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Commerce Commission
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For the Attention of: Simon Todd

21 March 2017

Dear Simon

Assessment of First Gas transmission's responses to the Commission's questions on Gilbert Stream pipeline realignment project

1. In its 16 November 2016 letter to the Commerce Commission (the Commission) on First Gas transmission BAU variance checks and AMP evidence assessment, Strata stated that the Commission may wish to consider requesting the relevant business cases for the Gilbert Stream and White Cliffs remediation projects for further assurance.
2. The Commission sought, and has obtained from First Gas, the relevant business case for Gilbert Stream. The Commission has asked Strata to provide an evaluation of these documents and provide its opinion on the level of justification they provide to support the proposed expenditure. Specifically, the Commission asked First Gas for the following information:
 1. the risk analysis and evidence of the marine erosion effects that have underpinned the Gilbert Stream project being considered a pipeline integrity risk;
 2. details of any industry consultation, discussions and support for the proposed Gilbert Stream pipeline realignment expenditure;
 3. details of the economic impact of a pipeline failure in the Gilbert Stream vicinity, estimated outage duration and any cost benefit analysis that has underpinned the decision to carry out the investment; and
 4. specific expenditure forecasts relating to the Gilbert Stream project.
3. The Commission asked Strata to provide its opinion on the acceptability of the supporting documentation and whether it sufficiently answered the Commission's questions.

Strata's assessment

4. The Commission's first question was:

The risk analysis and evidence of the marine erosion effects that have underpinned the Gilbert Stream project being considered a pipeline integrity risk.

5. In response, First Gas provided a 2016 Unmanned Aerial Vehicle (UAV) survey report (Appendix A) prepared by New Plymouth based, NZgeomatics. Established in 2009, NZgeomatics undertakes acquisition, modelling, analysis and management of spatial data using drone aerial surveying technology.

6. We have reviewed the NZgeomatics report and found that its purpose was to provide an aerial survey of the Gilbert Stream location using photographs and survey markers. The report contains updated information and data on the historical erosion of the cliff face.

7. The findings in the report relating to erosion that was seen between the March and July 2016 surveys state that;

some minor erosion has occurred along the cliff face in the last 3 months as noted in the profiles, particularly North 75m and 100m. Comparisons between cliff face photographs on pages 18 – 22 also show some erosion.

8. In addition, the NZgeomatics report provides updates on historical Light Imaging, Direction and Ranging (LIDAR) data from 2012 to 2015. The LIDAR chart for Profile North 75, which is the closest point from the pipeline to cliff edge, is reproduced in Figure 1. Whilst the NZgeomatics report provides information on historical erosion, it does not provide discussion or conclusions relevant to answering the Commission's question regarding risk assessment of future marine erosion.

9. First Gas also referenced its August 2016 options study (Appendix D) to address the Commission's first question.

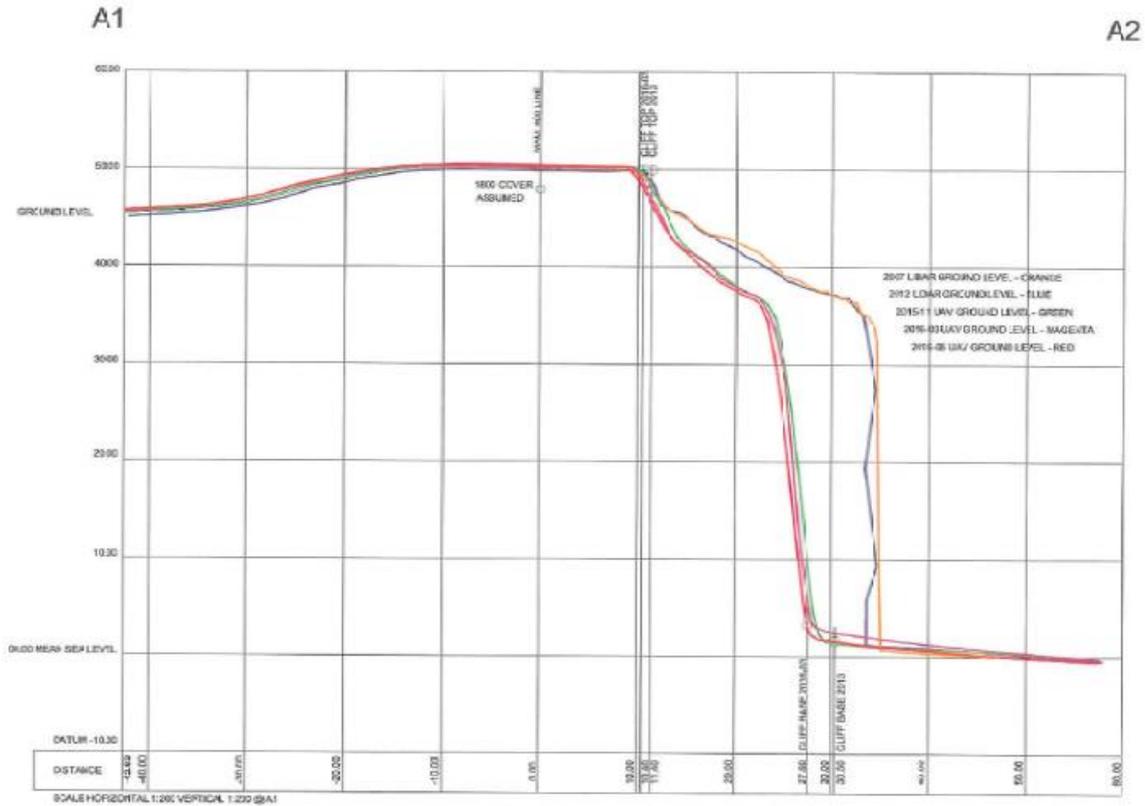
10. The Options Study¹ sets out First Gas' strategy to trigger a Mitigation Investment Plan as soon as any section of the pipeline breaches a 10m proximity to the cliff (we noted that Gilbert Stream is currently at 9.6m). (See Section 3.6 bullet point 3). This effectively sets the level of risk that First Gas considers is reasonable to take. The information provided does not explain how this level has been set.

11. The Options Study states the possibility that 5-10m cliff face loss episodic events can occur on this coastline.

The pipeline is less than 10 metres from the cliff side (a 50-metre high cliff). In addition to average erosion rates, the failure data for this coast line also indicates that episodic failure (where a large piece of land slips onto the beach) is the biggest concern. Episodic slips can eliminate up to five to ten metres at a time.

12. The reduction of coast line since 1884 and between 2007 and 2016 is provided as evidence of this erosion risk. The cliff profile provides an indication of the risk of a potentially large landslip.

¹ Section 3.6 bullet point 3



Source: NZgeomatics, Appendix B7 - Survey Results – Profile North 75²

13. The options study states that:

The long term average erosion rate as assessed in 2011 by GNS (refer report CR 2016_06LR) covering a period of 32 years and a land loss of 12m, indicates an average regression rate of 0.375m/year.

Other and more aggressive erosion rates of 0.8m/yr have also been used in the analysis, to test variations to design life gained. Other evidence based on more recent but narrow focused data shows an increased erosion rate of 4years and 5m lost (refer report CR 2016_06LR), suggesting a shorter-term period and high regression rate of 1.25m/yr.

² Appendix A Maui Pipeline (400Line) Gilbert Stream – Pukearuhe, UAV Survey Report # V-2890-02

14. When forming its judgements on cliff erosion rates for the Options Study, First Gas has been informed by:
- communications with the Asset Integrity Team, and previous pipeline owners, Maui Development Limited (MDL). Note: The title of land to each side of the Gilbert Stream is currently owned by MDL;
 - Paddle Delamore Partners site Geotechnical Report;
 - various reports from GNS Sciences indicating the geology, regression mechanics and historical rates of erosion assessments;
 - various reports from Geometrics NZ indicating with detailed surveying techniques, the sea cliff regression progress/status;
 - OSD Pipelines FEED Study Report - White Cliffs Pipeline Realignment Project, including revised costings; and
 - system modelling for seasonal gas demands to determine the initial feasibility for pipeline crossover points to reduce construction costs (related to Stopples and Hot Tap Tie-In primarily) and improve the delivery schedule.
15. Other than the above references, First Gas did not provide the Commission with any of the referenced reports. Provision of expert reports and advice would have provided information and evidence to support First Gas's risk assessment statements on the rates of cliff erosion.
16. The LIDAR data shown in Figure 1 on its own could suggest that the risk to the pipeline has not significantly increased because, even though the events have moved the cliff base 10m closer to the cliff edge, the cliff base remains 27m from the pipeline. Also, the major erosion events between 2012 and 2016 did not result in any material change of distance between the pipeline and the cliff top.
17. First Gas states in its options report that:
- As the sea erodes the cliff face creating sea caves and slabbing/cracking, cliff sections peel away, thus steepening the upper Rapanui Formation slopes. Over time, the upper layers revert to the stable slope by undermining the top edge of the cliff. This top section may fritter away or initially create tension cracking that finally slump in large (slip circle) failure events.³*
18. The additional material supplied by First Gas does not provide any expert analysis and advice to support its assumption that the more acute angle at the cliff top, due to previous erosion events, has increased the risk of a cliff top failure event. Accordingly, we are unable to conclude that First Gas has provided a full response to the Commission's question on erosion risk.
19. Notwithstanding the above comment, if the Commission chooses to accept that First Gas has obtained the advice referenced in the Options Study and that this supports its assumptions on increased risk, First Gas' response to the first question demonstrates the risk of an episodic cliff top slip that would threaten the pipeline.

³ First Gas Options Report section 2.1

20. The Commission's second question was:

Details of any industry consultation, discussions and support for the proposed Gilbert Stream pipeline realignment expenditure.

21. In response, First Gas provided copies of presentations provided to the Major Gas Users Group (MGUG) in July 2016 and (Appendix B) and in November 2016 (Appendix C).
22. The presentations provide evidence that First Gas provided information to the MGUG on these two occasions. The level of information provided in the presentation packs appears to be sufficient to give the attendees at the meetings a good overview of First Gas's assessment of the case and the issues relating to the Gilbert Stream relocation project.
23. In its response to the Commission's question, First Gas states that:

MGUG members expressed general support for First Gas investing to manage known risks to pipeline integrity.
24. The above statement is the only information provided by First Gas on the consultation, discussion and level of support for the proposed project.
25. In Strata's opinion, the information provided by First Gas is insufficient to answer the Commission's second question because it provides no evidence that consultation (consideration of stakeholder views), discussion (interchange of views) occurred. First Gas's statement that the MGUG expressed 'general support' for the project is unsupported by meeting records, letters of support, stakeholder submissions etc. as such, it cannot be accepted as evidence of support for the project.
26. Strata's opinion is that First Gas has not provided sufficient information to answer the Commission's second question.

The Commission's third question was:

Details of any alternatives that were considered for the Gilbert Stream pipeline realignment project

27. In response, First Gas provided its August 2016 options study (Appendix D). The Options Study fully evaluated four options.

Option 1 – North Bank Realignment
Option 2 – Gully Realignment
Option 3 – Southern Realignment
Option 4 – HDD Realignment
28. A 'do nothing' option was considered but presumably dismissed as being infeasible due to the assumed risk of cliff erosion.
29. We have reviewed the Options Study and consider that it provides the analysis and information that would meet a board's reasonable expectations for a business case justification. We found the economic analysis to be thorough and at a level that meets our experience of good industry practice.
30. Strata's opinion is that the information provided in the Options Study fully addresses the Commission's requested information in its third question.

The Commission's fourth question was:

Details of the economic impact of a pipeline failure in the Gilbert Stream vicinity, estimated outage duration and any cost benefit analysis that has underpinned the decision to carry out the investment;

31. In response, First Gas referred to its August 2016 options study (Appendix D) but commented that this document *does not consider the financial impact on the country if the gas transmission pipeline failed and gas supplies were curtailed*. In its written response to the Commission First Gas provided information from the Ministry of Business, Innovation and Employment (MBIE) report on the 2011 Pukearuhe incident.
32. First Gas assessed that a Gilbert Stream pipeline failure would be expected to have a similar economic impact to the Pukearuhe failure *as it is located on the same pipeline section and is within 1 kilometre of the location of this historic failure*. MBIE assessed the Pukearuhe incident to have an average economic cost of \$40 million.
33. First Gas noted that it had previously stated that five to six days would be typical for a pipeline repair of this type but that, due to conditions specific to the Gilbert Stream location, it expected that repair times around Gilbert Stream would likely be greater than this estimate.
34. Whilst First Gas did not provide a figure in its response, the information suggests that the economic cost of an outage would be more than \$240 million (6 days x \$40m).
35. The Commission's question and First Gas' response highlights the significant economic costs that could arise if a pipeline failure at Gilbert Stream occurred. Given that information on the economic cost of historical failures of similar pipelines was available, it is surprising that value was not calculated and used in a probability based risk assessment for the Gilbert Stream realignment business case.
36. Notwithstanding the above observation, in Strata's opinion First Gas has provided sufficient information for the Commission to resolve its fourth question.

Summary of Strata's opinion

37. Whilst the information and response from First Gas required to address the Commission's first two questions could have been more robust, we consider that the additional information provided in response to questions three and four demonstrates a clear case for progressing the Gilbert Stream pipeline realignment.

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Regards



Bill Heaps

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