

VERITEK

Gas Downstream Reconciliation Performance Audit Final Report

For

Mighty River Power Limited



Prepared by Steve Woods – Veritek Ltd

Date of Audit: 9/06/14 - 11/06/14

Date Audit Report Complete: 14/09/14

Executive Summary

This Performance Audit was conducted at the request of the Gas Industry Company (GIC) in accordance with Rule 65 of the 2013 Amendment Version of the Gas (Downstream Reconciliation) Rules 2008.

The purpose of this audit is to assess the systems, processes and performance of Mighty River Power Limited (MRPL) in terms of compliance with these rules.

The audit was conducted in accordance with terms of reference prepared by the GIC, and in accordance with the "Guideline note for rules 65 to 75 and 80: the commissioning and carrying out of performance audits and event audits, V3.0" which was published by GIC in June 2013.

The summary of report findings in the table below shows that MRPL's control environment is "effective" for eleven of the areas evaluated, "adequate" for two and "inadequate" for two.

Eleven of the fifteen areas evaluated were found to be compliant. Four breach allegations are made in relation to the remaining areas. They are summarised as follows:

- Altitude figures are incorrect for 13 ICPs leading to consumption information being over recorded by between 1% and 3.5%. I recommend the accuracy of altitude information is checked on a periodic basis.
- The use of incorrect meter pressure information has led to the submission of incorrect consumption information to the allocation agent. In some cases, the consumption information has been incorrect for a period greater than the due date for the final allocation, which will mean that some consumption information may not be included in the allocation process. As part of the resolution of this matter, I recommend that validation of meter pressure and meter dials be conducted on a monthly basis with meter owners.
- Allocation groups incorrect for 133 ICPs. I recommend monthly validation of the accuracy of allocation groups. MRPL has updated the registry for the ICPs in question and now has a regular monitoring process.
- MRPL's initial submission accuracy did not meet the 10% requirement for some gas gates for the period March 2012 to February 2013.

Summary of Report Findings

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
ICP set up information	2.1	Adequate	Not compliant	Some delays exist with the registry update systems and processes. 13 ICPs have the incorrect altitude recorded. A recommendation is made in relation to 432 ICPs where the altitude is recorded as zero, and may be inaccurate.
Metering set up information	2.2	Not adequate	Not compliant	Some meter pressure and meter dial discrepancies exist between MRPL's and meter owners' records. It is recommended that validation is conducted on a monthly basis with meter owners to address this matter.
Billing factors	2.3	Effective	Compliant	Robust controls are in place for the management of billing factors.
Archiving of reading data	3.1	Effective	Compliant	Robust controls are in place for the security of meter reading data.
Meter interrogation requirements	3.2	Not adequate	Not compliant	Monitoring of consumption greater than 250GJ was not in place and had not occurred for two years. This matter is now resolved.
Meter reading targets	3.3	Effective	Compliant	Meter reading occurs monthly for all ICPs. Meter reading attainment processes are robust.

Non TOU validation	3.4	Effective	Compliant	A robust validation process is in place before and after invoicing.
Non TOU error correction	3.5	Effective	Compliant	The error correction processes are robust. I recommend revisions are conducted when meter pressure and altitude figures are corrected.
TOU validation	3.6			Not applicable to the scope of this audit.
Energy consumption calculation	4	Effective	Compliant	There is no manual intervention in this process, and it was “proved” from end to end using a spreadsheet based calculation tool.
TOU estimation and correction	5.1			Not applicable to the scope of this audit.
Provision of retailer consumption information	5.2	Adequate	Compliant	The process for preparing consumption information files is compliant; however, some meter pressure and meter dial discrepancies exist between MRPL's and meter owners' records. This has resulted in incorrect consumption information being submitted to the allocation agent.
Initial submission accuracy	5.3	Effective	Not compliant	MRPL's estimate process includes a “factoring” process, which involves the use of historic profile shapes. Although compliance has not been achieved, the process is robust.
Forward estimates	5.4	Effective	Compliant	MRPL's forward estimate process includes a “factoring” process, which involves the use of historic profile shapes.

Historic estimates	5.5	Effective	Compliant	Compliance was achieved for all of the scenarios provided during the audit.
Proportion of HE	5.6	Effective	Compliant	Reporting has been provided as required.
Billed vs consumption comparison	5.7	Effective	Compliant	On a long-term basis, MRPL's billed information is slightly lower than consumption information. Although these figures cannot be directly compared, they provide a useful indicator to ensure that under reporting of consumption information is not occurring.

Persons Involved in This Audit

Auditor:

Steve Woods
Veritek Limited

MRPL personnel assisting in this audit were.

Name	Title
Monica Choy	Market Operations Manager
Phillip Brandt	Compliance and Process Improvement Coordinator
Melanie Joyce	Manager, Switch Assurance, Technical Data & Customer Data
Roderick Wong	Pricing Operations Analyst
Lucy Lu	Energy Analyst
Barbara O'Connor	Connection Centre Manager
Diane Scarfe	Senior Billing and Payment Representative
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Service providers assisting with processes within the audit scope:

Company	Processes
Datacol	Meter reading
Wells Instrument and Electrical	Meter reading

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1. Pre-Audit and Operational Infrastructure Information

1.1 Scope of Audit

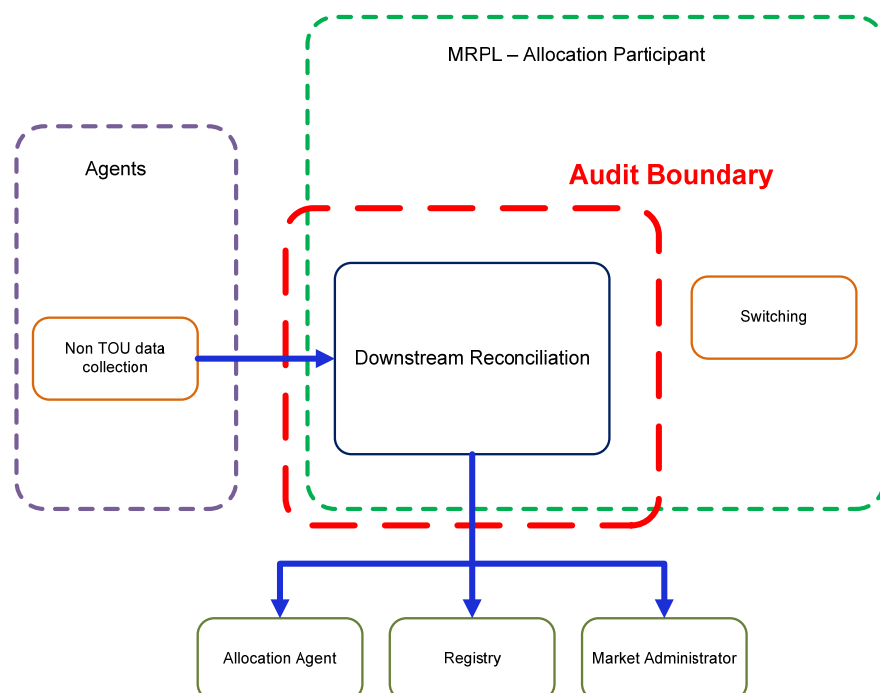
This Performance Audit was conducted at the request of the GIC in accordance with rule 65 of the Gas (Downstream Reconciliation) Rules 2008. Rule 65 is inserted below:

65. Industry body to commission performance audits
- 65.1 The industry body must arrange at regular intervals performance audits of the allocation agent and allocation participants.
- 65.2 The purpose of a performance audit under this rule is to assess in relation to the allocation agent or an allocation participant, as the case may be, -
- 65.2.1 The performance of the allocation agent or that allocation participant in terms of compliance with these rules; and
- 65.2.2 The systems and processes of the allocation agent or that allocation participant that have been put in place to enable compliance with these rules.

The audit was conducted in accordance with terms of reference prepared by the GIC, and in accordance with the “Guideline note for rules 65 to 75 and 80: the commissioning and carrying out of performance audits and event audits, V3.0” which was published by GIC in June 2013.

The audit was carried out on June 9-11th 2014 at MRPL’s offices in Auckland.

The scope of the audit includes “downstream reconciliation” only, as shown in the diagram below. Switching, metering ownership and data collection functions are not within the audit scope. MRPL only has allocation group 4 and 6 ICPs; therefore they do not have any TOU processes or systems.



1.2 Audit Approach

As mentioned in Section 1.1, the purpose of this audit is to assess the performance of MRPL in terms of compliance with the rules, and the systems and processes that have been put in place to enable compliance with the rules.

This audit has examined the effectiveness of the controls MRPL has in place to achieve compliance, and where it has been considered appropriate sampling has been undertaken to determine compliance.

Where sampling has occurred, this has been conducted using the Auditing Standard 506 (AS-506) which was published by the Institute of Chartered Accountants of New Zealand. I have used my professional judgement to determine the audit method and to select sample sizes, with an objective of ensuring that the results are statistically significant.¹

Where calculations are performed by MRPL's systems, the algorithm has been checked by using one or two examples as a "sample". Multiple examples are not required because they will not introduce any different variables.

Where compliance is reliant on manual processes, manual data entry for example, the sample size has been increased to a magnitude that, in my judgement, ensures the result has statistical significance.

Where errors have been found or processes found not to be compliant the materiality of the error or non-compliance has been evaluated.

¹ In statistics, a result is considered statistically significant if it is unlikely to have occurred by chance. (Wikipedia)

1.3 General Compliance

1.3.1 Summary of Previous Audit

MRPL provided a copy of their previous audit conducted in 2010 by Veritek Ltd. Twelve of the fifteen areas evaluated were found to be compliant. Two breach allegations were made in relation to the remaining areas. The resolution of these matters is summarised in the table below.

Breach Allegation	Rule	Section in this report	Resolution
The use of incorrect meter pressure information has led to the submission of incorrect consumption information to the allocation agent.	26.2.1, 26.3 & 28.2	2.2, 3.5 & 5.2	The 2010 audit identified 348 discrepancies. This has increased to 513.
MRPL's initial submission accuracy did not meet the 15% requirement for all gas gates for the period October 2008 to September 2009.	37.2	5.3	The threshold has changed from 15% to 10% and non-compliance still exists

1.3.2 Breach Allegations

MRPL has 1,369 alleged breaches recorded by the Market Administrator between December 2010 and April 2014. These are summarised as follows:

Nature of Breach	Rule	Quantity	Section in this Report
Switching Breaches		455	Not within audit scope
Initial vs final allocation variances	37.2	911	5.3
Late submission	31	2	5.2
Incorrect pressure factors used	26.2.1, 26.3 & 28.2	1	2.2

As noted in the Summary of Report Findings, this audit has found four areas of non-compliance. The following breach allegations are made in relation to these matters.

Breach Allegation	Rules	Section in this report
Altitude figures are incorrect for 13 ICPs leading to consumption information being over recorded by between 1% and 3.5%	28.2	2.1.2
The use of incorrect meter pressure information has led to the submission of incorrect consumption information to the allocation agent.	26.2.1 & 28.2	2.2
Allocation groups incorrect for 133 ICPs	29.2 & 29.3	3.2
MRPL's initial submission accuracy did not meet the 10% requirement for some gas gates for the period March 2012 to February 2013	37.2	5.3

1.4 Provision of Information to the Auditor (Rule 69)

In conducting this audit, the auditor may request any information from MRPL, the allocation agent and any allocation participant.

Information was provided by MRPL in a timely manner in accordance with this rule.

Information was requested from metering equipment owners and was provided within the requested timeframe or a subsequent agreed timeframe by all parties. I consider that all parties have complied with the requirements of this rule.

1.5 Draft Audit Report Comments

A draft audit report was provided to the industry body (GIC), the allocation agent, and allocation participants that I considered had an interest in the report. In accordance with rule 70.3 of the Gas (Downstream Reconciliation) Rules 2008, those parties were given an opportunity to comment on the draft audit report and indicate whether they would like their comments attached as an appendix to the final audit report. I received a response from MRPL. Their comments were considered in accordance with rule 71.1, prior to preparing the final audit report. As a result of the comments received. I have included a statement in the executive summary that MRPL has resolved the issue of incorrect allocation groups.

1.6 Transmission Methodology and Audit Trails (Rule 28.4.1)

All meter reading data is transmitted to MRPL in a secure manner; either by FTP or text files with a checksum. A complete audit trail was viewed for all data gathering, validation and processing functions. Compliance is confirmed with this rule.

2. Set-up and Maintenance of Information in Systems (Rule 28.2)

Every retailer must ensure the conversion of measured volume to volume at standard conditions and the conversion of volume at standard conditions to energy complies with NZS 5259:2004, for metering equipment installed at each consumer installation, for which the retailer is the responsible retailer.

Compliance with this rule has been examined in relation to the set-up of ICP, metering and billing information. I have also considered the "Gas (Downstream Reconciliation) Rules 2008 Billing factors guideline note, V1.0" (Billing Factors Guideline) published by GIC on 22/12/11 when examining the set up and maintenance of information.

2.1 ICP Set Up Information

2.1.1 New Connections Process

The process was examined for the connection and activation of new ICPs. MRPL has a robust set of validation processes and reports to identify and resolve discrepancies. These were demonstrated during the audit. The validation compares SAP data to registry data, and includes:

- Retailer
- Allocation group
- Gas gate
- Altitude
- Network price category code
- Status
- Meter owner

I checked the event detail report for March 2014 to evaluate whether status information is being populated in a timely manner. 170 ICPs had their status changed to ACTC. The registry was updated more than five business days after the actual event date for 68 of the 170 ICPs, and for 22 of these the registry was updated more than 20 business days after the actual event date.

I checked the 22 and found 15 of the changes were from ACTV to ACTC following a switch.

Seven of the 22 were new connections and late paperwork is the main issue for late registry updates.

Customers moving into properties with a status of ACTV are often only identified once the meter reading process has identified consumption. The average days from the actual event date to until the registry was updated was 11 days.

If ICPs have the incorrect status of ACTV for a period of several weeks, meter reading still occurs and the consumption information is supplied to the allocation agent. I checked some examples to ensure the consumption information flowed through to the GAS040 file.

107 ICPs were changed to ACTV or INACT during the same period, and seven of these had a registry update duration of more than five business days. Five of the seven were due to late advice from customers after they had moved out. For two ICPs, the electricity account was finalised but the gas account was overlooked. This is more of an issue for pre-payment electricity ICPs than post-payment ICPs because pre-payment is managed in a different system; therefore it is more difficult to identify associated gas accounts. Forward estimates are calculated for ICPs until the registry is updated.

When an ICP is established in MRPL's system for a proposed new connection a "proposed connection date" field is populated. Monitoring is in place to identify those ICPs where this date has passed without the receipt of a livening notification. There is also monitoring of situations where a livening notification has been provided but a meter docket has not been received. Customer identification and registration is managed by outbound calling to "register" the customer at the time the ICP is first established for the proposed new connection. This process includes appropriate steps to minimise the late notification to the registry and to ensure consumption information is provided to the allocation agent at the earliest opportunity.

2.1.2 Altitude Information

It is a distributor responsibility to populate the registry with current and accurate altitude information and MRPL uses these figures.

NZS 5259:2004 Amendment No1 contains the following points, which affect the way altitude information should be managed:

1. The maximum permissible error is $\pm 1.0\%$ where the meter pressure is below 100kPa and $\pm 0.5\%$ where the meter pressure is greater than 100kPa.
2. The following note is also included "To minimise uncertainty due to altitude factor the aim should be to determine the altitude to within 10m where practicable."

MRPL provided a registry list file and a sample of ICPs per distributor was checked against "google earth" data. The sample was selected by firstly looking for obvious outliers and then increasing the sample size through random selection. The "google earth" data is based on the "Shuttle Radar Topography Mission" (SRTM) results and a number of recent studies indicate an accuracy of $\pm 10\text{m}$ for altitude. An evaluation against this data is considered an appropriate test for "reasonableness".

Altitude figures within approximately 90m of the actual altitude will ensure an accuracy of $\pm 1.0\%$. As shown in the table below, there are seven NGCD ICPs with incorrect altitudes recorded and the difference is more than 90m. All seven were found by looking for obvious outliers and these examples are in Rotorua where an altitude less than 200m will normally be incorrect.

Point 2 above recommends altitude figures are determined to within 10m where practicable. An evaluation of altitude data on the registry was conducted to check whether this recommendation had been met. As noted above, the margin of error of the "google earth" data appears to be approximately $\pm 10\text{m}$, therefore, to allow for this margin, I have checked that the registry data is within 20m of "google earth" data.

As shown in the table below the altitude data on the registry appears to be very accurate. The seven NGCD discrepancies are the same ones that are also outside the 90m threshold.

Distributor	Total ICPs	ICPs checked	Quantity within 20m	Quantity within 90m
UNLG	28,877	30	30	30
NGCD	4,325	30	23	23
POCO	8,871	30	30	30
GNET	813	20	20	20
Total		110	103	103

A further evaluation was conducted of ICPs where the altitude figure was zero on the registry. This data appears to be less accurate than when a figure other than zero is populated. The results are shown in the table below. NGCD and GNET do not have any ICPs with zero populated. UNLG has 404 and a check of 20 found all were within 90m but only four were within 20m. POCO has 28 ICPs with zero populated. Six were within 20m and 14 were within 90m.

Distributor	Total ICPs	ICPs with altitude of zero	ICPs checked	Quantity within 20m	Quantity within 90m
UNLG	28,877	404	20	4	20
NGCD	4,325	0	0	N/A	N/A
POCO	8,871	28	20	6	14
GNET	813	0	0	N/A	N/A

I have considered whether distributors have potentially breached any rules by populating the registry with inaccurate altitude information. Distributors have responsibility for populating the registry with altitude figures² and for maintaining the accuracy of this information. Nevertheless, rule 28.2 requires retailers to comply with NZS 5259:2004, which includes the altitude accuracy requirements mentioned above.

I recommend that MRPL liaise with distributors to determine whether many of the ICPs with an altitude of zero should have more accurate figures populated. MRPL should keep GIC informed of progress in relation to this matter, and if improvements are not made to the accuracy of this data, MRPL should consider alleging a breach of the relevant Gas (Switching Arrangements) Rules 2008.

² Gas (Switching Arrangements) Rules 2008, Part A, ICP parameters maintained by Distributors and rules 41 and 58.

MRPL is required to correct the altitude factors in SAP and they must ensure corrections are made in the relevant revision files. Consumption information for the 13 ICPs with incorrect altitude figures will be high by between 1.0% and 3.5%.

2.2 Metering Set-up Information

During the previous audit, I identified 348 ICPs where the meter pressure did not match that provided by the meter owner. This issue was resolved at the time, but monthly validation of metering information is not occurring as I recommended and this has resulted in 513 meter pressure discrepancies during this audit. I also checked multipliers and dials. There were 251 dial discrepancies and one multiplier discrepancy. One ICP has a multiplier of three and this is unlikely to be correct.

The discrepancies identified are shown in the table below.

Meter Owner	Total ICPs	Meter Pressure Discrepancies	Meter Dial Discrepancies
NGC	38,237	435	223
Powerco	4,621	69	16
Gas Net	772	7	2
Nova	547	2	10
Total Discrepancies		513	251

I checked meter dockets for a sample of 10 ICPs and this confirmed the meter pressure figures supplied by the meter owners were correct. I recommend the meter pressure is confirmed for all ICPs where discrepancies are present, either by examining meter dockets or by conducting field checks, prior to the correction of data.

The discrepancy for 69 ICPs will result in an error greater than $\pm 1.1\%$ which is outside the maximum permitted error in NZS 5259. Although the incorrect pressure for most ICPs will not lead to a conversion error greater than that allowed by Table 3 of NZS5259, I strongly recommended this matter be resolved to ensure compliance with rule 26.2.1, which is the requirement to provide accurate and complete information.

The 513 meter pressure discrepancies have resulted in the under reporting of consumption information to the allocation agent of approx. 66 GJ per annum.

Where meter dial discrepancies exist there does not appear to have been an effect on consumption information. The meter reading processes are designed to identify meter dial discrepancies that could affect meter reading accuracy. If the meter reader's hand held device is expecting more digits than the number of dials, then the reading is entered as normal and notification is made in the "reader's

notes” field for investigation. If the hand held is expecting fewer digits than the number of dials, then the reading is entered into the “reader’s notes” field and once again an investigation is conducted. Although this “safety net” appears to be robust, I recommend that meter dials validation be conducted on a monthly basis with meter owners.

The use of incorrect meter pressure information has led to the submission of incorrect consumption information to the allocation agent. This is alleged as a breach of rules 26.2.1, 26.3 and 28.2.

2.3 Billing Factors

2.3.1 Temperature Information

For ICPs where the actual temperature is not measured NZS 5259: 2004 states that temperature may be estimated and four methodologies are provided. These are listed below in order of decreasing preference.

- (a) Temperature records of the station under flowing conditions. Historical records can be used if similarity is preserved.
- (b) Records of actual gas temperature in similar installations over similar periods at similar locations may serve to estimate the value of gas temperature in the installation.
- (c) For compact installations directly connected to short risers and well shaded from direct sunlight, where the temperature of the gas is in the vicinity of ground temperature, the temperature may be estimated from the average ground temperature at 300mm depth. NOTE – Reliable and relevant climatic temperature data may be used as a basis for estimating average 300mm ground temperatures. This may include published data. For installations with seasonal use only, the data for the relevant season or seasons should be used.
- (d) For installations where the inlet pipes are exposed to ambient air conditions the temperature may be estimated from the mean temperature obtained at reliable and relevant weather recording stations. For installations with seasonal use only, the data for the relevant season or season should be used. The installation should be shielded from direct sunlight.

MRPL has chosen option (c) and uses a read to read daily average temperature in their calculations. The daily temperature data was sourced from NIWA in 2012 and contains daily average ground temperatures at a 300mm depth. MRPL provided a copy of this data during the audit.

MRPL does not apply the Joule Thompson effect adjustment because network pressure information on the registry is not considered accurate. NZS 5259:2004 states “...correction may be made for the temperature drop due to pressure reduction if this reduction is made in the same installation and immediately upstream of the GMS. The temperature drop is about 0.5° per 100kPa of pressure drop. For large pressure drops or high flow rates it is recommended that the actual temperature drop be measured.” This indicates that adjustment for the Joule Thompson effect is desirable.

The Billing Factors Guideline contains the following expectations by GIC:

- Network owners ensure nominal operating pressures are correctly populated in the registry for all ICPs on their networks.
- Once network pressures are correctly populated, retailers ensure that they account for the Joule- Thomson effect by using the network pressure in the registry in their conversions of metered volumes to standard volume, particularly in situations where failure to do so will result in conversion errors greater than those allowed in Table 3 of NZS5259.

This also reinforces that adjustment for the Joule Thompson effect is desirable.

I recommend that MRPL adjusts for the Joule Thompson effect.

2.3.2 Calorific Values

Gas composition data is sourced from the Open Access Transmission Information System (OATIS) and is loaded into SAP.

The process was observed for the daily downloading of this data. Whilst this process includes a manual step, the personnel involved appear to be following well-defined instructions. If the data is not loaded by 2.00pm each day, an automated email is sent to a particular workgroup.

3. Meter Reading and Validation

3.1 Archiving of Register Reading Data (Rule 28.4.2)

Retailers are required to keep register reading data for a period of 30 months. Data was examined during the audit and it is confirmed that MRPL securely archives data for a period in excess of 30 months.

Some data provided by MRPL's meter reading contractor was checked and it was found that the readings matched the data in SAP. This proves the end-to-end process. This data is transmitted via FTP, or as a text file with a checksum, which ensures its security and integrity.

3.2 Retailer to Ensure Certain Metering Interrogation Requirements are Met (Rule 29)

This rule requires that for consumer installations where the actual or expected consumption is greater than 10TJ, a TOU meter will be installed and the installation will be assigned to allocation group 1 or 2. For consumer installations where the actual or expected consumption is between 250GJ and 10TJ a non-TOU meter will be installed and the installation will be assigned to allocation group 4.

MRPL only has allocation group 6 and 4 ICPs. MRPL normally monitors reporting annually to identify ICPs with actual consumption above 250GJ, and if it is determined the consumption is likely to remain at this level the allocation group is changed from 6 to 4. This process has not occurred for two years and MRPL's most recent reporting shows 122 allocation group 4 ICPs with consumption below 250GJ and 11 allocation group 6 ICPs with consumption over 250GJ. I checked a list showing all ICPs with

allocation group and annual consumption. This list confirmed the 133 ICPs with incorrect allocation groups. Compliance is not achieved with rules 29.2 and 29.3.

3.3 Meter Reading Requirements (Rules 29.4.3, 29.5 & 40.2)

All consumer installations with non-TOU meters must have register readings recorded at least once every 12 months unless exceptional circumstances prevent such an interrogation.

MRPL provided a copy of some GAS080 reports for March 2011, November 2013 and April 2014, along with a list of five ICPs not read within the last 12 months. The records in SAP were checked for all five installations and it was found that “exceptional circumstances” existed in all cases.

The table below shows the GAS080 results.

Target	Reading Percentage March 2013	Reading Percentage November 2013
Rolling 4 months (target 90%)	99.54%	99.36
12 months (target 100%)	99.96%	99.96

MRPL achieved compliance with rule 40.2, which is the requirement to report the number and percentage of validated register readings obtained in accordance with rules 29.4.3 and 29.5.

3.4 Non TOU Validation

Meter reading validation occurs at multiple levels.

At source, the handheld data input devices perform a localised validation, to ensure that the reading is within expected high-low parameters. These parameters are set as a “high/low” limit, based on an agreed setting with MRPL.

Readings that fail this initial validation must be re-entered, and if the second reading is the same, it will be accepted; if it is different (indicating an error with the first reading) then it must be re-entered. Once the same reading has been entered twice consecutively, it will be accepted.

The second level of validation occurs when the data reaches MRPL. A “master data” validation is conducted which ensures that the reading relates to the correct ICP, meter and register. A file “pre check” is also conducted and only files with a date within one month of the current date are accepted. This check also identifies obvious corruption of the data.

A validation is also conducted to ensure readings are within an acceptable range, the validation process contains a graphical tool that enables the current reading to be viewed in relation to historic consumption. Overall, this validation process is considered very robust.

The next level of validation occurs during the “billing validation” process. This process checks for high dollar amounts in addition to short and long billing periods.

Meter readings are not edited during these processes. If a reading fails validation and an incorrect meter reading is suspected, then a check reading is performed.

3.5 Non TOU Error Correction

The process for error correction was examined to ensure that consumption information for prior consumption periods is included in the revision process and provided to the allocation agent.

Changes to consumption information can only occur if changes have been made to billing information. MRPL adopts a “reverse and rebill” process to correct billing and therefore consumption information. This process was examined and I confirmed consumption information for prior consumption periods is included in the revision process and provided to the allocation agent.

3.6 TOU Validation

MRPL does not have any TOU customers.

4. Energy Consumption Calculation (Rule 28.2)

To evaluate this calculation a spreadsheet was prepared which converts volume between meter readings to volume at standard conditions and then to energy consumption. The relevant information for two ICPs was entered into the spreadsheet and the resulting energy value was compared to that calculated by SAP. This comparison confirmed the accuracy of the SAP calculation and confirmed compliance with NZS 5259.

The small sample size for this comparison is considered appropriate because the calculation being evaluated is conducted entirely within the SAP system, with no manual intervention. Therefore, the only opportunity for error is if the incorrect factors are present within the system.

5. Estimation and Submission Information

5.1 TOU Estimation and Correction (Rule 30.3)

MRPL does not have any TOU customers.

5.2 Provision of Retailer Consumption Information (Rules 30 to 33)

MRPL’s compliance with rules 30 to 33 was examined by a “walk through” of their processes and controls to confirm compliance.

A GAS040 file for April 2014 was examined and compared to the data in MRPL’s system at ICP level; the totals matched, which confirms compliance. This also proves that MRPL’s consumption information provided to the allocation agent is calculated at ICP level and then aggregated.

The matter of “vacant consumption” was also examined. When an ICP is vacant but still active (ACTV on the registry), meter reading still occurs and any volume recorded is converted into validated

consumption and is then included in the allocation process, even though this consumption is not billed.

5.3 Initial Submission Accuracy (Rule 37.2)

Final allocations are complete for the months January 2012 to January 2013. Rule 37.2 requires that the accuracy of consumption information, for allocation groups 3 to 6, for initial allocation must be within a certain percentage of error published by the industry body. The published percentage for the months analysed is 10%.

MRPL did not meet this requirement for a number of gas gates during the 12 month period shown. The results are summarised in the table below.

Month	Total Gas Gates	Number Within 10%	% Compliant
March 2012	68	37	54.4%
April 2012	68	31	45.6%
May 2012	68	40	58.8%
June 2012	68	48	70.6%
July 2012	68	44	64.7%
August 2012	68	42	61.8%
September 2012	68	46	67.7%
October 2012	69	44	63.8%
November 2012	70	47	67.1%
December 2012	71	41	57.8%
January 2013	71	39	54.9%
February 2013	71	50	70.4%

The following table shows the difference between consumption information for initial and final submissions at an aggregated level for all gas gates.

Month	Initial Submission All Gas Gates (GJ)	Final Submission All Gas Gates (GJ)	Percentage Variation
March 2012	57,749	61,289	-5.8%
April 2012	65,702	64,093	2.5%
May 2012	106,076	111,705	-5.0%
June 2012	140,416	142,085	-1.2%
July 2012	158,704	151,923	4.5%
August 2012	142,705	132,238	7.9%
September 2012	110,949	111,052	-0.1%
October 2012	94,340	91,881	2.7%
November 2012	74,639	74,620	0.03%
December 2012	59,700	56,365	5.9%
January 2013	51,173	48,636	5.2%
February 2013	46,517	45,229	2.8%

The table above show that at an aggregate level, the consumption information submitted to the allocation agent for the initial allocation is within 10% of the consumption information submitted for the final allocation.

5.4 Forward Estimates (Rules 34 & 36)

MRPL's forward estimates are based on either:

- Historic readings
- Historic daily average consumption
- Average consumption based on ANSIC code

MRPL's forward estimate process also includes a "factoring" process, which involves the use of the average of the previous two-year's profile shape. This ensures that the over estimation or under estimation of submission information is minimised during "shoulder" months.

5.5 Historic Estimates (Rules 34 & 35)

To assist with determining compliance of the historic estimate processes, MRPL was supplied with a list of scenarios. For each scenario, a manual calculation was performed using the relevant seasonal adjustment shape file, and this was compared to the calculation performed in MRPL's system. Compliance is confirmed for all scenarios. This test also proves that the correct shape file is used in each case.

Test	Scenario	Test Expectation	Result
A	ICPs become inactive part way through a month.	Consumption is only calculated for the Active portion of the month.	Compliant
B	ICPs become active then inactive within a month.	Consumption is only calculated for the Active portion of the month.	Has not occurred
C	ICPs become inactive, then active, then inactive again within a month.	Consumption is only calculated for the Active portion of the month.	Has not occurred
E	ICPs start on the 1 st day of a month.	Consumption is calculated to include the 1 st day of responsibility.	Compliant
F	ICPs end on the last day of the month.	Consumption is calculated to include the last day of responsibility.	Compliant
G	ICPs start part way through a month.	Consumption is calculated to include the 1 st day of responsibility.	Compliant
H	ICPs end part way through a month.	Consumption is calculated to include the last day of responsibility.	Compliant
I & J	ICP's are lost and won back in a month.	Consumption is calculated for each day of responsibility.	Has not occurred
N	ICPs start on 1 st and end on last day of month.	Consumption is calculated for each day of responsibility.	Has not occurred
O	Rollover reads	Consumption is calculated correctly in the instance of meter rollovers.	Compliant

5.6 Proportion of Historic Estimates (Rule 40.1)

This rule requires retailers to report to the allocation agent the proportion of historic estimates contained within the consumption information for the previous initial, interim and final allocations.

A GAS040 file was examined and compared to the data in MRPL's system at ICP level; the totals matched, which confirms compliance. This also proves that MRPL's consumption information provided to the allocation agent is calculated at ICP level and then aggregated.

5.7 Billed vs Consumption Comparison (Rule 52)

The content of the GAS070 files was proved by selecting some gas gates and checking the bills in SAP for all ICPs at those gates, against the total in the GAS070 files. This confirmed the accuracy of the data.

The table below shows a comparison between quantities billed and consumption information submitted to the allocation agent for a three year period. The consumption information is higher than quantities billed by 0.078%. This minor difference can be explained by the fact that the revision and normalisation processes for billed data are different to those for consumption data, the billed data, and the consumption data contains some initial and interim submission information for the most recent months, which will include a higher proportion of estimated data. Although these figures cannot be directly compared, they provide a useful indicator to ensure that under reporting of consumption information is not occurring.

Year ending	Billed	Consumption	Percentage Difference
February 2012	1,060,754	1,061,210	0.04%
February 2013	1,087,402	1,094,610	0.66%
February 2014	948,661	943,409	-0.55%
Total	3,096,817	3,099,229	0.078%

6. Recommendations

As a result of this performance audit I recommend the following:

- I recommend that MRPL liaise with distributors to determine whether many of the ICPs with an altitude of zero should have more accurate figures populated.
- 513 meter pressure discrepancies were found between MRPL's and meter owners' records. Meter docket were examined for 10 ICPs and it was found that the meter owner's data was correct for all 10 examples. This sample size is too small to draw any conclusions; however, I recommend that meter docket be checked or field visits conducted for the other ICPs to confirm that the correct data is being used. I recommend that validation occurs on a monthly basis with meter owners to address this matter.
- 251 meter dial discrepancies were found between MRPL's and meter owners' records. I recommend that validation occurs on a monthly basis with meter owners to address this matter.
- 133 ICPs had the incorrect allocation group recorded. I recommended the accuracy of this data be checked on a monthly basis and MRPL has adopted this recommendation.

Appendix 1 – 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 2 – MRPL Comments

Section	Control Rating	Compliance Rating	Comments	MRPL Comments
2.1	Adequate	Not compliant	<p>Some delays exist with the registry update systems and processes</p> <p>13 ICPs have the incorrect altitude recorded</p> <p>A recommendation is made in relation to 432 ICPs where the altitude is recorded as zero, and may be inaccurate.</p>	MRP are in the process of correcting these sites and a report is in place to flag discrepancies for correction
2.2	Not adequate	Not compliant	<p>Some meter pressure and meter dial discrepancies exist between MRPL's and meter owners' records.</p> <p>It is recommended that validation is conducted on a monthly basis with meter owners to address this matter.</p>	MRP are reviewing the current process to correct these discrepancies and acknowledge the recommendation to conduct validations. We will look to do these regularly
3.2	Not adequate	Not compliant	<p>Monitoring of consumption greater than 250GJ is not in place and has not occurred for two years</p>	MRP have corrected the sites in question and a process put in place to monitor these on a regular basis