



UPDATE

Gas Transmission Security and Reliability Update

March 2017

Executive Summary

Although unplanned interruptions to gas transmission services are extremely rare, they have the potential to cause significant disruption to end-users and harm the wider economy. Against that background, Gas Industry Co reviewed the availability of information and considered whether all the commercial and regulatory arrangements necessary to achieve effective security and reliability (S&R) of transmission pipelines are in place. Our findings were published in the April 2016 paper, *Gas Transmission Security and Reliability Issues Paper (Issues Paper)*.

Broadly our conclusions were that:

1. The primary responsibility for transmission S&R lies with the pipeline owners, operating within a regulatory framework defined principally by the Health and Safety at Work Act, the Commerce Act, and the Gas Act.
2. The regulatory agencies – WorkSafe NZ, the Commerce Commission and Gas Industry Co – have well defined roles with very little overlap.
3. The pipeline owners have strong incentives – reputational, commercial and statutory – to deliver effective S&R.
4. All the necessary arrangements to deliver effective S&R are in place, although some arrangements are untested, and compliance with others could be improved. In particular, despite the disclosure of substantial Asset Management Plans (AMP), some stakeholders were unsure if owners considered the systems to be adequately secure and reliable, or what the major risks were, or how those risks were being addressed.

On considering submissions on the *Issues Paper*, we made some adjustments to its conclusions and suggested action points. These are set out in our July 2016 paper, *Security and Reliability Issues Paper Submissions Analysis (Submissions Analysis Paper)*.

In the course of the S&R review, both transmission systems came under the ownership of First Gas Limited (First Gas).¹ The First Gas submission on the *Issues Paper* noted the importance of S&R to its business, and its desire to improve related communications, including continued constructive discussions with Gas Industry Co, shippers and end-users. This was borne out by First Gas engaging widely with stakeholders in the course of preparing its initial *Asset Management Plan (New AMP)*, including an update on key projects.

This *S&R Update Paper* reviews how matters now stand in relation to S&R, including an assessment of the *New AMP* and other S&R-related developments.

Conclusions

Given the short time available to consult with stakeholders, take on board the recommendations of the *Issues Paper* and *Submissions Analysis Paper*, and consolidate the previous two AMPs into a single, comprehensive and improved document... we think First Gas has achieved an excellent result.

¹ On 20 April 2016, Vector Gas Limited – owner of the Vector transmission system – was acquired by First State Funds, two infrastructure funds managed by First State Investments, known in Australia as Colonial First State Global Asset Management. Vector Gas Limited was renamed First Gas Limited (First Gas). Then, on 15 June 2016, First Gas purchased the Maui pipeline from Shell, Todd and OMV (collectively known as the Maui Mining Companies).

Regarding the specific matters raised in the *Submissions Analysis Paper* in relation to the AMP, the *S&R Update Paper* concludes that:

1. **Stakeholder engagement** on S&R matters during development of the *New AMP* has improved considerably on previous transmission pipeline owner communications.
2. First Gas has made a good start to articulating its **asset management philosophy**, supporting strategy and plans. It acknowledges that this work is still in progress.
3. The process for **analysing and ranking risks** is well covered in the *New AMP*, but there is scope for more discussion of the outcomes of the process, including on the relative ranking of the risks identified.
4. We continue to recommend a dashboard approach to presenting the **ranking of performance** and make a number of specific comments in relation to the reporting of individual performance measures (see s1.5.1 to s1.5.9 of this S&R Review).
5. In relation to **how incidents/emergencies will be responded to** we suggest the AMP could point stakeholders to where to look for more information on what is expected of them, how they should interact with the Transmission Service Provider (TSP) during an emergency, and where they would find information about the emergency (which may not necessarily be declared as a Critical Contingency).
6. We note there are numerous **maintenance plans** and suggest that it would be helpful if the *New AMP* provided a document reference guide that readers could refer to when they lose track of the purpose, relationship and location of the various documents.
7. The *New AMP* does not include **intelligent pigging results** and we suggest that First Gas discuss with stakeholders what details (if any) it is necessary to disclose.
8. We agree with the stakeholders who believe that **lead indicators** of performance are important and suggest that First Gas could discuss possible indicators with those stakeholders.
9. While the *New AMP* is still a 'work-in-progress', we consider that First Gas has consulted with end-users so as to keep **performance measures relevant to end-users**.
10. Some measures, such as the 'number of gas vents', would benefit from some additional description **clarifying the meaning of performance measures**, for example explaining why gas vents occur.
11. We consider that a dashboard would go a long way towards **linking targets to stakeholder objectives and external benchmarks**.
12. **Quantifying reliability**, for example by assessing whether a risk is a 1 in 10 year event, or a 1 in 1000 year event, is not straightforward and we recommend further dialog on how it can practically be done.
13. **The security standards are clear**, but some of the supporting detail could be tidied up.

Regarding the specific matters raised in the *Submissions Analysis Paper* in relation to other aspects of S&R, we conclude that:

1. We are confident that the **capacity issues identified by the Panel of Expert Advisers (PEA)** will be addressed through the First Gas process to develop a new transmission code.
2. In relation to **S&R of gas deliveries to individual sites**, First Gas has discussed this directly with a number of major end-users connected to the transmission pipelines, and is open to one-on-one discussions with any other end-user who has S&R concerns.

3. Gas Industry Co's *Market-Based Balancing Review (MBB Review)* has assessed the **effect of Market Based Balancing**. The First Gas process to develop a new transmission code will now consider balancing arrangements suitable for future access arrangements.
4. Gas Industry Co and the Commerce Commission continue to work together to ensure there is **no duplication of Gas Industry Co and Commerce Commission work** and that the price-quality regime and the new transmission access arrangements do not obstruct each other.

Next steps

We believe our consultation with stakeholders on S&R issues has now substantially addressed the concerns that gave rise to the review. However, we expect that matters with a strong S&R component will emerge from time to time² and these will be dealt with when they arise.

However, just as this paper has assessed the *New AMP* against the matters identified for attention in the *Submissions Analysis Paper*, our intention is to assess the next AMP against the outstanding matters identified in this paper. The outstanding matters for First Gas to consider in relation to the next AMP are:

1. Complete the Asset Management strategy and plans. (see s1.3)
2. Provide more discussion of the outcomes of the risk management process, including on the relative ranking of identified risks. (see s1.4)
3. Include a dashboard. (see s1.5 and s1.13)
4. Review the effectiveness of event reporting targets. (see s1.5.4)
5. Provide or reference information on how stakeholders should interact with the TSP during an emergency, and where they should look for information. (see s1.10)
6. Sharpen the performance measure definitions. (see s1.12)
7. Discuss with stakeholders how they can assess the probability of events. (see s1.14)
8. Tidy up the security standard. (see s1.15)

² For example, we expect that the Safety and Measurement Regulations will be reviewed as part of the Government's health and safety reform. It may be necessary for us to discuss any proposed changes with stakeholders.

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1. Asset Management Plan expectations and improvements

1.1 Expected improvements

In respect of the AMP, an action point from the *Submissions Analysis Paper* was for First Gas to work with stakeholders (including end-users, Gas Industry Co and the Commerce Commission) to ensure future AMPs and other disclosures provide a more assessable presentation of the GTB's interpretation of the data, identification of issues, and means of addressing those issues.

A widespread sentiment among stakeholders at the outset of our S&R investigation was dissatisfaction with the standard of communication with the pipeline owners. Although we made a number detailed recommendations in our *Issues Paper* and *Submissions Analysis Paper*, we considered that the biggest opportunity for improvement was to improve communications – both through dialog about which aspects of S&R matter to stakeholders, and by speaking to those concerns in the AMP. As our *Issues Paper* put it, the AMP:

... should tell the S&R story about:

- (a) how the system is performing;
- (b) what factors are really important to S&R; and
- (c) how the [Gas Transmission Business] GTB is managing these factors.

Issues Paper p11

In this chapter we first consider how First Gas has communicated with stakeholders about the AMP, then take a closer look at the more specific stakeholder wishes, as set out in our *Submissions Analysis Paper*. In particular, that paper concluded that the *New AMP* could reasonably be expected to include:

- (a) A description of the philosophy/principles being followed by the GTB, as proposed by MGUG and Nova.
- (b) An analysis and ranking of risks, as proposed by Fonterra, Methanex and MGUG.
- (c) A ranking of performance against maintenance and investment targets, as requested by MGUG and Genesis.
- (d) An outline of how incidents/emergencies will be responded to, as requested by Fonterra.
- (e) A maintenance plan, as requested by Genesis.
- (f) Intelligent pigging results, as requested by Genesis.
- (g) Lead indicators, as requested by MGUG and Nova.
- (h) More transparency of PIMP information, as requested by most submitters.
- (i) Keeping performance measures relevant to end-users, as proposed by Methanex.
- (j) Clarifying the meaning of performance measures, as proposed by First Gas.
- (k) Linking targets to stakeholder objectives and external benchmarks, as proposed by MGUG.
- (l) Quantifying reliability, as proposed by MGUG.

(Summary extract from s3.1 of *Submissions Analysis Paper*)

One final matter addressed in this chapter is security standards. s4.4 of the *Issues Paper* discussed security standards and concluded that, while they are a helpful guideline, they are not a particularly good indicator of overall S&R, and we did not favour mandatory standards such as N-1 redundancy. This position was generally supported in submissions. However, since they are a useful guideline, we discuss how they are dealt with in the *New AMP* for completeness.

1.2 Stakeholder engagement

In relation to S&R of the transmission system, most submissions on the *Issues Paper* called for greater levels of stakeholder engagement during the preparation of the *New AMP*. From mid-2016, when First Gas became owner of both transmission pipelines, we consider that it worked to answer that call. During that time, First Gas discussed S&R with individual stakeholders and held several S&R workshops. First Gas made S&R a high priority. As later noted by the First Gas Chief Executive in his introduction to the 2016 Gas Transmission Asset Management Plan:

Notwithstanding the effort required for this transition, we believe it is important to produce AMPs [for transmission and distribution pipelines] that clearly communicate the progress we have made to date and our future plans for managing the network. In doing so, we have sought to reflect recent discussions with the industry and our regulators on the information that they would like to see in our AMPs and how our disclosures can most effectively convey information to our stakeholders.

While our AMPs are still a 'work-in-progress' and further improvements will be made over time, we have tried to ensure they are accessible and easy for a wider range of stakeholders to use. We want to produce AMPs that are a valuable resource for our customers, staff, and regulators, and that they clearly set out the issues facing our networks and how we plan to respond.

(Extract from First Gas Chief Executive's introduction to the *2016 Gas Transmission AMP*)

In Section 2.3.2 of the *New AMP*, First Gas sets out how it intends to go about identifying its stakeholders' needs. It notes that the consultation on Gas Industry Co's *Issues Paper* provided one opportunity, and from the submissions on that paper First Gas understands that stakeholders want:

1. improved communication;
2. to better understand gas supply risks; and
3. to be able to understand the information contained in the *New AMP*.

Gas Industry Co comment

We support the priority First Gas has given to S&R, agree with its understanding of stakeholder submissions, and consider that its approach to preparing the New AMP greatly improved stakeholder communication.

1.3 Asset Management Philosophy

First Gas describes its asset management philosophy in the Asset Management Policy (see **Figure 1**) and the supporting strategy and plans (some of which are still under development).

Asset Management Policy

First Gas's Asset Management Policy is to effectively manage the gas distribution and transmission assets across their entire lifecycle in a safe, efficient and environmentally appropriate way to serve the needs of our customers, stakeholders and end-users while optimising the long-term return of our shareholders.

Achieving Operational Excellence in asset management is key to delivering on First Gas's Mission:

- To deliver stable and predictable financial performance through providing safe and reliable gas pipeline and network services.

To deliver on our Asset Management Policy First Gas will:

- Prioritise the integrity of our assets to ensure the safety of the people and places affected by our operations.
- Provide a reliable, resilient and secure service that meets customer needs.
- Preserve the environment by operating in a manner that mitigates environmental risks.
- Address and meet all legislative requirements.
- Communicate our investment plans to stakeholders, particularly the communities that host our assets.
- Operate in a manner that optimises the long-term financial outcomes for our shareholders.
- Balance the needs of competing objectives in a consistent and transparent manner.

To achieve and monitor this we will:

- Engage with our stakeholders in an open and transparent manner, integrating customers into our decision making.
- Provide efficient and effective systems for whole of life asset management processes.
- Regularly review our performance using relevant leading and lagging indicators.
- Grow the organisational competence and capability of First Gas in step with our asset management objectives.
- Ensure our Board and management are fully informed with accurate and timely data to support their responsibilities.
- Communicate with all our people and key stakeholders on all aspects of this policy.
- Continuously strive for improvement in all areas of asset management and work to align with ISO 55000.

All our people are responsible for:

- Ensuring their own and others adherence to this policy.
- Escalating any issues that may put the aims of this policy at risk.

Figure 1 First Gas Asset Management Policy (New AMPs4.1.2)

The elements of the policy are described in more detail in the related strategy and plans (see **Figure 2**). First Gas expects that, when completed, its asset management strategy will:

- Set out and explain a suite of new asset management objectives.
- Specify criteria for prioritising our asset management activities.
- Describe our approach to managing risk, in particular network security.
- Link our asset management practices, performance levels and our future targets.
- Provide a framework for the development of integrated maintenance and renewals plans.
- Set out a roadmap and timeframe for continuous improvement initiatives

(*New AMP s4.1.2*)

Figure 18: Documentation in our asset management framework

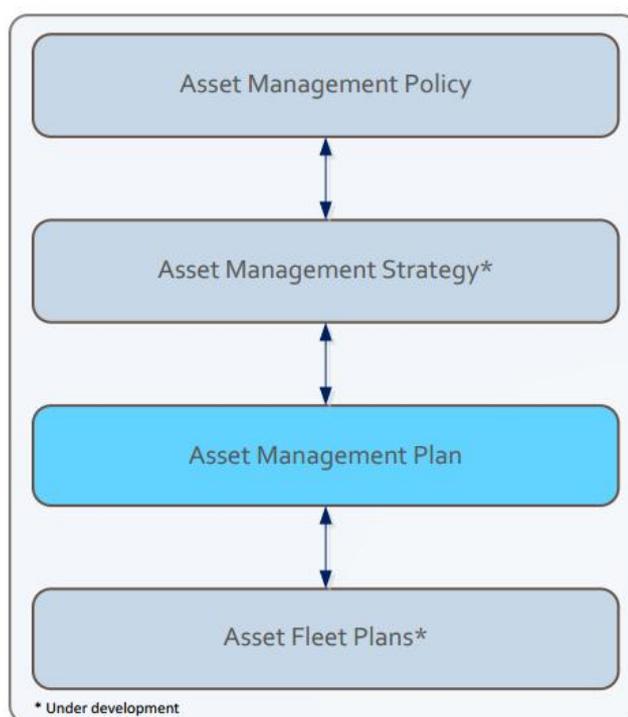


Figure 2 First Gas Asset Management Framework (*New AMP s4.1.1*)

In respect of managing transmission assets generally, s6 of the *New AMP* explains the First Gas lifecycle based approach.

In respect of maintenance, First Gas says that:

In general, our philosophy is to keep assets in use for as long as they can be operated safely, technically and economically. Our maintenance policies support this goal with a comprehensive set of processes, standards and schedules.

(*New AMP App H*)

Gas Industry Co comment

First Gas notes that further work needs to be done in this area. However, we consider that the New AMP makes a good start in describing the philosophy/principles First Gas is following.

1.4 Analysis and ranking of risks

In the *New AMP* s4.3, Asset Risk Management, First Gas notes that industry codes, such as AS 2885, require risk management to be a continuous process at all stages throughout the lifecycle of its gas transmission network. First Gas considers that its process accords with this, and with AS/NZS ISO 31000:2009.

s4.3.6 of the *New AMP* addresses the risk management process, and the major risks categories are identified in s4.5.3 as:

- (m) Transmission Pipeline Failure
 - (a) Potential for Third Party Damage
 - (b) Potential for Corrosion
 - (c) Potential for Ground Movement
 - (d) Physical Design and Characteristics of the Pipe
 - (e) Compressor Station Fire

Stakeholders wishing to find concrete examples of specific risks warranting action will find these mostly in s6.2, Asset Replacement and Renewal. For example:

1. Geotechnical risk:

White Cliffs: First Gas confirms that pipelines located in an erosion risk area at White Cliffs, Taranaki need to be realigned. Horizontal directional drilling (HDD) has been selected as the most appropriate technique for the realignment work. The project is forecast to begin preconstruction preparation in FY17, with the main site works being completed through FY22 and FY23. The total cost forecast for White Cliffs is **\$82 million**. (s6.2.2)

Gilbert Stream: a section of pipeline at Pukearuhe, north of Gilbert Stream, is at risk from marine erosion. A realignment project to begin in FY17 and to complete in FY18 at an estimated budget of **\$8.6 million**. (s6.2.2)

First Gas also notes (Executive Summary p4) that its focus on managing other geotechnical risks, such as landslides, has also increased. Building on its comprehensive study of geotechnical risks on the Maui pipeline, it plans to identify and categorise geotechnical risks on all its pipelines.

2. Obsolescence risk:

During FY17 and FY18 large capacity obsolete turbine meters will be replaced at Kapuni, Kawerau (timber mills) and selected Fonterra factories. (s6.10.4)

During FY17 and FY18 the SCADA system hardware platform, which is not now unsupported, will be replaced. (s6.10.5)

During FY 17 the Grove Flexflo regulators, for which spares are becoming depleted, will be replaced at Henderson compressor station, Kauri Dp, Maungatoroto Dp, and Warkworth Dp. (s6.10.8)

Gas Industry Co comment

In our view, the process for identifying and analysing risks is well covered in the New AMP. We note that evaluating risks, including the ranking of risks, is a key part of the First Gas risk management framework (s6.3.3 of the New AMP).

However, although the process is well covered, the relative ranking of specific risks identified through the process, gets little attention.

We consider that future AMPs would benefit from more discussion of the outcomes of the risk management process, including on the relative ranking of identified risks.

1.5 Ranking of performance

We, and other stakeholders, considered that performance reporting would be improved by the inclusion of some qualitative assessment of whether the reported results are good or bad. We suggested that a 'dashboard' would be helpful to convey the overall story about which risks are important, how they are being managed, and how the asset is performing (all information that can easily be lost in the detail). In particular, we suggested the *New AMP* could include in graphical or table format what the important metrics are, and how the business is performing against them. The value to customers is that they can quickly decide if there is anything of concern that might warrant delving more deeply into the *New AMP*.

Disclosure of service levels is specifically required by the *Gas Information Disclosure Determination 2012 – (consolidated in 2015)*. In the *New AMP*, Appendix I – Regulatory Requirements Lookup, cross-references those requirements against the sections of the *New AMP* that addressed them. In particular, service level targets are defined in s4.4.

When we previously looked at the service levels in the MDL and Vector AMPs we noted that:

1. The metrics are difficult to interpret without the benefit of an informed analysis. It would be a great help to stakeholders if the metrics could be summarised and displayed in a 'dashboard' format, accompanied by the GTB's interpretation of what they tell us. Such a dashboard could highlight the metrics addressing the highest risks (ie the risks that are most likely to lead to a supply interruption, such as corrosion or mechanical damage).
2. MDL and Vector had a somewhat different approach to setting targets and presenting the data. We expect this to be ironed out when the pipelines come under a single owner.
3. Some metrics are of keen interest to pipeline users (such as the number of Unplanned Interruptions) whereas others are less meaningful (such as PREs). We expect the new owner to discuss this with stakeholders so that in future the metrics can be presented, and their meaning distilled, and added to where GTBs can give greater assurance, in the most helpful way.

(S2.8 of the *Issues Paper*)

In s4.4 of the *New AMP* First Gas notes that 'we are still in the process of amalgamating the performance measures of the previously separately owned pipelines and will complete this work over the next 12 months.' So stakeholders should regard s4.4 of the AMP as work in progress.

Gas Industry Co comment

We continue to advocate for a dashboard of key indicators and note that the Commerce Commission has developed a number of graphical presentations of key indicators that may be a useful starting point (the Gas DPP Strata Dashboard published on 13 December 2016: <http://www.comcom.govt.nz/regulated-industries/gas-pipelines/gas-default-price-quality-path/2017-2022-gas-dpp/>).

We comment on the reporting against each individual performance measure, as listed in s4.4 of the *New AMP*, below.

1. Safety

s4.4.1 of the *New AMP* reports a target of zero lost time injuries, and ‘...[o]ur historical performance has met this target...’.

Gas Industry Co comment

The New AMP record of this performance measure does not seem to square with what was reported in s4.2.1 of the old Vector AMP. Vector provided a more extensive analysis of lost time injuries, reporting on two metrics (Lost Time Injury Frequency Rate (LTIFR) and a Total Recordable Injury Frequency Rate (TRIFR)), neither of which was zero. While First Gas is not responsible for previous results, there may still be lessons to learn from the previous safety experience.

2. Response time to emergencies (RTE)

s4.4.2 of the *New AMP* reports that no emergencies have occurred.

Gas Industry Co comment

The old Vector AMP was more informative on RTEs than the New AMP. For example, it noted that two projects were being implemented to improve RTE responses. These involved installing digital radios and GPS in field vehicles so that a Gas Controller could locate and communicate with the field staff closest to any emergency. First Gas may consider this an unnecessary amount of detail for the New AMP, but we think this kind of information is of interest to stakeholders.

3. Unplanned interruptions

s4.4.3 of the *New AMP* reports no unplanned interruptions and briefly describes the difference between planned and unplanned interruptions.

Gas Industry Co comment

In relation to reporting interruptions, the old Vector AMP was more expansive than the New AMP, also reporting on sub-categories of interruption (third party events, equipment failure etc), and describing two programmes that could improve future performance (Pipeline Replacement and Renewal, and Pressure Regulator Replacement). Again, the New AMP could usefully have reported on the progress of these programmes.

4. Events (previously called 'incidents and emergencies')

In relation to incidents and emergencies, the old Vector AMP targeted a 'Non-significant Events to Significant Events ratio' of no more than 30:1, and a 'Nonsignificant Events to Emergencies ratio' of no more than 220:1. In s4.4.4 of the *New AMP*, First Gas notes that its intention is to reduce the overall risk to the system, and that these ratios are an indicator of that. It reports the first ratio as being 118:1 for the past 4 years (which seems a curiously consistent result), and the second ratio as 41:0 for the last year (the previous 3 years being 118:0, 95:0 and 125:0. First Gas notes that it is reviewing the effectiveness of the targets in this area.

Gas Industry Co comment

We look forward to seeing the First Gas review of the effectiveness of the event reporting.

5. Security and reliability: compressor availability

s4.4.5 reports against two performance targets. The target for Compressor fleet reliability is 97%, and for Compressor fleet availability it is 95%. (These terms are not described in the *New AMP*, but full descriptions are available in the old Vector AMP.) Performance for the 2016 part year was 94 and 81%, respectively. It is noted that a control system replacement programme is underway to improve the consistently under target performance (the benefits of replacement digital control systems are explained in s4.4.7 and compressor fleet is extensively described in s6.9, including identification of the risks and key projects).

Gas Industry Co comment

We found the s6.9 discussion a very useful aid to understanding the significance of the s4.4.5 results. It may be helpful to cross-reference these for the benefit of readers who want more detail.

6. Security and reliability: public reported escapes and gas leaks

s4.4.6 reports against a target of no more than 5 confirmed public reported escapes per 1000 km per year (reduced from a previous target of 13). Performance for the 2016 part year was 2.2.

Gas Industry Co comment

We note that First Gas has significantly tightened this target.

7. Security and reliability: tactical initiatives and investment

s4.4.7 usefully collects together a number of initiatives and investments aimed at improving the security and reliability performance measure. These make reference to such things as the implementation of a new enterprise asset management system (Maximo), increased expenditure on geo-hazard inspection and remediation, programmed identification and replacement of pressure regulators etc.

Gas Industry Co comment

We found the list of tactical initiatives helpful, but it does seem out of place in the Performance Measurement section.

8. Environmental

s4.4.8 confirms that the environmental target (of full compliance with all requirements from local and regional councils, to have no prosecutions based on breaches, environmental regulations or requirements) was met again.

Gas Industry Co comment

Noted.

9. Compliance

s4.4.9 reports that this is a new performance measure relating to the five-yearly certificate of fitness issued to First Gas by Lloyds, and annual audit comparing First Gas practice to AS/NZS 2885, also performed by Lloyds. The target is to have no non-compliances found during audit or, if non-compliances are found, to resolve the issue within a specified timeframe.

Gas Industry Co comment

We consider this new performance measure an informative addition.

1.6 An outline of how incidents/emergencies will be responded to

In the *Submissions Analysis Paper* we noted stakeholders need to understand how the TSP will respond to incidents/emergencies, and that, if the actual Emergency Plans are too detailed for inclusion in the AMP, the detail should be made available to stakeholders on-line.

Contingency planning and response is dealt with in s4.3.8 of the *New AMP*. It notes that the emergency response plan has been well tested, including through annual exercises, and shown to be capable of managing significant events. The plan describes what staff are responsible for during a major emergency or incident, including the formation of the emergency response management team.

The First Gas emergency response plan can be activated by a variety of scenarios including physical damage or limitations to the system and unplanned supply interruptions. At the extreme such an event may be declared as a Critical Contingency. In that case the First Gas *Critical Contingency Management Plan*³ would also be invoked. That plan has a number of communications protocols embedded in it.

Gas Industry Co comment

We think s4.3.8 gives useful, but very high level information. We consider that stakeholders (particularly major users) may be looking for better information about how they should interact with the TSP during an emergency, and where they should look for information.

Perhaps the AMP is not the best place to deal with this level of detail, but it would be helpful if there was at least a note to direct stakeholders to where to look for more information on what (if anything) is expected of them during an emergency (which may not necessarily be declared as a Critical Contingency).

1.7 Maintenance plan

s6.4.1 of the *New AMP* describes the objective and key drivers for maintenance of the asset. The Maintenance objective is:

... to provide timely, quality and cost-effective maintenance services to ensure that assets are maintained to support the required level of safety and reliability, availability, output capacity, and service quality.

(*New AMP* s6.4.1)

And, it is noted that:

... we have developed overarching maintenance regimes for pipelines and stations. These are set out in the following documents.

- Maintenance Strategy Document
- Pressure Equipment Management Plan
- The strategy for pipelines is described in the PIMP

(*New AMP* s6.4.1)

Although not publicly available, we are told the Maintenance Strategy document (First Gas document 3205250) outlines maintenance practices, the circumstances under which different maintenance practices are to be applied, and the management of maintenance practices using the Computerised Maintenance Management System (s6.4.2).

The Pressure Equipment Management Plan (First Gas document 3206146) is not publicly available either, but we are told that it '... sets out the requirements for inspection intervals, competent person requirements, non-conformance reporting and standards to be applied'. (App H). At least one key project, the water bath heater refurbishment program, aims '... to ensure that we are complaint with our pressure equipment management plan' (s6.10.1).

³ Prepared in accordance with the Gas Governance (Critical Contingency Management) Regulations 2008 and available at: <http://gasindustry.co.nz/work-programmes/critical-contingency-management/current-arrangements/critical-contingency-management-plans/>

The PIMP is not publicly available either, but we are told it ‘... describes the approach to maintaining and inspecting our various asset types’ (s6.4.2), details ‘...monitoring of threats to the pipeline from ground instability slips and/or erosion...’ (s6.7.1), and includes ‘... a schedule for condition assessment, and implementation of CP on below ground piping in stations’ (s6.10.1).

Various other references to maintenance plans are made throughout the document.⁴

Gas Industry Co comment

There are clearly numerous maintenance plans that may already meet the suggestion made by Genesis in its submission on the Issues Paper that a comprehensive maintenance plan should minimise outages and shorten outage times.

We find s6 LIFECYCLE MANAGEMENT, of the New AMP to be quite readable and reassuring. However, the names and relationships of the documents referred to are difficult for a lay reader to keep in mind. (To illustrate the point, a random sample of documents that the New AMP refers to includes: the Asset Management Policy, the Asset Management Strategy, the Asset Management Plan, the Fleet Plans, the Communication and Assessment of Works Adjacent to Pipelines document, the Transmission Risk Management Guidelines, Business Continuity Planning Procedures, the Disaster Recovery Procedures, Key Performance Indicators, the CP Implementation Schedule, the Certificate of Fitness, the Hazardous Area Verification Dossier, the Asset Maintenance Schedule, the Maintenance Strategy, the Pressure Equipment Management Plan, and the PIMP.)

It would be helpful if the AMP provided a document reference guide that readers could refer to when they lose track of what the purpose, relationship and location of the various documents are (just as some Russian novels provide a guide to the character names and relationships).

1.8 Intelligent pigging results

The Submissions Analysis Paper suggested that the *New AMP* could include a schedule of completed and planned pigging which could be updated annually.

s6.7.1 of the *New AMP* does include an extract from the PIMP showing the typical frequency for in-line inspections (10 year intervals in rural areas, and 5 year intervals in urban areas), but no programme of pigging work is provided.

⁴ For example s6.4.2 tells us that ‘advanced investigative and corrective technologies to extend machinery life are used to determine respective maintenance plans on the assets’, and that ‘the frequencies [of maintenance work] defined in the maintenance plans are encapsulated in the Computerised Maintenance Management System (CMMS)’. s6.7.4 tells us that ‘... off-pipeline assets... predominantly civil construction type of assets... may require routine maintenance plans to ensure that they are maintained to a suitable standard’. App H.1 tells us that ‘there are a number of specific pipeline authorisation conditions required as part of the routine maintenance plan.’; and H.4 ‘all maintenance on stations facilities including individual components is scheduled in a maintenance plan’.

Gas Industry Co comment

We accept that it would not be practical or necessary for the AMP to include full details of all scheduled and completed work in every area of its operation. This is a matter that First Gas has discussed with stakeholders, and aimed to strike a reasonable balance. We encourage any stakeholder who is not satisfied that sufficient detail is provided in any specific area to discuss this with First Gas in the first instance.

1.9 Lead indicators

Some stakeholders believe that as well as reporting on historical performance, the AMP should also report on leading indicators that may give warning of increasing risks. The *Submissions Analysis Paper* suggested they could include such things as: employee/user perception surveys, S&R audits, risk factor reduction activities, S&R awareness training, etc.

On p4 of the *New AMP* Executive Summary it is noted that ‘... to continually monitor our quality of service, we have put in place a range of key performance indicators (KPI) to drive our focus on continual improvement of customer outcomes’. Also, one element of the First Gas Mission (s4.1.2) is to: ‘regularly review our performance using relevant leading and lagging indicators’ (underlining added). The current performance indicators are listed in s4.4, but none appear to be leading indicators.

Gas Industry Co comment

We recognise that lead indicators are difficult to design, and take time to implement. However, we agree with the submitters who suggested that they are important. Perhaps First Gas could discuss possibilities with Nova and MGUG, whose submissions on the Issues Paper both advocated for leading indicators.

1.10 More transparency of PIMP information

In the *Submissions Analysis Paper* we noted that we agreed with submitters that visibility of some PIMP information is desirable, but were concerned that it may make the AMP bloated and unwieldy. Our preferred outcome was for the TSP to allow on-line access to selected parts of the PIMP (such as Emergency Plans, intelligent pigging schedules; maintenance schedules etc).

The *New AMP* has many references to what the PIMP includes, but very few actual extracts from the PIMP.

Gas Industry Co comment

We understand that most stakeholders have indicated to First Gas that, depending on other prospective improvements to the AMP, they would not require access to the PIMP. First Gas is reluctant to incur the cost of providing access to the PIMP if it is not required. We think this is an area for on-going review.

1.11 Keeping performance measures relevant to end-users

End-users are a key stakeholder, so the AMP should meet their reasonable needs.

Gas Industry Co comment

As discussed earlier, we consider that First Gas has consulted widely on stakeholder views, including end-users, and has acknowledged that the New AMP is still a 'work-in-progress' and further improvements will be made over time.

1.12 Clarifying the meaning of performance measures

In its submission on the *Issues Paper*, First Gas noted that there is scope to clarify the meaning of some metrics. For example, 'incidents and emergencies' covers a broad range of events that are caused by quite different factors. Similarly, reporting the 'number of gas vents' may not be helpful if the reason for venting are not clear.

Gas Industry Co comment

As discussed in section 1.5 above, we consider that there is still room to sharpen up the performance measure definitions.

1.13 Linking targets to stakeholder objectives and external benchmarks

MGUG suggested that cross referencing the targets to stakeholder objectives relating performance to outcomes (by showing, for example, how compressor availability affects supply reliability) would be helpful. It also suggested that the performance measures should be reported in one place rather than being spread through the AMP and other information disclosures (financial and performance).

Gas Industry Co comment

As noted earlier, we continue to support the concept of a dashboard of key indicators. MGUG's proposals are broader than this, but we think that a dashboard would be a good starting point.

1.14 Quantifying reliability

Some MGUG members wish to get a better understanding of whether particular risks are, say, of a 1 in 10 year event, or of a 1 in a 1000 year event. This information would help them to assess their own site risk, and whether further investment is required.

The *New AMP* categorises RTE, number of unplanned interruption, number of events, compressor availability, and public reported escapes and gas leaks, as Security and Reliability measures (*New AMP* s4.4.2-4.4.6). These measures may go some way to providing the kind of probability information that MGUG is looking for.

Gas Industry Co comment

We consider that it is reasonable for system users to wish to have a sense of the probability of events. Although we do not know how First Gas would be able to provide the kind of assessment MGUG is looking for, we encourage First Gas and MGUG to have more dialog on this point.

1.15 Security standards

We consider that Appendix G of the AMP goes some way towards fully describing the system security standard. Importantly, component redundancy is set out in the table at sG.8 (see **Figure 3**).

G.8. COMPONENT REDUNDANCY LEVELS

The following minimum redundancy levels are required for the various components making up the gas transmission system¹⁸:

Asset Type	Redundancy Level
Pipelines	N
Rotating Equipment ¹⁹	N-1
Pressure regulation streams at delivery points (peak gas delivery >= 20GJ per day)	N-1
Other delivery point equipment (including pressure regulation streams at delivery points with peak gas delivery < 20GJ per day)	N

Exceptions

- a. N-1 redundancy for rotating equipment at customer connections is not required, unless specifically contracted for.
- b. N-1 redundancy for rotating equipment is not required at low-demand compressor stations. On the First Gas Transmission network, these include Derby Rd, Kawerau and Henderson compressor stations.
- c. The Pokuru compressor station does not meet N-1 redundancy for demands on the Bay of Plenty Gas Transmission system. However, this station is supported directly by Mahoenui compressors from the 200 line, Hence, Pokuru compressor station is considered to meet the N-1 redundancy standard.

Figure 3 – Table at *New AMP* sG.8

However, the security standard detail is not always easy to follow. For example, the standard sets out to establish (sG.3):

- (a) A clear measure for the minimum acceptable transmission system output performance.

We assume that this refers to, for example, that gas pipelines should not to exceed 100% of the maximum allowable operating pressure level (MAOP) under stable operating conditions, or 110% of MAOP under transient operating conditions. However, it is not entirely clear that this is what is meant.

- (b) A clear design standard that identifies when investments may be required.

We are told that the primary trigger point for such investment is when the forecast peak gas demand profile would cause one or more of the system requirements discussed in Section 3 to no

longer be met. However, on reading Section 3, it is not clear what these system requirements are. Only when we read s5.1.3, which says that the system requirements are defined in the standard, does the penny drop... that the system requirements must be those set out in sG.6 and sG.7, ie the "minimal acceptable transmission system output performance" discussed in point 1 above. To a casual reader this will be needlessly confusing.

Gas Industry Co comment

We consider that First Gas has done well to set out its security standard, and that some further tidying up could make it even easier for a casual reader to follow.

2. Progress on other action points

2.1 Other action points

In addition to suggestions in regard to the AMP, the *Submissions Analysis Paper* made a number of other suggestions:

That First Gas:

1. address the capacity allocation issues identified by the PEA;
2. work with any individual end-user who wishes to assess the S&R of deliveries to its individual site (given that this will be affected by a possibly unique set of risks along its gas transmission route).

That Gas Industry Co:

1. consider whether new balancing arrangements are contributing to more stable linepack management; and
2. continue to work with the Commerce Commission to ensure that there is no duplication of function.

That Gas Industry Co and stakeholders:

1. work with the Commerce Commission during its Input Methodologies Review and through the consultation on the 2017 reset of the GTB default price paths to ensure that the price-quality regime is providing appropriate constraints/incentives on investment, including major new investments.

We discuss progress on these 5 points in the 5 sections below.

2.2 Capacity allocation issues identified by the PEA

In mid-2016 when First Gas became the owner of both the Maui and Vector transmission systems, it confirmed that it wished to develop a new access regime, and a single new transmission code. As 'industry body' under the Gas Act, Gas Industry Co wishes to ensure that any such arrangements meet the objectives of the Gas Act and the Government Policy Statement (GPS), and may recommend regulation to the Minister if necessary. Considering these matters, First Gas and Gas Industry Co agreed to co-lead the new code development work, each with its complementary responsibilities.

Gas Industry Co issued a foundation consultation paper on 13 September 2016 entitled: *Gas Transmission Access - Single Code Options Paper - Part 1 (SCOP1)*, and First Gas followed this up with a second consultation paper on 28 November 2016 entitled: *Gas Transmission Access: Single Code Options Paper (SCOP2)*. *SCOP1* reviewed previous PEA work and *SCOP2* explored the possible forms that a single new code could take.

On 27 January 2017 Gas Industry Co published an *Analysis of Submissions on SCOP2 (SCOP2 Submissions Analysis)*, and on 17 February First Gas published a document entitled *Gas Transmission Access Code Development: Proposed Decisions and Next Steps (Proposed Decisions)*. These documents will be discussed at an industry workshop on 28 February 2017.

Gas Industry Co comment

The process for developing the new code is still evolving, but First Gas wishes to have it in place by 1 October 2018. Judging from the pace of discussions, we consider this is achievable. We are confident that the capacity issues identified by the PEA will be addressed through this process.

2.3 S&R of gas deliveries to individual sites

First Gas has discussed S&R with a number of major end-users directly connected to the transmission pipeline, and is open to one-on-one discussions with any other end-user who has S&R concerns.

Gas Industry Co comment

We appreciate First Gas promptly dealing with these end-user concerns.

2.4 Effect of Market-Based Balancing

Market-Based Balancing (MBB) is the transmission pipeline balancing regime that came into effect on 1 October 2015. To review the effect of the regime, Gas Industry Co collected and analysed operational data, and reported our findings in a November 2016 paper: *Review of Market-Based Balancing (MBB Review)*.

The review concluded that primary balancing had significantly improved, the spread between average balancing gas put and call prices had significantly decreased, and that use of the Mokau compressor had significantly decreased.

However, the review also noted that the default rule that had applied in about 89% of the days and that, despite the improvement in primary balancing, secondary balancing activity (puts, calls and cash-outs) had increased.

Most submitters on the *MBB Review* thought that our approach to the analysis was reasonable, although many made suggestions for further analysis.

Gas Industry Co comment

Given the code development work discussed in s2.2, we think it is too early to say which of these suggestions is worth pursuing. In our analysis of submissions on the MBB Review we suggest we can consider this once the transmission service definitions are sufficiently advanced.

2.5 No duplication of Gas Industry Co and Commerce Commission work

Gas Industry Co and the Commerce Commission have been meeting at least once a month while the Default Price Path (DPP) reset is underway and the process for developing the new transmission code is taking shape.

Gas Industry Co comment

Gas Industry Co will continue to work with the Commerce Commission to ensure that there is no duplication of function and that the price-quality regime and the new transmission access arrangements do not obstruct each other.

3. Conclusions and next steps

3.1 Conclusions on the *New AMP*

We consider that the stakeholder engagement during the formation of the *New AMP* demonstrated the importance First Gas places on S&R. It will have contributed to First Gas achieving its intention to ‘... produce AMPs that are a valuable resource for our customers, staff, and regulators, and that they clearly set out the issues facing our networks and how we plan to respond’ (First Gas Chief Executive introduction to *New AMP*). Given the short time available to consult with stakeholders, take on board the recommendations of the *Issues Paper* and *Submissions Analysis Paper*, and consolidate the previous two AMPs into a single, comprehensive and improved document... we think First Gas has achieved an excellent result.

Regarding the specific matters raised in the *Submissions Analysis Paper* in relation to the AMP, we conclude that:

1. **Stakeholder engagement** on S&R matters during development of the *New AMP* has improved considerably on previous transmission pipeline owner communications.
2. First Gas has made a good start to articulating its **asset management philosophy**, supporting strategy and plans. It acknowledges that this work is still in progress.
3. The process for **analysing and ranking risks** is well covered in the *New AMP*, but there is scope for more discussion of the outcomes of the process, including on the relative ranking of the risks identified.
4. We continue to recommend a dashboard approach to presenting the **ranking of performance** and make a number of specific comments in relation to the reporting of individual performance measures (see s1.5.1 to s1.5.9 of this S&R Review).
5. In relation to **how incidents/emergencies will be responded to** we suggest the AMP could point stakeholders to where to look for more information on what is expected of them, how they should interact with the TSP during an emergency, and where they would find information about the emergency (which may not necessarily be declared as a Critical Contingency).
6. We note there are numerous **maintenance plans** and suggest that it would be helpful if the *New AMP* provided a document reference guide that readers could refer to when they lose track of the purpose, relationship and location of the various documents.
7. The *New AMP* does not include **intelligent pigging results** and we suggest that First Gas discuss with stakeholders what details (if any) it is necessary to disclose.
8. We agree with the stakeholders who believe that **lead indicators** of performance are important and suggest that First Gas could discuss possible indicators with those stakeholders.
9. While the *New AMP* is still a ‘work-in-progress’, we consider that First Gas has consulted with end-users so as to keep **performance measures relevant to end-users**.
10. Some measure, such as the ‘number of gas vents’, would benefit from some additional description **clarifying the meaning of performance measures**, for example explaining why gas vents occur.

11. We consider that a dashboard would go a long way towards **linking targets to stakeholder objectives and external benchmarks**.
12. **Quantifying reliability**, for example by assessing whether a risk is a 1 in 10 year event, or a 1 in a 1000 year event, is not straightforward and we recommend further dialog on how it can practically be done.
13. **The security standards are clear**, but some of the supporting detail could be tidied up.

3.2 Conclusions on other aspects of S&R

In relation to the other *Submissions Analysis Paper* suggestions:

1. We are confident that the **capacity issues identified by the PEA** will be addressed through the First Gas process to develop a new transmission code.
2. In relation to **S&R of gas deliveries to individual sites**, First Gas has discussed this directly with a number of major end-users connected to the transmission pipeline, and is open to one-on-one discussions with any other end-user who has S&R concerns.
3. Gas Industry Co's *MBB Review* has assessed the **effect of Market Based Balancing**. The First Gas process to develop a new transmission code will now consider balancing arrangements suitable for future access arrangements.
4. Gas Industry Co and the Commerce Commission continue to work together to ensure there is **no duplication of Gas Industry Co and Commerce Commission work** and that the price-quality regime and the new transmission access arrangements do not obstruct each other.

3.3 Next steps

We believe our consultation with stakeholders on S&R issues has now substantially addressed the concerns that gave rise to the review. However, we expect that matters with a strong S&R component will emerge from time to time⁵ and these will be dealt with when they arise.

However, just as this paper has assessed the *New AMP* against the matters identified for attention in the *Submissions Analysis Paper*, our intention is to assess the next AMP against the outstanding matters identified in this paper. The outstanding matters for First Gas to consider in relation to the next AMP are:

1. Complete the Asset Management strategy and plans. (see s1.3)
2. Provide more discussion of the outcomes of the risk management process, including on the relative ranking of identified risks. (see s1.4)
3. Include a dashboard. (see s1.5 and s1.13)
4. Review the effectiveness of event reporting targets. (see s1.5.4)
5. Provide or reference information on how stakeholders should interact with the TSP during an emergency, and where they should look for information. (see s1.10)
6. Sharpen the performance measure definitions. (see s1.12)
7. Discuss with stakeholders how they can assess the probability of events. (see s1.14)
8. Tidy up the security standard. (see s1.15)

⁵ For example, we expect that the Safety and Measurement Regulations will be reviewed as part of the Government's health and safety reform. It may be necessary for us to discuss any proposed changes with stakeholders.

ABOUT GAS INDUSTRY CO

Gas Industry Co is the gas industry body and co-regulator under the Gas Act. Its role is to:

- develop arrangements, including regulations where appropriate, which improve:
 - the operation of gas markets;
 - access to infrastructure; and
 - consumer outcomes;
- develop these arrangements with the principal objective to ensure that gas is delivered to existing and new customers in a safe, efficient, reliable, fair and environmentally sustainable manner; and
- oversee compliance with, and review such arrangements.

Gas Industry Co is required to have regard to the Government's policy objectives for the gas sector, and to report on the achievement of those objectives and on the state of the New Zealand gas industry.

Gas Industry Co's corporate strategy is to 'optimise the contribution of gas to New Zealand'.

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