Firstgas

GAS TRANSMISSION

Asset Management Plan 2020

Summary Document

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MESSAGE FROM THE CHIEF EXECUTIVE OFFICER

Dear Stakeholders,

Welcome to First Gas Limited's (Firstgas) Gas Transmission Asset Management Plan (AMP) for 2020. We have continued to strengthen our approach to asset management to ensure we continue to deliver safe, reliable and affordable gas transmission services to our customers across the North Island.

2020 has been another busy year for the team delivering our capital works programme, with a strong focus on improving the efficiency of our operations, addressing risks on our network, while ensuring the safety of staff, contractors and the general public. We have developed a compression strategy that will modernise and simplify our ageing fleet of compressor units, progressed the Gilbert Stream project to address erosion, and continued to address geohazards on our network, such as the technical review of the Mangapukatea project. It was pleasing to see that the hard work that Firstgas has put into managing our gas transmission business over the last three years reflected in the positive AECOM risk management and geohazard reviews released by the Commerce Commission in late 2019.

It would be remiss not to comment on the impact that COVID-19 has had, and will continue to have, on New Zealand. I am proud that throughout the April and May lockdown, Firstgas was able to continue to provide essential services, by transporting gas to all of our customers, including hospitals and other essential service providers. We were able to proactively review and adjust our own capital works programme, as a number of our projects were delayed over the period. We also worked with our customers to offer tailored payment plans to assist them through this difficult period. It will be important that, as a business, we remain agile and able to respond effectively to future changes in the sector and economy.

Looking ahead, we see no reason to divert our focus away from making a positive contribution to New Zealand's net-zero carbon future through the use of our assets and expertise. Our gas transmission system supports a diverse and resilient energy system, with our network able to support customers converting from coal to natural gas. As a business, we have signed up to the Climate Leaders Coalition, and have committed to reducing our own emissions by 30% by 2030.

Firstgas is working hard to understand how we can decarbonise our gas networks. In March 2020, we launched our hydrogen pipeline network trial. This event was hosted by the Minister of Energy, the Honourable Dr Megan Woods, and is partly funded by the Government's Provincial Growth Fund. Amongst other opportunities, we are also looking at how we can support a viable biogas market within New Zealand.

These exciting future opportunities will only be possible with a safe, resilient, and efficient gas transmission network. I hope you find the 2020 AMP for our transmission business both interesting and informative. We look forward to working with you all in the coming year and welcome feedback on this year's document.

Paul Goodeve
Chief Executive Officer

GLOSSARY

TERM	DEFINITION
AMMAT	Asset Management Maturity Assessment Tool
AMP	Asset Management Plan
Asset grades	Grade 1: means end of service life, immediate intervention required Grade 2: means material deterioration but asset condition still within serviceable life parameters. Intervention likely to be required within 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 existing physical assets in the network, as well as Non-network assets, e.g. IT or facilities
CCC	Climate Change Commission, government body proposed to be established through the Zero Carbon Bill
COO	Chief Operating Officer
CPP	Customised Price-Quality Path
CPU	Central Processing Unit
DP	Delivery Point
DPP	Default Price – Quality Path
FEED	Front End Engineering Design
FY2020	Financial year from 1 October 2019 to 30 September 2020. Firstgas' financial year is aligned with its regulatory disclosure year.
GDB	Gas Distribution Business
GIC	Gas Industry Company – New Zealand's gas industry co-regulatory body
GM	General Manager
GMS	Gas Measurement System – commonly referred to as a gas meter
GTAC	Gas Transmission Access Code: the single access code for the transmission system, replacing the Maui Pipeline Operating Code and the Vector Transmission Code
GTB	Gas Transmission Business
HDD	Horizontal directional drilling
HSEQ	Health, Safety, Environment and Quality

TERM	DEFINITION
ICP	Installation Control Point
IS	Information Systems
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*.
IT	Information Technology
KGTP	Kapuni Gas Treatment Plant
KPI	Key Performance Indicators
MLV	Main line valve
NZTA	New Zealand Transport Agency
OATIS	Open Access Transmission Information System
Opex	Operational expenditure: the ongoing costs directly associated with running the gas transmission 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)
PIG	Pipeline inspection gauge tool
Pigging	A method of internally inspecting, cleaning or gauging a high-pressure pipeline, normally while in service to obtain information on pipeline condition
PJ	Petajoule (unit of energy). 10^{15} joules = 1,000 TJ
Planning Period	The AMP planning period is the projected 10-year period commencing with the disclosure year following the date that the AMP is disclosed. The planning period for this AMP is 1 October 2020 to 30 September 2030
RTE	Response Time to Emergencies
Regulatory period	The period for default/customised price-quality regulation applicable to a gas transmission business (GTB), as specified in a determination made under section 52P of the Commerce Act 1986. The current regulatory period is 1 October 2017 – 30 September 2022.
SCADA	Supervisory control and data acquisition
TJ	Terajoule (unit of energy) = 10^{12} Joules
UAV	Unmanned Aerial Vehicle

A full glossary is also included in **Appendix A** of the supporting appendices for this 2020 Asset Management Plan.

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EXECUTIVE SUMMARY

This is First Gas Limited's (Firstgas) Gas Transmission Asset Management Plan (AMP) for 2020.

Firstgas owns and operates New Zealand's gas transmission system. Our system transports large volumes of natural gas from production stations in the Taranaki region to distribution networks and large customers across the North Island. We also own and operate more than 4,800 kilometres of gas distribution pipelines, supplying consumers across Northland, Waikato, Central Plateau, Bay of Plenty, Gisborne and Kapiti Coast.

Firstgas is part of the wider Firstgas Group. The Firstgas Group owns energy infrastructure assets across New Zealand through our affiliate Gas Services NZ Limited (GSNZ), a separate business with common shareholders that owns Rockgas, the LPG business and Flexgas, the Ahuroa gas storage facility. Activities across the Firstgas Group are driven by our vision and mission:

Vision	Proudly leading the delivery of New Zealand's energy needs in a changing world
Mission	Safely and reliably delivering energy that is affordable and acceptable to New Zealand's families and businesses

For our gas transmission business, this means that we are focused on transporting gas across the North Island to meet the diverse needs of our customers, be it industrial use, power generation, commercial applications or residential use for space heating, water heating and cooking. We are focused on ensuring gas is a competitive fuel choice for our customers, while operating within the regulated price-quality framework set by the Commerce Commission.

Key drivers for our transmission business

Our AMP describes the asset management processes that we use to manage our gas transmission system and its assets. It focuses on how we intend to manage these assets over the next 10 years (the planning period), with a focus on:

- A commitment to safety, for our staff, customers and the general public
- Being accountable for the performance of our gas transmission system
- Providing visibility of our investment in the network and upcoming physical works
- Ensuring ongoing engagement with our stakeholders, staff and contractors
- Compliance with our regulatory obligations.

Our approach to asset management is guided by an asset management framework that provides a clear "line of sight" from Firstgas Group's direction and goals, down to our company objectives and day to day activities. This framework guides the optimal combination of life cycle activities to be applied across our portfolio of transmission assets, based on their criticality, condition and performance.

There are a number of key drivers that influence our approach to asset management for our gas transmission business over the ten-year planning period. Firstgas is focused on:

- **Looking for performance improvements:** We are focused on the efficiency of how we physically operate our transmission system, as well as the efficiency of our broader business activities. The introduction of our compression strategy this year is a key focus, with our intention to update and simplify an ageing fleet of compressor units, by using singular modular compression packages. This approach will improve reliability, security of supply and provide flexibility, allowing units to be relocated to match future changing system loads and opportunities.

  Our asset management improvement programme also incorporates a number of activities that will improve our asset management practices. Programmes like maintenance optimisation will enable us to more efficiently maintain our assets.
- **A strong culture around health and safety:** Safety is at the forefront of how we approach managing and operating our transmission assets. Maintaining product containment is the primary control that minimises risk to all those who live and work on and around the transmission network. Asset integrity and our asset management practices outlined in this AMP are crucial in maintaining safe outcomes.
- **Mitigating and managing risk:** The consideration of risk plays a key role in our asset management decisions. We take a systematic approach to ensure that hazards and risks can be controlled and mitigated to an appropriate level. The identification and replacement of poor condition / non-standard critical equipment is one of the many approaches we use to reduce risk in our transmission system.

  The impact of geohazards and how this translates to pipeline integrity risk remains a key focus for us. AECOM's 2019 report into Firstgas' management of geohazards found that we have appropriate management processes and systems in place, supported by field staff and external consultants, to identify and assess geohazards and determine whether and how to monitor or remediate and to prioritise remediation works.

- **Preparing for the future and addressing climate change:** Our gas transmission and distribution systems support a secure and resilient energy system by providing diversity in our country's energy supply. Thermal electricity generation from gas provides much needed electricity during dry winters and peak demand periods. We are focused on keeping the use of our transmission system affordable for customers, while also supporting the shift of businesses from coal to natural gas.

  Firstgas is committed to supporting New Zealand's transition to a net zero carbon economy. We have work underway investigating how we can decarbonise the gas system, through the transportation of hydrogen and / or biogas through our networks.
- **Adaptability of our business:** The impact of the COVID-19 pandemic will continue to impact on our economy for many years to come. Firstgas was able to take a proactive approach to planning and reforecasting the work planned for FY2020 on our networks, as soon as lockdown came into effect. We also worked closely with our customers to offer tailored support during this difficult time. Going forward, we remain focused on adapting and managing our business, within the evolving context.

Activities planned for the coming year

The focus for the coming year (FY2021) remains on providing our customers a safe and resilient gas transmission system, while maturing and optimising our approach to asset management. Our forecast capital expenditure (Capex) over the next ten years is set out in Figure 1.

The increased level of Capex forecast for FY2021 can be attributed to the continued development of the IT platform to support the Gas Transmission Access Code (GTAC) which will oversee the commercial arrangements for the entire transmission system. Complexities during implementation have resulted in a delay in this project and overspend; however, we are completing a review and "reset" of the project and will look to establish a new budget and timeframe for implementation.

We are prioritising work on the Gilbert Stream realignment project and remediation of the Pariroa land feature (the "buckle") in the coming year. These projects address two known geohazards in the Taranaki region. We will also start implementing the new compression strategy. We will continue our programme of intelligent pigging, coupled with upgrades to the PIG launchers and receivers, to ensure we can effectively monitor the condition of our transmission system.

The forecast Opex over the next planning period is set out in Figure 2. We forecast a steady level of Opex of approximately $45 million per year (in 2020 prices). Continuous improvement is part of how we conduct business and going forward, we will continue to review Opex activities and looking for opportunities for savings.

Figure 1: Forecast total Capex (all figures in FY2020 prices)

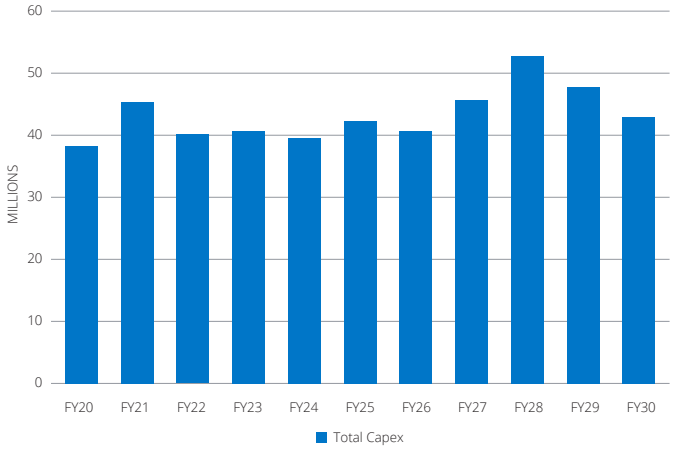
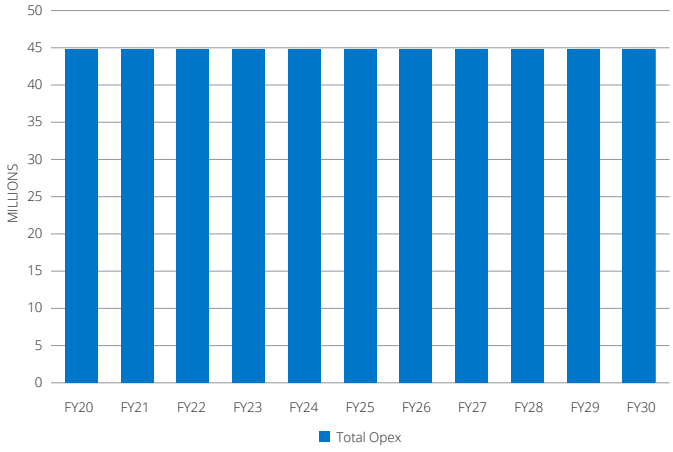


Figure 2: Forecast total Opex (all figures in FY2020 prices)



Measuring our progress

To ensure that we continue to deliver a reliable, safe and affordable gas supply through our transmission system, Firstgas has established a series of Key Performance Indicators (KPIs) that we regularly monitor and annually report against. Our performance against our KPIs for the year ending 30 September 2019 is set out in Table 1.

Table 1: Trends in Key Performance Indicators (KPI)

KEY PERFORMANCE INDICATORS	FY2019	FY2021 TARGET	TREND[41]
Safety: Lost time injuries	0	**0**	
Response time to emergencies is less than 3 hours	100%	**100%**	
Unplanned interruptions	1	**0**	
Major interruptions	0	**0**	
Environmental[42] – instances of non-compliance	0	**0**	
Asset Management Maturity Assessment	2.9	**3**	
Public reported escapes and gas leaks	5	**<5**	
Compressor reliability	97%	**>97%**	
Lloyds annual audit compliance	1	**0**	
Compressor availability	89%	**>95%**	

1. The arrow direction compares data between FY2018 and FY2019, if there was an increase, decrease or steady trend. The arrow colour indicates how close is the KPI to the FY2021 target.
2. We have a policy aim of providing a safe and reliable gas supply to our customers in a manner that minimises our impact on the environment. We are committed to comply with all legislative requirements and where possible exceed them.

While compressor availability has trended upwards since our purchase of the assets in 2016, we recognise that historical performance has not met the required target levels. As part of the approach to lifting compressor performance, we have a control system replacement programme underway, as well as the compressor strategy, to improvement performance in this area.

Firstgas had one area of non-compliance that was identified during the last Lloyds annual audit of our gas transmission system. We have now resolved this matter.

Performance against our budget

Each year, we review the actual expenditure on our transmission system against the forecast expenditure presented in the prior year's AMP. This provides our customers and stakeholders visibility of how we are performing against our plans. For the year ending 30 September 2020,[3] Firstgas has had a solid result, delivering the majority of its capital works programme. The major variances between actual and forecasted Capex relate to:

- Rephasing of the civil works for the Gilbert Stream re-alignment project to FY2021. This deferral was due to the impact of COVID-19.
- The technical review for the Maungapukatea (White Cliffs) erosion site which has adjusted the timing of the project and subsequently reduced the expenditure planned for FY2020.

We are forecasting our Opex to be in line with the forecast in our 2019 AMP Update, with only a small variance of $600,000.

Moving forward

As part of our continuous improvement work, Firstgas intends to undertake a formal review of our AMPs in late 2020. We are keen to engage with our stakeholders and customers to discuss the current format of our AMPs and understand if the information is appropriate for our readers needs and if there are further improvements that readers would like to see. We recognise that our stakeholders want to better understand how our investments address risks on our transmission system and we need to provide greater commentary on our environmental, social, and corporate governance (ESG) obligations. We are looking at how to best address this.

The 2021 AMPs will be a key input[4] for the Commerce Commission's Default Price-Quality Path (DPP) reset for the next regulatory period (2022 – 2027), providing the Commerce Commission with both the forecast expenditure sought for the next regulatory control period and the project justifications.

3. All data from 1 May 2020 to 30 September 2020 has been forecasted, in order to provide a complete 12 months of data.
4. Alongside our annual Information Disclosures schedules setting out historic spend and results.

1. INTRODUCTION

This is First Gas Limited's (Firstgas) Gas Transmission Asset Management Plan (AMP) for 2020.

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

As the sole provider of gas transmission services in New Zealand, we are regulated under Part 4 of the Commerce Act 1986 and subject to both price-quality path and information disclosure regulation. Producing an AMP each year is one of these regulatory requirements, as well as being a key document guiding the operations of our business and our engagement with customers and stakeholders.

This section outlines the purpose, scope and structure of our 2020 AMP and provides an overview of our overall business and the gas transmission system. We also set out the key regulatory and environment changes that are influencing our gas transmission business.

1.1 PURPOSE OF AMP

The purpose of our AMP is to describe the asset management processes that we use to manage our gas transmission system and its assets. The AMP focuses on how we intend to manage these assets over the next 10 years (the planning period) to both achieve our asset management objectives and meet stakeholder expectations. It also sets out sufficient information so that our customers and stakeholders can understand how we address key asset-related risks, the performance targets we set for our gas transmission system, and how efficiencies and improvements are being achieved across the business.[5]

We also take the opportunity to update our stakeholders on our progress against the 2019 AMP Update[6] and outline our key priorities for the year ahead. This is an important part of our ongoing stakeholder engagement and enables our customers to evaluate the value being delivered through our capital programme.

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

- **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 stakeholders about how we intend to manage the gas transmission system. 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 ongoing performance of our system.
- **Investment planning:** Provide visibility of forecasted system 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[7] set by the Commerce Commission.

1.2 PERIOD COVERED BY THE AMP

The AMP covers a ten-year forecast period from 1 October 2020 through to 30 September 2030 (the planning period). This aligns with our 1 October to 30 September financial and pricing year. The expenditure forecasts presented in this AMP are expressed in constant 2020 prices (unless otherwise stated).

The 2020 AMP for Firstgas' gas transmission business was approved by our Board of Directors on 12 August 2020.

1.3 SCOPE OF THE AMP

The 2020 AMP sets out our planned investments in our gas transmission system during the planning period. It explains how we will develop our transmission system, renew our assets, and undertake maintenance to provide a safe, reliable and valued service to our customers.

Expenditure forecasts and planned projects over the ten-year planning period are based on analysis of customer, system and asset information. Capital expenditure (Capex) and operational expenditure (Opex) forecasts as set out in the AMP provide important inputs to our annual business plan.

The 2020 AMP complies with the requirements for a full Asset Management Plan, as specified in the Commerce Commission's Information Disclosure Determination.[8] **Appendix M** provides a detailed reference table, detailing our compliance with each aspect of the Information Disclosure requirements.

1.4 STRUCTURE OF THE AMP

The 2020 AMP follows the same structure that Firstgas adopted in 2018 and is comprised of two parts:

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

5. As specified in section 2.6.2 of the *Gas Transmission Information Disclosure Amendments Determination (No.1) 2017*, published 14 June 2017, Commerce Commission.
6. Gas transmission 2019 AMP Update, available here: https://firstgas.co.nz/wp-content/uploads/First-Gas-Transmission-2019-AMP-Update.pdf
7. *Gas Transmission Information Disclosure Amendments Determination 2012*, consolidating all amendments as at 3 April 2018, Commerce Commission.
8. *Gas Transmission Information Disclosure Amendments Determination 2012*, consolidating all amendments as at 3 April 2018, Commerce Commission.

The full structure of our 2020 AMP is set out in Table 2 below.

Table 2: Structure of our 2020 AMP

AMP SUMMARY DOCUMENT	
Provides an overview and summary of the activities we have undertaken and are planning to undertake for the planning period.	
STANDALONE APPENDICES IN ONE CONSOLIDATED DOCUMENT	
Appendix A	Glossary
Appendix B	Information Disclosure schedules
Appendix C	Network overview
Appendix D	Asset fleets
Appendix E	Schematic diagrams of transmission assets
Appendix F	System development
Appendix G	Security standard
Appendix H	Asset management approach
Appendix I	System capacity determination
Appendix J	Expenditure overview
Appendix K	Scheduled maintenance
Appendix L	Significant projects
Appendix M	Regulatory compliance report
Appendix N	Directors certificate

2. OVERVIEW OF FIRSTGAS

This section introduces our business and provides an overview of how Firstgas is structured. It also provides key information on our gas transmission system, our approach to asset management and managing risk, the impact of COVID-19, and the key regulatory, policy and environmental factors influencing our business over the past year.

2.1 CORPORATE STRUCTURE OF FIRSTGAS

Firstgas is owned by funds associated with First Sentier Investors, part of the Mitsubishi UFJ Financial Group. First Sentier Investors is a long-term infrastructure investor with experience in the regulated utility sector with assets across Europe, the United Kingdom, Asia and New Zealand.[9]

On 20 April 2016, Firstgas took control of Vector Limited's gas transmission assets (along with Vector's gas distribution assets located outside Auckland). In a separate transaction on 15 June 2016, Firstgas took ownership of Maui Development Limited's gas transmission assets (the Maui pipeline). The creation of Firstgas is the first time that gas transmission assets in New Zealand have had a common owner. We believe that common ownership is delivering three distinct advantages for gas industry participants and consumers:

- A strong commercial interest in maximising the competitiveness of gas
- An opportunity to bring new capabilities to our team to drive growth in the use of the gas transmission system
- An ability to operate the gas transmission system and manage our assets in ways that better serve the interests of our customers.

We recognise that for most customers, gas is an optional fuel. Unlike electricity, which is universally used by households and businesses, reticulated natural gas is not a necessity in New Zealand. This means that gas must be cost-effective and will often need to be actively marketed to compete with other energy options. We remain focused on actively promoting the use of gas and ensuring work signalled in our AMPs maximises the value obtained from our gas transmission system.

Firstgas Board

Firstgas is governed by a Board of Directors, chaired by Mark Ratcliffe. 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**.

Firstgas Group

Our broader business

Firstgas also owns and operates more than 4,800 kilometres of gas distribution pipelines. Our distribution network services approximately 63,000 consumers across Northland, Waikato, Central Plateau, Bay of Plenty, Gisborne and Kapiti Coast. Our gas distribution business is also regulated under Part 4 of the *Commerce Act 1986* and the 2020 AMP for our gas distribution business is available on our Firstgas website.[10]

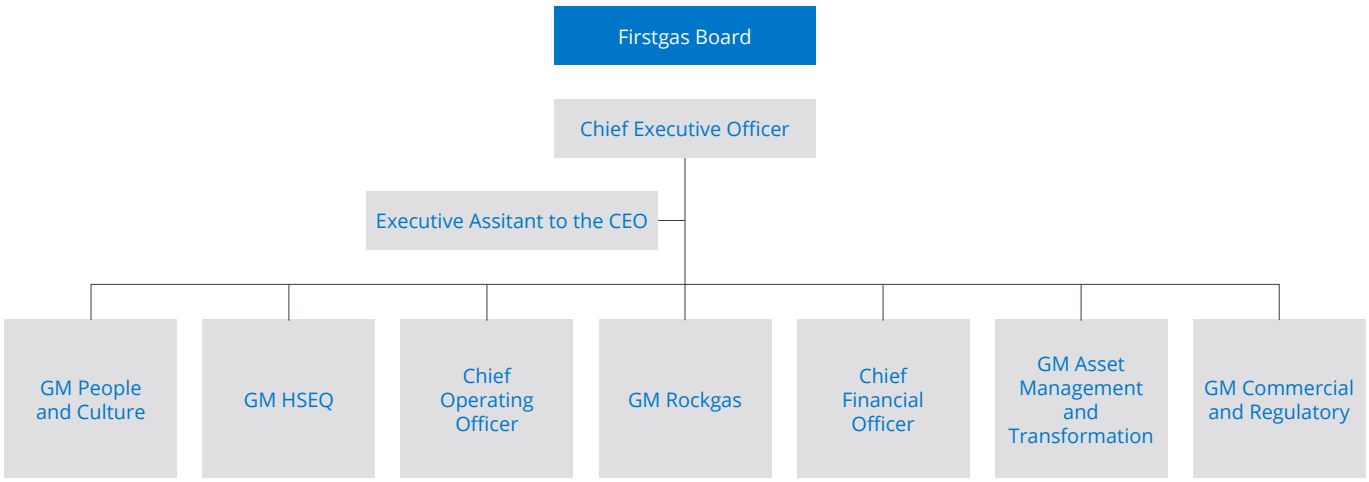
Firstgas is part of the wider Firstgas Group. The Firstgas Group owns energy infrastructure assets across New Zealand through our affiliate Gas Services NZ Limited (GSNZ), a separate business with common shareholders that owns the Rockgas[11] and the Ahuroa gas storage[12] facility. Rockgas has over 80 years' experience and provides LPG to 100,000 customers throughout New Zealand. It is New Zealand's largest LPG retail business and supplies its customers with both domestic and imported sources of LPG. The Ahuroa gas storage facility (trading as Flexgas Limited) is New Zealand's only open access gas storage facility.

9. More information on First Sentier Investors is available on their website: https://www.firstsentierinvestors.com.au/au/en/institutional/about-us/corporate-profile.html
10. More information on our gas distribution business is available here: https://firstgas.co.nz/about-us/regulatory/distribution/
11. More information on Rockgas: https://rockgas.co.nz
12. More information on Flexgas Limited: https://flexgas.co.nz/

2.2 ORGANISATIONAL STRUCTURE

Firstgas employs approximately 222 staff.[13] Most staff are based in our corporate headquarters in Bell Block, New Plymouth, with small teams located in Wellington, Tauranga, Palmerston North, Hamilton and Auckland. Our Executive team is headed by our Chief Executive Officer (CEO) Paul Goodeve, with seven direct reports: Chief Operating Officer (COO), Chief Financial Officer (CFO), General Manager Commercial and Regulation, General Manager People and Culture, General Manager Asset Management and Transformation, General Manager Health, Safety, Environment and Quality (HSEQ) and General Manager Rockgas.[14] Our organisational structure is illustrated in Figure 3 below.

Figure 3: Organisation chart[15]



13. Excludes employees directly employed by Rockgas, but incorporates a number of business support staff that provide support across the Firstgas Group of businesses.
14. Biographies of our Executive Team are available on our website www.firstgas.co.nz.
15. GM means General Manager.

2.3 FIRSTGAS' TRANSMISSION NETWORK

Firstgas owns and operates a gas transmission system consisting of underground pipelines, compressor facilities and above ground stations in the North Island of New Zealand. The transmission system incorporates both the Maui and non-Maui[16] transmission pipelines, as set out in Figure 4.

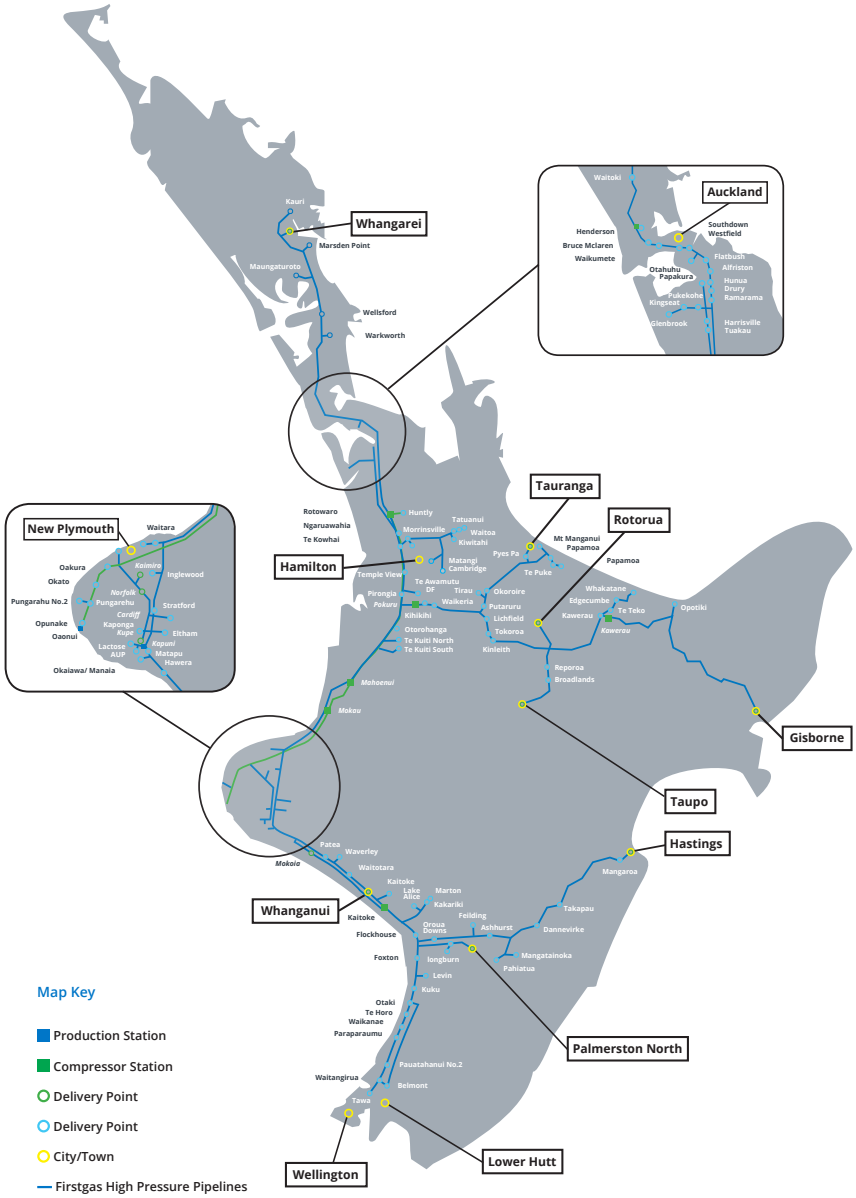
The gas transmission system is 2,514 kilometres long, with approximately 133 kilometres installed in urban areas and the remainder in rural areas. The internal diameter of the pipelines ranges from 50mm to 850mm, with the majority installed below ground. The pipelines connect 252 stations that contain a range of equipment designed to receive, transmit and deliver gas safely and efficiently to customers.

The assets were constructed and commissioned in accordance with the appropriate standards applicable at the time. From the mid-1960s to the mid-1980s, assets were constructed to codes and standards under United States *Minimum Federal Safety Standards for Gas Lines – Part 192*, United States Department of Transport and United Kingdom Institute of Petroleum. From the mid-1980s and into the 1990s, assets were constructed to the New Zealand gas pipeline code, NZS 5223 – *Code of Practice for High Pressure Gas and Petroleum Liquids pipelines*. In the late 1990s, the *AS 2885 Pipelines – Gas and Liquid Petroleum* suite of standards was adopted.

The key statistics for the gas transmission system as of 30 June 2020, are set out in Table 3.

For a full overview of the gas transmission system, please refer to **Appendix C.**

Figure 4: Firstgas' gas transmission pipelines



16. The gas transmission system purchased off Vector Limited in April 2016.

Table 3: Key gas transmission statistics as at 30 June 2020

STATISTIC	VALUE	CHANGE FROM 2019 AMP UPDATE
System length (kilometres)	2,514	1
Compressor stations	9	0
Compressor units	20	(3)
Delivery points	131	1

Notes:

- Legacy non-operational compressors have been excluded from the count of compressor units, as these units are not required for the operation of the network and are no longer maintained.
- The increase in Delivery Points relates to the commissioning of Mangorei Delivery Point.
- The increase in the pipeline length relates to the bypass pipeline installed as part of the Pariroa defect remediation.

Asset categories

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

Table 4: Asset categories for gas transmission

ASSET CATEGORY	DESCRIPTION
Cathodic protection (CP) system	In addition to their external coating, pipelines are connected to an impressed current CP system. This provides secondary protection against corrosion at coating defects by holding the pipeline at a negative voltage relative to the ground.
Coalescers and filter/separators	Coalescers and filter/separators are used to protect downstream facilities such as compressors, pressure regulators and meters from fine particles of liquid contaminants and impurities found in the gas streams.
Compressor stations	Compressor stations are situated at strategic locations and are designed to increase the pressure of the gas to ensure that the required gas pressure and quantity is delivered to the extremities of the system. There are reciprocating, gas turbine, and electric driven compressors in use on our system.
Critical spares and equipment	We own a stock of critical spares and equipment for an anticipated range of pipeline repair options. Whenever new assets are introduced, an evaluation is made of the necessary spares and equipment items required to be retained to support the repair of any equipment failures.
Filters	Filters are installed to remove solid particulate contamination from the system and protect downstream equipment from erosion by impingement and blockage from build-up of contaminants.
Gas chromatographs (GCs)	A gas chromatograph (GC) is a chemical analysis instrument for analysing chemical components in a complex sample. It uses flow through a narrow tube known as a column, through which different chemical constituents of a sample pass in a gas stream (carrier gas, mobile phase) at different rates depending on their chemical and physical properties and their interaction with a specific column filling (stationary phase). As the components exit from the end of the column, they are detected and identified electronically.
Heating systems	When gas pressure is reduced by pressure regulators at delivery points, the gas temperature reduces. To maintain gas temperature above the lower limit specified in *NZS 5442 – Gas Specification for Reticulated Natural Gas*, heating systems are required. Heating systems are either gas-fired water bath heaters (WBHs) or electric heaters.

ASSET CATEGORY	DESCRIPTION
Isolation valves	Isolation valves are used to isolate sections of station pipe work, instrumentation tubing, equipment or control systems to facilitate maintenance, replacement or emergency shutdown.
Main line valves	Main line valves (MLVs) are designed to automatically isolate pipeline sections when pipeline failure occurs. MLVs are positioned at maximum intervals of 32 kilometres throughout the length of the gas transmission system, except in the Auckland metropolitan area. In Auckland, MLVs are nominally spaced at 13-kilometre intervals due to the higher potential consequences of pipeline failures.
Metering systems	Metering systems are used to provide accurate gas volume flow data. Meters have rotary-displacement, turbine, ultrasonic, mass flow or diaphragm gas volume measurement mechanisms.
Odorisation plants	Gas odorisation provides a means for the detection and location of gas escapes. We odorise gas using odorant injection systems, supported by bulk odorant storage tanks at KGTP and the major receipt points from the Maui transmission pipeline.
Off-pipeline assets (on and off easement)	Transmission pipelines are managed through easements. However, in some areas there may be additional assets that are not located within the easement. These are referred to as off-pipeline assets and are predominantly civil construction type assets. These assets may include the following: retired land blocks, access tracks and culverts, crib or retaining walls, fencing and drainage, ground water monitoring equipment and land movement monitoring equipment.
PIG launchers and receivers	PIG launchers and receivers facilitate the use of In Line Inspection (ILI) survey tools for pipeline condition monitoring and internal cleaning tools. PIG receivers also act to contain and facilitate safe disposal of debris that is removed from the pipeline by PIGs.
Pipelines	Our high-pressure pipelines are constructed from steel with wall thickness and material grades specified by appropriate design codes.
Pressure regulators	Pressure regulators reduce the pressure of the flowing gas to a pre-determined downstream pressure. Pressure regulators form part of delivery point equipment that supplies gas at reduced pressure to gas distribution networks, directly to customers or to downstream parts of the transmission system.
Pressure relief valves	Pressure relief valves are installed to protect pipelines or pressure vessels from over pressurisation. Pressure relief valves limit pressure to a pre-determined value by safely venting gas contained within the protected equipment to the atmosphere.
SCADA and communications	The SCADA system constantly monitors asset operating conditions at strategic pipeline locations, including high-volume delivery points and delivery points at pipeline extremities. It also provides remote control of compressors and some MLVs.
Special crossings	Special crossings encompass a variety of crossings installed during pipeline construction. The designs include: – Aerial self-supporting pipelines – Pipelines supported by aerial trussed structures – Buried cased crossings where the pipeline is contained in a concentric steel sleeve – Pipelines supported on flexible bearings.

Further information on asset categories is set out in **Appendix C**.

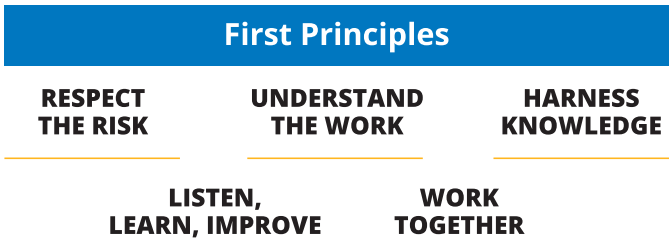
2.4 OUR ASSET MANAGEMENT APPROACH

Firstgas' 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 that guides the subsequent development of our asset management system, asset management policy, objectives and ultimately this AMP.
- **Asset Management System:** This system links our corporate objectives and stakeholder needs[17] to specific asset management approaches through our Asset Management Policy. We are working to align with the requirements of *ISO 55001*, the international standard for asset management, and seeks to reflect good practice.
- **Performance Measures:** Performance documents set out the overall asset management performance objectives and the key performance indicators (KPIs) that Firstgas regularly monitor to ensure we provide a safe and reliable gas transmission system. Where appropriate, the targets have been developed to align with the definitions developed by the Commerce Commission for Information Disclosure.
- **Asset Management Maturity Assessment Tool (AMMAT) and benchmarking:** This discusses the outcome of our AMMAT review and other benchmarking exercises.

Our AMP captures the key elements of this asset management document suite in a summarised form and explains our asset management strategy and approach to both internal and external stakeholders. Greater detail on the AMMAT review is included in **Appendix B** and our approach to Asset Management and KPIs is set out in **Appendix H**.

Figure 5: Firstgas First Principles



Key assumptions

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

- The present gas industry structure will broadly remain the same. For example, we have assumed that over the planning period, gas will continue to flow from the Taranaki region to customers located in other parts of the North Island
- Works will continue to be delivered through a mixture of insourced and outsourced activities. We make decisions on what work to outsource based on capability, cost and resource availability
- There will be no major disruptive changes to the availability of service providers
- Consumer demand and expectations will continue to follow long-term trends. While we aim to increase the use of our gas transmission network, we have adopted prudent growth forecasts that are tied to historic trends in the uptake and use of gas in New Zealand.
- There will be no major changes to the regulatory regime that governs our operational and investment decisions, for example, through structural changes to the regulatory institutions or the regulatory mechanisms currently in place that allow us to recover our efficient costs.

To the extent possible, all relevant assumptions made in developing this AMP have been quantified and described in the relevant sections.

2.5 OUR APPROACH TO HEALTH AND SAFETY

Safety is at the forefront of how we approach managing and operating our assets. There are hazards involved in the transmission and distribution of a flammable product such as natural gas. We take a systematic approach to ensure that the hazards and risk can be controlled and mitigated to an appropriate level. The asset integrity and our asset management practices outlined in this AMP illustrate how we mitigate risks and maintain safe outcomes. From maintaining containment of our product through to the Health, Safety and Environment (HS&E) leadership and accountability that underpins our culture.

Firstgas has a strong culture for ensuring safety. It is at the core of everything we do and extends beyond ensuring our people are safe in the field. Consideration of safety is at the forefront whether we are designing new assets, developing maintenance plans, executing work in the field, operating the network or having the appropriate emergency response plans.

Maintaining product containment is the primary control that minimises risk to both workers and the public. Asset integrity and our asset management practices outlined in this AMP are, therefore, crucial in maintaining safe outcomes.

17. Further information on stakeholder engagement is set out in section 6.

Firstgas understands that one of the key factors in HS&E excellence is leadership and accountability. Leadership is required from all layers across the organisation, but the expectation and drive around Leadership starts at the top. We have developed a set of First Principles that outline our approach to achieving healthy and safe work within Firstgas. The First Principles provide guidance on how we work rather than provide a prescriptive set of rules. Our First Principles are used as a basis for discussion when making decision about our work and ensuring that expectations are met.

2.6 ADDRESSING RISKS ON OUR TRANSMISSION 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 and 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 Firstgas 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 that we are prepared for and can respond quickly to a major incident that occurs or may occur on our gas transmission system.
- **Event management:** This provides clear definitions and guidance for all disciplines working for Firstgas to ensure a consistent approach in recognising and reporting events.

Given the potentially severe nature of failures on the gas transmission system (particularly arising from a loss of containment), appropriate and effective risk management is integral to our day-to-day operations. 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 asset management processes include formal evaluation of our assets against our security criteria.
- **Addressing poor condition/non-standard equipment:** Our lifecycle management processes seek out critical items of equipment that are at a higher risk of failure or are non-standard.
- **Formal risk review and sign-off:** Our processes include formal requirements to manage the risks identified, including mandatory treatment of high-risk items and formal management sign-off where acceptance of moderate risks is recommended.
- **Use of structured risk management:** We use structured risk capture and management processes to ensure key residual risks are visible and signed off at an appropriate level.

Greater detail on our approach to risk management set out in **Appendix H**.

AECOM review of risk management

AECOM[18] was commissioned by the Commerce Commission in April 2019 to objectively assess the risk management practices within New Zealand's gas pipeline businesses. They reviewed existing information relevant to risk management processes, procedures and information, and supplemented these findings through a series of on-site meetings and discussions with relevant staff. In addition to the risk review, an additional review by AECOM was undertaken on Firstgas' geotechnical risk management for the transmission system.

Firstgas welcomed the review as it provided an opportunity for us to demonstrate our risk management to the Commerce Commission and stakeholders. AECOM's report highlighted that Firstgas recognises the risk that natural land movement poses to its gas pipelines and that these risks need to be managed or mitigated but cannot be eliminated. The review found that we have appropriate management processes and systems, supported by field staff and external consultants, in place to identify and assess geohazards and determine whether and how to monitor or remediate and to prioritise remediation works.

It was also pleasing to see the hard work that Firstgas has put into managing both our gas transmission and distribution businesses over the last three years is reflected in the good reviews. In particular, the risk management review highlighted the strong continuous improvement culture that we have established across our businesses.

The reports provided us with an opportunity for improvement and we have developed an improvement plan to address the recommendations. Further information can be found in **Appendix H** and section 3.2 outlines the significant activities undertaken in FY2020.

18. AECOM is an infrastructure consulting firm.

Addressing geohazards on our network

The impact of geohazards and how this translates to pipeline integrity risk remains a key focus for Firstgas. Geohazard is the term we use for land instability events, such as landslides, erosion or movement of rocks or debris, that has the potential to affect the integrity of transmission pipelines.

Geohazard risks on the transmission system

During discussion on the DPP reset for 2017 – 2022, we provided the Commerce Commission with information on the identified geohazard risks on our transmission system and the work underway to address these risks.[19] An updated table of geohazard risks is shown in Table 5 below, with greater detail provided in **Appendix C** including the project status. A key activity undertaken in FY2020 was the technical review of the Managapukatea (White Cliffs) re-alignment project, more detail is provided in section 3.2.

Table 5: Summary of geohazard risk on transmission system

LOCATION	HAZARD	ACTIONS	ASSESSED RISK[20]	CHANGE IN RATING (FROM MARCH 2017)
Gilbert Stream	Loss of pipeline integrity due to erosion of the cliff face	An interim response plan is required to manage the threat, at the recommendation from Firstgas Engineering monthly monitoring and GNS analysis.	High	No change. There is currently a project being undertaken to mitigate the risk.
Pipeline Awakau Road No.1	Pipeline traverses near the crest of a ridge	Pipeline integrity review required. Routine monitoring ongoing.	Intermediate	Project completed. Risk to be reviewed.
Pipeline Awakau Road No.2	Slope stability	Pipeline Integrity review and Field Assessment required.	Intermediate	No change. There is currently a project being undertaken to mitigate the risk.
Mokau land movement	Slope stability	Ongoing monitoring monthly Pipeline Integrity review required.	Intermediate	Changed from High to Intermediate. Project is already underway.
200 Pipeline Huhu Road Weir remediation	Landslide	Place rock filled gabion baskets and Reno mattresses around the pipeline and complete fish pass works.	Intermediate	No change. There is currently a project being undertaken to mitigate the risk.
300 Line Managawhete Stream erosion remediation	Erosion	Install bank stabilisation in form of RipRap placement and riparian planting in backfill.	Intermediate	Changed from High to Intermediate. Project is in progress to address the risk.
Mangapukatea (White Cliffs)	Loss of pipeline integrity due to the erosion of cliff face	Routine monitoring ongoing. Technical review conducted in 2020 with support by GNS science and geotechnical engineering consultants.	Low	Changed from High to Low following the 2020 technical review of the site. See section 3.2 for details.
Gibbs Fault above ground pipe corrosion remediation	Fault	The bridge drain slots should be blocked to prevent water from running off the bridge deck directly onto the pipes.	Low	No change. There is currently a project being undertaken to mitigate the risk.

19. Based on Firstgas Geohazard Risk Ranking Tool
20. Based on Firstgas Geohazard Risk Ranking Tool

2.7 IMPACT OF COVID-19

During March / April 2020, New Zealand moved to an Alert level 4 lockdown, in response to the coronavirus pandemic (COVID-19). This saw a State of National Emergency declared, and all New Zealanders required to stay at home in their "bubbles" with the exception of essential service providers. This had, and continues to have, a significant impact on New Zealand's communities and economy.

During Level 4, Firstgas continued to provide essential services by transporting gas across our both transmission and distribution networks to customers such as hospitals and public facilities who rely on us. We continued to operate our 24/7 control room at Bell Block in New Plymouth, where staff operated at a distance and staggered shift handovers. Operationally, we restricted the activities on our assets to only critical work that was required to support ongoing gas supply, in line with the intent of the COVID alert level system. Like many businesses, the majority of our staff worked from home during the period.

Effect of COVID-19 on customer gas demand

The lockdown resulting from the COVID-19 pandemic caused some of the largest industrial gas consumers, in sectors deemed non-essential, to either cease operating altogether or reduce their gas consumption to the minimum level necessary to keep their plants operational. Major examples included steel making and some pulp and paper manufacturing.

Users deemed essential, including the dairy and food-processing sectors, continued operating and using gas. In some cases, these gas users were affected by changes in consumer demand for their products or the need to operate in a way that allowed for "social distancing" in their workplaces. One of the largest growth opportunities on the gas transmission system, the Tauriko project (see **Appendix F**) is likely to be delayed by at least six months, as groundworks on its site had to cease during the lockdown.

We expect that the serious world-wide recession resulting from COVID-19 will inevitably reduce gas consumption in some sectors for some time to come. It is uncertain whether the worst-affected consumers will return to their previous modes of operation and levels of gas consumption. This may result in reduced demand for capacity in some areas, at least in the short term, and therefore the need for capacity expansion.

Effect of COVID-19 on Firstgas' work programme

Firstgas has reviewed our forecast work programme and associated expenditure in light of the pandemic in New Zealand and the impact on use of the gas transmission system. The planned expenditure for FY2020 adjusted for the impact of COVID-19 is set out in Table 6 below.

This performance can be attributed to the robust planning and Capex governance processes that have been put in place over the last two years. It has helped limit the negative impact of the COVID-19 lockdown on our remaining work programme for FY2020.

We took a proactive approach as soon as the lockdown came into effect, planning and reforecasting the work planned for FY2020. Our overall expenditure is less that stated in 2019 AMP, however we have achieved our reforecast programme.

Table 6: Planned expenditure for FY2020 adjusted for impact of COVID-19

BUSINESS	2019 AMP FY2020 FORECAST ($MILLION)	FULL YEAR FORECAST ($MILLION)	% VARIANCE
Gas transmission	$42.8	$38.5	-10%

2.8 REGULATORY AND POLICY ENVIRONMENT

This section provides an overview of the regulatory and policy environment that our gas transmission business operates within. We have seen a stable year for regulatory settings, with FY2020 focused on embedding new disclosure requirements for related party transactions. We also discuss the evolving policy environment in response to uncertainty in the energy sector and the growing reliance on gas to support electricity generation.

Stable regulatory environment for gas businesses

The regulatory environment for the gas transmission business has been relatively stable over the past year, with Firstgas now moving into the fourth year of the 2017 – 2022 regulatory period.

In March 2020, Firstgas published our first Information Disclosure schedules incorporating the new requirements for related party transactions (RPTs).[21] These changes were driven by the decisions from the 2016 Input Methodologies (IMs)[22] review for gas pipeline businesses and came into force in December 2017. The new requirements adopt a "principles based" valuation approach for RPTs, replacing the prescriptive list of options previously set out in the IMs for valuing such transactions. Regulated businesses are now required to demonstrate that the value of an RPT is not greater than an "arms length transaction" (for purchases made by the regulated business) or not less than an "arms length transaction" (for sales made by the regulated business).

Our FY2019 Information Disclosure discusses each of the related party transactions and our approach to valuing these transactions for our gas transmission business. We have again elected to incorporate some of the information required under the new related party transaction rules into this year's AMP, in addition to our annual information disclosures at the end of the disclosure year. Section 5.1 sets out the maps of anticipated network expenditure.

Looking towards the next DPP reset and IM review

In 2022, the Commerce Commission will set the Default Price-Quality Path (DPP) for gas pipeline businesses for the next regulatory period, 1 October 2022 to 30 September 2027. The Commission must also complete the next review of the Input Methodologies by the end of 2023.[23] Firstgas looks forward to actively engaging in both these processes, which will provide an opportunity for the industry, the Commission and all stakeholders to consider how the regulatory framework can remain fit for purpose and support an energy sector that is transitioning to a low carbon future.

Learnings from other regulated sectors

In FY2020, the Commerce Commission completed the five-yearly reset of Default Price Quality Paths for electricity distribution businesses (EDBs). Firstgas followed this process to identify any learnings that may apply to our next DPP reset for 2022 – 2027. Whilst the businesses are different, EDBs are struggling with similar issues as gas businesses around how the regulatory framework can support periods of change and uncertainty.

Of particular interest, was the introduction of an innovation allowance and the ability to reopen a DPP Determination for unexpected growth on an EDB's network. Like the electricity industry, we experience growth that is difficult to predict as businesses convert from coal to gas to lower their emissions. At the same time, Firstgas is working alongside Government to consider other innovative energy options, such as the potential for our networks to convey hydrogen and other zero carbon gases.

We look forward to working with the Commission and other stakeholders as we enter the next regulatory period to ensure that regulation supports both the current industry and the move to meet the future needs of New Zealanders.

Changes in the broader gas sector

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

Review of the Gas Act

In 2018, the Government announced it would be reviewing the Gas Act 1992 focusing on three key areas[24]:

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

At the time of writing, the *Gas (Information Disclosure and Penalties) Amendment Bill* is before Parliament.[25] This Bill was introduced following consideration of the prolonged outages at the Pohokura production station, which, combined with planned outages at other production stations and dry spring conditions, led to record gas spot market prices and high electricity wholesale prices. These outages highlighted a number of issues in relation to the transparency of information in the gas market, that can have a wide range of effects.

21. https://firstgas.co.nz/wp-content/uploads/First-Gas-transmission-information-disclosure-2019-STAMPED.pdf
22. The IMs are the rules, requirements and process that underpin regulations under Part 4 of the Commerce Act, as a regulated Business we are required to apply these input methodologies that cover, how assets are values, depreciated and revalued, how to estimate cost of capital, and how tax should be treated and how common costs are allocated between the businesses. The IMs are required to be reviewed at least every 7 years.
23. The last main IM review was completed in 2016, with the review of the related party IM finalised in 2017. The IMs must be reviewed within 7 years.
24. Options for amending the Gas Act 1992, Ministry of Business, Innovation and Employment, June 2019. Refer https://www.mbie.govt.nz/have-your-say/amending-the-gas-act/
25. Gas (Information Disclosure and Penalties) Amendment Bill

The Bill introduces provisions into the Gas Act that will enable the GIC to introduce a regulated information disclosure regime to address any issues with information in the gas market. Firstgas supports the introduction of regulated information disclosure requirements for the gas sector. We believe that the main information gaps relate to planned and unplanned outages at major gas production and user facilities and a regulated option will be the most effective

The options for amending the Gas Act originally considered whether the Gas Act remains fit for purpose in regulating the use of emerging technologies and alternative fuels in New Zealand. We consider this remains an important question that has yet to be resolved.

We are concerned that the impression that meeting the definition of gas is all that is required to allow future fuels to flow into our networks. In fact, we consider there is further work required around the Gas Act, industry regulations and standards to support the development of future fuels such as hydrogen and biogas. Any changes must ensure that gas remains of a specification that it can transported safely within New Zealand's gas infrastructure and safely and reliably used by consumers.[26]

GIC work on information disclosure

Over the last year, the GIC has been consulting on options to increase the level of information disclosed on the gas market. This workstream was driven by a request by the Minister of Energy, following the outages at Pohokura in 2018, as discussed above. The workstream explored the potential information issues, the different approaches to information disclosure (from voluntary through to regulated options) and ways of publishing this information.

In May 2020, the GIC confirmed its next steps would include progressing a Statement of Proposal (SOP) for information disclosure.[27] The SOP provided to the Government will include identifying and evaluating options to address information issues at gas production stations and the Ahuroa gas storage facility. This will include an evaluation of the industry-led Upstream Gas Outage Information Disclosure Code. Firstgas management participated in the development of the Disclosure Code, on behalf of Flexgas. We consider the development of the Disclosure Code a positive step. While it does not have the full force of regulation, it does have an appropriate level of prescription that defines what information should be disclosed. As participants to the Disclosure Code, Flexgas will disclose information on the operation of the Ahuroa gas storage facility and all such disclosures are available on the Gas Industry Company's website.[28]

Government's climate change policy

New Zealand's Government has set a goal of achieving net-zero emissions by 2050 with the passing of the *Climate Change Response (Zero-Carbon) Amendment Act* on 13 November 2019. This Act provides a framework by which New Zealand can develop and implement clear and stable climate change policies that:

- Contribute to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5 °C above pre-industrial levels.
- Allow New Zealand to prepare for and adapt to the effects of climate change.

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

Firstgas welcomed the creation of the Climate Change Commission, a Crown entity established under the *Climate Change Response (Zero Carbon) Amendment Act*. The Commission's role is to provide sound evidence-based advice to the Government on how to transition to a low emissions economy. The first three emissions budgets will be recommended by the Climate Change Commission and set by the Government by the end of 2021. Firstgas has engaged with the Climate Change Commission in recent months to discuss existing opportunities to reduce emissions through the efficient use of natural gas and our investigations into the potential for transporting hydrogen and biogas in our pipelines.

The Government has also taken steps to reform the Emission Trading Scheme over the last 12 months. We believe that a comprehensive emissions trading scheme (ETS) is a useful tool to encourage the behavioural changes needed to lower New Zealand's carbon emissions. In June 2020, the Government passed the *Climate Change Response (Emissions Trading Reform) Amendment Bill* that included a limit on the total emissions allowed within the ETS, rules to ensure emission prices are more predictable, and a provisional emissions budget for the 2021-2025 period.

26. Further information on why we consider the Gas Act must remain fit for purpose to support New Zealand's changing needs in a low carbon economy, see our submission to MBIE.
27. https://www.gasindustry.co.nz/work-programmes/gas-sector-information-disclosure/problem-assessment-october-2019/cross-submissions-on-problem-assessment/document/6963
28. https://www.gasindustry.co.nz/industry-notifications/

2.9 DECARBONISING OUR GAS NETWORKS

Over the last 12 months, Firstgas has increased our focus on how we can decarbonise our gas networks, to support New Zealand's move to a net-zero emissions economy. As our gas transmission and distribution networks cover much of the North Island, we believe we are ideally placed to support the development, transfer, and use of future fuels such as:

- **Hydrogen** which produces only heat and water vapour when it is burnt, making it a suitable choice for reducing carbon emissions
- **Biogas** which is made from decomposed organic material from the likes of landfills and wastewater treatment plants.

This section discusses the projects we have recently commenced and the actions Firstgas is undertaking to understand our own carbon footprint.

Hydrogen pipeline network trial

Firstgas has commenced work on a desktop feasibility study for hydrogen this year that will define the trials required to transport hydrogen in our network. This study has been 50% funded by the Provincial Growth Fund and was launched publicly at Parliament in March 2020.

Hydrogen is rapidly emerging as a cost-effective way to decarbonise parts of our energy system, and a leading zero carbon energy solution for applications such as high temperature process heat and heavy transport, which can be expensive or impractical to electrify. Moreover, hydrogen provides similar storage benefits as natural gas which can allow hydrogen to address peaking and dry year cover in the electricity system. Costs to produce hydrogen from water using electrolysis are decreasing rapidly with advances in technology and the scale of production.

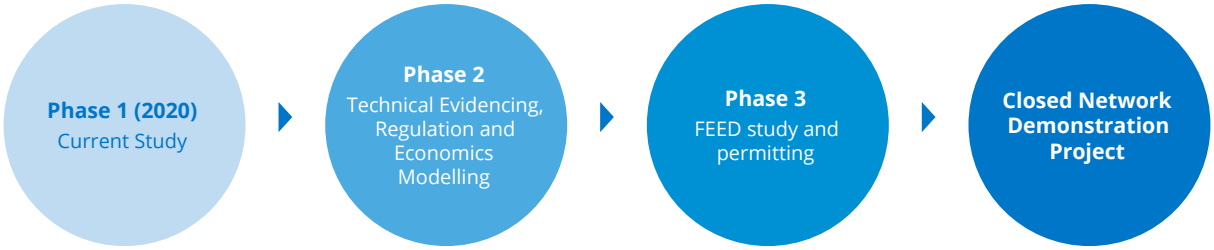
Work in the United Kingdom (UK) has shown that hydrogen can be blended with natural gas up to 20% without the need to replace domestic appliances. It can therefore offer partial decarbonisation at low cost because it allows for the use of existing infrastructure.

Our hydrogen pipeline network trial consists of four phases, as illustrated in Figure 6 below.[29] The current study will conclude in September 2020 and has the following objectives:

- Assess the potential sources and uses for hydrogen/hydrogen blends
- Consider the technical feasibility of converting the gas grid
- Establish the economics of decarbonisation using hydrogen
- Design the experiment(s) we need to do to safely convert the grid and selects the location(s).

This work also allows us to engage extensively with stakeholders in the potential hydrogen value chain. To launch the current project, we held workshop events in March 2020 in Wellington and New Plymouth that were attended by over 150 representatives from across the energy, industrial, government and iwi sectors. This broad engagement has been tremendously valuable by ensuring our study canvases a wide range of possible hydrogen scenarios. We also have representatives from MBIE, the NZ Hydrogen Association and Venture Taranaki on our governance group for the project. We would like to thank our stakeholders for their support of this project.

Figure 6: Firstgas' hydrogen pipeline trial



29. Phase 1 started in February of 2020.

Biogas development

Biogas is a renewable natural gas produced through the decomposition of waste at landfills or the anaerobic digestion of wastewater at municipal or industrial wastewater treatment plants. In 2019, 3.66 PJ of biogas was produced at 20 sites across New Zealand – most of this was used for onsite electricity generation, with the remainder used for heating.

The technology for biogas production is mature and with treatment, biogas can be used as a direct replacement for methane in our gas pipeline. In 2018, 125 PJ of biogas was produced in the UK with 12 PJ injected into the national grid. This was achieved through UK government programmes to secure feed-in tariffs, in addition to an active market for certification of green gas. Moreover, currently there are 232 operational biogas plants in Germany injecting biogas into natural gas networks.[30]

Firstgas believes that biogas use could be increased dramatically in New Zealand due to our significant food production and waste sectors. In addition to producing a renewable gas, biogas production also reduces solids going to landfill, improves air quality and improves water quality. We think it is a win-win for our energy and waste sectors.

Biogas remains costly when compared with natural gas due to issues of scale and coordination of organic waste streams. Firstgas is looking at how to further enable biogas production. Our work programme will focus on:

- Understanding the potential biogas market
- Developing technical standards and guidance on the treatment and injection of biogas into our network (or a distribution network)
- Developing guidance on the commercial arrangements for shipping of biogas
- Working with wastewater and waste operators to understand biogas process and potential barriers to injection into the network
- Understanding the potential for certification and incentive schemes to increase biogas production.

Renewable gas certification

While we are preparing our networks for the introduction of these flexible green energy sources, successfully decarbonising our energy system will rely on creating strong markets for these gases. We think that setting up a certification scheme will be integral to building a well-functioning market for renewable natural gas (RNG) or biogas and hydrogen. This will allow a premium to be attributed to zero carbon gases and allow buyers to count renewable natural gases / hydrogen in their carbon reduction efforts.

Certification systems are currently used in New Zealand to demonstrate electricity is produced solely from renewable sources. Overseas, similar schemes exist for certification of biogas production. Allowing this exchange of value will be instrumental to incentivising the development of zero carbon gas projects. We will be working with stakeholders over the coming months to ensure that a renewable gas certification scheme is available to our network users. We will support the development of this scheme and ensure that the commercial arrangements on our pipeline facilitate the growth of the zero-carbon gas market.

Member of the Climate Leaders Coalition

In 2019, Firstgas signed up to the Climate Leaders Coalition. This group is committed to taking voluntary action on climate change and includes 118 organisations across New Zealand. The Coalition represents a unique opportunity for businesses to work together and learn from each other to reduce their emissions. Organisations from all sectors of the economy are represented in the Coalition and together the signatories make up 60% of New Zealand's gross emissions.[31]

As part of this group, we have committed to measuring and publicly reporting our greenhouse gas emissions, setting a public emissions reduction target, and working with our suppliers to reduce their emissions.[32]

Measuring our carbon footprint

Recently, Firstgas Group's carbon footprint was assessed by DETA Consulting. This gave us a deeper understanding of the quantity of greenhouse gas emissions that are produced through our production and distribution processes, as well as consumer emissions from consumption. The greenhouse gas-intensive areas of the process were identified and therefore, will allow for targeted emission reductions to be carried out in the most effective manner.

As outlined in section 3.2, Firstgas is also undertaking a review of our compression needs on the transmission system. By implementing a programme of upgrades to our existing compression fleet and operating the fleet as a single system, there are a number of benefits that can be realised. Of note, the project would remove 17.5 kt $CO_{2\text{-eq}}$ from our carbon footprint annually.

There are also opportunities for us to improve the efficiency with which we use electricity, and in doing so, reduce our carbon footprint from electricity use further. Firstgas is planning to install solar photovoltaic (PV) generation on the main headquarters building's roofs to offset some of the electricity demand.

30. According to European Biogas Association (EBA): https://www.europeanbiogas.eu/wpcontent/uploads/2020/06/GIE_EBA_BIO_2020_A0_FULL_FINAL.pdf
31. Information on the Climate Leaders Coalition is available here: https://www.climateleaderscoalition.org.nz/
32. Detail on our commitments is available on our website here: https://firstgas.co.nz/about-us/community-partnership/towards-a-net-zero-carbon-future/?fbclid=IwAR218GPzClRx8xGNkQF8o_r94GvR4eWH7tRi1YP4V2fsZml5OMK7dxTQfFU

3. YEAR IN REVIEW

This section provides an overview of Firstgas' major projects and initiatives over the past year ended 30 September 2020, the third year of the current regulatory period (2017 – 2022). We review our forecast expenditure against the plans stated in our 2019 AMP Update and discuss the variances in activities undertaken.

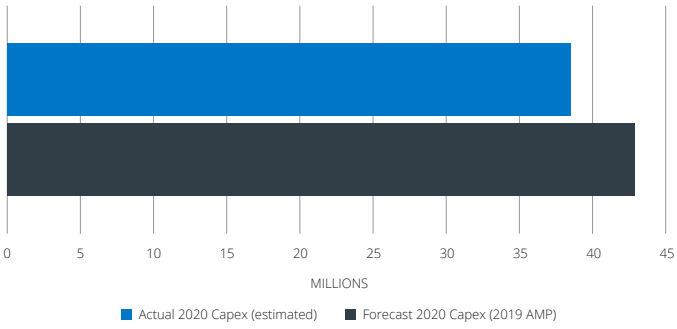
3.1 EXPENDITURE SUMMARY

Firstgas remains focused on creating and maintaining a safe and resilient network for our customers, and this is reflected in the work that we have undertaken over the last 12 months. Figures 7 and 8 outline our forecast actual expenditure for the year ended 30 September 2020[33] and compare actual expenditure to the forecasts presented in our 2019 AMP Update.

We set an ambitious work programme for FY2020. While the work restrictions during the COVID-19 lockdown period have affected our planned spend for the year, our ability to progress planned capital works prior to the lockdown has helped to mitigate the shortfall in expenditure.

Where necessary, we have rephased the capital works programme across the remaining two years of this DPP regulatory period. Some projects have been specifically deferred due to the impact of COVID-19, while other projects have been deferred to increase confidence that the way we execute the work provides good value and reflects the best possible implementation approach.

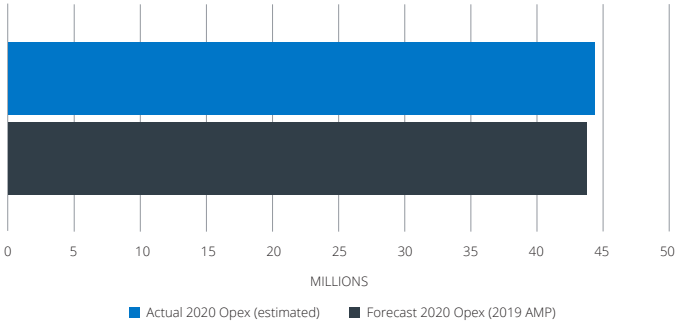
Figure 7: Total Capex in FY2020 versus forecast expenditure in 2019 AMP Update



Major variances in expenditure for FY2020 relate to:

- Rephasing of the civil works for the Gilbert Stream re-alignment project to FY2021. This deferral was due to the impact of COVID-19.
- The technical review for the Maungapukatea (White Cliffs) erosion site has reduced the expenditure planned for FY2020 (see section below for detail).

Figure 8: Total Opex in FY2020 versus forecast expenditure in 2019 AMP Update



We are forecasting our Opex expenditure to be in line with our forecast submitted as part of our 2019 AMP Update, with only a small variance of $600,000.

33. All data from 1 May 2020 to 30 September 2020 has been forecasted, in order to provide a complete 12 months of data.

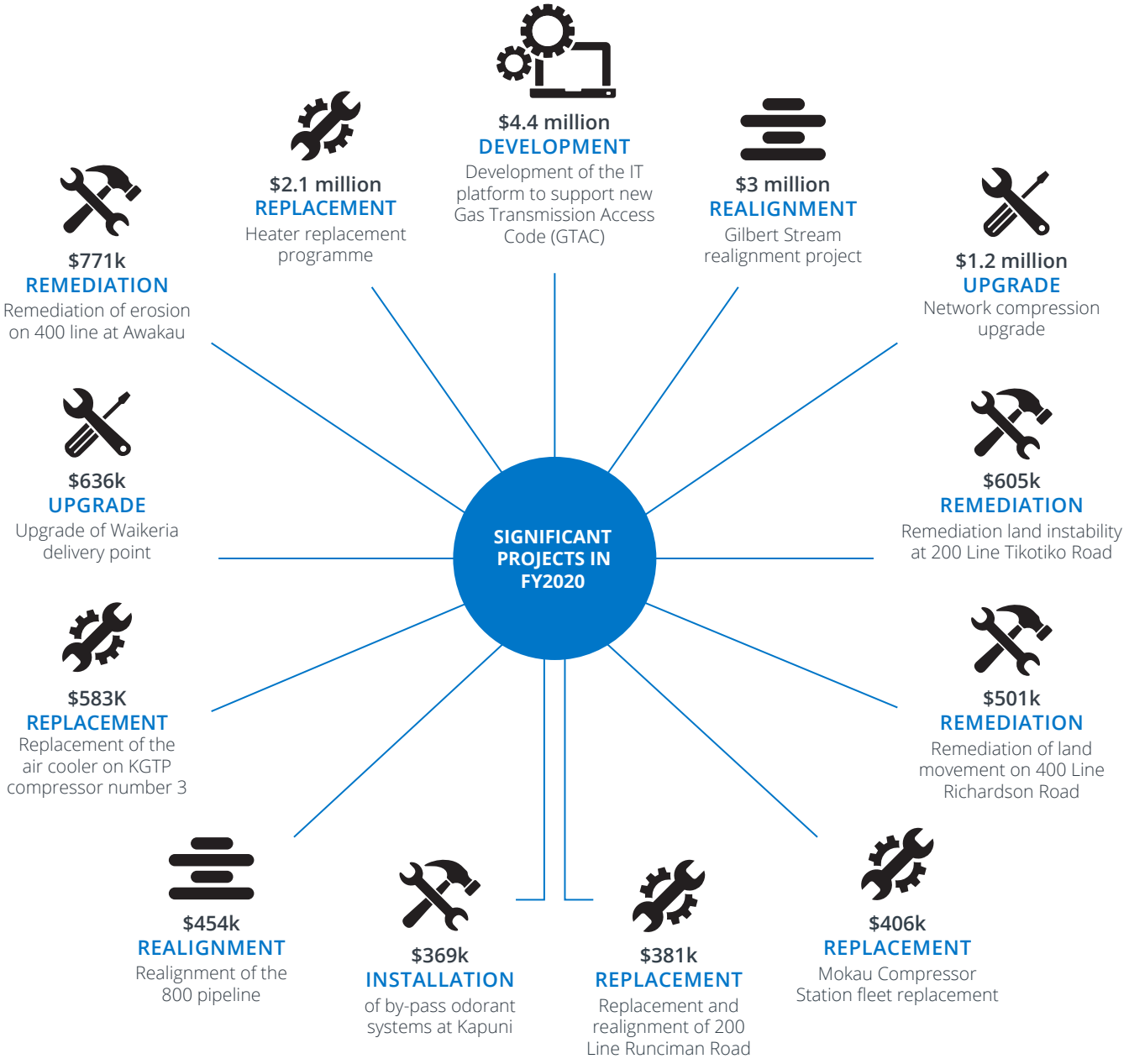
3.2 SIGNIFICANT ACTIVITIES UNDERTAKEN IN FY2020

Athough COVID-19 has impacted our forecast expenditure, improvements over the last few years in Capex expenditure management and control have mitigated what could have otherwise been a more significant reduction in expenditure. Careful planning and flexibility in our planning approach, allowed us to re-phase delivery of the projects and concentrate on areas of the project that could be delivered during lockdown. Once the lockdown restrictions were lifted, the project teams were able to focus back on the delivery of the works programme.

Figure 9 outlines the most significant projects during the last 12 months. Most of the projects were identified in our 2019 AMP Update, with the scope and justification provided for each project.

We discuss these projects below, as well as our progress on the Mangapukatea (White Cliffs) realignment project. We also set out the significant work we have undertaken through our asset management improvement programme.

Figure 9: Significant projects in FY2020 (at May 2020)



Development of IT platform to support new Gas Transmission Access Code (GTAC)

Firstgas has been working to replace the two existing transmission access codes since August 2016. The consolidation of the two pipeline codes will provide a more effective way of making pipeline capacity available, thereby reducing barriers to market entry and improving the efficiency of the gas market. The new Gas Transmission Access Code (GTAC) is a strategic initiative for the New Zealand gas industry.

In February 2019, the Gas Industry Company (GIC) released its Final Assessment Paper that concluded that the GTAC is materially better than the existing codes. The next step is delivery of the IT platform on which the GTAC will operate. This new system will provide efficiencies in managing the commercial operations of the pipeline system through automated nominations, approvals and scheduling systems. It is important that the GTAC is supported by a stable and workable technology solution so that Firstgas can ensure that service expectations can be met.

Complexities in developing the IT platform, including a large degree of system customisation required, as well as the impact of disruptions arising from COVID-19, have meant that the original implementation timeframes have been extended and an overspend above budget. The issues associated with the project are not insurmountable, and Firstgas are now undertaking a full project review (see section 4) . The earliest opportunity that the project may go live is October 2021.

In the interim, we will continue to operate under the two existing pipeline access codes and will continue to maintain and use our existing OATIS system.

Gilbert Stream realignment

The Gilbert Stream realignment project in Northern Taranaki is a priority for Firstgas, with coastal erosion now within ten metres of the 750mm (30-inch) high pressure pipeline at Gilbert Stream.

Over the past year, we have completed significant civil works with the construction of the culvert over which the pipeline will be laid. All site works ceased when New Zealand moved to Alert level 4 in response to the COVID-19 pandemic, which has impacted on the forecast expenditure for the FY2020 year. Post lockdown, crews had remobilised to site to continue with construction, however the focus has now shifted to demobilise from site during winter. Work will resume post winter, when conditions on site improve.

Heater replacement programme

Firstgas has initiated a programme to replace the ageing fleet of water bath heaters (WBH) across many of the delivery points (DP) on our transmission system.

Many of our WBHs are nearing the end of their useful life, as both the gas fired and electric WBHs on the Firstgas transmission network were typically installed at the time of delivery point or station construction. Further units have also been progressively added over the years as more delivery points have been added to the network.

This programme will extend the assets' life and will ensure we are compliant with our pressure equipment management plan. Moreover, electronic controls are mandatory for WBHs above 275 kW. The programme will be developed across the gas transmission system during the planning period FY2020 – FY2029, with a cost of approximately $30 million. Currently, two projects are in the detail design phase and one in the execution phase.

Appendix C provides background on the WBHs in our transmission system and the age profile of these assets.

Figure 10: Aerial photo of Gilbert Stream area

Figure 11: 400 line erosion remediation at Awakau

Network compression upgrade

As indicated in our previous AMPs, we have been undertaking a review of our compression needs on the transmission system. This has expanded from looking at individual compressor stations to reviewing the system as a whole.

Our recent review[34] of transmission system compression requirements has identified that significant benefits can be realised by implementing a programme of upgrades to our existing compression fleet and operating the fleet as a single system.[35] We have subsequently developed a compression strategy that seeks to:

- Update and simplify an ageing fleet of compressor units, by utilising singular modular compression packages
- Minimise lifecycle capital and operational expenditure
- Improve reliability, security of supply and emergency response
- Provide flexibility to allow units to be relocated to match future changing system loads and opportunities
- Reduce asset integrity, security of supply and operational risks.

Firstgas submitted our compression strategy as one of our two "Shovel Ready" projects to the Government's Infrastructure Industry Reference Group (IRG). Unfortunately, this project was not accepted under the IRG scheme, however we are still planning to proceed with the project, funded through our normal funding regime.

Remediation of erosion on 400 line at Awakau

Firstgas has undertaken a remediation project to address erosion that is impacting the 400 Line near Awakau Road.

The 400 Line supplies gas from the Frankley Road off-take in Taranaki to the Huntly off-take in the Waikato, servicing Hamilton and the Central North Island regions. Historic and more recent instability of 400 pipeline easement fill has occurred at two sites north of the Awakau Road crossing and south of the Awakau Road Main Line Valve (MLV). The instability features are located on the steep slopes to the north-west side of the pipeline. The instability areas are known as Awakau Road 1 and Awakau Road 2. These two sites were assessed as part of the overall 400 Line geohazards features assessment in 2016. The resulting SMS risk level was assessed at Intermediate, with geohazard risk scores Awakau Road 1 (19) and Awakau Road 2 (14).

Firstgas' project delivery team completed the design phase of this remediation project within FY2019 and the project will be finished in spring of 2020.

Upgrade of the Waikeria delivery point

Firstgas completed an upgrade of the Waikeria Delivery Point (DP) to meet increased customer demand.

Firstgas supply gas to the prison at Waikeria from the Waikeria DP. The prison is currently undergoing an expansion and requires additional gas. We signed an agreement with the Department of Corrections to increase the capacity of the Waikeria DP to not less than 790 scmh (the current DP capacity is 380 scmh). To meet the agreed capacity increase, a number of upgrades were required to assets within the DP such as regulators, relief valves, SCADA facilities and critical heater alarms.

34. The review was initiated in 2018 and was signalled in the 2019 AMP Update.
35. Historically the Maui and Non-Maui networks have been under separate ownership and considered as two systems for technical reviews.

Addressing land instability at 200 line at Tikotiko Road

Firstgas is undertaking a project to address land instability impacting the 200 Line at Tikotiko Road, in the Waikato region.

In December 2019, Firstgas with support from Pattle Delamore Partners (PDP) carried out detailed site investigations on the 200 Line Tikotiko Road (no. 1) land instability area. This investigation confirmed land movement, with approximately 60 metres of the 200 Line currently offset horizontally by up to 1.8 metres downslope from an assumed original straight pipeline alignment. The movement of the line is consistent with the landslide mapped for the site.

We have determined that drainage works and pipeline destressing are required to address this land movement. The project is being executed in two phases: Phase 1 providing sub surface drains and Phase 2 relieving of pipeline strain. The project is currently in the execution phase and is expected to be completed by September 2020.

Replacement of the air cooler on KGTP compressor number 3

Firstgas is replacing the air cooler on compressor number three at the Kapuni Gas Treatment Plant (KGTP), to meet higher performance requirements.

We own and maintain a a number of compressors at the Kapuni Gas Treatment Plant (KGTP). One of the compressors (number three) is subject to poor performance in summer conditions and is deteriorating. A gas cooler life expectancy study[36] was completed in December 2015 and recommended that the cooler be replaced. In addition, the existing concrete pad that supports the gas cooler is believed to be undersized.

The project replaced the air cooler on compressor number 3 with an upgraded unit to meet the higher performance requirements and was completed in FY2020.

Remediation of land movement on the 400 line at Richardson Road

Firstgas is undertaking work to address land movement that is impacting on the 400 Line at Richardson Road in Auckland.

The Rotowaro – Southdown pipeline (400N Line) passes through an area of known instability in Brookby, in the area of Richardson Road. The site is located approximately 17.5 kilometres south upstream of the Southdown Delivery Point and approximately 7.7 kilometres downstream of the Clevedon Main Line Valve (MSV). Firstgas, with support from Pattle Delamore Partners (PDP), carried out a detailed site investigation including a pipeline survey in January 2019 following heavy rainfall events in late December 2018. The investigation noted land movement of 300 – 400mm (downslope) around the pipeline.

The project will remove excess material from the head of the landslide (phase one) and install sub-surface drainage in the southern lobe and at least part of the main landslide (phase two). Currently, the project is in the close-out phase, with completion expected by September 2020.

Realignment of the 800 pipeline

The 800 line was realigned to make way for the new Tauriko Business Estate. In order for the development works to progress, the pipelines needed to be relocated and significant contouring of the land was necessary to achieve a level site.

The developer engaged Firstgas through execution of a Limited Notice to Proceed (LNTP) to complete a FEED for the project and procure the pipeline required. Firstgas subsequently engaged a third party (Plant and Platform) to undertake the detailed design works for the project, as significant contouring of the land was necessary to achieve a level site for the business estate. Long lead items were confirmed, and procurement of line pipe commenced in FY2019.

The project was completed and commissioned in a timely manner in FY2020.

Mokau compressor station fleet replacement

Following concern over the ongoing condition and reliability of the Mokau Compressor Station, in April 2017, Solar Turbines Pty – Caterpillar Ltd (Solar) undertook a Fleet Assessment Service (FAS) review, on behalf of Firstgas. This review identified 37 items that they recommended required either replacement or upgrading, to ensure appropriate operation and reliability are achieved. Of these 37 items, nine have either been completed or will be addressed as part of the current dry gas seal (DGS) project also being executed.

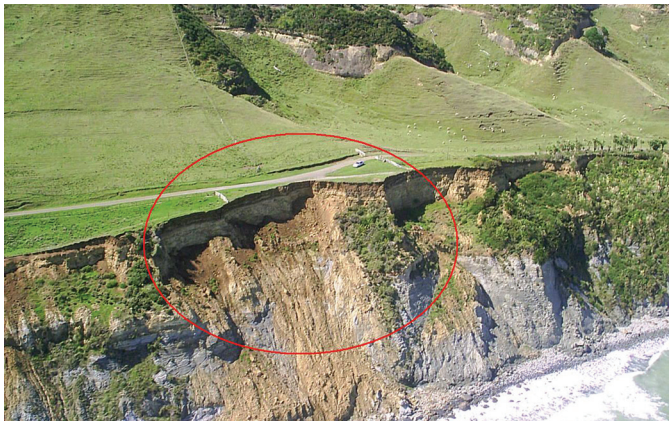
The remaining 28 items were reviewed by Firstgas engineering, and of these, nine have been selected to be addressed. The outstanding 19 items were deemed as immaterial and not needing action at this point.

The major items to replace are the fire and gas system (F&M), and the Human Machine Interface (HMI) hardware and software, which are all obsolete and unsupported by Solar. Firstgas is planning to finish the project at the end of FY2020.

36. *Gas Cooler Remaining Life Assessment 11-0110.18*, prepared by ITL for Vector Transmission, December 2015.

Figure 12: 200 line realignment at Runciman Road

Figure 13: Mangapukatea (White Cliffs) area



Replacement and realignment of 200 line at Runciman Road

Firstgas has replaced and realigned the 200 Line at Runciman Road in South Auckland to address coating failures on the pipeline.

The coating of the 200 Line downstream of the Runciman Road pressure reduction station was affected by ice formation due to a pressure-related temperature decrease. Many factors were believed to have been in play including the low temperature of this section of pipeline, topography and wet soil condition. The root cause for the coating failure in the 1.8 kilometre area was attributed to water pooling, freezing and contracting, and subsequently ripping the coating from the pipe.

As the area is being developed in the very near future, it was recommended to remediate the pipeline as soon as possible to avoid excavation of developed land. Firstgas decided to replace the pipeline in that area and the project is currently in the execution phase. We expected that the work will be finished in FY2021.

Installation of by-pass odorant systems at Kapuni

Firstgas is installing standardised odorant injection skids and a bypass system at the Kapuni odorant injection plant to improve the reliability of the plant.

The Kapuni odorant injection plant is currently unreliable, and the equipment is obsolete. We are in the process of purchasing and installing standardised odorant injection skids that will achieve our goal of equipment standardisation and provide operational redundancy. We are also implementing a bypass system as part of this project. As a matter of standard practice, all other sites have bypass odoriser redundancy, in addition to the pumped injection systems.

The project is currently in the execution phase and we expected that it will be finished at the end of FY2020.

Mangapukatea (White Cliffs) re-alignment project

As part of ongoing risk management and project development, Firstgas has recently undertaken a full technical review of all information relating to the Mangapukatea (White Cliffs) pipeline realignment project in northern Taranaki. That review has shown us that cliff face erosion rates in the area are lower than previously modelled and therefore, it is unlikely that a major pipeline realignment will be required in the next five years. This section provides detail of this review alongside the other work we have undertaken over the last year.

Background on the project

As detailed in previous AMPs, the Mangapukatea project involves the realignment of both high-pressure pipelines at Mangapukatea, Taranaki. These two pipelines are impacted by coastal erosion that threatens to eventually expose the pipelines that supply gas across the North Island. Firstgas has been reviewing the technical options[37] and timing for the realignment over recent years, as well as the approach to funding this major project[38]. This risk was first identified in the 2018 AMP, therefore in the 2019 AMP Update we proposed a major pipeline realignment as the most likely solution to resolve this risk.

37. Horizontal Directional Drilling for both pipelines, at a cost of up to $100 million.
38. Refer to detail in the 2018 AMP and 2019 AMP Update for gas transmission.

Recent technical review

Firstgas undertook a technical review of the geohazard in early 2020 to consider the previous erosion and planning assumptions at the erosion site. This review involved:

- The development of an erosion model for the site
- An independent consultants' engineering review of the site's geology
- A detailed review of all previous historical erosion reports to identify credible future erosion scenarios.

Firstgas embedded the outputs of the review into the erosion model to assess risk and develop project planning assumptions based on erosion triggers. This has shown that the anticipated expected rate of erosion is significantly lower than first thought. This means that the major realignment previously contemplated[39] will not be required during the next five to 10 years and there is currently negligible risk of a loss of supply.

Another important output of the review was the identification of a simpler, lower cost realignment option that could address any future erosion at the site. The review also helped to establish erosion triggers/scenarios that will ensure that the realignment project proceeds as the risk escalates, and that the work can be completed in a planned way before the risk level escalates to a high level.

We commissioned AECOM to peer review the conclusions and recommendations from our technical review. AECOM confirmed that the Firstgas' process for this work was "robust, comprehensive and well executed."

Funding approach for Mangapukatea

Firstgas has signalled in previous AMPs that we intended to apply for a Customised Price-Quality Path (CPP) to secure funding for the Mangapukatea project. As we had previously estimated starting the physical works for the project during FY2026 / 2027, we were anticipating submitting the CPP application for the next regulatory control period (1 October 2022 – 30 September 2027).

Given the change in timing discussed above, with the project unlikely to be required in the next five years, Firstgas does not believe that preparing a CPP application is warranted to secure funding at this time. We have reviewed our forecast expenditure for the next regulatory period and consider that required funding fits within the parameters of the DPP regime. We have discussed this approach with government stakeholders and customers and outlined how this revised approach will ensure a safe, reliable and affordable gas transmission system going forward.

Next steps

The next steps for this project are detailed in section 4.1, addressing our activities for the year ahead. This includes detail on our continued monitoring of the site and the emergency response approach.

Asset management improvement programme

Over the last year, a number of activities have been initiated to improve our asset management practices and ensure we continue to meet our asset management objectives. This is driven in part from our own initiatives and recommendations put forward following the AECOM review commissioned by the Commerce Commission. This improvement programme is aligned with our increased strategic focus on asset management and included work on the risk management categories.

AECOM review

As mentioned in section 2.5 , AECOM was commissioned by the Commerce Commission New Zealand in April 2019 to objectively assess the risk management practices. Figure 14 shows the gap analysis summary for Firstgas' transmission business in terms of asset knowledge, strategic planning processes, asset management practices, information systems and organisational tactics. More detail information is provided in **Appendix H**.

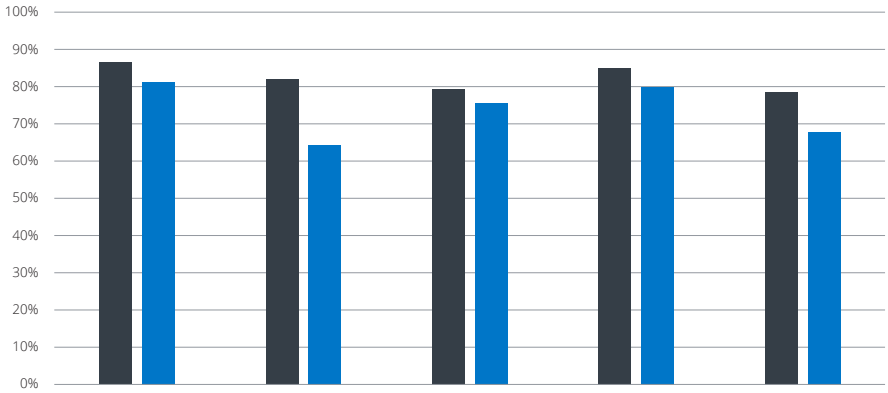
The review found the biggest gaps between our current approach and the best appropriate approach are in our strategic planning processes and organisational tactics, and therefore we will be focusing our efforts in those categories. Asset knowledge and asset management practices are the best areas with less than four percent of difference. However, where possible, we will look for improvement opportunities in all areas.

Maintenance optimisation

We have reviewed maintenance plans and developed maintenance strategies based on eliminating waste, and the use of technology to collect and collate information. Some of the achievements in the last year are the refinement of the maintenance strategy and the completion of the specification data project, to update what asset data we are recording in our CMMS. This will provide the information to validate our maintenance strategies and improve our strategic planning and asset knowledge processes for renewals planning.

39. Horizontal Directional Drilling for both pipelines, at a cost of up to $100 million.

Figure 14: Gap analysis summary for Firstgas' transmission business



	Asset Knowledge	Strategic Planning Processes	Asset Management Practices	Information Systems	Organisational Tactics
Best Appropriate	86%	82%	79%	85%	79%
Current	81%	64%	76%	80%	68%

Upgrade of Maximo

Firstgas and our IS support partners, upgraded Maximo[40] to the latest version identifying improvements that could be implemented in the post-upgrade drops. The Maximo upgrade will provide the information needed across the business to feed into our organisational tactics process for the risk management strategy. The Maximo improvements have been successful and seamless with no impact on the system. The improvements include:

- A hardware update with improved system re-enforcement and security protocols
- Better user experience with a single sign-on process
- Software update to the latest version

Maximo Asset Health and Insights (MAHI) project

The development of new technology to provide real-time dashboards for asset health is underway. The MAHI project was initiated in FY2020 with the implementation of a proof of concept (PoC). The PoC process created a trial environment based on selected assets. The MAHI dashboard tool will provide reports and visualisation of asset health scores based on Firstgas' asset data and information.

The implementation of MAHI will be a highlight in the coming year. By having the visual indication of asset health and consistent measures to evaluate health will support our strategic decision making when planning for asset replacement and renewals.

Project management manual (PMM) upgrade

This project was driven by the fact that there was not a consistent or current project management framework for project managers to work to across the business. The upgraded PMM now sets out the overall project management approach for every project, as well as the project management objectives, requirements and the business processes that are to be followed. We have also prepared a "how-to" guide for new employees or contractors and as a quick reference for existing managers. The PPM upgrade will provide the information needed on project management to feed into our organisational tactics process for RM training and skills.

40. Maximo is the Firstgas' Enterprise Asset Management (EAM) system to support changes with elements in the asset management system.

3.3 PERFORMANCE OF THE GAS TRANSMISSION SYSTEM

A key premise of the AMP is that existing reliability, safety and supply quality levels will be maintained and improved. We have regulated targets and have set additional targets that help drive performance improvements and measure our progress in delivering a reliable, safe and high-quality service (these targets are detailed in our 2019 AMP Update). To align with regulatory disclosures, the data presented covers the year ending 30 September 2019.

The table below refers to some of the KPIs that we report on for Information Disclosure as part of the Commerce Commission requirements. The following table shows that we have seen improvement or maintained 100% compliance against a number of our targets over the past three years

Our KPI scores for FY2019 are reported in the first column of the table:

- The trend column represents the movement in the KPI between FY2018 and FY2019.
- The target column refers to the score we would like to achieve over the next twelve months.

Table 7: Trends in Key Performance Indicators (KPIs)

KEY PERFORMANCE INDICATORS	FY2019	FY2021 TARGET	TREND[41]
Safety: Lost time injuries	0	**0**	▶
Response time to emergencies is less than 3 hours	100%	**100%**	▶
Unplanned interruptions	1	**0**	▼
Major interruptions	0	**0**	▶
Environmental[42] – instances of non-compliance	0	**0**	▶
Asset Management Maturity Assessment	2.9	**3**	▲
Public reported escapes and gas leaks	5	**<5**	▲
Compressor reliability	97%	**>97%**	▲
Lloyds annual audit compliance	1	**0**	▲
Compressor availability	89%	**>95%**	▲

Additional information regarding our KPIs and targets is contained in **Appendix H** and in the comments below:

- **Safety-lost time injuries:** Firstgas has not had a lost-time injury since purchasing the transmission networks in 2016.
- **Major interruptions:** A major interruption means any declaration of a critical contingency caused or contributed to by an incident on the transmission assets. Historical performance shows that unplanned interruptions are relatively rare.
- **Asset management maturity assessment:** Our current score is 2.9, which reflects the improvements that Firstgas has made over the last four years.
- **Compressor reliability:** There has been an improvement of 2% since Firstgas purchased the transmission network.
- **Lloyds annual audit compliance:** The recent audit concluded that the contractor's personnel competencies have not been verified against Firstgas' training competencies framework. As result, one non-compliance was raised and it has already been resolved. Firstgas will follow up on this matter during the next inspection.
- **Compressor availability:** The result continues to trend upwards since our purchase of the assets in 2016. However, historical performance has not met the required target levels. As part of the approach to lifting compressor performance, we have a control system replacement programme underway.

41. The arrow direction compares data between FY2018 and FY2019, if there was an increase, decrease or steady trend. The arrow colour indicates how close is the KPI to the FY2021 target.
42. We have a policy aim of providing a safe and reliable gas supply to our customers in a manner that minimises our impact on the environment. We are committed to comply with all legislative requirements and where possible exceed them.

4. YEAR AHEAD

This section sets out the areas of focus for Firstgas over the coming year commencing 1 October 2020, the fourth year of the regulatory period (2017 – 2022). The focus remains on providing our customers with a safe and resilient transmission system, while maturing and optimising our approach to asset management.

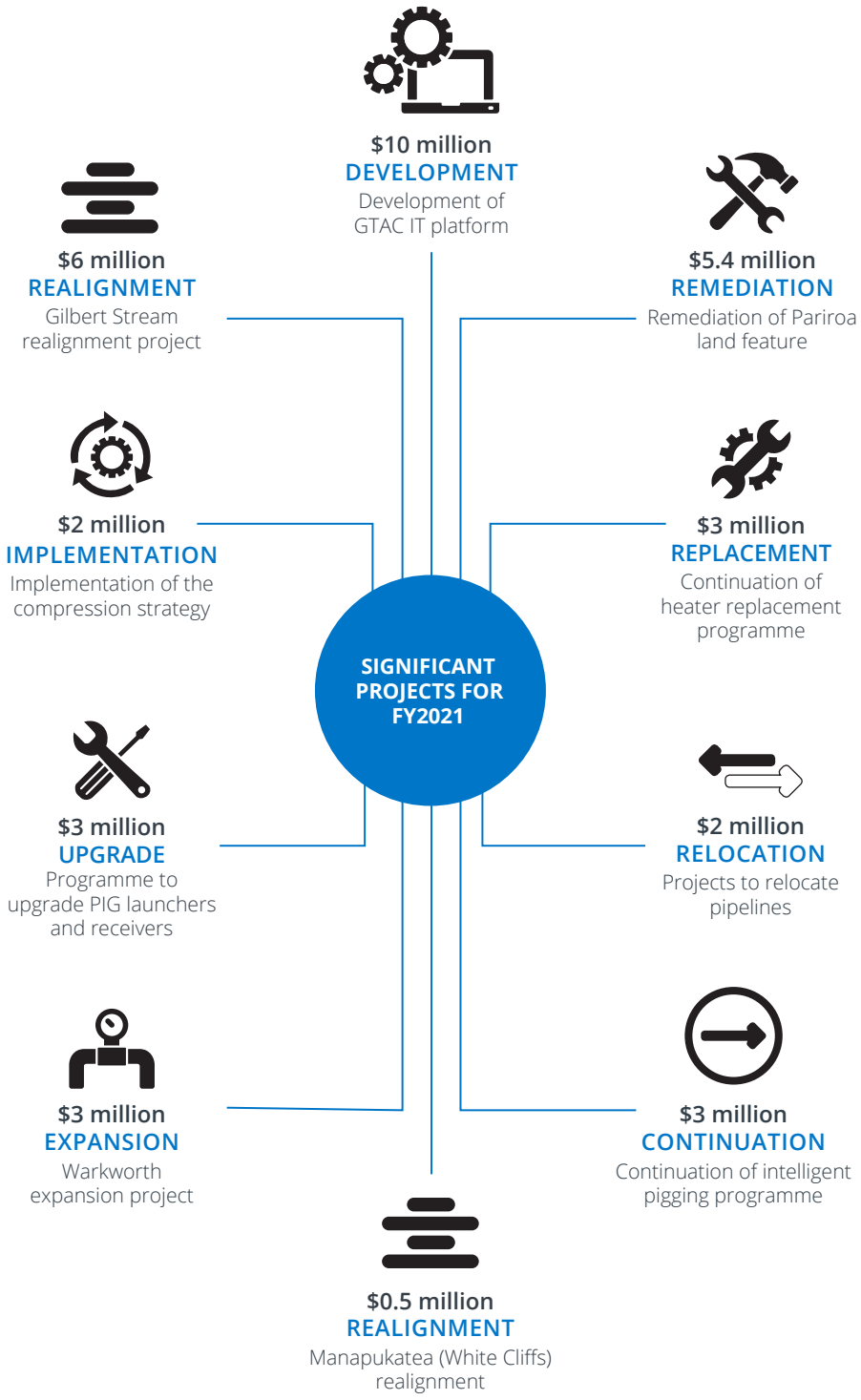
4.1 SIGNIFICANT ACTIVITIES FOR FY2021

Figure 15 sets out the major activities we plan to undertake throughout FY2021.

These projects represent almost 79% of the overall Capex programme for our gas transmission business for the coming year. Greater detail on all significant projects can be found in **Appendix L**.

We outline each of these projects below and we also provide information on the Mangapukatea (White Cliffs) realignment project, our continuing work on assessing geohazard risk, and further work on our asset management improvement programme.

Figure 15: Significant projects for FY2021



Gilbert Stream realignment project

The Gilbert Stream realignment project in Northern Taranaki will remain a priority for Firstgas, with the project expected to complete construction of the pipeline in autumn / winter 2021.

As outlined in section 3.2 above, Firstgas has already completed significant work on this project. The next stage of the execution will focus on the construction of the new section of pipeline on the culvert and tying this section into the existing pipeline on the northern and southern side. The project's close-out is currently planned to be completed in summer FY2022.

It was estimated that the permanent realignment construction will take place during the summer of 2021 / 2022 with final reinstatement in the second quarter of 2022. At present, the civils work has progressed, and pipeline work commenced. Site construction ceased during the COVID-19 shutdown, but civil and pipeline work has resumed after the lockdown.

The project schedule and budget has been revised due to a number of factors, including the impact of COVID-19. Firstgas continues monthly monitoring of erosion at the Gilbert Stream site. Whilst this erosion has not been increasing, we remain prepared to respond if coastal erosion were to accelerate and put the integrity of the pipeline at risk.

The use of drone technology to monitor the cliff face allows us to ensure that the risk is managed while we prepare to carry out the realignment.

Development of GTAC IT platform

The implementation of the Gas Transmission Access Code (GTAC) continues, with detailed development of the necessary commercial, operational and supporting IT systems progressing into 2021.

Complexities during the implementation have resulted in a delay to the expected go-live date of 1 April 2020. We remain committed to delivering a quality project and keeping you informed of progress.

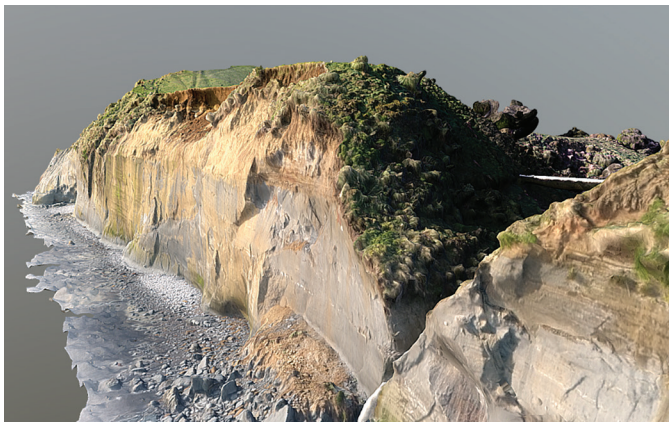
We are taking the opportunity to "reset" the project, including a review of the technology solution and developing the business rules and processes required to successfully complete a quality implementation of GTAC.

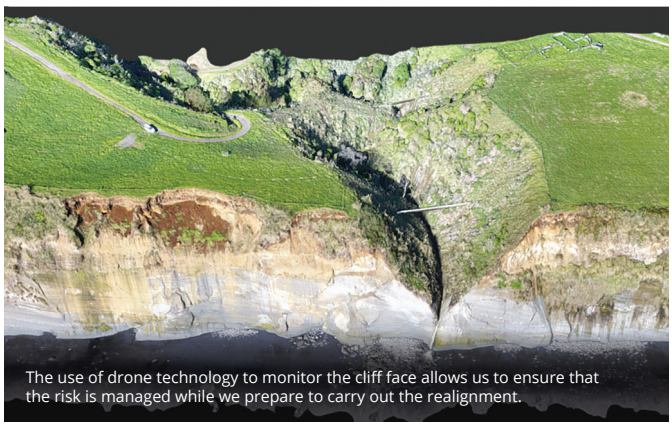
The GTAC Project Team will complete the technology review and recommend any changes necessary across the supporting technology components, including TACOS (the replacement for OATIS) and IMV (the metering validation system).

The project team will then focus on documenting the business rules, processes and procedures needed to operate the GTAC within Firstgas and across the industry. These processes will be developed in collaboration with assigned team members from Commercial and Operations, along with external specialists and vendors. This will be a big undertaking across several months, but it will provide the clarity needed to successfully complete the project.

While we do not have a revised implementation date, we know the project will not go live in 2020. October 2021 is now its earliest possible delivery date.

Figure 16: 3D rendering of the Gilbert Stream erosion





The use of drone technology to monitor the cliff face allows us to ensure that the risk is managed while we prepare to carry out the realignment.

Remediation of Pariroa land feature

An intelligent in line inspection survey undertaken in April 2018 identified a buckle in the 400 Line between Frankley Road Offtake and Mokau Compressor Station. Pariroa Phase 1 installed a temporary by-pass in December 2018. Phase 2 of the project will provide the permanent solution and remove the by-pass.

Studies are near complete to enable concept scoping as we have the geotechnical report and a draft additional geotechnical report. The additional draft geotechnical report supports the earlier view of the simple repair to the damaged pipeline is all that is required to return to normal service. Additional drainage outside the easement area will almost certainly be required.

Implementation of the compression strategy

As discussed in previous AMPs and section 3.2 above, Firstgas has been undertaking a review of our compression needs on the transmission system. The compression strategy has focused on our key compression sites, and pending approval, the compression strategy will be delivered over a 10 year period. The compression strategy was finalised in FY2020 and we are starting to plan our key compression sites upgrades over the next 10 years.

The work will incorporate the construction and installation of the new modular compressor units, as well as modifications to the existing pipework to tie in the new units. This work will also identify long-lead items for procurement and enable us to develop a detailed cost estimate for the works.

The forecast Capex for the compression strategy is set out in Figure 17. Further detail on this strategy is available in **Appendix L.**

Continuation of the heater replacement programme

As discussed above, Firstgas has initiated a programme to replace the aging fleet of WBHs across our transmission system.

Many of our WBHs are nearing the end of their useful life, as they have been in place since the transmission lines were first installed. Nine heaters in different delivery points have been selected for replacement in FY2021.

Appendix C provides background on the WBHs on our transmission system.

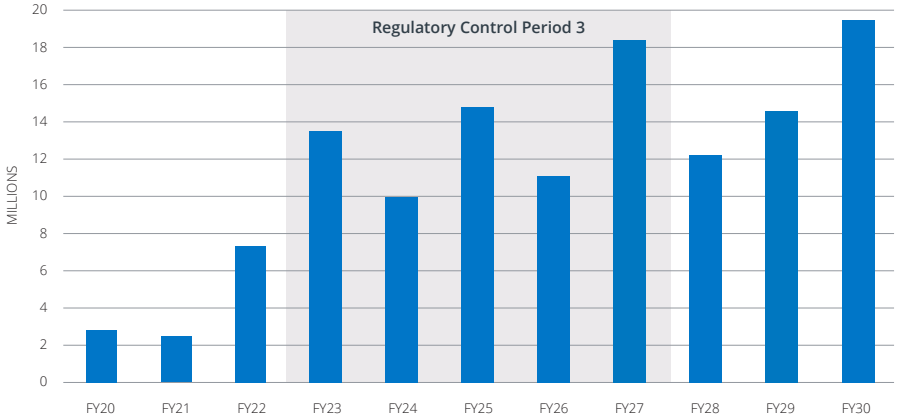
Programme to upgrade pig launchers and receivers

Firstgas has embarked on a programme to upgrade our pigging facilities to ensure they are aligned with industry good practice. Part of this work involves upgrades to our pigging launchers and receivers. We are continuing with this planned programme of pigging facilities upgrades in FY2021. The plan includes eight projects in different regions such as Auckland, Waikato, Hawke's Bay, Taranaki and Manawatu.

Pipeline pigging is an essential asset management activity. Firstgas uses a tool referred to as a 'PIG' (Pipeline-Inspection-Gauge) that is inserted into the pipeline at dedicated launch and receive locations. Pigging of the pipelines allows us to carry out maintenance and inspection activity without stopping the flow of gas.

Our fleet of launchers and receivers currently have varied configurations that reflect what was best practice at the time they were manufactured. We are looking to move to standardised designs for our facilities, taking into account current pigging technologies and configurations.

Figure 17: Forecast Capex for compression strategy implementation



Projects to relocate pipelines

We are undertaking several projects to relocate pipelines, following requests from third parties including a major relocation project for the Ports of Auckland at Te Rapa.

Ports of Auckland

Firstgas is continuing work with the Ports of Auckland Limited (POAL) to finalise the detailed design for the relocation of the 402 pipeline at Te Rapa. It is expected that the relocation of the pipeline will be completed in the latter part of summer 2021.

POAL have purchased a block of land in Te Rapa just North of Hamilton. New Zealand Railways Main Trunk Railway for the North Island runs through this land and POAL plan to turn the purchased land into an inland port. The land is to be developed to provide both closed and open storage areas mainly for the storage of containers. NZ Rail intend to create three railway sidings off the main trunk line to facilitate access to the storage areas.

The Firstgas owned and operated 6-inch 402 line runs through the land that has been purchased. The line is required to be realigned and lowered to allow the POAL works to progress, as the depth of cover over the pipeline is not of sufficient depth nor has sufficient protection to allow for the POAL development.

Warkworth expansion project

Firstgas will be conducting a FEED study over the course of the next few months to understand the expansion requirements needed to meet expected increased demand from customers in the Warkworth area.

The Warkworth expansion project has been on the horizon for a number of years. Gas demand growth in the region is dependent on two factors – the area is forecast to be a residential growth area, and the area also houses an agricultural glasshouse. To meet both the increase in domestic demand and commercial demand, we will be required to upgrade the existing pipeline and delivery point.

The 432 line is a 2-inch pipeline that supplies the Warkworth 2 Delivery Point. The agriculture glass house is the biggest single consumer in Warkworth, using gas to make hot water for heating, and (clean) flue gases as a source of CO_2 to enhance plant growth. They need to be assured that the gas delivery infrastructure can deliver the additional gas required.

Our assets operate within an optimum window; if we start operating outside of that window, the result can be that we are unable to maintain a reliable supply, and possible asset failure. Over the course of the next few months a FEED study will be undertaken to understand the expansion requirements needed.

Continuation of intelligent pigging programme

The frequency of our intelligent pigging programme is driven by our Pipeline Integrity Management Plan. Typically for pipelines that transit urban area or are in areas that pose an increased risk, the intelligent pigging will be conducted at five yearly intervals. For pipelines that transit rural areas or are not exposed to elevated potential for risk, the pigging is conducted at ten yearly intervals. For all our piggable pipelines, it is a requirement from our pipeline certifier that we conduct the pigging at our specified intervals to maintain our certificate of fitness.

We are coming into a busy period for our pigging programme. A number of pipelines to be inspected are the same diameter and we typically use the opportunity to run the pigs at the same time, as the equipment is mobilised into the country by the vendor. Through the course of FY2021, we are planning to conduct a series of intelligent pigging at the following locations:

- 100 and 200 series pipelines that run north and south out of Taranaki
- 430 pipeline that runs north of Auckland to Henderson compressor station
- 700 series pipelines between Feilding and Hasting.

Mangapukatea (White Cliffs) re-alignment project

As discussed in the section above, Firstgas has completed an extensive technical review of the previous erosion and planning assumptions at the Mangapukatea erosion site. The 2020 technical review concluded that the pipelines are currently at a negligible risk and are unlikely to be exposed or damaged in the next 5 – 10 years.

Over the next 12 months, Firstgas will continue the on-site monitoring of the erosion rate and evidence of episodic events at the current frequency. Ground water monitoring equipment will also be installed at the earliest opportunity, to be able to continually apply the safe setback distances established by the review.

The development of project stage triggers from the review will enable us to respond to changes in the environment in a timely fashion, if large episodic events occur that currently have not been deemed credible. This will ensure that actions are taken to be able to respond to any scenario, within a timeframe that is deemed acceptable. This incorporates the continued development of an emergency response approach that will allow for a fast execution of the project on an emergency basis if required.

The erosion model will be assessed and baselined annually by Firstgas staff to establish whether the current planning assumptions are still appropriate and will be updated with the current cliff proximity at the time, to calculate the anticipated project timeline from the new baseline. This also allows for any new erosion scenario to be considered. Any episodic events that exceed 5 metres recession will trigger a model review immediately and the impact on the planning assumptions will be considered.

Addressing geohazard risks on our system

As outlined in section two above,[43] Firstgas has implemented a new programme to better understand and manage geohazard risks on our gas transmission system. This significant programme of work involves:

- Initial reporting of each of the geohazards, assessing each feature for its likely impact to pose a risk to the pipeline.
- Conducting more detailed field assessments, geotechnical assessments, and pipeline integrity impact assessments. This work is aligned with our intelligent pigging reports to gain a more detailed understanding of the specific feature, how active it is and the impact to the pipeline.
- Remediation is planned where required, alongside routine monitoring on the feature.

This process of work enables us to ensure that the activities we undertake follow a risk-based approach. There is a summary of geohazard risks on the transmission system in Table 4 of this document. In **Appendix C**, we provide greater detail on the status of our current risks and planned activities for each site.

4.2 ASSET CONDITION (SCHEDULE 12A)

Schedule 12a (report on asset condition) provides a high-level overview of the asset condition ratings as per the Commerce Commission's grading categories.[44] 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.

A summary of the work programmes include:

- **Compressors** (22.22% of reciprocating engine driven are classified as grade 1): The existing reciprocating compressors at Rotowaro CS will require major overhauls within the next 5 years.
- **Metering systems** (16% of ultrasonic meters, 56% of rotary meters and 66% of turbine meters are classified as grade 1): Meter replacements are an ongoing programme throughout the AMP period. Over the next five years, we anticipate that 10% – 20% of the meters will be replaced. This replacement programme is based on age of the existing meters. Performance will be monitored to ensure that the replacement programme is targeted to the meters where performance issues warrant the replacement.
- **Cathodic protection** (6% are classified as grade 1): A programme to replace the rectifier units is underway.
- **Chromatographs** (11% are classified as grade 1): Chromatographs will be replaced in the next 5 years.

Further detail on the condition, risks and issues, and planned activities can be found in **Appendix C**.

4.3 ASSET MANAGEMENT IMPROVEMENT PROGRAMME

Our Asset Management Maturity Assessment Tool (AMMAT)[45] gap analysis and other external and internal reviews demonstrate that while Firstgas has improved in a number of areas since the last AMMAT in 2018, we still have opportunities for improvement. Our asset management improvement programme going forward includes a number of initiatives aimed at achieving these improvements and optimising the long-term performance of our assets. These initiatives include the following areas described below.

Maturing our risk management system and asset health

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

The asset health dashboard will support the business in making an informed decision on where to spend its effort and investments to the areas where it is necessary to support the safe, reliable and efficient operation of plant and equipment. The business requires a method by which a centralised, transparent view of asset health to improve the way that asset health and criticality information is used and communicated.

As mentioned in section 3.2, Firstgas and Certus Solutions worked collaboratively to develop a Proof of Concept (PoC) for the Maximo Asset Health Insight (MAHI) project. This project will be built, assess and test an auditable methodology

43. And also outlined in our 2017 submission to the Commerce Commission on the 2017 – 2022 DPP reset.
44. When Firstgas 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.
45. See **Appendix H** for further detail.

for determining asset health of selected transmission and distribution assets such as pipelines and stations, to support realisable and measurable business improvements.

Figure 18 shows a MAHI dashboard that demonstrates health insights at station level.

Embedding and evolving the Asset Management system

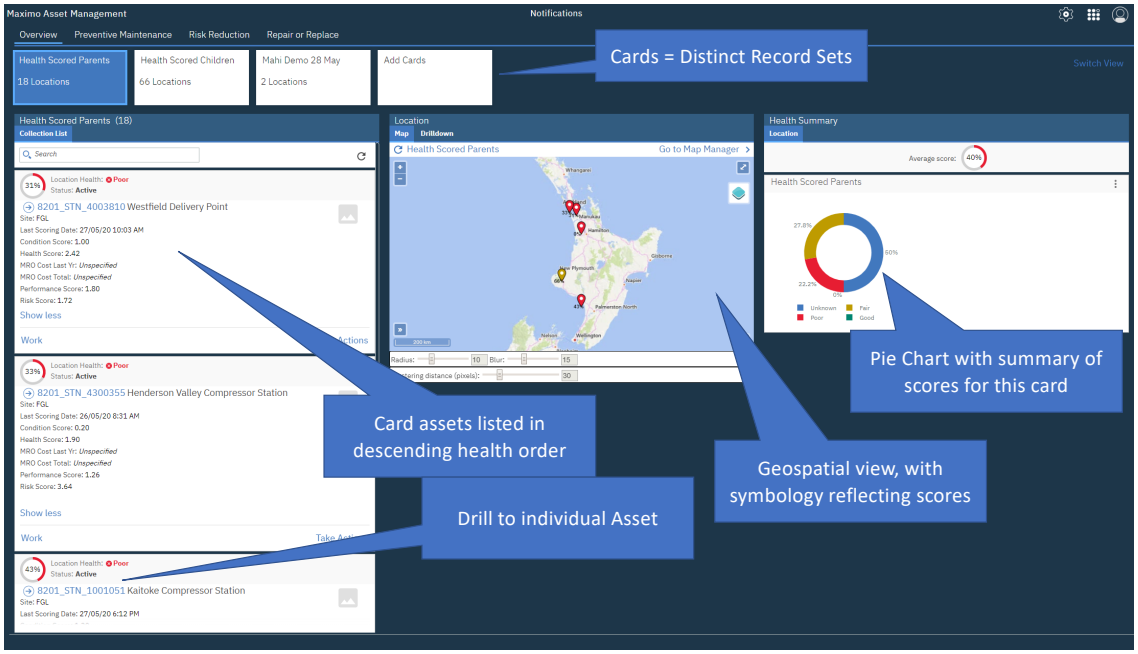
We intend to embed and further develop our overall asset management framework, asset management system elements, and ensure our documentation more closely aligns with *ISO 55000* (Asset Management Standards). Key elements of this system include:

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

Roll out of the maintenance optimisation programme

Over the coming year, we will continue to expand the maintenance optimisation to the pipeline cleaning PIG programme. We will also develop technology to monitor, collect and collate asset data into Maximo (Firstgas' Enterprise Asset Management system) and power BI report server.

Figure 18: Maximo Asset Health Insights (MAHI) dashboard



5. EXPENDITURE FORECASTS

As Firstgas is improving our asset management approaches and systems, we are gaining a greater understanding of our risk profile and where we need to allocate funding. Due to the impact of COVID-19, we have had a critical review of our expenditure and delivery forecasts of our capital works plan. Subsequently, we have made some adjustments to our planned expenditure profiles over the remaining years of the DPP period.

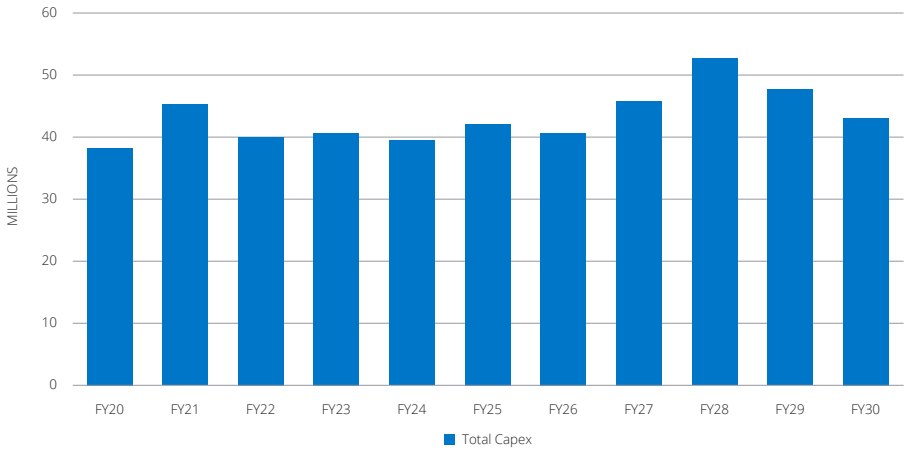
5.1 CAPEX FORECAST

Our forecast Capex spend over the next ten years is set out in Figure 19.

The increased level of Capex investment forecast for FY2020 can be attributed to:

- The continued development of the GTAC IT platform

Figure 19: Forecast total Capex (all figures in FY2020 prices)



Largest Capex projects within the planning period

Like last year, we have elected to include within our AMP the high-level heat map that shows the largest Capex projects we have planned for the next ten years (FY2021 to FY2030). This heat map is part of the new related party transaction information disclosure requirements, that were announced by the Commerce Commission in December 2017. Figure 20 sets out the location of the largest ten projects, with greater detail in Table 8.

The identified projects are all network Capex. Network Capex is forecast to be completed by our related party, Gas Services New Zealand Limited (GSNZ) under an operations and management (O&M) agreement between Firstgas and GSNZ. This O&M agreement was entered into in 2016 and will be reviewed before September 2022. GSNZ manages a number of third-party contractors to deliver this network Capex.

The map to the right 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 2021.

More detail on the Capex projects identified in Table 8 can be found in the appendices to our 2020 AMP. Where the identified projects include some reinforcement work, there may be possible future network or equipment constraints.

Figure 20: Largest Capex projects

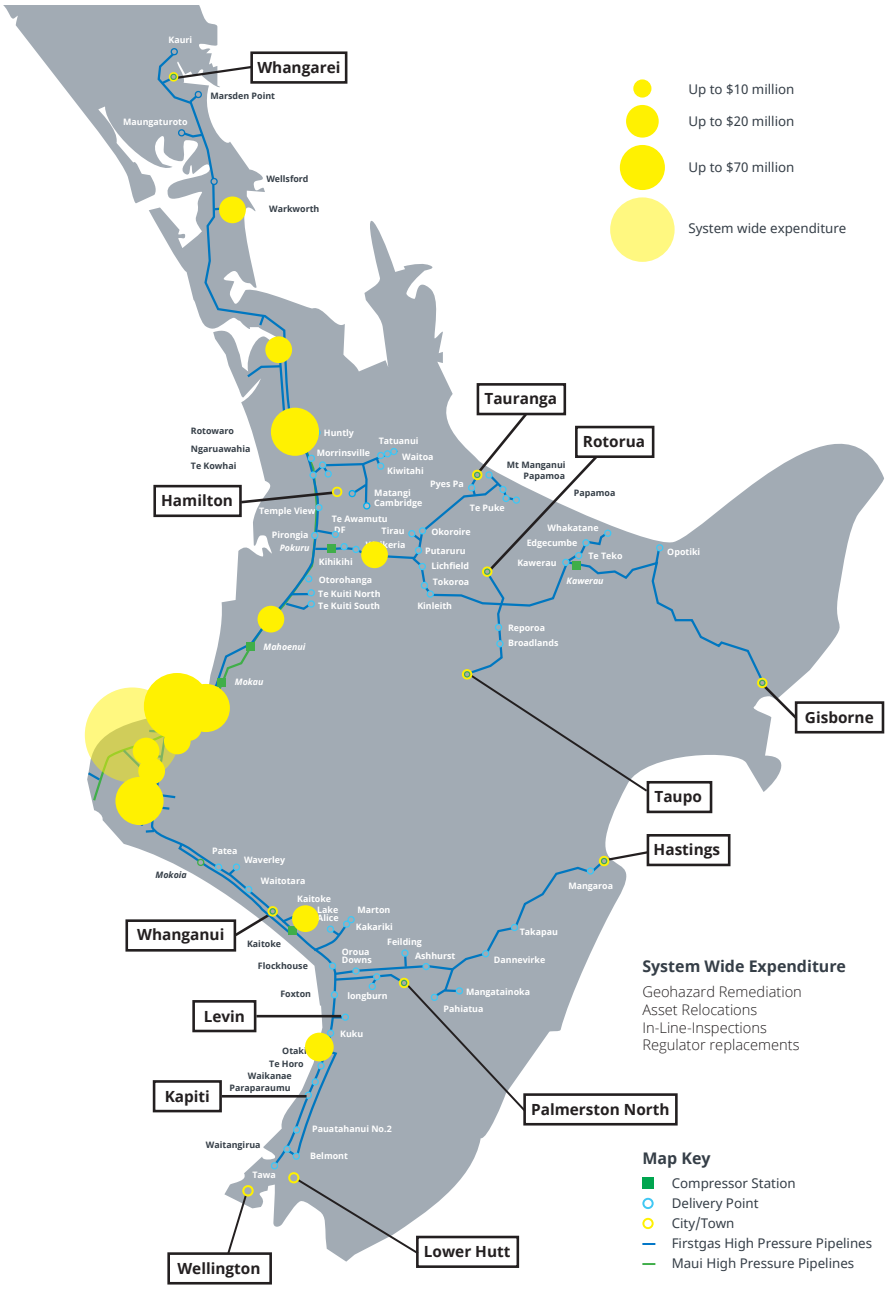


Table 8: Description of largest Capex projects

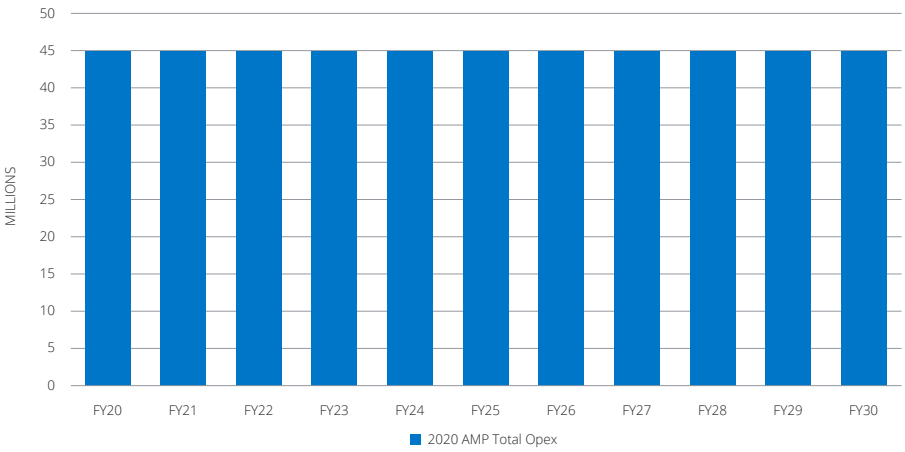
PROJECT	DESCRIPTION	REGION	COST (CONSTANT $)	PERIOD
Compression strategy	Upgrade and standardisation of ageing fleet of compressors	Strategic compression sites	$100 million	FY2021– FY2030
Geohazards	Risk remediation projects resulting from geotechnical hazards	System wide	$57 million	FY2021– FY2030
Gilbert Stream realignment	Geohazard risk remediation from coastal erosion	North Taranaki	$7.8 million	FY2021– FY2022
Heating systems	Replacement of ageing fleet of water bath heaters	System wide	$30 million	FY2021– FY2030
Warkworth expansion	Increasing pipeline capacity to meets increase in demand	Northern system	$6 million	FY2021– FY2022
Pipeline inline inspections	Pipeline pigging operations undertaken on piggable lines	System wide	$6.5 million	FY2021 – FY2022
SCADA and communications	Upgrade and replacement of SCADA master server	North Taranaki	$15 million	FY2021 – FY2030
Mangapukatea re-alignment	Geohazard risk remediation from coastal erosion	North Taranaki	$2 million	FY2021 – FY2025
Pariroa defect	Pipeline defect repair and land stabilisation	North Taranaki	$5.5 million	FY2021 – FY2021
Asset relocations	Relocation of infrastructure	System wide	$20 million	FY2021 – FY2030
Customer connections	Supporting system growth and new customers	System wide	$19 million	FY2021 – FY2030

5.2 OPEX FORECAST

The forecast Opex over the next planning period is set out in Figure 21. There is no significant change in ongoing Opex from that set out in 2019 AMP Update. We forecast a steady trend in Opex over this ten-year period of approximately $45 million.

For FY2020, we are expecting that our expenditure will be in line with our forecast. Continuous improvement is part of how we conduct business and over the next years, we will continue to review Opex activities and looking for opportunities for savings.

Figure 21: Forecast total Opex (all figures in FY2020 prices)



Largest Opex activities going forward

Like last year, we have also elected to include within our AMP the high-level heat map that shows the largest Opex activities for the next 10 years (FY2021 to FY2030). Figure 22 sets out the location of the largest 10 activities, with greater detail in Table 9.

All network Opex, except for the purchase of compressor fuel, is forecast to be completed by our related party, Gas Services New Zealand Limited (GSNZ) under the operations and management agreement between Firstgas and GSNZ. This agreement was entered into in 2016 and will be reviewed by September 2022. GSNZ manages a number of third-party contractors to deliver this network opex.

A description of the largest Opex activities identified in Table 9 is provided below. All activities are network-related works, and none are a result of future network or equipment constraints.

Figure 22: Largest Opex projects

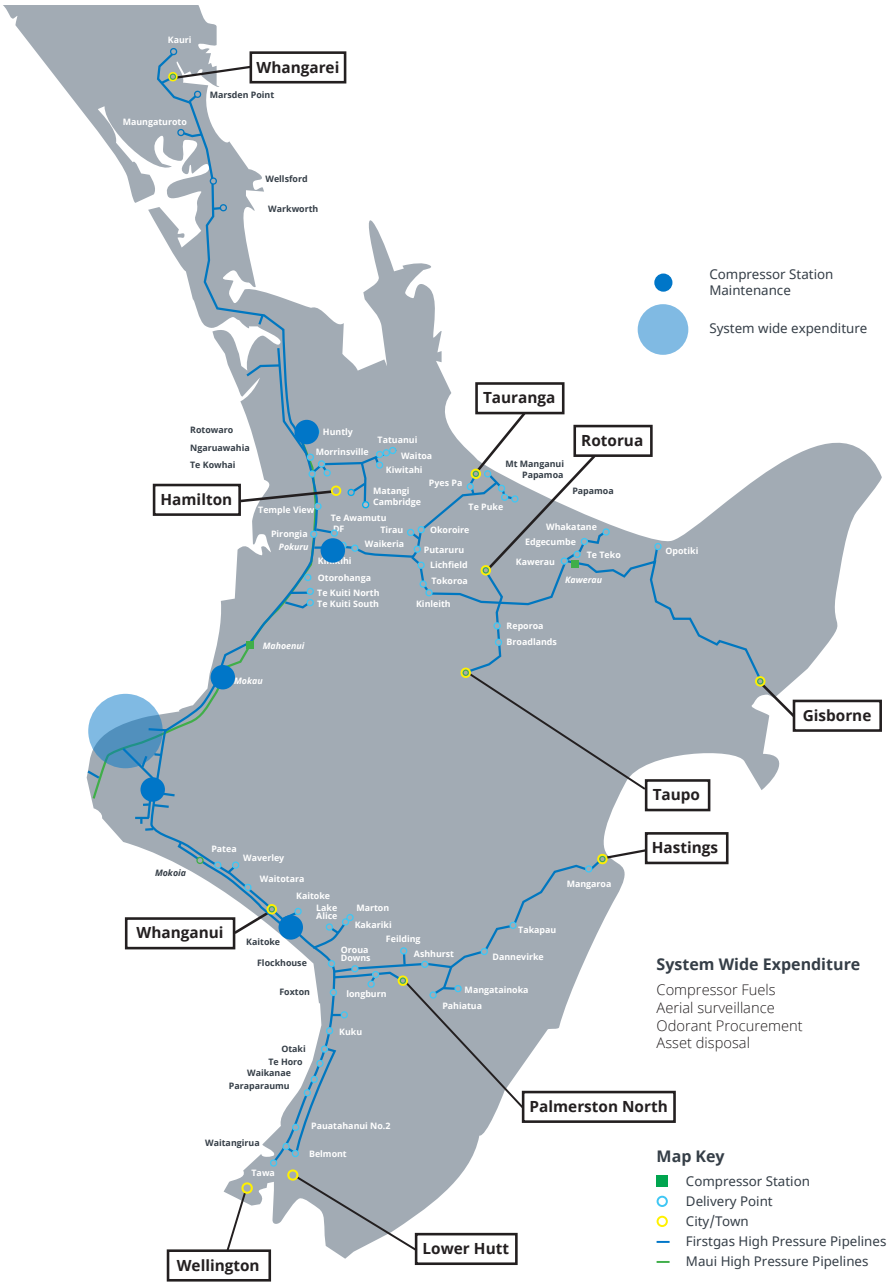


Table 9: Description of largest Opex activities

PROJECT	DESCRIPTION	REGION	COST (CONSTANT $)	PERIOD
Kapuni Gas Treatment Plant (KGTP) maintenance[46]	Ongoing maintenance costs associated with assets at KGTP	Taranaki	$12 million	FY2021– FY2030
Rotowaro Compressor Station maintenance	Ongoing maintenance costs associated with assets onsite	Northern System	$2.9 million	FY2021– FY2030
Mokau Compressor Station maintenance	Ongoing maintenance costs associated with assets onsite	Taranaki	$3 million	FY2021– FY2030
Kaitoke Compressor Station maintenance	Ongoing maintenance costs associated with assets onsite	Southern system	$2.5 million	FY2021– FY2030
Pokuru Compressor Station	Ongoing maintenance costs associated with assets onsite	Bay of Plenty system	$1.8 million	FY2021– FY2030
Bulk odorant purchasing	Procurement of odorant	System wide	$1.8 million	FY2021– FY2030
Odorant systems maintenance	Ongoing maintenance costs associated with assets onsite	System wide	$3.4 million	FY2021 – FY2030
Aerial surveillance	Helicopter and fixed wing aerial surveillance costs	System wide	$5.8 million	FY2021– FY2030
Asset decommissioning	End of lifecycle costs to decommission assets.	System wide	$10.0 million	FY2023 – FY2030

46. The implementation of the compression strategy would deliver a reduction in planned maintenance expenditure for all sites that will be upgraded. As the project is developed and detailed design undertaken the savings in maintenance costs will be factored into to ongoing expenditure forecasts.

6. STAKEHOLDER ENGAGEMENT

Firstgas recognises the importance of regular engagement with our major gas users, shippers and customers who rely on the consistent and safe delivery of large volumes of gas to maintain their ongoing productivity and business.

6.1 ENGAGING WITH THE GAS INDUSTRY ON OUR APPROACH

Firstgas is increasingly taking a proactive approach to engagement with our customers and stakeholders. In October 2019, we developed our first transmission customer engagement plan[47] for consultation with customers. The focus of this plan was to

- Summarise the issues that we plan to engage with gas transmission customers on during FY2020
- Explain why we consider these issues to be important areas for engagement and describe how we plan to carry out this engagement
- Seek input from our customers on the gas transmission issues that are of greatest interest to them.

We group our customers into four broad groups to guide our engagement – major gas users (direct connects), shippers, gas distribution businesses (GDBs) and gas producers. We elected to focus the plan on this targeted set of "customers" to focus our engagement with parties that receive services directly from our transmission business. We hope that this will provide for tighter, more-focused engagement on the issues of greatest interest to those directly affected by price and quality, while still acknowledging and engaging on the interests of broader stakeholders (such as landowners, iwi, and community groups).

We are currently preparing our draft customer engagement plan for FY2021 and are looking to build on the learnings and feedback we have received from customers to date. In particular, we are looking at how we can engage more effectively with smaller gas users (from residential and commercial business through to mid-size industrials) and gas distribution businesses.

6.2 MAINTAINING REGULAR DIALOGUE WITH STAKEHOLDERS

Over the last year, we have continued to engage with our customers on implementation of the new Gas Transmission Access Code (GTAC). The focus of discussions during 2019 and 2020 has shifted to implementing the IT and business process requirements that will support the operation of the GTAC. Key topics discussed during industry workshops included functional specifications, system integration, as well as testing and training requirements. A series of "First Look" workshops were completed during December 2019 to give customers visibility of the progress made to date with implementation. This involved a number of gas industry representatives visiting Firstgas' New Plymouth office for a first hand experience of the IT systems being developed to implement the GTAC.

In March 2020, Firstgas notified stakeholders of our decision to suspend the GTAC IT implementation project during the COVID-19 lockdown. Subsequent industry conference calls provided detail on the reasons for the deferral of GTAC 'go-live' as well as the steps we were taking to 'reset' the GTAC IT implementation project.

In addition to GTAC implementation, we have welcomed our continued engagement with the Major Gas Users Group (MGUG) and the opportunity to attend their regular meetings. This has enabled us to provide updates on a number of our projects, operational matters and industry development, as well as getting feedback on how users are affected by our work programme and broader industry and market changes.

During the past year we have also had regular interaction with gas producers. In May 2020, we asked producers to provide information to demonstrate their compliance with gas quality standards. Producers have provided a suite of information (including test results for various gas components and characteristics) to evidence that they have the systems and processes in place to monitor the gas that enters the transmission system against the required specification. We are reviewing the information provided and will seek additional information or clarification from individual producers where required.

We continue to advocate for a regulated solution to enable increased information disclosure in the gas market, particularly around production outages. Flexgas, the operator of the Ahuroa gas storage facility and part of the Firstgas Group, has committed to voluntary disclosure of any planned interruptions at the storage facility.

47. https://firstgas.co.nz/wp-content/uploads/Firstgas_Transmission-Customer-Engagement-Plan_16-March-2020.pdf

6.3 PROACTIVE DISCUSSIONS ON DECARBONISING OUR GAS NETWORK

Firstgas has been increasingly active discussing our work exploring the decarbonisation of our gas networks (refer to section 2.7 for detail). We have submitted on a number of discussion documents relating to decarbonising process heat and actively seek out opportunities to engage with government officials, Ministers and stakeholders in discussions on decarbonising our New Zealand's energy system and the opportunities for future fuels.

We use our memberships of organisations like the Australian Gas Pipeline Association (APGA) to link up with similar businesses in other countries. This allows us to understand issues evolving in other jurisdictions and reflect how these may impact our operations as well as discuss best practice options.

6.4 LAND AND PLANNING STAKEHOLDER MANAGEMENT

Firstgas' Land and Planning team's stakeholder management plan is focusing on building and sustaining relationships, and where appropriate partnerships with landowners, iwi, councils, developers, contractors and other interested parties for the protection of the transmission pipeline and the community. To manage this, our stakeholder management and engagement plan sets out goals, objectives, actions, processes and a policy that guide the framework for stakeholder relations. Firstgas approaches every engagement with a stakeholder as an opportunity to improve relationships with them and this is a process that needs to be well managed.

Through an ongoing marketing survey campaign, Firstgas is inviting and capturing feedback from our stakeholders seeking to improve the way it works with them. This is in terms of the medium for communication (e.g. phone, mail, email, online, social media) through to what is communicated, and the messaging involved. This is creating an opportunity to re-examine our stakeholder management and create new ways of engaging with stakeholders to grow and sustain long lasting relationships that benefit all parties.

The team is also embedding and developing a new land data management system that helps manage and record all interactions with our stakeholders and provide information when in the field.

6.5 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 transmission operating codes (which include obligations relating to confidentiality) and we need to comply with the *Health and Safety in Employment (Pipelines) Regulations 1999* 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.