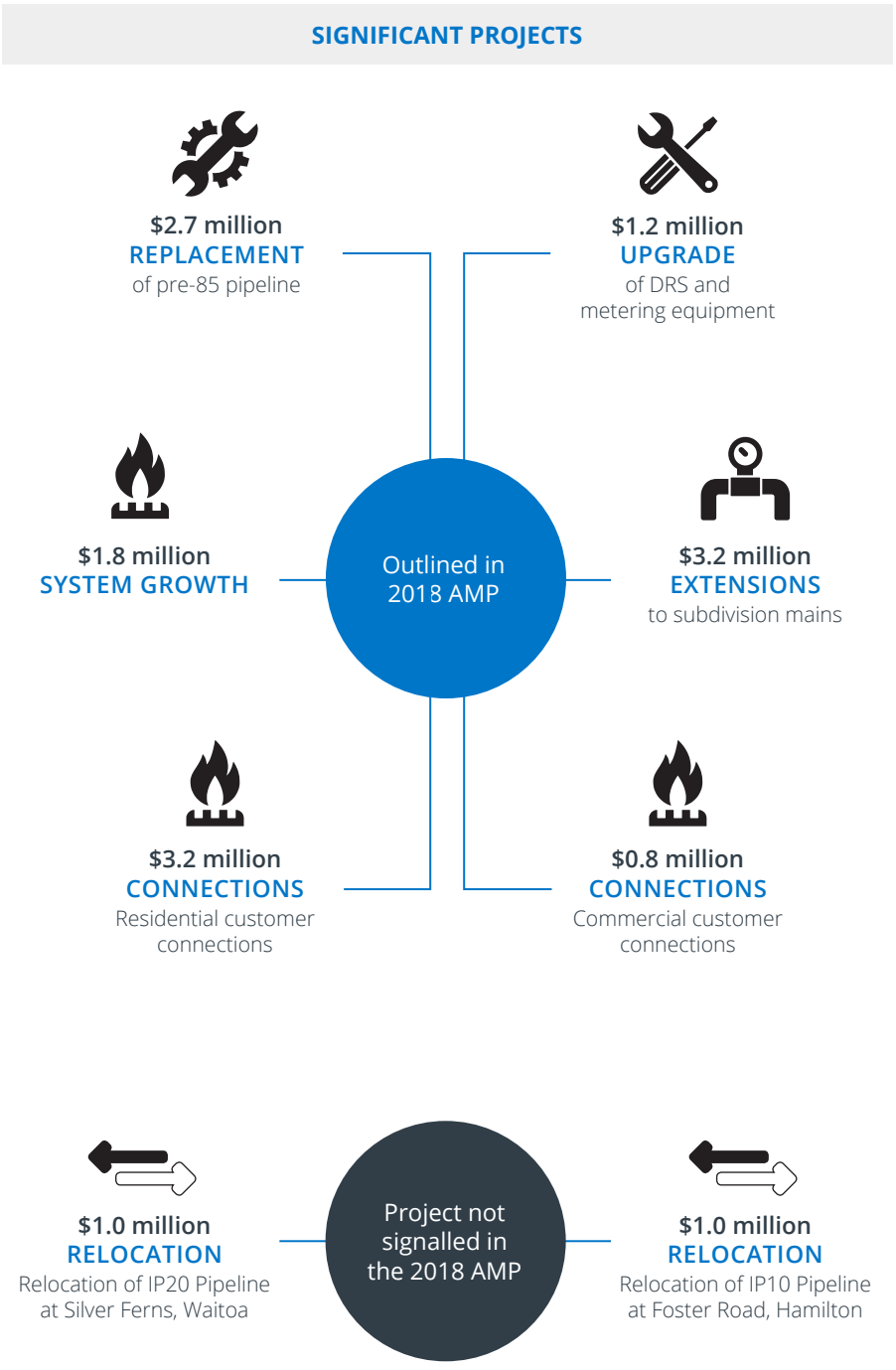
This section sets out the areas of focus for First Gas over the year commencing 1 October 2019, the third year of the 2017 – 2022 DPP period. We will continue to implement growth projects and new customer connections, as well as focusing on replacing the remaining pre-1985 PE pipeline in our system.

4.1 SIGNIFICANT ACTIVITIES FOR FY2020

Figure 8 sets out the major activities we plan to undertake on our gas distribution network throughout FY2020. The location of these significant projects is shown in Figure 9, 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.

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

Figure 8: Significant projects for FY2020



Replacement of pre-1985 pipeline

As discussed in the section above, the pre-1985 pipeline report that was completed last year is now being used to prioritise the replacement programme across the network. There are ten projects (approximately 8.8 kilometres, mostly in the Hamilton area) with risk scores ranging between intermediate and extreme, that have been identified and prioritised for replacement next year.

This programme of work has been prioritised based on the asset condition information gathered by First Gas and summarised in Schedule 12A (see **Appendix B**). Data shows that 1.32% of the total length of the medium pressure pipeline in our distribution system (approximately 406 kilometres of pre 1985 main pipes) have a grade 2 rating. Assets with this rating have a material deterioration but the asset condition is still within the serviceable life parameters. Intervention for these assets is likely to be required within 3 years.

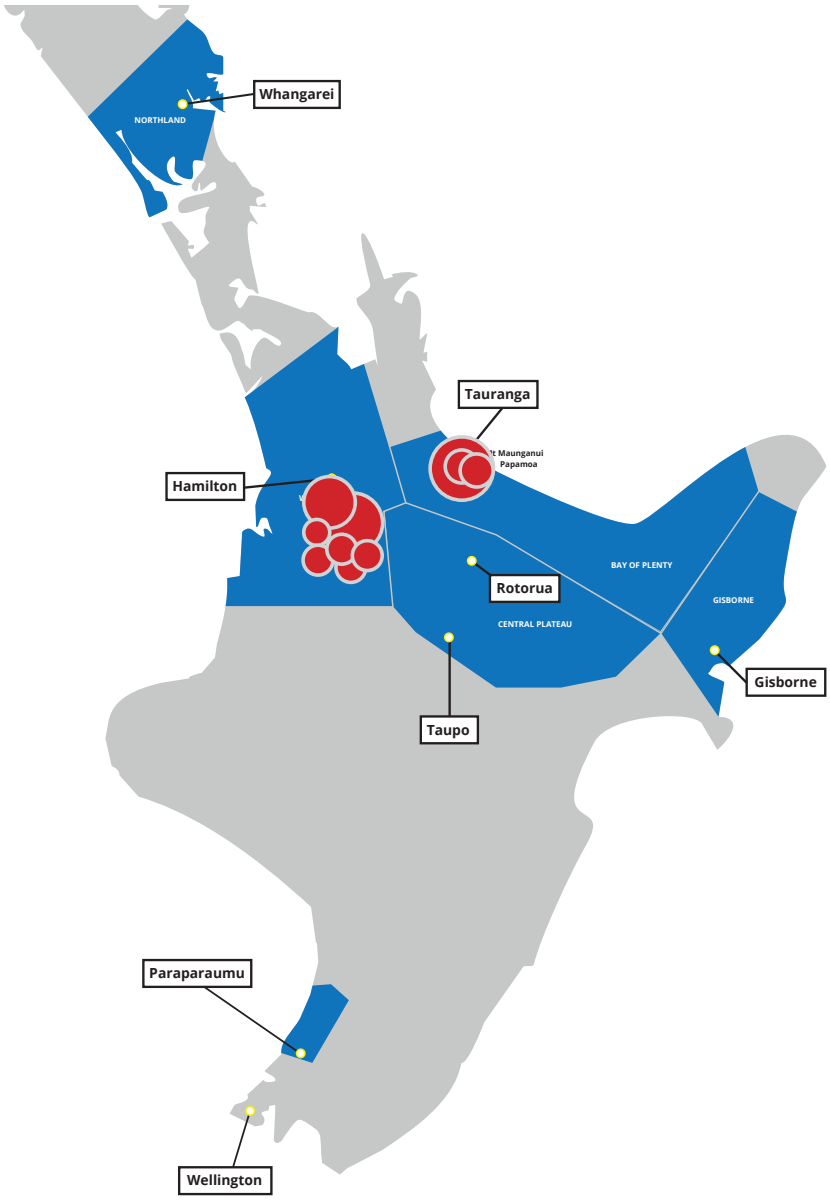
We are implementing a new suite of software systems to improve our project management reporting, control and monitoring. This will provide greater visibility over current projects, greater cost control and improved monitoring with near time information. An example of the portfolio summary being developed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

Upgrades of DRS and metering equipment

The following upgrade projects are planned for the coming year:

- **Wairere Drive relocation and DRS 101 and 103 upgrade in Hamilton:** Work on this project was re-scheduled to FY2020, due to delays with the Hamilton City Council programme and the need to avoid the interruption of supply to customer during winter periods. This project involves relocation of distribution pipes and replacing both DRS101 and 103 with one suitable-sized DRS.
- **DRS 80218 Waitoa:** This DRS is rusting away due to its caustic environment location – it is located next to a

Figure 9: Location of significant projects for FY2020



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1. Cadastral information sourced from CoreLogic.
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rendering plant. This project will rebuild and move the DRS to a suitable location.

- **DRS 80247 Waitoa:** The existing equipment will be raised above the ground to avoid water entering the assembly body.
- **DRS 241 Whangarei:** Removal of the obsolete regulator and installation of approximately 300 metres of 100mm NB PE MP4 gas main from DR-80096-WG to link the MP4 network. This work was re-scheduled to FY2020 due to delays in obtaining a deed of grant from Kiwi Rail.

This programme has been prioritised based on the asset condition information gathered by First Gas and summarised in Schedule 12A (see **Appendix B**). Data shows that 5.9% of the total number of intermediate pressure DRSs (approximately – six DRSs) have a grade 2 rating. Assets with this grade rating have material deterioration but the asset condition is still within the serviceable life parameters. Intervention for grade 2 assets is likely to be required within three years.

System growth

Some of the proposed load growth scenarios and projects (mainly in Hamilton network such as IP reinforcement) are currently being reviewed through our remodeling of the distribution network to determine the appropriate options and timing. Part of this process will determine the sectional and incremental projects for next year and future years.

Reinforcement of the Hamilton IP DRS

We will design and install a new IP20/IP10 DRS and interconnecting pipelines west of Te Rapa Road and Wairere Drive Junction in Hamilton. This will provide assurance around the network operating pressure, by increasing the quality of supply and flow capacity. This work was re-scheduled to FY2020 to enable a further engineering assessment study to be undertaken.

New customer connections

A large component (50%) of next year's Capex spend will continue to be allocated to connecting new customers and subdivision mains extensions. We are planning to connect 1,600 new customers in FY2020. 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:

- The reinforcement of 4.3 kilometres of MP4 network to facilitate a plant upgrade for Omya Lime works in Te Kuiti ($1.28 million in total which includes $71,000 of transmission's contribution to the programme of work). This work is likely to commence at the beginning of October 2019.
- A mains extension supply to NZ Food Innovation Sheep Milk Factory ($1 million).

During FY2020, 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.

Relocation of IP20 pipeline at the Silver Ferns property, Waitoa

A 50 NB carbon steel IP20 pipeline in Waitoa network was found to be running underneath one of the building facilities at Silver Ferns property in Tatuanui, Waitoa. This pipeline represents a safety risk to the people who are working in the area and will be relocated.

Relocation of IP10 pipeline in Foster Road, Hamilton

An existing 200NB carbon steel distribution pipeline on Foster Road, Hamilton running between number 55 Foster Road and an unnamed stream is one of the two main distribution gas pipelines supplying Hamilton. This pipeline (approximately 30 metres) is to be rerouted due to the need of replacing an existing corroded culvert.

Asset condition (Schedule 12A)

Schedule 12A (report on asset condition set out in **Appendix B**) provides an overview of the asset condition using the grading classifications prescribed by the Commerce Commission.[11] 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.

Further detail on the condition, risks and issues, and planned activities can be found in **Appendix E**, Asset Fleets of the 2018 AMP.

Asset Management improvement programme

We will continue developing our overall asset management framework, asset management system elements and documentation while also looking at improving the way we use our existing IT systems and technology.

The key asset management improvement activities for FY2020 include:

- Maximo – improve use of core functionality and improve usability.
- Documents and records management – embed and improve recently implemented system.
- System integration – align and improve visibility of information across the business.

11. 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.

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. The key driver of our expenditure throughout the planning period is to reduce risk and maintain our level of service.

5.1 CAPEX FORECAST

Our forecast Capex spend over the next ten years is set out in Figure 10. There is minor change to the profile but no change to the total Capex within the current DPP period from that set out in the 2018 AMP.

The changes within this DPP period (2017 – 2022) relates to:

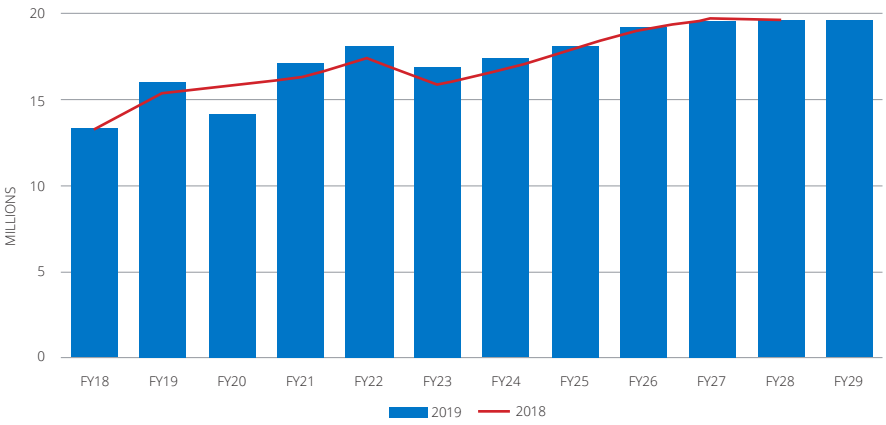
- Rebalancing of the programme of work for system growth in the areas of Hamilton, Tauranga and Gisborne;
- Rebalancing of the work programme to replace pre-1985 pipeline.

The changes in the next regulatory period (2022 – 2027) relate to:

- An increase in asset replacement and renewal expenditure to address the risk associated with pre-1985 pipeline.
- An increase in system growth expenditure due to increases in proposed project costs in the Waikato and Bay of Plenty regions.

This equates to an increase of $2.5 million compared to the amount disclosed in the 2018 AMP.

Figure 10: Total Capex forecast for the planning period (all figures in FY2019 prices)



Largest Capex projects going forward

This year we have elected to include within our AMP Update the high-level heat map that shows the largest Capex projects planned for the next ten years (FY2020 to FY2029). This heat map is part of the new related party transaction Information Disclosure requirements, that were announced by the Commerce Commission in December 2017 (see section 2.6). Figure 11 sets out the location of the largest ten projects, with greater detail in Table 4.

All network Capex is forecast to be completed by our related party, Gas Services New Zealand Limited (GSNZ) under an operations and management agreement (O&M) between First Gas and GSNZ. This O&M agreement was entered into with the change in ownership of the distribution business in 2016 and will be reviewed before September 2022.

The map below depicts our anticipated significant planned expenditure during the planning period. It is a snapshot in time, with the information we have available, and may change. As we progress into the 10 year plan, we will develop the activities according to our processes to develop more accurate forecasts and delivery schedules. The activities will form part of the Information Disclosure requirements for March 2020.

A description of the largest Capex projects identified in table 4
is provided below and more detail can be found in the 2018 AMP. All projects are network projects. Where the identified projects include some reinforcement work, there may be possible future network or equipment constraints. Currently no such constraints have been identified.

Figure 11: Largest Capex projects

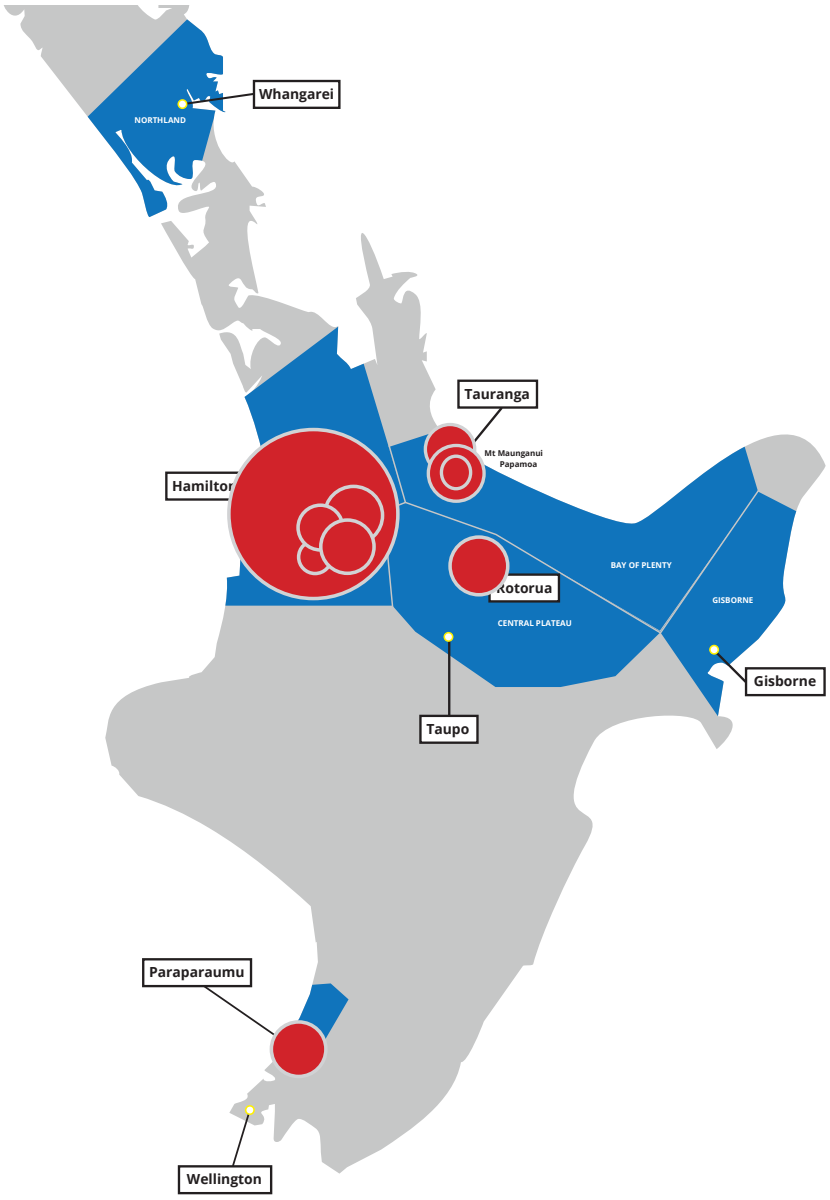


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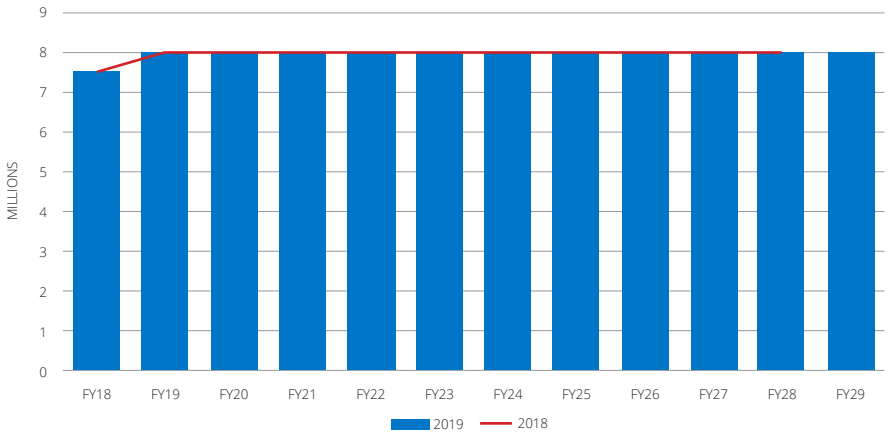
Table 4: Description of largest Capex projects

PROJECT	DESCRIPTION	REGION	COST (CONSTANT $)	PERIOD
Pre-85 replacement programme	As discussed in section 4.1, replacement of pre-1985 PE pipe will occur throughout the planning period.	Waikato, Hamilton ($21.7million) Bay of Plenty ($2.9 million) Kapiti ($2.9 million) Central Plateau ($1.4 million)	$29 million	Across the period
Cambridge IP20 reinforcement	To address anticipated demand growth in the area, we are planning reinforcement of the IP20 network. This will see the construction of approximately 1,430 metres of pipeline and provide up to 1,660 scm/h of capacity into the Cambridge network.	Waikato	$1.1 million	FY2021
Hamilton IP reinforcement	To address anticipated demand growth in the area, we are planning reinforcement of the IP10 network. The proposed load growth scenarios are currently under review through modelling of the Hamilton network to determine the ideal options and timing.	Hamilton	$2.3 million	FY2020 – FY2022
Mt. Maunganui IP reinforcement	To enhance network security, we are planning to create IP20 pipeline loops in this area.	Bay of Plenty	$2.4 million	FY2024– FY2026
Mains and subdivision urban growth	To address anticipated urban growth development plan for Hamilton and Tauranga.	Hamilton ($800,000 Tauranga ($800,000)	$1.6 million	FY2020 – FY2022
Industrial/commercial connections 1. OMYA Lime Works 2. NZ Food Innovation	As discussed in section 4.1, we anticipate two major new connections in the first half of this planning period: – Reinforcement of the MP4 network to facilitate a plant upgrade for Omya Lime works in Te Kuiti. – A mains extension to supply NZ Food Innovation Sheep Milk Factory.	Waikato	$2.2 million	FY2020 – FY2022

5.2 OPEX FORECAST

The forecast Opex over the planning period is set out in Figure 12. There is no significant change in ongoing Opex from that set out in 2018 AMP.

Figure 12: Total Opex forecast for the planning period (all figures in FY2019 prices)



Largest Opex spend categories going forward

This year we have elected to include within our AMP Update the high-level heat map that shows the largest Opex projects planned for the next ten years (FY2020 to FY2029). This heat map is also part of the new related party transaction information disclosure requirements, that were announced by the Commission in December 2017. First Gas does not have specific Opex projects planned for the period. Instead we have provided the total Opex expenditure. Where it has been possible, we have specified the level of Opex allocated to each region within our network. Figure 13 sets out the location of the planned Opex spend, with greater detail in Table 5.

All network Opex and system operations and network support Opex is forecast to be completed by our related party, GSNZ under an Operations and Management (O&M) agreement between First Gas and GSNZ. This O&M agreement was entered into with the change in ownership of the distribution business in 2016 and will be reviewed before September 2022.

A breakdown of the Opex by region is provided in Table 5 and more detail can be found in the 2018 AMP. Currently no network constraints have been identified that will result in Opex during this planning period.

Figure 13: Largest Opex Spend

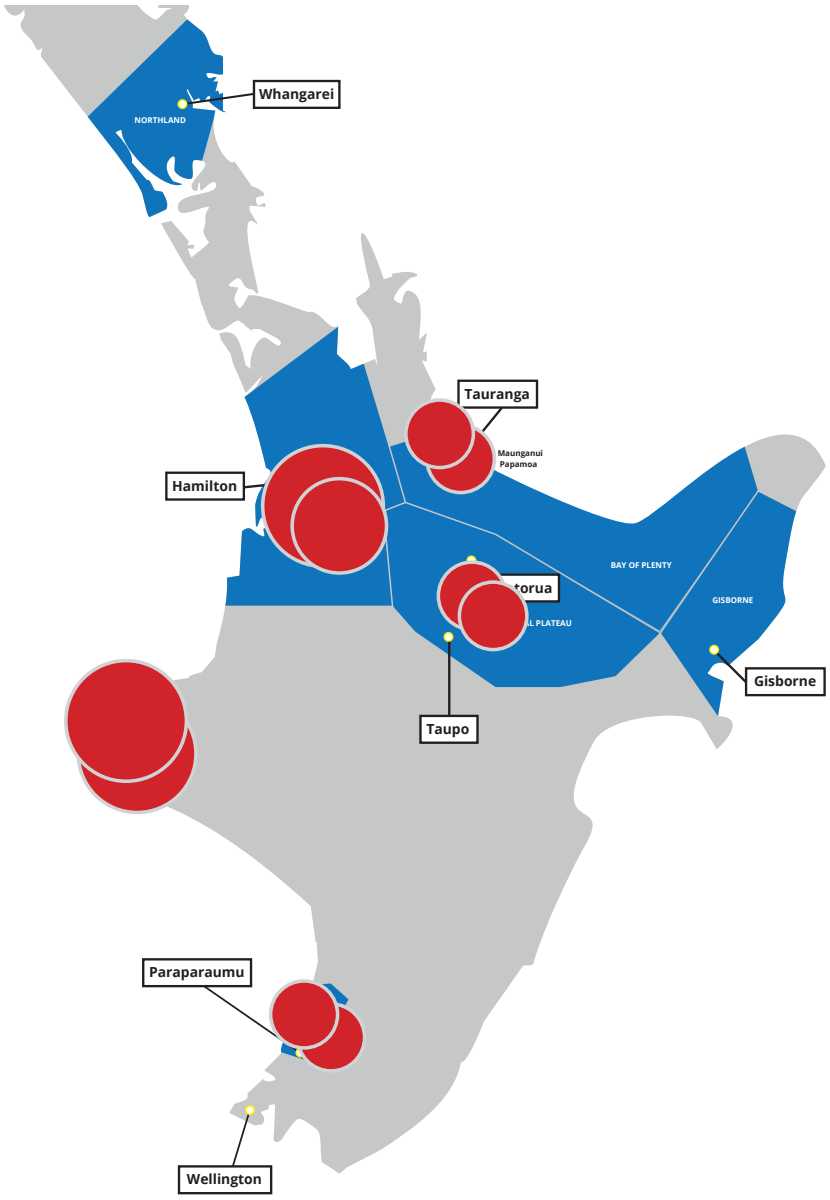


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Table 5: Description of largest Opex spend categories

PROJECT	DESCRIPTION	REGION	COST (CONSTANT $)	PERIOD
Service interruptions, incidents and emergencies	Ongoing costs to support reactive activities in terms of safety response and repair of any part of asset damaged from environmental factors or third-party interference, response to any fault at a station where safety or supply integrity could be compromised, and remediation or isolation works of unsafe network situations.	Waikato ($11.6 million) Bay of Plenty ($4.9 million) Central Plateau ($4.9 million) Kapiti ($4.9 million) Northland ($3.3 million) Gisborne ($3.3 million)	$30 million	Across the period
Routine and corrective maintenance and inspection	Ongoing costs directly associated with operating and maintaining the gas distribution system.	Waikato ($7 million) Bay of Plenty ($3 million) Central Plateau ($3 million) Kapiti ($3 million) Northland ($2 million) Gisborne ($2 million)	$ 19 million	Across the period
System operations and network support	Ongoing costs to support the management and operation of the network.	New Plymouth	$ 16 million	Across the period
Business support	Ongoing costs to support Distribution Operations.	New Plymouth	$ 17 million	Across the period

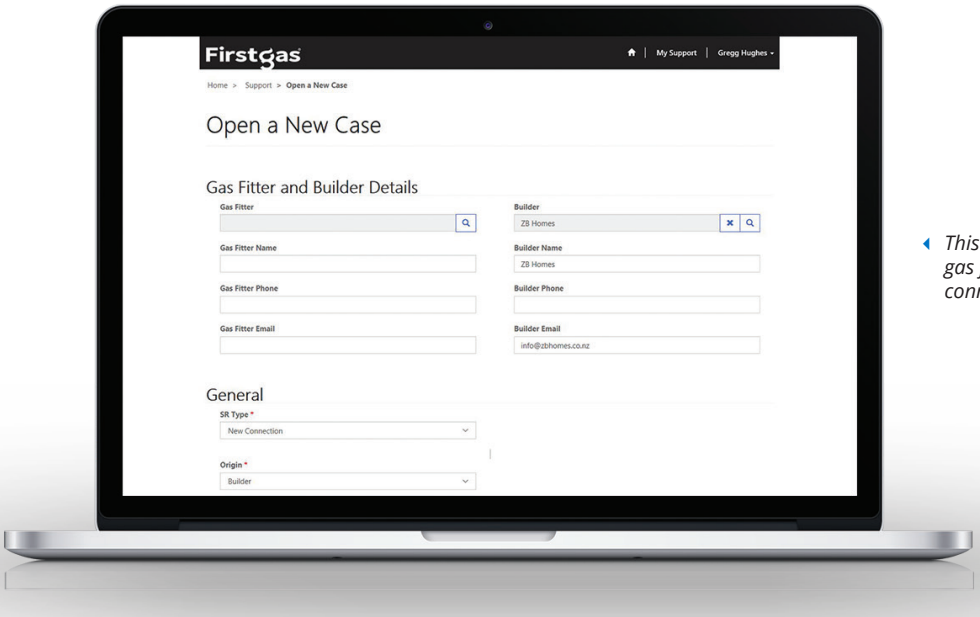
6. STAKEHOLDER ENGAGEMENT

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.

6.1 CONTINUED ENGAGEMENT AND RELATIONSHIP BUILDING

First Gas has continued to engage with retailers, stakeholders and customers to ensure we can meet the needs of all our customers. In the past year, we have undertaken the following activities:

- In May 2019, we ran our **annual gas retailers' workshop** in Auckland. The focus of this year's workshop was pricing, developing a new use of system agreement, connections process, marketing initiatives, and metering.
- We published an updated **capital contributions** policy in July 2019. This policy is available on our website here[12] and clarifies First Gas' approach around when capital contributions and/or fees are required from our customers.
- We have begun work on updating our retailer agreements, which are known as **use-of system agreements (UoSA).** We circulated and discussed the key components of the updated draft UoSA with retailers in July and will have ongoing consultation and additional workshops on the UoSA during the remainder of 2019 calendar year. First Gas is aiming to produce an updated UoSA that aligns with electricity distribution draft agreements that were released by the Electricity Authority and the terms set out in Powerco's recently executed UoSA for its gas distribution business.
- We have rolled out the **gas fitters and builder connections portal** to a wider group of interested gas fitters and builders working within our distribution areas. The portal has the advantage of further streamlining our connection process,



This picture shows the gas fitters and builder connections portal

12. https://firstgas.co.nz/wp-content/uploads/FGL-DX-Capital-Contributions-Policy-1-July-2019.pdf

assisting with the accuracy of property data and allowing users to access and filter connection information via their user login.

- We have undertaken a **customer journey mapping project.** First Gas has sought external support to profile the users of natural gas. By better understanding the users of reticulated natural gas, we can ensure we continue to offer products that meet the market's needs.
- We have continued our engagement with the **New Zealand Utilities Access Group (NZUAG)**, a joint consultative group of road and rail owners/managers and utility companies. NZUAG has recently completed a review of its National Code of Practice for Utility Operators' Access to Transport Corridors. This Code 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 are working with the NZUAG to promote responses to the Code's KPIs which focuses on third party damage affecting all utility owners. The collection, provision and subsequent analysis of the data will add further emphasis to the work First Gas is leading against third party damage, and our approach within the NZUAG has been welcomed over the last year.

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.

6.2 MANAGING CONFLICTING INTERESTS

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.

Fleet Image

Fleet Image is a business that spray paints buses and helicopters.

"Our business has been using natural gas since 1985 and long may it continue. It plays a key role in the operation of all four of our branches and it was great to get a natural gas supply to our new Hamilton site."

APPENDICES

This section sets out the required Information Disclosure schedules that must be completed each disclosure year. It also summarises the material changes made since the 2018 AMP and includes our signed director certificate.

APPENDIX A: SUMMARY OF MATERIAL CHANGES AND COMPLIANCE

The table below:

- Summarises the material changes in our asset management plan, as compared with our 2018 gas distribution AMP.
- Demonstrates our compliance with the requirements for an AMP Update, as set out in the *Gas Distribution Information Disclosure Determination 2012* (ID Determination).

Table 6: Summary of material changes and compliance

ID REQUIREMENT	DISCUSSION
Clause 2.6.5 For the purposes of clause 2.6.3, the AMP update must:	
Clause 2.6.5 (1) Relate to the gas distribution services supplied by the GDB.	This AMP update relates to First Gas' distribution business. Information on the First Gas' transmission business (GTB) can be found in the separate transmission AMP Update.
Clause 2.6.5 (2) Identify any material changes to the network development plans disclosed in the last AMP under clause 12 of Attachment A or in the last AMP update disclosed under this clause 2.6.5.	There has been some rebalancing of the work programme under system growth in the areas of Hamilton, Tauranga and Gisborne.
Clause 2.6.5 (3) Identify any material changes to the lifecycle asset management (maintenance and renewal) plans disclosed in the last AMP pursuant to clause 13 of Attachment A or in the last AMP update disclosed under this clause.	There has been some rebalancing of DRS upgrade projects between FY2019 and FY2020. There has been some rebalancing of the programme of work to replace pre-1985 pipeline in the current regulatory period.
Clause 2.6.5 (4) Provide the reasons for any material changes to the previous disclosures in the Report on Forecast Capital Expenditure set out in Schedule 11a and Report on Forecast Operational Expenditure set out in Schedule 11b.	There have been no material changes to Forecast Operational Expenditure disclosed in the 2018 AMP. There is an overall increase in asset replacement and renewal expenditure to address the risk associated with pre-1985 pipeline for FY2023 and FY2024. There is an overall increase in system growth expenditure due to increases in proposed project costs in the Waikato and Bay of Plenty regions for FY2023 and FY2024.
Clause 2.6.5(5) Identify any changes to the asset management practices of the GDB that would affect a Schedule 13 Report on Asset Management Maturity disclosure.	There have been no material changes to the asset management practices that would affect the asset management maturity disclosure in the 2018 AMP.
Clause 2.6.5 (6) Contain the information set out in the schedules described in 2.6.6.	See **Appendix B.**

ID REQUIREMENT	DISCUSSION
Clause 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 Demand in Schedule 12b. 5. the Report on Forecast Demand in Schedule 12c.	See **Appendix B.**
Clause 2.7.2 Before the start of each disclosure year, every GDB must complete and publicly disclose the Mandatory Explanatory Notes on Forecast Information in Schedule 14a by inserting all relevant information relating to information disclosed in accordance with clause 2.6.6.	See **Appendix B.**

APPENDIX B: INFORMATION DISCLOSURE SCHEDULES

This appendix includes the following Information Disclosure Schedules:

Schedule 11a – Report on forecast Capital Expenditure

Schedule 11b – Report on forecast Operational Expenditure

Schedule 12a – Report on Asset Condition

Schedule 12b – Report on Forecast Utilisation

Schedule 12c – Report on Forecast Demand

Schedule 14a – Explanatory Notes on Forecast Information

B.1: Schedule 11a: Report on Forecast Capital Expenditure

Company Name	First Gas Distribution
AMP Planning Period	1 October 2019 - 30 September 2029

SCHEDULE 11a: REPORT ON FORECAST CAPITAL EXPENDITURE

This schedule requires a breakdown of forecast expenditure on assets for the current disclosure year and a 10 year planning period. The forecasts should be consistent with the supporting information set out in the AMP. The forecast is to be expressed in both constant price and nominal dollar terms. Also required is a forecast of the value of commissioned assets (i.e., the value of RAB additions)
GDBs must provide explanatory comment on the difference between constant price and nominal dollar forecasts of expenditure on assets in Schedule 14a (Mandatory Explanatory Notes).
This information is not part of audited disclosure information.

sch ref

		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 19	30 Sep 20	30 Sep 21	30 Sep 22	30 Sep 23	30 Sep 24	30 Sep 25	30 Sep 26	30 Sep 27	30 Sep 28	30 Sep 29
11a(i): Expenditure on Assets Forecast		$000 (nominal dollars)										
	Consumer connection	6,250	7,612	8,419	9,359	10,129	10,986	11,939	13,001	13,442	13,914	14,193
	System growth	4,940	1,928	4,303	4,607	2,334	2,319	2,748	3,114	3,269	3,334	3,401
	Asset replacement and renewal	3,425	4,075	3,949	4,161	4,493	4,583	4,674	4,768	4,863	4,961	5,060
	Asset relocations	1,237	724	739	812	828	845	862	1,028	1,049	1,070	1,091
	Reliability, safety and environment:											
	Quality of supply	-	-	-	-	-	-	-	-	-	-	-
	Legislative and regulatory	-	-	-	-	-	-	-	-	-	-	-
	Other reliability, safety and environment	-	-	-	-	-	-	-	-	-	-	-
	Total reliability, safety and environment	-	-	-	-	-	-	-	-	-	-	-
	Expenditure on network assets	15,852	14,340	17,409	18,939	17,785	18,732	20,224	21,911	22,623	23,279	23,744
	Expenditure on non-network assets	161	199	516	344	479	478	157	174	484	144	147
	Expenditure on assets	16,013	14,539	17,926	19,282	18,263	19,211	20,381	22,084	23,107	23,423	23,891
plus	Cost of financing	61	56	70	75	70	74	79	85	89	90	92
less	Value of capital contributions	1,500	1,441	1,530	1,680	1,769	1,867	1,974	2,214	2,201	2,286	2,332
plus	Value of vested assets											
	Capital expenditure forecast	14,574	13,154	16,466	17,678	16,565	17,418	18,486	19,955	20,995	21,227	21,652
	Assets commissioned	13,724	13,343	15,789	17,427	16,787	17,240	18,264	19,651	20,778	21,174	21,560

		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 19	30 Sep 20	30 Sep 21	30 Sep 22	30 Sep 23	30 Sep 24	30 Sep 25	30 Sep 26	30 Sep 27	30 Sep 28	30 Sep 29
		$000 (in constant prices)										
	Consumer connection	6,250	7,462	8,090	8,818	9,356	9,948	10,599	11,316	11,470	11,641	11,641
	System growth	4,940	1,890	4,135	4,340	2,156	2,100	2,440	2,710	2,789	2,789	2,789
	Asset replacement and renewal	3,425	3,995	3,795	3,920	4,150	4,150	4,150	4,150	4,150	4,150	4,150
	Asset relocations	1,237	710	710	765	765	765	765	895	895	895	895
	Reliability, safety and environment:											
	Quality of supply	-	-	-	-	-	-	-	-	-	-	-
	Legislative and regulatory	-	-	-	-	-	-	-	-	-	-	-
	Other reliability, safety and environment	-	-	-	-	-	-	-	-	-	-	-
	Total reliability, safety and environment	-	-	-	-	-	-	-	-	-	-	-
	Expenditure on network assets	15,852	14,057	16,730	17,843	16,427	16,963	17,954	19,071	19,305	19,475	19,475
	Expenditure on non-network assets	161	195	450	255	413	404	140	151	413	121	121
	Expenditure on assets	16,013	14,252	17,180	18,098	16,840	17,367	18,094	19,222	19,717	19,595	19,595
	Subcomponents of expenditure on assets (where known)											
	Research and development	-	-	-	-	-	-	-	-	-	-	-

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
for year ended		30 Sep 19	30 Sep 20	30 Sep 21	30 Sep 22	30 Sep 23	30 Sep 24	30 Sep 25	30 Sep 26	30 Sep 27	30 Sep 28	30 Sep 29
Difference between nominal and constant price forecasts		$000										
Consumer connection		-	150	328	542	773	1,038	1,340	1,685	1,972	2,274	2,552
System growth		-	38	168	267	178	219	308	404	479	545	611
Asset replacement and renewal		-	80	154	241	343	433	524	618	713	811	910
Asset relocations		-	14	29	47	63	80	97	133	154	175	196
Reliability, safety and environment:												
Quality of supply		-	-	-	-	-	-	-	-	-	-	-
Legislative and regulatory		-	-	-	-	-	-	-	-	-	-	-
Other reliability, safety and environment		-	-	-	-	-	-	-	-	-	-	-
Total reliability, safety and environment		-	-	-	-	-	-	-	-	-	-	-
Expenditure on network assets		-	283	679	1,096	1,358	1,769	2,269	2,840	3,318	3,804	4,270
Expenditure on non-network assets		-	4	67	89	66	75	18	22	71	24	26
Expenditure on assets		-	287	746	1,184	1,424	1,844	2,287	2,862	3,389	3,827	4,296

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
11a(ii): Consumer Connection	for year ended	30 Sep 19	30 Sep 20	30 Sep 21	30 Sep 22	30 Sep 23	30 Sep 24
*Consumer types defined by GDB**		$000 (in constant prices)					
Mains Extensions/Subdivsions		2,832	3,264	3,329	3,396	3,396	3,396
Service Connections - Residential		2,877	3,266	3,756	4,321	4,753	5,228
Service Connections - Commercial		515	888	960	1,056	1,162	1,278
Customer Easements		26	44	45	45	46	47
* include additional rows if needed							
Consumer connection expenditure		6,250	7,462	8,090	8,818	9,356	9,948
less Capital contributions funding consumer connection		-	-	-	-	-	-
Consumer connection less capital contributions		6,250	7,462	8,090	8,818	9,356	9,948
11a(iii): System Growth							
Intermediate pressure							
Main pipe		1,327	1,360	3,190	2,440	200	1,000
Service pipe		-	-	-	-	-	-
Stations		172	225	225	1,145	-	300
Line valve		-	-	-	-	-	-
Special crossings		-	-	-	-	-	-
Intermediate Pressure total		1,499	1,585	3,415	3,585	200	1,300
Medium pressure							
Main pipe		3,157	305	720	755	1,956	800
Service pipe		-	-	-	-	-	-
Stations		284	-	-	-	-	-
Line valve		-	-	-	-	-	-
Special crossings		-	-	-	-	-	-
Medium Pressure total		3,441	305	720	755	1,956	800
Low Pressure							
Main pipe		-	-	-	-	-	-
Service pipe		-	-	-	-	-	-
Line valve		-	-	-	-	-	-
Special crossings		-	-	-	-	-	-
Low Pressure total		-	-	-	-	-	-

98		**Other network assets**						
99		Monitoring and control systems	-	-	-	-	-	-
100		Cathodic protection systems	-	-	-	-	-	-
101		Other assets (other than above)	-	-	-	-	-	-
102		**Other network assets total**	-	-	-	-	-	-
103								
104		**System growth expenditure**	4,940	1,890	4,135	4,340	2,156	2,100
105	*less*	Capital contributions funding system growth	-	-	-	-	-	-
106		**System growth less capital contributions**	4,940	1,890	4,135	4,340	2,156	2,100
107								
108								
109			*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
		for year ended						
110		**11a(iv): Asset Replacement and Renewal**	**30 Sep 19**	**30 Sep 20**	**30 Sep 21**	**30 Sep 22**	**30 Sep 23**	**30 Sep 24**
111		**Intermediate pressure**	**$000 (in constant prices)**					
112		Main pipe	367	20	20	20	20	20
113		Service pipe	-	-	-	-	-	-
114		Stations	590	330	150	150	220	220
115		Line valve	-	100	100	100	100	100
116		Special crossings	-	60	-	-	-	-
117		**Intermediate Pressure total**	957	510	270	270	340	340
118		**Medium pressure**						
119		Main pipe	2,302	3,210	3,235	3,485	3,560	3,560
120		Service pipe	-	-	-	-	-	-
121		Station	-	-	-	-	-	-
122		Line valve	-	-	-	-	-	-
123		Special crossings	-					
124		**Medium Pressure total**	2,302	3,210	3,235	3,485	3,560	3,560
125		**Low Pressure**						
126		Main pipe	-	-	-	-	-	-
127		Service pipe	-	-	-	-	-	-
128		Line valve	-	-	-	-	-	-
129		Special crossings	-	-	-	-	-	-
130		**Low Pressure total**	-	-	-	-	-	-
131		**Other network assets**						
132		Monitoring and control systems	67	125	125	-	100	100
133		Cathodic protection systems	98	50	50	50	50	50
134		Other assets (other than above)	1	100	115	115	100	100
135		**Other network assets total**	166	275	290	165	250	250
136								
137		**Asset replacement and renewal expenditure**	3,425	3,995	3,795	3,920	4,150	4,150
138	*less*	Capital contributions funding asset replacement and renewal	-	-	-	-	-	-
139		**Asset replacement and renewal less capital contributions**	3,425	3,995	3,795	3,920	4,150	4,150

11a(v): Asset Relocations

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
Project or programme*	30 Sep 19	30 Sep 20	30 Sep 21	30 Sep 22	30 Sep 23	30 Sep 24
provisional forecast	1,237	710	710	765	765	765
*include additional rows if needed						
All other projects or programmes - asset relocations						
Asset relocations expenditure	1,237	710	710	765	765	765
less Capital contributions funding asset relocations						
Asset relocations less capital contributions	1,237	710	710	765	765	765

11a(vi): Quality of Supply

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended	30 Sep 19	30 Sep 20	30 Sep 21	30 Sep 22	30 Sep 23	30 Sep 24
Project or programme*	$000 (in constant prices)					
Category not utilised						
*include additional rows if needed						
All other projects or programmes - quality of supply						
Quality of supply expenditure	-	-	-	-	-	-
less Capital contributions funding quality of supply						
Quality of supply less capital contributions	-	-	-	-	-	-

11a(vii): Legislative and Regulatory

Project or programme						
Category not ulitised						
*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*						
Category not utilised						
*include additional rows if needed						

189		All other projects or programmes - other reliability, safety and environment					
190		**Other reliability, safety and environment expenditure**	-	-	-	-	-	-
191	*less*	Capital contributions funding other reliability, safety and environment					
192		**Other Reliability, safety and environment less capital contributions**	-	-	-	-	-	-
193								
194	**11a(ix): Non-Network Assets**		*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
195	**Routine expenditure**		**30 Sep 19**	**30 Sep 20**	**30 Sep 21**	**30 Sep 22**	**30 Sep 23**	**30 Sep 24**
196		*Project or programme**						
197		ICT		126	441	100	111	395
198		Building Refurbishment		29	9	155	302	8
199		All other projects or programmes- routine expenditure	161	40				
200								
201								
202		** include additional rows if needed*						
203		All other projects or programmes - routine expenditure						
204		**Routine expenditure**	161	195	450	255	413	404
205	**Atypical expenditure**							
206		*Project or programme**						
207								
208								
209								
210								
211								
212		** include additional rows if needed*						
213		All other projects or programmes - atypical expenditure						
214		**Atypical expenditure**	-	-	-	-	-	-
215								
216		**Expenditure on non-network assets**	161	195	450	255	413	404

B.2: Schedule 11b: Report on Forecast Operational Expenditure

Company Name	First Gas Distribution
AMP Planning Period	1 October 2019 - 30 September 2029

SCHEDULE 11b: REPORT ON FORECAST OPERATIONAL EXPENDITURE

This schedule requires a breakdown of forecast operational expenditure for the disclosure year and a 10 year planning period. The forecasts should be consistent with the supporting information set out in the AMP. The forecast is to be expressed in both constant price and nominal dollar terms. GDBs must provide explanatory comment on the difference between constant price and nominal dollar operational expenditure forecasts in Schedule 14a (Mandatory Explanatory Notes).
This information is not part of audited disclosure information.

sch ref												
7		Current year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
8	for year ended	30 Sep 19	30 Sep 20	30 Sep 21	30 Sep 22	30 Sep 23	30 Sep 24	30 Sep 25	30 Sep 26	30 Sep 27	30 Sep 28	30 Sep 29
9	**Operational Expenditure Forecast**	**$000 (in nominal dollars)**										
10	Service interruptions, incidents and emergencies	2,939	3,093	3,155	3,218	3,283	3,348	3,415	3,483	3,553	3,624	3,697
11	Routine and corrective maintenance and inspection	896	1,953	1,993	2,033	2,073	2,115	2,157	2,200	2,244	2,289	2,335
12	Asset replacement and renewal	-	-	-	-	-	-	-	-	-	-	-
13	**Network opex**	3,835	5,046	5,148	5,251	5,356	5,463	5,572	5,684	5,797	5,913	6,032
14	System operations and network support	1,331	1,650	1,683	1,716	1,751	1,786	1,821	1,858	1,895	1,933	1,972
15	Business support	3,163	1,800	1,837	1,873	1,911	1,949	1,988	2,028	2,068	2,110	2,152
16	**Non-network opex**	4,494	3,450	3,519	3,590	3,662	3,735	3,809	3,886	3,963	4,043	4,123
17	**Operational expenditure**	8,329	8,496	8,667	8,841	9,017	9,198	9,382	9,569	9,761	9,956	10,155
18		Current year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
19	for year ended	30 Sep 19	30 Sep 20	30 Sep 21	30 Sep 22	30 Sep 23	30 Sep 24	30 Sep 25	30 Sep 26	30 Sep 27	30 Sep 28	30 Sep 29
20		**$000 (in constant prices)**										
21	Service interruptions, incidents and emergencies	2,939	3,032	3,032	3,032	3,032	3,032	3,032	3,032	3,032	3,032	3,032
22	Routine and corrective maintenance and inspection	896	1,915	1,915	1,915	1,915	1,915	1,915	1,915	1,915	1,915	1,915
23	Asset replacement and renewal	-	-	-	-	-	-	-	-	-	-	-
24	**Network opex**	3,835	4,947	4,947	4,947	4,947	4,947	4,947	4,947	4,947	4,947	4,947
25	System operations and network support	1,331	1,617	1,617	1,617	1,617	1,617	1,617	1,617	1,617	1,617	1,617
26	Business support	3,163	1,765	1,765	1,765	1,765	1,765	1,765	1,765	1,765	1,765	1,765
27	**Non-network opex**	4,494	3,382	3,382	3,382	3,382	3,382	3,382	3,382	3,382	3,382	3,382
28	**Operational expenditure**	8,329	8,329	8,329	8,329	8,329	8,329	8,329	8,329	8,329	8,329	8,329
29	**Subcomponents of operational expenditure (where known)**											
30	Research and development	-	-	-	-	-	-	-	-	-	-	-
	Insurance	-	-	-	-	-	-	-	-	-	-	-
32												
33		Current year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
34	for year ended	30 Sep 19	30 Sep 20	30 Sep 21	30 Sep 22	30 Sep 23	30 Sep 24	30 Sep 25	30 Sep 26	30 Sep 27	30 Sep 28	30 Sep 29
35	**Difference between nominal and real forecasts**	**$000**										
36	Service interruptions, incidents and emergencies	-	61	123	186	251	316	383	451	521	592	665
37	Routine and corrective maintenance and inspection	-	38	78	118	158	200	242	285	329	374	420
38	Asset replacement and renewal	-	-	-	-	-	-	-	-	-	-	-
39	**Network opex**	-	99	201	304	409	516	625	737	850	966	1,085
40	System operations and network support	-	33	66	99	134	169	204	241	278	316	355
41	Business support	-	35	72	108	146	184	223	263	303	345	387
42	**Non-network opex**	-	68	137	208	280	353	427	504	581	661	741
43	**Operational expenditure**	-	167	338	512	688	869	1,053	1,240	1,432	1,627	1,826

B.3: Schedule 12a: Report on Asset Condition

Company Name	**First Gas Limited**
AMP Planning Period	**1 October 2019 - 30 September 2029**

SCHEDULE 12a: REPORT ON ASSET CONDITION

This schedule requires a breakdown of asset condition by asset class as at the start of the forecast year. The data accuracy assessment relates to the percentage values disclosed in the asset condition columns. Also required is a forecast of the percentage of units to be replaced in the next 5 years. All information should be consistent with the information provided in the AMP and the expenditure on assets forecast in Schedule 11a.

sch ref

					Asset condition at start of planning period (percentage of units by grade)						
8	Operating Pressure	Asset category	Asset class	Un	Grade 1	Grade 2	Grade 3	Grade 4	Grade unknow	Data accuracy (1–4)	% of asset forecast to be replaced in next 5 years
9	Intermediate Pressure	Main pipe	IP PE main pipe	km	-	-	-	-	-	N/A	-
10	Intermediate Pressure	Main pipe	IP steel main pipe	km	-	-	100.00%		-	3	-
11	Intermediate Pressure	Main pipe	IP other main pipe	km	-	-	-	-	-	N/A	-
12	Intermediate Pressure	Service pipe	IP PE service pipe	km	-	-	-	-	-	N/A	-
13	Intermediate Pressure	Service pipe	IP steel service pipe	km	-		100.00%		-	3	-
14	Intermediate Pressure	Service pipe	IP other service pipe	km	-	-	-	-	-	N/A	-
15	Intermediate Pressure	Stations	Intermediate pressure DRS	No.	-	5.9%	39.6%	54.5%	-	4	5.90
16	Intermediate Pressure	Line valve	IP line valves	No.	-	6.7%	65.8%	9.6%	17.9%	3	-
17	Intermediate Pressure	Special crossings	IP crossings	No.	-	-	88.2%	11.8%	-	3	5.90
18	Medium Pressure	Main pipe	MP PE main pipe	km	-	1.32%	12.14%	86.54%	-	3	1.30
19	Medium Pressure	Main pipe	MP steel main pipe	km	-	7.30%	92.4%	-	-	3	1.90
20	Medium Pressure	Main pipe	MP other main pipe	km	-	-	-	-	-	N/A	-
21	Medium Pressure	Service pipe	MP PE service pipe	km	-		15.0%	85.00%	-	3	0.50
22	Medium Pressure	Service pipe	MP steel service pipe	km	-	50.0%	50.00%	-	-	3	-
23	Medium Pressure	Service pipe	MP other service pipe	km	-	-	-	-	-	N/A	-
24	Medium Pressure	Stations	Medium pressure DRS	No.	-	-	41.7%	58.3%	-	4	-
25	Medium Pressure	Line valve	MP line valves	No.		6.5%	76.4%	7.9%	9.1%	3	0.10
26	Medium Pressure	Special crossings	MP special crossings	No.	-	-	93.2%	5.1%	1.7%	3	6.80
27	Low Pressure	Main pipe	LP PE main pipe	km	-	30.00%	30.00%	40.0%	-	3	-
28	Low Pressure	Main pipe	LP steel main pipe	km	-	-	-	-	-	N/A	-
29	Low Pressure	Main pipe	LP other main pipe	km	-	-	-	-	-	N/A	-
30	Low Pressure	Service pipe	LP PE service pipe	km	-	-	100.0%	-	-	3	-
31	Low Pressure	Service pipe	LP steel service pipe	km	-	-	100.0%	-	-	3	-
32	Low Pressure	Service pipe	LP other service pipe	km	-	-	-	-	-	N/A	-
33	Low Pressure	Line valve	LP line valves	No.	-	-	100.0%	-	-	3	-
34	Low Pressure	Special crossings	LP special crossings	No.	-	-	-	-	-	N/A	-
35	All	Monitoring and control systems	Remote terminal units	No.	-	-	-	-	-	N/A	-
36	All	Cathodic protection systems	Cathodic protection	No.		6.9%	83.7%	9.0%	-	3	7.00

B.4: Schedule 12b: Report on Forecast Utilisation

First Gas Distribution

Company Name	First Gas Limited
AMP Planning Period	1 October 2019 – 30 September 2029

SCHEDULE 12b: REPORT ON FORECAST UTILISATION

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

sch ref

Forecast Utilisation of Heavily Utilised Pipelines

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* 30 Sep 19	*CY+1* 30 Sep 20	*CY+2* 30 Sep 21	*CY+3* 30 Sep 22	*CY+4* 30 Sep 23	*CY+5* 30 Sep 24	Comment
Kapiti	Paraparaumu	Paraparaumu IP20	1,300	950	1,480	-	scmh	1,564	1,320	1,328	1,336	1,344	1,352	Currently operating below MinOP. System reinforcement connecting Waikanae and Paraparaumu IP20 networks is planned to be completed by the end of FY2020. Flow to Paraparaumu IP20 will reduce because Waikanae is supplying more gas to Paraparaumu.
							kPa	902	1,115	1,113	1,111	1,109	1,107	
Waikato	Waitoa	Waitoa MP4	400	200	647	3	scmh	644	644	644	644	644	644	Heavily utilised but no growth forecast. Modelled peak load on the majority of the MP4 system (worst pressures). System reinforcement is planned to be completed by the end of FY2020.
							kPa	205	207	207	207	207	207	
Waikato	Cambridge	Cambridge IP20	1,300	950	1,546	433	scmh	1,114	1,394	1,416	1,439	1,461	1,483	Reinforcement has been completed. No constraints have been identified.
							kPa	1,417	1,123	1,101	1,078	1,054	1,029	
Waikato	Hamilton	Hamilton IP10	1,000	800	15,160	-	scmh	15,204	15,243	15,293	15,343	15,393	15,443	No remaining capacity at MinOp is available in the system. System reinforcement options are being assessed and planned for completion over the next 3 years. Pressure indicated in the table are significantly less than MinOp. This occurs only in a small section of the Hamilton IP10 network (Hamilton East area). However, the Hamilton MP4 network which is supplied by this section of Hamiltion IP10 network will still operate satisfactorily at these modelled pressures.
							kPa	563	561	557	552	547	543	
Waikato	Hamilton	Hamilton MP4	400	200	10,246	127	scmh	14,590	14,626	14,674	14,722	14,770	14,808	No contraints have been identified.
							kPa	280	279	279	278	278	277	
							scmh							
							kPa							
							scmh							
							kPa							
							scmh							
							kPa							
							scmh							
							kPa							
							scmh							
							kPa							

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

Disclaimer for supply

The information in this table contains modelled estimates of utilisation and capacity. Any interested party seeking to invest in supply from First Gas Limited's distribution networks should contact their retailer and confirm availability of capacity.

Notes and assumptions

1. A 'heavily utilised' pressure system is a pressure system where the modelled flow rate, at system peak during 2016, is greater than or equal to 500 scmh, and its utilisation (pressure drop) is greater than or equal to 40% from the nominal operating pressure (NOP). The utilisation of a pressure system is calculated using the formula: [1 - (system minimum pressure / nominal operating pressure)] *100%.
2. The remaining capacity of a 'heavily utilised' pressure system is obtained by examining the modelled flows at various extremity points in each pressure system, and the level at which the minimum operating pressure (MinOP) is reached. First Gas Limited's security standards set the MinOP at 50% of the rated pressure (which equates to approximately 82% of the pipeline capacity) for a pressure system (based on standard operating pressures). The minimum modelled flow rate, analysed at one extremity point, is used to calculate the remaining capacity of the entire pressure system being studied.
3. A forecast model of a pressure system is obtained by applying either its forecast flow rate or an annual growth rate in each forecast year; and scaling its loads evenly to give the system total flow. The resulting minimum system pressure is simulated on this basis.
4. The forecast system flow is populated using the respective network system as tabulated in Appendix I of the First Gas Distribution Asset Management Plan 2018 - 2028.

B.5: Schedule 12c: Report on Forecast Demand

Company Name	**First Gas Limited**
AMP Planning Period	**1 October 2019 – 30 September 2029**

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.

ch ref

12c(i) Consumer Connections

Number of ICPs connected in year by consumer type

Consumer types defined by GDB	*Current year CY* **30 Sep 19**	*CY+1* **30 Sep 20**	*CY+2* **30 Sep 21**	*CY+3* **30 Sep 22**	*CY+4* **30 Sep 23**	*CY+5* **30 Sep 24**
Residential	1,331	1,500	1,750	2,000	2,250	2,500
Commercial	100	115	130	135	135	145
Industrial	2	3	3	4	4	4
[GDB consumer type]						
[GDB consumer type]						
Total	1,433	1,618	1,883	2,139	2,389	2,649

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12c(ii): Gas Delivered

	Current year CY **30 Sep 19**	*CY+1* **30 Sep 20**	*CY+2* **30 Sep 21**	*CY+3* **30 Sep 22**	*CY+4* **30 Sep 23**	*CY+5* **30 Sep 24**
Number of ICPs at year end (at year end)	64,296	65,414	66,797	68,436	70,325	72,474
Maximum daily load (GJ per day)	41,827	49,650	50,000	50,650	50,950	51,250
Maximum monthly load (GJ per month)	970,000	972,910	975,829	978,756	981,692	984,638
Number of directly billed ICPs (at year end)	-	-	-	-	-	-
Total gas conveyed (GJ per annum)	9,110,348	9,165,010	9,220,000	9,275,320	9,330,972	9,386,958
Average daily delivery (GJ per day)	24,960	25,041	25,260	25,412	25,564	25,647
Load factor	78.27%	78.50%	78.74%	78.97%	79.21%	79.45%

B.6: Schedule 14a: Explanatory Notes on Forecast Information

Forecasts in this AMP Update are in constant (real) value terms. In preparing Schedules 11a and 11b we have escalated our real forecasts to produce nominal forecasts for Information Disclosure.

While we expect to face a range of input price pressures over the planning period, we have based our escalation approach on the consumer price index (CPI). This has been done to align forecast inflation with the initial 'exposure' financial model for the gas DPP. Therefore, for the purposes of this AMP Update we have assumed changes are limited to CPI rather than adopting more specific indices or modelling trends in network components or commodity indices. Similarly, we have not sought to reflect trends in the labour market.

Table 7: Forecast Information

FOR YEAR ENDED	CPI
FY2019	0.00%
FY2020	2.01%
FY2021	2.01%
FY2022	2.00%
FY2023	2.00%
FY2024	2.00%
FY2025	2.00%
FY2026	2.00%
FY2027	2.00%
FY2028	2.00%
FY2029	2.00%

APPENDIX C: DIRECTOR CERTIFICATE

Certification for Year beginning Disclosures

Clause 2.9.1

We, Philippa Jane Dunphy and Euan Richard Krogh, being directors of First Gas Limited, certify that, having made all reasonable enquiry, to the best of our knowledge:

(a) The following attached information of First Gas Limited prepared for the purposes of clauses 2.6.1, 2.6.3, 2.6.6 and 2.7.2 of the Gas Distribution Information Disclosure Determination 2012 in all material respects complies with that determination.

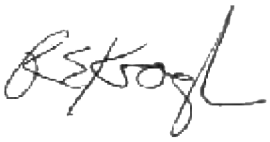
(b) The prospective financial or non-financial information included in the attached information has been measured on a basis consistent with regulatory requirements or recognised industry standards.

(c) The forecasts in Schedules 11a, 11b, 12a, 12b and 12c are based on objective and reasonable assumptions which both align with First Gas' corporate vision and strategy and are documented in retained records.

Director

14 August 2019

Date



Director

14 August 2019

Date