



# TRANSMISSION SYSTEM OWNER SYSTEM CHANGE PERFORMANCE AUDIT

First Gas Limited as Transmission System  
Owner

Audit date: 27 and 28 June 2019

Report date: 27 August 2019

Under the Gas (Downstream Reconciliation Rules) Rules 2008 the Gas Industry Company has commissioned Langford Consulting to undertake a performance audit of First Gas Limited in its role of Transmission System Owner. The purpose of the audit is to assess the impact of proposed changes to the First Gas systems and processes that enable compliance with these rules.

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## Executive Summary

Under the Gas (Downstream Reconciliation Rules) Rules 2008 (the rules) the Gas Industry Company (GIC) has commissioned Langford Consulting to undertake a performance audit of First Gas Limited in its role of Transmission System Owner (TSO). The audit was commissioned under rule 65.5 and its scope was therefore limited by rule 65.6 to the impact of the proposed change on the allocation agent or allocation participant's systems, processes and procedures.

The engagement commenced on 19 March 2019 and involved a site visit to the TSO's offices in Bell Block, New Plymouth on 27 and 28 June 2019.

The purpose of the audit is to assess whether, after the implementation of the intended change, the TSO will be able to be compliant with the rules.

The audit was conducted within the terms of reference supplied by the GIC and within the guideline note *Guideline note for rules 65 to 75: the commissioning and carrying out of performance audits and event audits, version 3.0* (<http://www.gasindustry.co.nz/dmsdocument/2858>).

The summary of report findings shows that the First Gas control environment, for the seven areas evaluated, was found to be "effective" and "compliant" for all areas.

The auditor found no issues during the audit that should prevent the First Gas plan to 'go live' with the new system. In all respects the new system had controls that were at least as good as the old system and in many respects were significantly improved.

No breaches were raised as a result of the audit. It is anticipated that after the implementation of the intended change the TSO will be able to be compliant with the rules.

The following recommendations were made:

**RECOMMENDATION:** That First Gas verify the gas type setting populated for each gas gate in the Interim Metering Validation system (IMV).

**RECOMMENDATION:** That First Gas build a report to confirm that the data held in OATIS is the same as the latest set of validated data in IMV. This should be run monthly prior to the initial data deadline, and again prior to the interim and final deadlines.

**RECOMMENDATION:** First Gas should consider whether it is appropriate that the reporting settings are unprotected, and the Systems Controller can change min/max settings without peer review or signoff.

**RECOMMENDATION:** First Gas should consider if the system can be improved to allow users to leave comments against worklist items even when no action is taken.

**RECOMMENDATION:** That the downstream UFG figures are reviewed routinely once the interim data becomes available as an additional control on gas gate meters.

**RECOMMENDATION:** The team manager should obtain a list of those who currently have access to the secure drive as a routine quarterly activity. The list should be reviewed to ensure the appropriateness of all persons with access to the data.

**RECOMMENDATION:** The controls on the gas type process should be improved as recommended in the 2017 audit. This should be a priority in the next stage of system enhancement.

## Summary of breach allegations

There are no breach allegations arising from this audit.

## Summary of report findings

Issue	Section	Rule	Control Rating (refer to appendix 1 for definitions)	Compliance Rating	Comments
Completeness, accuracy and timeliness of data		26.2	Effective	Compliant	Controls have been improved and processes run faster and more reliably as a result of replacing an Access database with a SQL database and making calculation coding more efficient.
Identification, remedy and reduction of UFG		26.3	Effective	Compliant	First Gas monitor transmission UFG for concerning trends, it is recommended that they also monitor downstream UFG.
Audit trails		27A.1	Effective	Compliant	The 2017 recommendation to improve controls of the gas type processes is repeated in this audit
Retention and availability of information		27A.2	Effective	Compliant	The allocation agent and industry body have confirmed they are happy with the availability of information. Retention of data is greatly improved with the migration of historical data into one SQL database.
Provision of daily injection information		41	Effective	Compliant	First Gas was breached in 2017 for not having daily metered energy quantities at 2 allocated gas gates. One has now been upgraded and the other is being upgraded with daily quantities available shortly.
Identification and reporting of material errors		44.1	Effective	Compliant	Metering test results were being processed in a more timely fashion. The allocation agent confirmed they were content with the First Gas reporting of errors.
Correction of suspected and actual material errors		Schedule 1A	Effective	Compliant	Improved 'as found' processes make the corrections process more consistent, repeatable and transparent with more complete record keeping.

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## 1. Purpose of the Audit

Under the Gas (Downstream Reconciliation Rules) Rules 2008 (the rules) the Gas Industry Company (GIC) has commissioned Langford Consulting to undertake a performance audit of First Gas Limited in its role of Transmission System Owner (TSO). The audit was commissioned under rule 65.5 and its scope was therefore limited by rule 65.6 to the impact of the proposed change on the allocation agent or allocation participant's systems, processes and procedures.

The engagement commenced on 19 March 2019 and involved a site visit to the TSO's offices in Bell Block, New Plymouth on 27 and 28 June 2019.

The purpose of the audit is to assess whether, after the implementation of the intended change, the TSO will be able to be compliant with the rules.

The auditor worked to the terms of reference supplied by the GIC.

In preparing the report, the auditor used the processes set out in the guideline note issued on 1 June 2013: *Guideline note for rules 65 to 75: the commissioning and carrying out of performance audits and event audits, version 3.0* (<http://www.gasindustry.co.nz/dmsdocument/2858>).

## 2. General Compliance

Where a participant intends to make a change to any of its systems, processes or procedures likely to make a major impact on its compliance with the rules, rule 65.4 requires them to advise the industry body of the proposed change at least 90 days before the change is to take place. The TSO has notified the GIC of their intended change. However, they first notified the GIC on 15 March about this system change that was at that time intended to be implemented on 3 April, which would have been a breach of rule 65.4 being less than 90 days notification. The implementation date subsequently moved back to July, so no breach arises.

### 2.1 Breach Report

First Gas as TSO have not had any alleged breaches since the last system change audit in May 2017.

### 2.2 Summary of previous audit

The TSO was last audited by Tara Gannon of Veritek in May 2017, also a system change audit under rule 65.5. The audit report states that six of the eight areas evaluated were compliant, the two non-compliant areas were "provision of daily injection information" and "identification and reporting of material errors". These two areas were nonetheless found to have adequate controls. There were three alleged breaches, summarised as follows:

- Estimated daily data is provided for two allocated gas gates, Matangi and Pauatahanui 2
- Some validated injection data was provided late for two initial allocations

- Notification and correction of errors does not occur immediately because it takes time to investigate and calculate the correction. In particular, there are delays in processing meter test results and in investigating issues where input is required from other parties.

## 2.3 Provision of Information to the Auditor

In conducting this audit, the auditor may request any information from First Gas, the industry body and any registry participant.

Information was provided by First Gas in a timely manner in accordance with this rule. As well as access to their systems and people, First Gas also provided access to the following documentation:

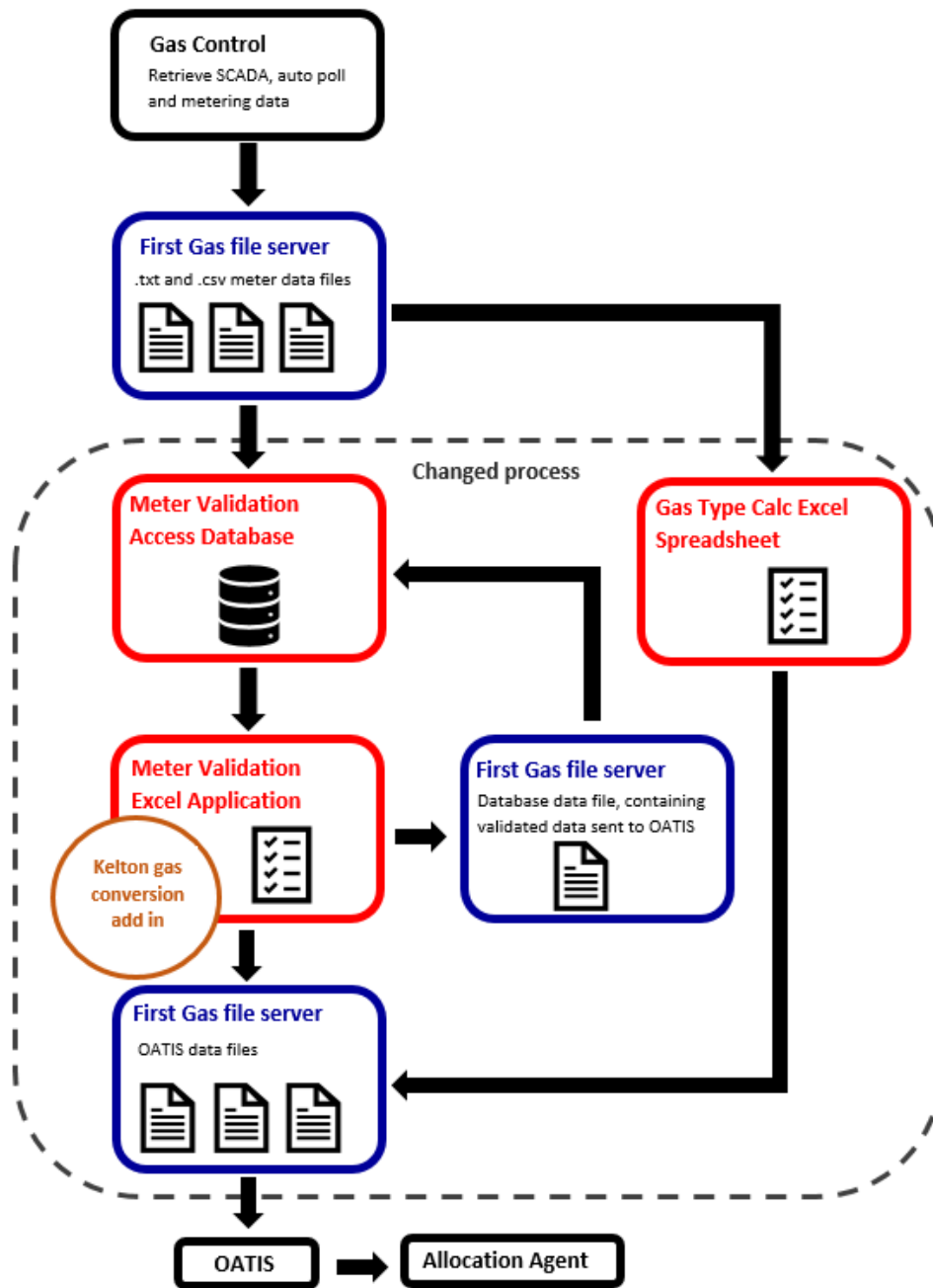
- System Change Overview
- Process documentation
- Test Plan
- Testing of data migration
- Kelton Add-in calculation details
- Parallel Test Exit Report
- Deployment
- 'As found' process template

The auditor also liaised with the industry body and the allocation agent to confirm the TSO's compliance.

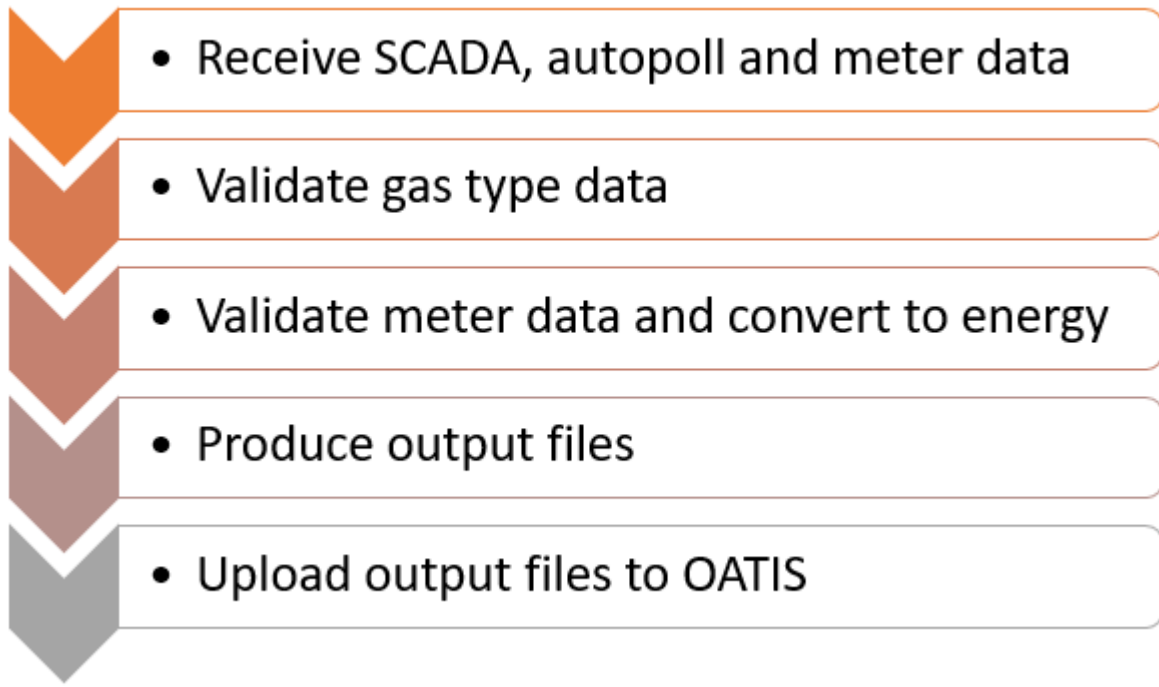
## 3. Summary of proposed system change

The new system is called the Interim Metering Validation system, or IMV. It is 'interim' because it is only a steppingstone towards a full solution. It has been implemented now to ensure the needs of the new operating code system (TACOS), expected to go live 1 October, are met. TACOS will require automated data uploads. It also addresses the immediate issues the System Controllers who use the existing metering data system are facing. The Access databases are very slow to load, often crash and need constant compacting and archiving. Since the initial solution implemented at the start of 2017, they have had to create four Access databases as they had each reached their capacity. The energy calculation process in Excel was also very slow.

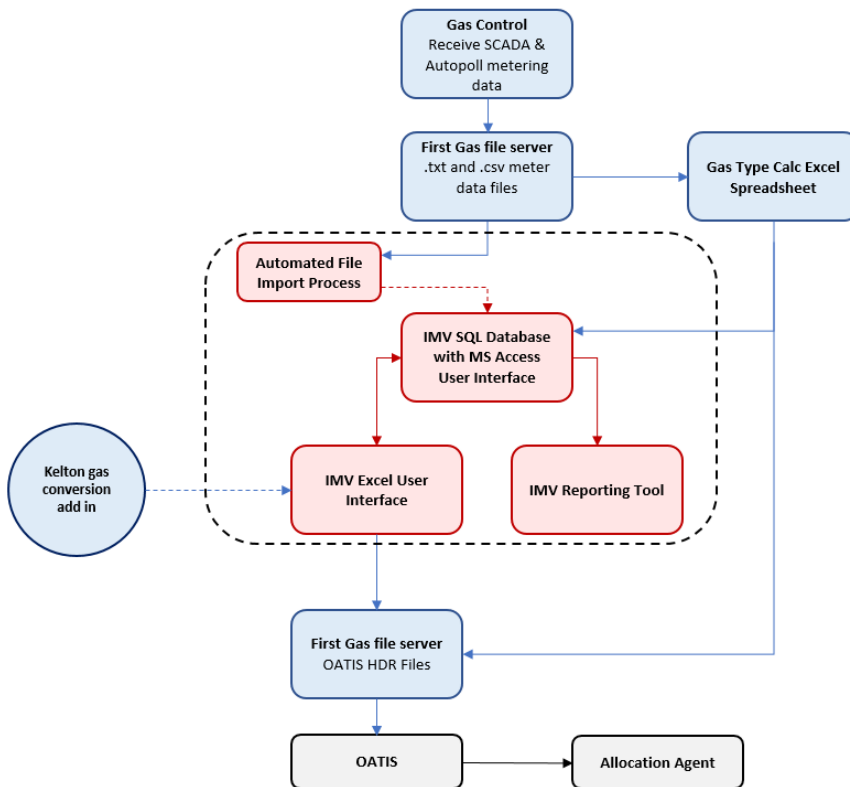
The 2017 audit summarised the old process as follows:

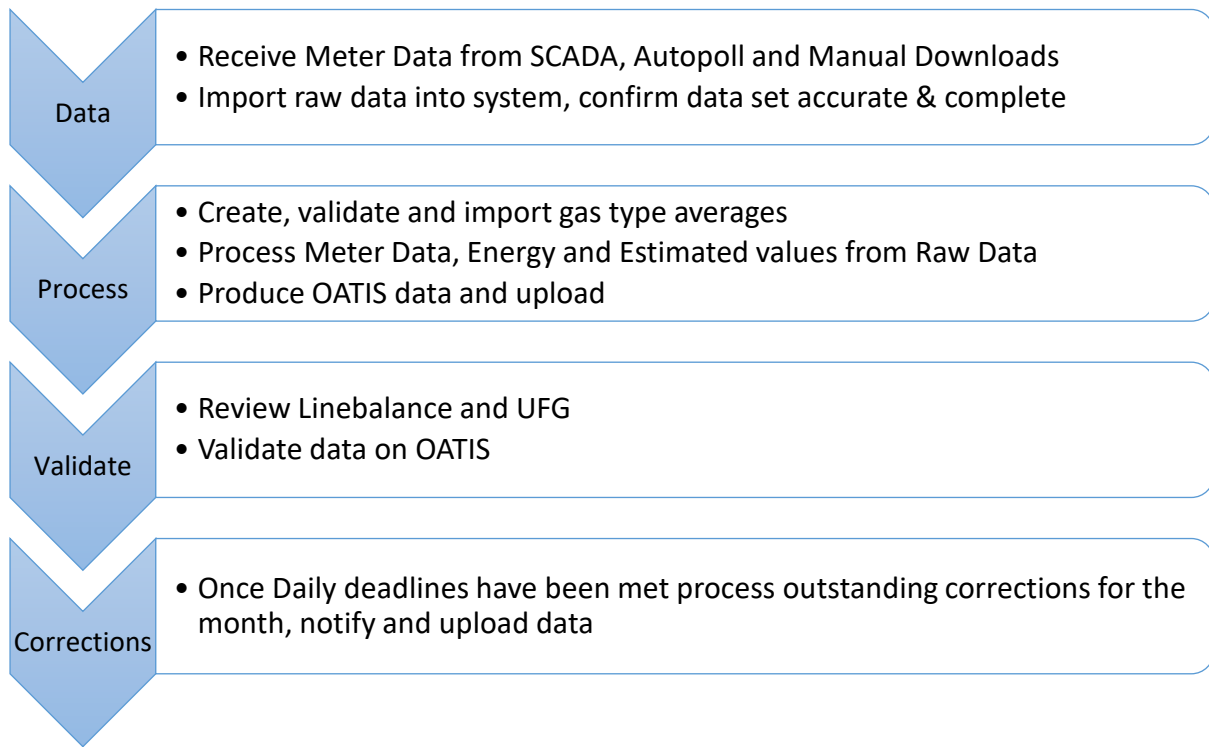






First Gas describe their new IMV system, at a high level, as follows.





The main points of difference are the automated data import (performed by SQL Server Integration Services), the SQL database which replaces the Access database and improvements to the user interfaces. The receipt of data on to a secure server, the processing of the gas type data and the delivery of files to external parties via OATIS remain unchanged.

First Gas decided to keep the updated user interface as unchanged as possible. One of their objectives was to free the System Controllers to face the areas of change resulting from a new transmission operating code and the associated new TACOS system, by creating headroom with their metering data validation tasks. To do this they wanted to give them a faster, more reliable system, but without too much change to the associated processes. In IMV the users still have an Access user interface to manage the data flows through the SQL database and Excel spreadsheets to convert raw data into energy data and to review trends in the data to identify issues.

Although the Access and Excel user interfaces are similar to those in the old system, they have been improved so remain in scope for this audit. In particular the Kelton gas conversion add-in remains, but the coding which embeds it has been made more efficient. The tools for reviewing data trends and exceptions after the energy conversion have been separated out into an Excel reporting tool and is much improved.

The team still use paper based checklists for their daily and month end processes which are largely unchanged by the new system. They still include prompts to perform additional checks such as reviewing Gas Control logs, as already recorded in the 2017 audit, so these are not described again in this report.

The gas type process remains unchanged so is out of scope for this audit.

The 'As Found' process for reviewing laboratory results was not in scope for the IMV project, but had been improved since the last audit, so the new process was briefly reviewed, see section 5.4.

In 2017 the old First Gas processes had to manage some data quirks which required manual manipulation and/or correction of data files to enable them to be processed. These routine correction processes have now been removed from the new processes by dealing with them at source, making changes on site to metering set-ups. This has further streamlined the metering data processes.

The processes for managing unmetered gas gates and for spot meter reads remain unchanged and are managed outside of IMV, so are out of scope for this audit and were not reviewed.

## 4. General Obligations

### 4.1 Obligation to act reasonably (rule 26.1)

No examples of First Gas acting unreasonably were found.

### 4.2 Completeness, accuracy and timeliness of data (rule 26.2)

Under the rules:

*26.2 Every allocation participant must provide the information required under these rules in a manner that is:*

*26.2.1 Accurate and complete; and*

*26.2.2 Not misleading or likely to mislead; and*

*26.2.3 Timely*

During the 2017 audit this was assessed by tracing a sample of data from the Gas Control source files, through the validation process to the published data on OATIS. The process involved:

- Gas Control downloading data from the meters and transferring it to secure folders.
- Uploading the data into the meter validation Access database
- Identifying and resolving missing data
- Excel validation checks
- Referral of issues to metering specialist
- Energy conversion in Excel using Kelton FloCalc add in
- Validated data exported to OATIS

There was also a parallel process to manage and validate gas type data:

- Gas type data is pulled into Excel from files supplied by Gas Control
- Excel validation checks are applied

The energy calculation occurred within the metering validation Excel spreadsheet. A sample of data was followed from source through each process. The energy conversion was done using a Kelton FloCalc add-in. It was noted that some gas gates had no altitude entered, and it was recommended these should be updated. No other issues or recommendations were identified.

In essence the 2017 description above still accurately describes the process under the new IMV system, except the data is uploaded into a SQL database instead of an Access database. The more detailed

process flow for the IMV system starts with the raw data being imported automatically by the SSIS tool into a staging table, previously this was a manual process. The data is then imported into the Excel user interface where it is converted into energy and returned to SQL, where it is held in the validated metering data table. After data is reviewed using the reporting tool (the reporting tool only views data, it doesn't change it) a flag is added to the SQL record to show it has been reviewed and validated. If data is corrected this is done in the Excel user interface and the corrected data is sent to SQL where the replaced energy data is moved to a history data table, together with a correction log. Data can be corrected multiple times and all previous versions will be held in the historical data tables with comments and date information regarding the correction.

The SQL database is a much more robust tool for managing the data. It has a much larger data capacity, quicker processing times and stronger controls, such as stored procedures which apply rules for example if the data has been imported before, and creation of logs of imported data. The move from Access to SQL will result in improved change control, higher availability, one place for the holding of all historical data, quicker processing and improved audit trails.

This audit tracked data through the whole end to end process and replicated the energy calculation manually. It also verified a sample of historical data held in the SQL database that was more than 30 months old, both raw data and energy data. The review of 30 month old data had not been possible in the 2017 audit, instead the intent of how data would be stored had been noted.

The Test Manager talked the auditor through the test process as well as providing documentation of the test plan and the test exit report. The testing consisted of both UAT testing and parallel run testing of daily, monthly and exception processes. Testing was executed by BAU staff who were familiar with the processes and the data. Defects were logged and tracked using a Jira system. The project had now met their defined exit criteria. The auditor was satisfied that systematic UAT and parallel run testing had been completed on the new system and that the defects arising had been identified and addressed.

There had also been a managed data migration exercise which had been tested by reporting by difference post migration. Matters arising from the difference reporting were being addressed.

First Gas have reviewed their gas gate altitudes since the last audit and they no longer have any altitudes set to zero. They have ensured the revised altitudes have been correctly populated in the new system as a part of their testing process. The business has also been through a process to verify all the multipliers. They have not however been through a process to verify the gas types populated in IMV.

**RECOMMENDATION:** That First Gas verify the gas type setting populated for each gas gate in IMV

When First Gas have finished their data validation for the day the data is pushed to OATIS. If data is subsequently corrected in IMV the last part of the correction process is to push the revised data to OATIS, but there is no flag or alarm to alert the team to corrected data in IMV that has not been sent to OATIS. It would be possible for there to be human error and the corrected file not to be sent. OATIS would then be presenting data to industry participants that should have been updated by corrected data.

**RECOMMENDATION:** That First Gas build a report to confirm that the data held in OATIS is the same as the latest set of validated data in IMV. This should be run monthly prior to the initial data deadline, and again prior to the interim and final deadlines.

An important area of change was the revised energy conversion spreadsheet. This still incorporates the Kelton calculator as an add-in. The AGA8 gross characterisation methodology 2 is still used. However, the old spreadsheet ran inefficiently. By examining the old code and revising how the calculator runs, significant efficiencies have been achieved by IMV.

During the audit some energy calculations were run in IMV and then replicated manually utilising a standalone Kelton calculator. During the manual calculation settings such as altitude and gas type were also confirmed back to source. The manual calculation using a desktop version of the Kelton calculator replicated that produced by IMV to the exact decimal point, demonstrating that the Kelton add-in had been correctly built into the IMV system and no inaccuracy introduced. It was noted that the Excel user interface had formulas protected.

The audit also reviewed the new reporting tool for reviewing temperature, pressure, volume and energy data that is outside of expected values. The settings have been brought across from the current system and not reviewed as a part of the IMV project. The settings are not protected. The Systems Controller has full access to change the settings for minimum and maximum tolerances.

**RECOMMENDATION:** First Gas should consider whether it is appropriate that the reporting settings are unprotected, and the Systems Controller can change min/max settings without peer review or signoff.

Comments are required by the system whenever action is taken to create an audit trail, however the system doesn't give any opportunity for the System Controller to leave a comment when no action is taken, because the data exception is acceptable.

**RECOMMENDATION:** First Gas should consider if the system can be improved to allow users to leave comments against worklist items even when no action is taken.

### 4.3 Identification, remedy and reduction of UFG (rule 26.3)

Under the rules:

*26.3 Where an allocation participant is or becomes aware of a cause of UFG at a gas gate, it must use reasonable endeavours to remedy the cause of UFG or reduce UFG occurring at a gas gate.*

During the 2017 audit it was established that First Gas review the Maui line balance report as a part of their daily activities' checklist. If there is a difference +/-3% for more than a day the data is reviewed for possible causes. If necessary, they may liaise with the metering engineer or request a meter be tested.

There was no change to the processes of reviewing UFG as these are completed outside of the IMV system, in OATIS. The auditor did however take the opportunity to confirm with the team that not only was the Maui line balance reviewed every day for any concerning UFG trends, but also the OATIS line balance reports for the rest of the transmission system. The Bay of Plenty, North, SKF and the total non-Maui system were included in the daily check processes.

However, the TSO does not routinely review the downstream UFG figures because there is no meaningful data until several months later. Nonetheless, they could potentially highlight an issue at a gas gate that might not be significant or identifiable in the context of the upstream UFG.

**RECOMMENDATION:** That the downstream UFG figures are reviewed routinely once the interim data becomes available as an additional control on allocated gas gate meters.

## 5. Obligations as Transmission System Owner

### 5.1 Audit trails (rule 27A.1)

Under the rules:

*27A Every Transmission system owner must ensure that:*

*27A.1 Any information supplied to the allocation agent for each allocation in accordance with rule 41 or rule 44 is transferred and stored in such a manner that it cannot be altered without leaving a detailed audit trail*

During the 2017 audit trails and processes were reviewed to ensure data could not be modified without authorisation and without leaving a record. This included files received from Gas Control, the meter validation access database, the meter validation Excel application, the gas type Excel spreadsheet, files for import to OATIS and the meter validation database. A recommendation arose that the controls on the gas type spreadsheet should be improved, but otherwise no other matters arose.

The changed parts of the system were again reviewed during the current audit. The files received from the field are held on a secure drive, prior to being uploaded. This in principle was no different from the old system although the specific drive had changed from the T drive to the X drive. The auditor asked for a list of staff who currently have access to that drive. The list was reviewed and the need for access to the drive was established for all, except for one staff member whose need for access would be confirmed with the team manager.

**RECOMMENDATION:** The team manager should obtain a list of those who currently have access to the secure drive as a routine quarterly activity. The list should be reviewed to ensure the appropriateness of all persons with access to the data.

As the gas type process has not been changed since the last audit the recommendation from that audit is repeated here. It would be good to include that process in any future system improvements as the gas types are not just used by First Gas in their energy conversions, but also by retailers for the downstream ICPs. So, the robustness of the process has industry wide implications.

**RECOMMENDATION:** The controls on the gas type process should be improved as recommended in the 2017 audit. This should be a priority in the next stage of system enhancement

The Excel user interface is designed to be used by one person at a time. When staging and saving data in the Excel user interface it was observed that it is possible for two users of the spreadsheet to create a

conflict. This was a “microsecond” risk. Although not ideal, it was judged not to be a significant issue by the auditor because it is clear to the user that the process has not run, and no data corruption issues arose. The user merely has to rerun the activity. No recommendation is therefore made in this respect.

Overall the security of the data and the audit trails of the IMV system are at least as good as the old system, but in many respects are much improved.

## 5.2 Retention and availability of information (rule 27A.2)

Under the rules:

*27A Every Transmission system owner must ensure that:*

*27A.2 A copy of all information about daily metered energy quantities injected at each gas gate is kept for a minimum period of 30 months and is made available to the allocation agent, industry body or an auditor on request.*

During the 2017 audit backups of the Access database and the two spreadsheets (for metering validation and gas types) were reviewed, as were plans for retention of files (both original and processed/validated data) for 30 months and there was no evidence of data requests that had not been responded to.

In the new IMV system First Gas have gone through a data migration exercise to transfer the data from the four Access databases into the new IMV SQL database. They wrote migration scripts to pull the records into a staging table, added a field to say which Access database it had been sourced from, created unique identifiers for each record, then ran additional scripts to move the data from the staging table to the correct table within SQL. They then built a comparison table to compare the data back to the original Access databases.

All data from early 2017 when First Gas started to process its own metering has been transferred, plus anything available for prior dates. In total there were 4.3 million records to transfer. After migration there was a robust exercise to identify if the migration was successful. As of the day of the audit there were approximately 4,000 records still missing from the new database. Identification of the issues to resolve the transfer of the remaining records was being actively worked on.

During the audit raw data for pressure, temperature and volume from over 30 months ago was seen in IMV and verified back to the original raw data file on the shared drive. Energy data from over 30 months ago was also viewed in IMV and verified to the data presented in OATIS by the current system. The auditor was therefore assured that the requirement to hold 30 months of data would be achieved by the new system and would be a significant improvement on the multiple Access databases holding historical information currently.

The auditor also checked with the industry body and the allocation agent who both reported they were happy with the access to data they were getting via OATIS. The allocation agent also commented: “We note that the OATIS site is being replaced and now realise the new TACOS system will not have the ability to download files. We are developing our system to consume the new API’s.”

### 5.3 Provision of daily injection information (rule 41)

Under the rules:

#### 41 *Provision of daily injection information*

41.1 *Every transmission system owner must provide to the allocation agent by 1200 hours on the 4<sup>th</sup> business day of the month that immediately follows a consumption period the daily metered energy quantities injected at each allocated gas gate connected to its transmission system for that consumption period.*

41.2 *For each interim allocation and final allocation, every transmission system owner must provide to the allocation agent, by the times and on the days specified in rule 32 and 33 respectively, daily metered energy quantities injected at each allocated gas gate connected to its transmission system for the relevant consumption period.*

41.3 *Transmission system owners are not required to provide daily metered energy quantities under these rules 41.1 and 41.2 for unmetered gas gates or oversized metered gas gates.*

41.4 *Transmission system owners must provide the allocation agent and the industry body with access to data on daily metered energy quantities injected at each gas gate. For the purpose of this Rule, access to data includes the ability to download that data.*

The 2017 audit established that data is uploaded to OATIS each business day by 2pm for large welded points, and by 12 midday on the fourth business day following the end of the month, except for the unmetered and oversized meter gas gates. There were controls in place to ensure incomplete or unvalidated data aren't added in error. The audit identified a small number of gas gates where the data wasn't available until the end of the month, where exemptions hadn't been applied for. Only two of them were allocated gas gates (Matangi and Pauatahanui 2). It was recommended that they should apply for an exemption for these two gates. There were also two instances of validated data being provided late.

First Gas decided to upgrade the Matangi and Pauatahanui 2 sites. Matangi has already been done and daily data was viewed as a part of this audit. The Pauatahanui 2 upgrade is in progress. This is a much better solution to the concern than an additional exemption.

The allocation agent confirmed that they "have no trouble with First Gas and their supply of daily injection metering data."

The new processes are much quicker. Under the old process the time for importing the daily data across all sites was about 50 minutes and often crashed. Under the new system the import takes 5 to 10 minutes and is more robust. The old system used to take another 50 minutes to run the data through the Excel energy conversion, now the new process takes about 12 minutes. Therefore, the new system will set up First Gas well for success in meeting their regulatory timeframes and free up time for dealing with data quality issues rather than processing.



## 5.4 Identification and reporting of material errors (rule 44.1)

Under the rules:

44 *Correction of allocations by allocation agent*

44.1 *Where an allocation participant discovers that:*

44.1.2 *daily metered energy quantities injected at a gas gate previously provided to the allocation agent under rule 41*

*included a material error, that allocation participant must immediately advise the allocation agent of the nature and extent of the error and provide the corrected consumption information or daily metered energy quantities.*

During the 2017 audit it was established that First Gas identify corrections through their validation processes. The corrections are done in the meter validation excel spreadsheet and the gas type spreadsheet, and notes are added to record the reasons. The validation processes were reviewed to get assurance that common errors and situations were being identified. Some corrections were routine where raw data must be routinely modified to ensure correct processing, and these were found to be well controlled.

OATIS notices were used to notify when data has been corrected, but not when the correction is applied before that is made available, only when the data made available is changed. This was under discussion with the Allocation Agent in 2017.

The 2017 audit raised some concern about the length of time it took for some corrections to be done.

The IMV system is an improvement on the old system as most of the need for routine corrections has been eradicated by changing metering systems on site. Also, the new reporting tool has improved the TSO's ability to identify issues. The processes for notifying the allocation agent of issues remains unchanged.

The allocation agent confirmed that "First Gas notify the allocation agent of any errors or issues that they are aware of in a timely manner."

It was also noted that lab results were being processed in a more timely fashion and that the team were being proactive in pursuing lab results that they knew to expect from logs and field information.

## 5.5 Correction of suspected and actual material errors (Schedule 1A)

Under the rules:

### Schedule 1A – Correcting for gas gate metering errors

Rules 41 and 44

Transmission system owners must use the best information available to them at the time of calculating daily metered energy quantities

Metering error	Correction criteria
<b>Suspected Metering Error</b>	<p>If the transmission system owner suspects, or is made aware of, but cannot confirm before the times specified in rule 41 the existence of a metering error at a gas gate, then it will determine <b>daily metered energy quantities</b> for the relevant period based on one or more of the following:</p> <ul style="list-style-type: none"> <li>(a) quantities derived from <b>metering equipment</b>;</li> <li>(b) historical data for a corresponding prior period; and/or</li> <li>(c) any other information reasonably available to the <b>transmission system owner</b>.</li> </ul>
<b>Actual Metering Error</b>	<p>If the transmission system owner discovers, or is made aware of, a metering error at a gas gate, <b>daily metered energy quantities</b> for the relevant period will be calculated based on one or more of the following, as applicable to the nature of the of the <b>metering equipment error</b>:</p> <ul style="list-style-type: none"> <li>(a) the results of testing performed on the <b>metering equipment</b> found to have been in error;</li> <li>(b) data from accurate <b>metering equipment</b> operating in series;</li> <li>(c) data from accurate <b>metering equipment</b> operating in parallel;</li> <li>(d) correction factors from a relevant time period when the <b>conversion device</b> or other <b>metering equipment</b> was functioning properly;</li> <li>(e) independent corrections for pressure, temperature, compressibility or other relevant factors;</li> <li>(f) gas properties based on relevant historical information;</li> <li>(g) gas properties from the most appropriate alternative gas analyser;</li> <li>(h) data from <b>metering equipment</b> unaffected by the error;</li> <li>(i) data from another party's accurate check metering downstream of the <b>gas gate</b>;</li> <li>(j) consumption quantities from <b>consumer installations</b> provided by the <b>allocation agent</b>, including production profiles (with due allowance for UFG if applicable);</li> <li>(k) historical data for a corresponding prior period; and/or</li> <li>(l) other information reasonably available.</li> </ul>

During the 2017 audit a sample of corrections were reviewed. They were also tracked through the correction process, to the Access database and to OATIS.

It was found that the process for making corrections was clearly documented and all were corrected using the best information available. It was also noted that corrections were routinely peer reviewed and a record of that review was kept in the relevant spreadsheet. Suspected errors were being

discussed with the Allocation Agent if they are material, to decide if an estimate was required. Instructions from the Allocation Agent were being followed.

Corrections will continue to be done outside of the new IMV system, so this part of the First Gas process was technically out of scope for this audit. However, First Gas had made improvements to the spreadsheet for the 'as found' process (the review of laboratory results for meters and correctors to ascertain whether any correction is required and, if so, to compute the correction). The auditor was given a brief overview of the new spreadsheet process and provided with a copy of the process template and an example failed meter correction.

The 'as found' process had been streamlined since the 2017 audit. It starts with an e-mail alert regarding the test result. Also available for the review would be end of month log sheets and paperwork from the field technician who had originally removed the meter/corrector. This would, for example, indicate whether the removal was for routine maintenance or because there was a concern about the equipment. The team know what lab results are expected from the field paperwork and proactively follow up with the lab if the resulting lab results do not arrive in the timeframe expected. All this information is filed by location.

The 'as found' spreadsheet captures all the relevant data to deduce whether a correction is required as a result of a failed lab result. If a correction is required, the calculation is done in the spreadsheet. The System Controller considers what alternative data sources are available and there is a preferred hierarchy of what should be used. Both the decision about whether a correction is required or not, and the actual corrections are always peer reviewed.

It was good to see the work put into creating this improved spreadsheet process which will make the review of lab results and the calculation of corrections arising more consistent, repeatable and transparent, with a comprehensive record of the decision making and calculations.

## 6. Breach Allegations

There are no breach allegations a result of this audit.

## 7. Conclusion

As at the date of the on-site audit First Gas had three outstanding defects:

- Approximately 4,000 records outstanding from the data migration (out of 4.3 million)
- An issue relating to the exporting of CSV files when there were repetitive exports
- A data range issue for clocked meter reports

The auditor found no other issues during the audit that should prevent the First Gas plan to go live with the new IMV system. In all respects the new IMV system had controls that were at least as good as the old system and in many respects were significantly improved.

No breaches were raised as a result of the audit. It is anticipated that after the implementation of the intended change the TSO will be able to be compliant with the rules.

The following recommendations were made:

**RECOMMENDATION:** That First Gas verify the gas type setting populated for each gas gate in the Interim Metering Validation system (IMV).

**RECOMMENDATION:** That First Gas build a report to confirm that the data held in OATIS is the same as the latest set of validated data in IMV. This should be run monthly prior to the initial data deadline, and again prior to the interim and final deadlines.

**RECOMMENDATION:** First Gas should consider whether it is appropriate that the reporting settings are unprotected, and the Systems Controller can change min/max settings without peer review or signoff.

**RECOMMENDATION:** First Gas should consider if the system can be improved to allow users to leave comments against worklist items even when no action is taken.

**RECOMMENDATION:** That the downstream UFG figures are reviewed routinely once the interim data becomes available as an additional control on gas gate meters.

**RECOMMENDATION:** The team manager should obtain a list of those who currently have access to the secure drive as a routine quarterly activity. The list should be reviewed to ensure the appropriateness of all persons with access to the data.

**RECOMMENDATION:** The controls on the gas type process should be improved as recommended in the 2017 audit. This should be a priority in the next stage of system enhancement.

## Appendix A – Control Rating Definitions

Control Rating	Definition
Control environment is not adequate	<p>Operating controls designed to mitigate key risks are not applied, or are ineffective, or do not exist.</p> <p>Controls designed to ensure compliance are not applied, or are ineffective, or do not exist.</p> <p>Efficiency/effectiveness of many key processes requires improvement.</p>
Control environment is adequate	<p>Operating controls designed to mitigate key risks are not consistently applied, or are not fully effective.</p> <p>Controls designed to ensure compliance are not consistently applied, or are not fully effective.</p> <p>Efficiency/effectiveness of some key processes requires improvement.</p>
Control environment is effective	<p>Isolated exceptions identified when testing the effectiveness of operating controls to mitigate key risks.</p> <p>Isolated exceptions identified when testing the effectiveness of controls to ensure compliance.</p> <p>Isolated exceptions where efficiency/effectiveness of key processes could be enhanced.</p>

## Appendix B – Industry Comment on Draft Report



22 August 2019

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Dear Julie

### Draft audit report – Transmission System Operator

First Gas Limited welcomes the opportunity to comment on the draft audit report entitled “*First Gas in its role as Transmission System Owner*”, dated 8 July 2019. We welcome the conclusions drawn in the draft audit report that First Gas is “effective” or “compliant” across all areas assessed. We appreciated the recommendations put forward by the auditor, and are now reflecting on how these can be implemented.

#### Correction around capability of TACOS

We wish to make one correction to the draft report, where the report discusses the upcoming change from OATIS to TACOS that is planned for 1 April 2020. On page 13, the report states:

*The auditor also checked with the industry body and the allocation agent who both report they were happy with the access to data they were getting via OATIS. The allocation agent also commented: “We note that the OATIS site is being replaced and now realise the new TACOS system will not have the ability to download files. We are developing our system to consume the new APIs.”*

This statement is not correct. The TACOS system does have the ability to download files in either Excel or CSV formats (export to Excel Express functionality). Daily Delivery Reports and Hourly Delivery Reports (DDRs/HDRs) will also be available for download in CSV format, and parties will have API access to DDR and HDR information. The format of these files is unchanged.

First Gas is currently investigating the issue raised by the Allocation Agent. We have established that it relates to the fact that the Allocation Agent currently receives a compressed (.zip) folder of the DDRs from OATIS, which will no longer be available. The Allocation Agent will have access to CSV downloads of these files (in the current format) and an option for API access. We are working with the Allocation Agent to ensure they are prepared for this change.

#### Contact details

If you have any questions regarding this submission, please contact me on 027 472 7798 or via email at [karen.collins@firstgas.co.nz](mailto:karen.collins@firstgas.co.nz).

Yours sincerely

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Regulatory Policy Manager

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