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VERITEK

Gas Distributor Audit Report

For

Nova Energy Ltd

Prepared by: Tara Gannon – Veritek Ltd

Date of Audit: 12/01/2021 – 19/01/2021

Date Audit Report Complete: 28/05/2021

Executive Summary

This Performance Audit was conducted at the request of the Gas Industry Company (GIC) in accordance with Rule 88 of the Gas (Switching Arrangements) Rules 2008 in effect from 14 September 2015.

The purpose of this audit is to assess the systems, processes, and performance of Nova Energy Ltd (Nova) in terms of compliance with these rules.

The audit was conducted in accordance with terms of reference prepared by GIC.

Nova uses their CMMS (Computerised Maintenance Management System) to store distributor and meter owner information. Not all distributor maintained fields on the registry are recorded in CMMS. This means that full validation of Nova's records against the registry cannot be easily completed for all fields.

I viewed changes in the CMMS test system which will add the fields recorded on the registry which are not currently recorded in CMMS. Once the new fields are live and data in all CMMS fields recorded on the registry has been populated and cleansed, Nova intends to create an extract to produce gas registry updates which will manually be transferred to the registry. These changes are expected to be material, and Nova is expected to undergo a major change audit before the changes are implemented.

Daily validation between CMMS and the registry is currently in place for selected distributor maintained fields, and I recommend this is expanded to include all distributor maintained fields (including pricing and addresses) once they have been added to CMMS.

The summary of report findings in the table below shows that Nova's control environment is "effective" for 11 of the areas evaluated, "adequate" for two and "not adequate" for registry validation. Breach allegations are made in relation to these and are summarised below:

- five ICPs had incorrect pressures recorded on the gas registry, which were updated during the audit,
- ICP 0000073192NA6D6 has load shedding category 4 assigned, but is expected to consume over 10,000 GJ per annum and does not meet the requirements for load shedding category 4,
- ICP 0000071521NA7E5 had an incorrect MHQ recorded on the registry and was updated during the audit,
- 29 ICPs had addresses which were not readily locatable, and were corrected during the audit,
- 24 ICPs had duplicate addresses recorded of which ten were updated to be unique during the audit, and the other 14 ICPs genuinely have more than one meter in the same location and are distinguished by their meter number, and
- network pressure corrections for 0000073200NAAB7, 0000073220NA7E2, 0000073162NA6C1, 0001549724NA7EB and 0000073584NA1F5 were not made as soon as practicable; the delayed corrections did not result in errors outside the allowable thresholds in NZS 5259.

I recommend Nova:

- complete a major change audit prior to automation of the registry update process,
- check load shedding categories for reasonableness when changes are requested, and at least quarterly - any exceptions should be followed up with Nova's retail team,

- expand the daily discrepancy report to include discrepancies between CMMS and the registry for all distributor-maintained fields, once these fields are live in CMMS,
- until the daily discrepancy report is expanded to include all fields and daily discrepancies are consistently resolved, the monthly distributor registry report should be compared to CMMS with any discrepancies resolved by 4pm on the 15th business day of the month, and
- once the registry update process is partially automated (i.e., updates are no longer individually processed through the web interface), review acknowledgement files to confirm that the updates have been processed successfully.

The matters raised are shown in the tables below.

Summary of Report Findings

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
General obligations	2	Effective	Compliant	Nova's participant information is correct. There were no examples of unreasonable actions or improper use of the registry.
New connections	3	Effective	Compliant	New connection updates were on time and accurate.
Network pressure	4.1	Adequate	Not compliant	Five ICPs had incorrect pressures recorded on the gas registry, which were updated during the audit. 23 ICPs were found to have incorrect network pressures during the previous audit, and were updated during this audit.
ICP altitude	4.2	Effective	Compliant	ICP altitude is correct.
Gas gate	4.3	Effective	Compliant	Gas gate information is correct.
Load shedding category	4.4	Adequate	Not compliant	ICP 0000073192NA6D6 has load shedding category 4 assigned, but is expected to consume over 10,000 GJ per annum and does not meet the requirements for load shedding category 4. Additional validation of load shedding categories is recommended.

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
Maximum hourly quantity	4.5	Effective	Not compliant	<p>This field is not used to determine network charges and is not required to be populated.</p> <p>One ICP had an incorrect MHQ recorded on the gas registry, which was updated during the audit.</p>
Physical address	4.6	Effective	Not compliant	<p>Addresses for all ICPs created during the audit period are unique and readily locatable, indicating that the current controls are effective.</p> <p>Some issues exist for historic addresses:</p> <p>29 ICPs had addresses which were not readily locatable, and were corrected during the audit.</p> <p>24 ICPs had duplicate addresses recorded. Ten were updated to be unique during the audit, and the other 14 ICPs genuinely have more than one meter in the same location and are distinguished by their meter number.</p>
Decommissioned status	4.7	Effective	Compliant	
Connection statuses	4.8	Effective	Compliant	

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
Registry validation and correction	4.9	Not adequate	Not compliant	<p>Not all registry fields are held in CMMS or periodically validated.</p> <p>I viewed changes in the CMMS test system which will add the fields recorded on the registry which are not currently recorded in CMMS. Once the new fields are live, and data in all CMMS fields recorded on the registry has been populated and cleansed, Nova intends to create an extract to produce gas registry updates which will manually be transferred to the registry. I recommend that the discrepancy reporting is enhanced to include all distributor maintained fields.</p> <p>Once these changes are complete, the controls are expected to be effective.</p>
Creation and decommissioning of gas gates	5	No examples of changes	No examples of changes	
Management of network price category codes	6	Effective	Compliant	
Management of loss factor codes	7	Effective	Compliant	
Disclosure on application	8	Effective	Compliant	

Persons Involved in This Audit

Auditor:

Tara Gannon
Veritek Limited

Nova personnel assisting in this audit were.

Name	Title
Craig Muirhead	Health, Safety & Pipeline Manager
Helena Vimmars	Operations Technician

Contents

Executive Summary	2
Summary of Report Findings	4
Persons Involved in This Audit	7
Contents	8
1. Pre-Audit and Operational Infrastructure Information	10
1.1 Scope of Audit	10
1.2 Audit Approach	10
1.3 General Compliance	11
1.4 Provision of Information to the Auditor (Rule 91)	11
1.5 Breach allegations	11
1.6 Draft Audit Report Comments	12
1.7 Gas Gate and ICP Data	13
1.8 ICP data	13
2. General obligations	15
2.1 Participant registration information (Rules 7 and 10)	15
2.2 Obligation to act reasonably (Rule 34)	15
2.3 Obligation to use registry software competently (Rule 35)	15
3. New connections	16
3.1 ICP creation (Rules 5.2, 43.1 and 43.2)	16
3.2 ICP assignment (Rule 51.1, 51.2, 51.3, 53.1 and 53.4)	17
4. Registry information management (Rule 58.1 and 58.2)	19
4.1 Network pressure	20
4.2 ICP altitude	21
4.3 Gas gate	22
4.4 Load shedding category	22
4.5 Maximum hourly quantity	24
4.6 Physical address	25
4.7 Decommissioned status (Rules 59.11 and 59.12)	26
4.8 Connection statuses (Rule 60)	26
4.9 Registry validation and correction (Rules 61.1 and 62)	27
5. Creation and decommissioning of a gas gate (Rule 45.1 and 45.2)	30
6. Management of network price category codes (Rule 46)	30
7. Management of loss factor codes	30
7.1 Distributors to determine loss factor codes (Rule 47.1 and 47.2)	30
7.2 The addition or deletion of loss factor codes (Rule 48)	30

8. Disclosure on application (Rule 50)	30
Recommendations	32
Appendix 1 – Control Rating Definitions	33
Appendix 2 – Additional Nova Comments	34

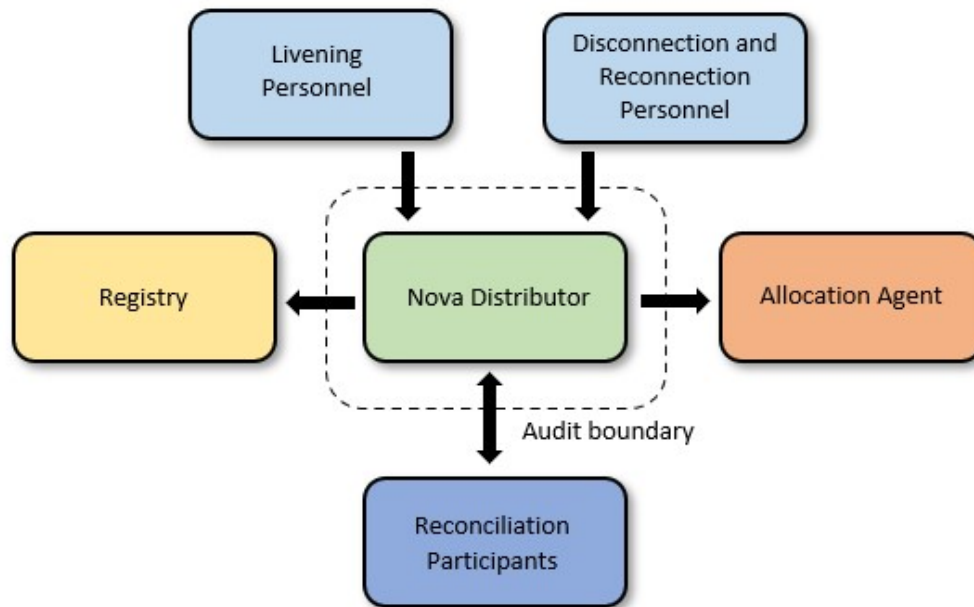
1. Pre-Audit and Operational Infrastructure Information

1.1 Scope of Audit

The purpose of this audit is to assess the systems, processes, and performance of Nova in terms of compliance with these rules. The audit was conducted in accordance with terms of reference prepared by GIC.

The audit was carried out remotely between 12 January 2021 and 19 January 2021 using Zoom.

The scope of the audit includes the distributor responsibilities only, as shown in the diagram below.



1.2 Audit Approach

As mentioned in **section 1.1** the purpose of this audit is to assess the performance of Nova 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 Nova 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

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

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.

1.3 General Compliance

The Market Administrator confirmed that no alleged breaches have been recorded for Nova in the last two years in relation to its role as a distributor.

1.4 Provision of Information to the Auditor (Rule 91)

In conducting this audit, the auditor may request any information from Nova, and any registry participant or operator. Information was provided by Nova in a timely manner in accordance with this rule.

Information was not required from any other participant in relation to this audit. I consider that Nova have complied with the requirements of this rule.

1.5 Breach allegations

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

Breach Allegation	Rules	Section in this report
<p>Five ICPs had incorrect pressures recorded on the gas registry, which were updated during the audit.</p> <ul style="list-style-type: none"> ICPs 0000073200NAAB7, 0000073220NA7E2 and 0000073162NA6C1 had incorrect network pressures recorded in CMMS and the registry. ICPs 0001549724NA7EB and 0000073584NA1F5 had incorrect pressures recorded on the registry, but correct pressures recorded in CMMS. 	GSAR 58.1	4.1
<p>ICP 0000073192NA6D6 has load shedding category 4 assigned, but is expected to consume over 10,000 GJ per annum and does not meet the requirements for load shedding category 4.</p>	GSAR 58.1	4.4
<p>ICP 0000071521NA7E5 had an incorrect MHQ recorded on the registry and was updated during the audit.</p>	GSAR 58.1	4.5
<p>29 ICPs had addresses which were not readily locatable, and were corrected during the audit.</p> <p>24 ICPs had duplicate addresses recorded. Ten were updated to be unique during the audit, and the other 14 ICPs genuinely have more than one meter in the same location and are distinguished by their meter number.</p>	GSAR 58.1	4.6

Breach Allegation	Rules	Section in this report
<p>Network pressure corrections for 0000073200NAAB7, 0000073220NA7E2, 0000073162NA6C1, 0001549724NA7EB and 0000073584NA1F5 were not made as soon as practicable. The delayed corrections did not result in errors outside the allowable thresholds in NZS 5259.</p> <p>23 ICPs were found to have incorrect network pressures during the previous audit, and were updated during this audit. The affected ICPs were 0000073254NA3B5, 0000073220NA7E2, 0000071569NA754, 0000073198NA447, 0000073234NAC45, 0000072849NADE9, 0000071576NA227, 0000122483NA383, 0000092681NA364, 0000071393NA3D4, 0000071410NA55C, 0000071411NA919, 0000071473NA66C, 0000071484NABB1, 0000071537NACC7, 0000071540NA450, 0000071548NA644, 0000071615NA214, 0000072141NA6F4, 0000072161NABA1, 0000074497NA AFC, 0000074498NA522, and 0000075044NA6DF.</p> <p>Reasonable endeavours were not used to maintain current and accurate information.</p>	GSAR 58.1	4.9

Four alleged breaches were recorded in relation to the 2018 distributor audit, and the outcomes are recorded in the table below.

Breach Allegation	Breach No.	Rule	Section in this report	Outcome
One ICP out of a sample of four where records of the retailer request were available did not have an ICP assigned within three business days of request.	2018-085	51.2	3.2	The Market Administrator did not raise any material issues.
Inaccurate altitudes recorded on the registry for three ICPs.	2018-086	58.1	4.2	The Market Administrator did not raise any material issues.
Inaccurate network pressures recorded in the registry for 45 ICPs.	2018-087	58.1	4.1	The Market Administrator did not raise any material issues.
Inaccurate load shedding categories for 18 ICPs.	2018-088	58.1	4.4	The Market Administrator did not raise any material issues.

1.6 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 92 of the 2015 Amendment Version of the Gas (Switching Arrangements) 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. The following response was received.

Party	Response	Comments provided	Attached as appendix
Nova Energy	Yes	Yes	No changes were made to the report. Nova's comments are included in each section where non-conformance is recorded.

1.7 Gas Gate and ICP Data

All of Nova's distribution systems are bypass networks situated in Wellington, Hastings, Hawera and Auckland. Nova (GNVG) is the only retailer which trades on the networks.

No gas gates have been created or decommissioned during the audit period. The table below lists the relevant Gas Gates:

Gas Gate	Description
FLB15601	Flat Bush (Nova)
HST05203	Hastings (Nova)
HUN15302	Hunua (Nova)
HWA20802	Hawera (Nova)
TWB24810	Tawa B (Nova)

1.8 ICP data

A registry list file was reviewed, and a summary of this data by "ICP status" is as follows:

ICP Status	Number of ICPs (Sep 2020)
New	-
Ready	-
Active Contracted (ACTC)	216
Active Vacant (ACTV)	3
Inactive Transitional (INACT)	21
Inactive Permanent (INACP)	17

ICP Status	Number of ICPs (Sep 2020)
Decommissioned (DECR)	1

2. General obligations

2.1 Participant registration information (Rules 7 and 10)

All registry participants must supply registration information to the registry operator. Registration information consists of:

- the name of the registry participant, and
- the registry participant's telephone number, physical address, facsimile number, email address, and postal address, and
- identification as to which class, or classes, of registry participant (retailer, distributor, or meter owner) that the registry participant belongs.

Registration information must be given in the form and manner required by the registry operator as approved by the industry body. Every person who is a registry participant at the commencement date must supply the registration information within 20 business days of the commencement date. A person who becomes a registry participant after the commencement date must supply the registration information within 20 business days of becoming a registry participant.

Nova's participant registration information was confirmed to be valid. Compliance is confirmed.

2.2 Obligation to act reasonably (Rule 34)

Every registry participant must act reasonably in relation to its dealings with the registry and, in doing so, must use its reasonable endeavours to co-operate with other registry participants.

Processes for managing queries and complaints about Registry information were reviewed. No examples of Nova acting unreasonably were found. Compliance is confirmed.

2.3 Obligation to use registry software competently (Rule 35)

Each registry participant must ensure that any software for the registry is used in a proper manner by competent employees or by persons under the supervision of those employees.

No registry participant may request, permit, or authorise anyone other than the registry operator to provide support services in respect of any software for the registry.

Each registry participant must appoint a nominated manager to be responsible for all that registry participant's communications with the registry.

No examples of Nova using Registry software incompetently were found. Access to modify Registry information is restricted and staff are appropriately trained. Nova only uses Jade for Registry support services. Compliance is confirmed.

3. New connections

3.1 ICP creation (Rules 5.2, 43.1 and 43.2)

ICP Format

ICPs should be created as a unique 15-character identifier assigned to each ICP, having the format xxxxxxxxxxxxxxccc, where:

- xxxxxxxxxx is the gas connection number specified by the distributor and unique to that connection in the distributor's records
- xx is an alphabetic combination, determined by the industry body, for use by the distributor when creating the ICP identifier
- ccc is an alphanumeric checksum generated by an algorithm specified by the industry body

Nova uses their Gas Registry ICP generator spreadsheet to create ICP numbers. Nova's retail team provides a unique premises number for each requested ICP, which is entered into Gas Registry ICP generator spreadsheet and combined with Nova's distributor code, a checksum generated by the spreadsheet, and leading zeros to make a total of 15 characters.

Review of the registry list confirmed all ICPs are in the correct format.

ICP requirements

ICPs must be assigned for each consumer installation connected to Nova's distribution system. The ICP must represent a single point of connection, which:

- may be isolated from the distribution system or transmission system without affecting any other consumer installation,
- has a single loss factor and a single network price category; and
- has its gas volume measured directly by a single set of metering equipment complying with NZS 5259, or measured indirectly by a method approved by the industry body.

To determine compliance with each of these requirements, I reviewed Nova's processes and checked all ICPs on the registry list generated on 18 September 2020. Compliance is confirmed.

Requirement	Commentary
Isolation of ICPs	<p>Nova does not allow ICPs to be connected downstream of other ICPs. Any applications that required this would be rejected. As part of the application process Nova checks the requested address in Mapviewer to identify whether the property already has a gas connection or an address may be incorrect.</p> <p>24 ICPs had duplicate addresses recorded on the registry list. Nova confirmed that all were separate connections. Ten were corrected to unique addresses during the audit. The remaining 14 ICPs are situated in buildings with more than one meter in close proximity, and the meter number is relied upon to determine the correct location. The duplicate addresses are discussed further in section 4.6.</p>

Requirement	Commentary
Single loss factor and network price category	All ICPs have loss factor NA and price category DOA assigned, which ensures there is a single loss factor and network price category for each ICP.
Metering installed	<p>All meters installed on Nova's network are owned by Nova. The connection requirements are confirmed as part of the new connection application process, and single set of compliant metering is selected and installed based on this information in accordance with NZS 5259.</p> <p>The registry list generated on 18 September 2020 found all ICPs with a connection status indicating that a meter is present had metering installed.</p>

3.2 ICP assignment (Rule 51.1, 51.2, 51.3, 53.1 and 53.4)

Distributors must assign an ICP within three business days of receiving a request for an ICP from a retailer, or advise the retailer why they are unable to assign an ICP.

Once confirmation is received that the consumer installation is connected, the following information must be updated on the registry within two business days:

- ICP identifier,
- ICP creation date,
- responsible distributor code, and
- physical address of the consumer installation.

All remaining distributor ICP parameters (apart from ICP and connection status) must be entered on the registry within two business days of confirming those values. The distributor may change the ICP status to new at any time before the retailer changes the ICP status.

Nova receives applications for new ICPs from Nova's retail team once agreement with the customer has been reached, and the details required to create the ICP are available. The ICP is created using the Gas Registry ICP generator spreadsheet and provided to the Nova retail team.

Installation work is scheduled and completed by Nova's technicians and contractors, and work request and completion paperwork is sent by email. All information required is populated on the registry as soon as possible after connection.

I checked all five ICPs which were created in 2018 or later and confirmed that the registry was updated on time and accurately.

Rule	Commentary
51.2 The distributor must create an ICP or advise of the reasons if an ICP cannot be created with three business days of receiving a request.	All ICPs were created within three business days of receiving a request for ICP creation from Nova's retail team.

Rule	Commentary
51.3 The distributor must update the ICP, creation date, distributor, and address on the registry within two business days of receiving confirmation the ICP is connected.	All ICPs had the required information populated prior to the ICP being connected.
53.1 The distributor must update the registry parameters within two business days of identifying the parameters, so that the registry can change the ICP status to READY-GIR status.	All ICPs had the required information populated prior to the ICP being connected.

The previous audit recommended that Nova keep a record of retailer requests for new ICPs, and the recommendation has been implemented.

4. Registry information management (Rule 58.1 and 58.2)

The distributor must use its reasonable endeavours to maintain current and accurate information in the registry in relation to the ICPs and the ICP parameters for which it has responsibility.

New connections and installation changes are completed by Nova's contractors and technicians. Work requests and job completion details are transferred via email, and CMMS and the registry are updated on receipt of job completion details. The registry is usually updated first to ensure that the timeframes set out in the rules are met.

Nova's distributor information is updated manually using the registry web interface. Registry attributes and event dates are determined from paperwork returned from the field. As part of the update process the user confirms that the update is successful; acknowledgement files are not separately reviewed.

Some distributor maintained fields on the registry are excluded from CMMS. I viewed changes in the CMMS test system which will add the fields recorded on the registry which are not currently recorded in CMMS. Once the new fields are live and data in all CMMS fields recorded on the registry has been populated and cleansed, Nova intends to create an extract to produce gas registry updates which will manually be transferred to the registry. These changes are expected to be material, and Nova is expected to undergo a major change audit before the changes are implemented.

The following fields are recorded on the registry but not in CMMS:

Registry field excluded from CMMS	Comment
ICP type	The ICP type is "GN" for all ICPs on Nova's networks
Installation details	This is an optional notes field on the registry
Load shedding category	
Loss factor code	The loss factor is "NA" for all ICPs on Nova's networks
Maximum hourly quantity	The MHQ is recorded as zero for most ICPs
Network price details	This is an optional notes field on the registry
Physical address postcode	The postcode can be derived from other address information

A registry list is imported into CMMS daily, and a daily discrepancy report for network and metering data is produced. The report contains the following distributor maintained fields:

- ICP,
- network owner,
- gate,
- network pressure, and
- ICP status.

ICPs only appear on the discrepancy report if there is a discrepancy between the values recorded in CMMS and on the registry, and the fields are compared by the report process. The following distributor discrepancies were included in the reports provided for 27 November 2020 and 21 January 2021:

- ICP not found in CMMS,
- ICP not found in registry list,

- ICP status,
- gas gate, and
- network pressure.

Reported discrepancies are investigated to confirm the correct values before CMMS and/or the registry is updated as required. I saw evidence that the number of discrepancies is reducing over time. The majority of discrepancies on the report do not relate to distributor fields maintained by Nova.

I found that not all discrepancies are reviewed and resolved daily, and some discrepancies found during the audit did not appear on the reports during the date range that the issue was present. The validation process and recommendations for improvement are discussed further in **section 4.9**.

Notification files are not reviewed, reliance is placed on the discrepancy report to identify updates made by other parties which affect Nova.

Recommendation	Audited party comment
Complete a major change audit prior to automation of the registry update process.	<p>Response: Agree</p> <p>Comments: Nova Networks have added all fields recorded in the Gas Registry to our CMMS. No PROD automation will be carried out until UAT is completed and audited</p>

Each of the Meter Owner parameters are discussed individually in **sections 4.1 to 4.8** below.

4.1 Network pressure

Network pressure is held in CMMS, and verified on entry by checking the Mapviewer GIS information.

Network pressure is recorded on the daily discrepancy report discussed in **section 4.9**, but ICPs with discrepancies between CMMS and the registry in this field are not always included in the report unless there is also a discrepancy in another reported field. I found three ICPs (0000071569NA754, 0001549724NA7EB and 0000073584NA1F5) where the network pressure differed between CMMS and the registry which were not included in the discrepancy report and were not resolved until the audit.

Network pressure accuracy

I checked the accuracy of network pressure by identifying streets where less than 60% of the ACTC or ACTV ICPs on a particular street had one pressure and the remaining ICPs had a different pressure. Five streets were identified, and all 18 connected ICPs were checked:

- ICPs 0000073200NAAB7, 0000073220NA7E2 and 0000073162NA6C1 had incorrect network pressures recorded in CMMS and the registry,
- ICP 0000071569NA754 had an incorrect network pressure recorded in CMMS, but the correct pressure recorded on the registry,

- ICPs 0001549724NA7EB and 0000073584NA1F5 had incorrect pressures recorded on the registry, but correct pressures recorded in CMMS, and
- the other 12 ICPs had correct pressures recorded in CMMS and on the registry.

All ICPs with incorrect network pressures were corrected during the audit.

Where the registry pressure was incorrect, there could be an impact on the retailer's Joule Thomson Effect calculation which will vary depending on the ground temperature applied. The minimum difference in the Joule Thomson Effect adjustment was +0.03°C and the maximum was +1.15°C. Even at low ground temperatures, this is not expected to result in differences outside the allowable threshold set in NZS 5259.

I rechecked the 45 ICPs where network pressure discrepancies over 50 kPa between CMMS and the registry were identified during the previous audit. 22 of the ICPs had their network pressure corrected prior to the audit, and 23 ICPs had backdated corrections processed during the audit.

Non-Conformance	Description	Audited party comment
<p>Regarding: GSAR 58.1</p> <p>Control Rating: Adequate</p>	<p>Five ICPs had incorrect pressures recorded on the gas registry, which were updated during the audit.</p> <ul style="list-style-type: none"> • ICPs 0000073200NAAB7, 0000073220NA7E2 and 0000073162NA6C1 had incorrect network pressures recorded in CMMS and the registry. • ICPs 0001549724NA7EB and 0000073584NA1F5 had incorrect pressures recorded on the registry, but correct pressures recorded in CMMS. 	<p>Response: Agree</p> <p>Comments: On-going CMMS development and active management of discrepancy reporting will reduce these discrepancies</p>

4.2 ICP altitude

ICP altitude is viewable in CMMS' Mapviewer, and verified by checking the Mapviewer GIS information before updating the registry. ICP altitude is not included in the daily discrepancy report discussed in **section 4.9**.

ICP altitude accuracy

It is a distributor responsibility to populate the registry with correct altitude information to support compliance with NZS 5259. NZS 5259 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, and
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."

I assessed the accuracy of the altitudes recorded on the registry on 18 September 2020 against Google Earth altitudes for a sample of ICPs. 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. Point 2 above recommends altitude figures are determined to within $\pm 10\text{m}$ where practicable. To allow for these margins, I have checked that the registry altitude is within $\pm 20\text{m}$ of the Google Earth altitude.

A sample of 50 ICP altitudes were checked:

- I created pivot tables and charts to analyse altitudes for all ACTC and ACTV ICPs at each gas gate, and 14 outlying ICPs across all Gas Gates were checked on Google Earth; all 14 outliers were within $\pm 12\text{m}$ of the Google Earth data, and
- I manually checked a further 36 ICPs selected at random, and the altitude was within $\pm 15\text{m}$ of the Google Earth data.

No ICPs had a difference of more than $\pm 15\text{m}$ or would cause an altitude factor difference of more than $\pm 0.2\%$. All were within the thresholds set out in NZS 5259.

I rechecked the three ICPs where altitude differences between Google Earth and CMMS were more than $\pm 20\text{m}$ at the time of the previous audit. One ICP was decommissioned in 2018, and the other two ICPs have had corrections processed and now have altitudes within $\pm 1\text{m}$ of the Google Earth altitude.

4.3 Gas gate

Gas gate is held in CMMS, and verified on entry by checking the Mapviewer GIS information.

Gas gate is recorded on the daily discrepancy report discussed in **section 4.9**, and exceptions are reported. The only exceptions identified in the reports provided for November 2020 and January 2021 related to off network ICPs where Nova is the responsible meter owner, which are outside the scope of the distributor audit.

Gas gate accuracy

I checked the accuracy of gas gates by checking for streets where some of the ACTC or ACTV ICPs on a particular street had one gas gate and the remaining ICPs had a different gas gate. I also compared the town recorded in addresses for ACTC and ACTV ICPs. I did not identify any exceptions.

4.4 Load shedding category

Load shedding categories are advised by Nova’s retail team as part of the ICP application process, and requests for changes to load shedding categories are provided by email. Nova’s distribution team validates the requested categories against information that they hold, such as the customer name, industry, and metering type, to determine whether they appear valid. They do not hold consumption information for ICPs, so do not validate the requested categories against expected or actual consumption.

Load shedding category is not recorded in CMMS or included in the daily discrepancy report discussed in **section 4.9**.

Load shedding category accuracy

The load shedding category identifies the position of the ICP's consumer installation in the hierarchy for emergency curtailment of gas. Load shedding categories and codes are determined and published by the industry body from time to time and are consistent with the curtailment bands under Schedule 3 of the Gas Governance (Critical Contingency Management) Regulations 2008.

The categories are shown below.

Category Code	Consumption in Gigajoules (GJ) or Terajoules (TJ)	Load Shedding Category (ie Curtailment Band) Description
0	N/A	Any consumer installation, to the extent that gas is used for injection into gas storage
1	More than 15 TJ per day	Any consumer installation supplied directly from the transmission system and that has an alternative fuel capability
2	More than 15 TJ per day	Any consumer installation supplied directly from the transmission system and that does not have an alternative fuel capability
3	More than 10 TJ per annum and up to 15 TJ per day	Large industrial or commercial consumer installation
4	More than 250 GJ per annum and up to 10 TJ per annum	Medium-sized industrial or commercial consumer installation
5	More than 2 TJ per annum	Any consumer installation (whether or not in bands 0 to 4), to the extent that an essential services designation applies to the installation
6	250 GJ or less per annum	Small commercial consumer installation
7	Any	Any consumer installation (whether or not in any of curtailment bands 0 to 4), to the extent that a critical care designation applies to the consumer installation
DOM	Any	Domestic consumers

I checked the registry list as of 18 September 2020 for obvious discrepancies between allocation groups, property descriptions, and load shedding categories for ACTC and ACTV ICPs. This analysis identified some potential discrepancies, which are summarised in the table below. Nova investigated all of these discrepancies and the "Actual" column shows one confirmed discrepancy relating to ICP 0000073192NA6D6. ICP 0000073192NA6D6 is expected to consume over 10,000 GJ per annum and does not meet the requirements for load shedding category 4.

Scenario	Possible	Actual
Load shedding category 6 with allocation group 4	2	-
Load shedding category 4 with allocation group 1 or 2	5	1
Load shedding category 4 with allocation group 6	9	-
Load shedding category DOM with a meter category above NV10	1	-
Load shedding category DOM with a property description indicating otherwise	-	-

I rechecked discrepancies identified during the previous audit and found all had been resolved, or the connection status had been updated to GPM (inactive permanent).

I recommend Nova implements further monitoring of consumption and allocation groups to identify potential load shedding category discrepancies.

Recommendation	Audited party comment
<p>Check load shedding categories for reasonableness when changes are requested, and at least quarterly, and follow up any exceptions with Nova's retail team.</p> <p>The load shedding categories can be validated against the allocation group, metering price category and type, and property description/ANZSIC code.</p>	<p>Response: Agree</p> <p>Comments: On-going CMMS development and active management of discrepancy reporting will reduce these discrepancies</p>

Non-Conformance	Description	Audited party comment
<p>Regarding: Rule 58.1</p> <p>Control Rating: Adequate</p>	<p>ICP 0000073192NA6D6 has load shedding category 4 assigned but is expected to consume over 10,000 GJ per annum and does not meet the requirements for load shedding category 4.</p>	<p>Response: Agree</p> <p>Comments: On-going CMMS development and active management of discrepancy reporting will reduce these discrepancies</p>

4.5 Maximum hourly quantity

MHQ is not recorded in CMMS or included in the daily discrepancy report discussed in **section 4.9**. Where populated, the MHQ is calculated based on the meter capacity.

MHQ accuracy

The maximum hourly quantity is the maximum quantity of gas, in cubic metres, that the gas-consuming equipment at the consumer installation is capable of drawing per hour. The value is distinct from the capacity of the gas service pipe or metering equipment serving the consumer installation. This field is mandatory only where MHQ is used to determine the distributor's network

charges and it may be conveyed by means of a 'disclosure on application' code in accordance with rule 50.

Nova is a private pipeline owner and there is no requirement for pricing categories to be recorded for its ICPs. All ICPs have network price category DOA assigned, and MHQ is not used to determine network charges.

MHQ is recorded on the registry for seven active ICPs. I confirmed that the MHQ was correctly entered for six ICPs, and the MHQ was corrected from 80 to 106 for ICP 0000071521NA7E5 during the audit. The error has no impact on gas conversion or compliance with NZS 5259.

Non-Conformance	Description	Audited party comment
<p>Regarding: GSAR 58.1</p> <p>Control Rating: Effective</p>	<p>ICP 0000071521NA7E5 had an incorrect MHQ recorded on the registry and was updated during the audit.</p>	<p>Response: Agree</p> <p>Comments: On-going CMMS development and active management of discrepancy reporting will reduce these discrepancies</p>

4.6 Physical address

Physical address information is recorded in CMMS and the registry, and is not included in the daily discrepancy report discussed in **section 4.9**.

When creating ICPs, Nova validates addresses by checking the application details against their GIS system, which contains LINZ data. If there are any discrepancies, they are queried with the applicant.

Physical address accuracy

The physical address assigned by the distributor to the ICP's consumer installation, so that the ICP can be unambiguously identified with the consumer installation, in the registry.

I checked the registry list as of 18 September 2020 for incomplete and duplicated addresses for ACTC and ACTV ICPs.

- 29 ACTC ICPs had addresses which were not readily locatable and did not include a physical address unit, physical address number or property name. All were created prior to the audit period, and were corrected to unique addresses during the audit.
- 24 ACTC ICPs had duplicate addresses, and were created prior to the audit period. Ten were corrected to unique addresses during the audit. The remaining 14 ICPs are situated in buildings with more than one meter in close proximity, and the meter number is relied upon to determine the correct location.

I confirmed that all ICPs created during the audit period had unique and readily locatable addresses.

Non-Conformance	Description	Audited party comment
<p>Regarding: Rule 58.1</p> <p>Control Rating: Effective</p>	<p>29 ICPs had addresses which were not readily locatable, and were corrected during the audit.</p> <p>24 ICPs had duplicate addresses recorded. Ten were updated to be unique during the audit, and the other 14 ICPs genuinely have more than one meter in the same location and are distinguished by their meter number.</p>	<p>Response: Agree</p> <p>Comments: On-going CMMS development and active management of discrepancy reporting will reduce these discrepancies</p>

4.7 Decommissioned status (Rules 59.11 and 59.12)

Decommissioned status (DECR) may only be assigned where:

- the ICP is removed from future switching and reconciliation processes, and
- any associated consumer installation is no longer connected to the distribution system.

The decommissioned ICP status may only be changed to inactive-permanent (INACP).

Nova's policy is to only update the ICP status from INACP to DECR if the premises is demolished, and the ICP will not be used again. If an ICP moves from Nova's bypass network to the local open access network, Nova will leave the ICP at INACP status so that the ICP can be moved to active status if supply through the Nova network is resumed.

Review of the event detail report for 19 September 2018 to 18 September 2020 found no ICPs were updated to DECR status during the period. One ICP is currently at DECR status (updated in 2015), and I confirmed that the status was correctly applied.

17 ICPs are at INACP-GPM status which have not been decommissioned, because the building has not been demolished. No evidence of incorrect or late updates to decommissioned status were found.

4.8 Connection statuses (Rule 60)

Connection status is held in CMMS. Status is recorded on the daily discrepancy report discussed in **section 4.9**.

Connection status accuracy

The distributor must ensure the correct status change date is recorded in the registry. The registry list as of 18 September 2020 was reviewed and no exceptions were identified:

- 17 ICPs were at INACP-GPM status, and have not been decommissioned because supply may return to the Nova network,
- no ICPs were at NEW or READY status, and
- one ICP had DECR status recorded and was decommissioned in 2015.

Review of the event detail report for 19 September 2018 to 18 September 2020 found all status updates related to updates to NEW and READY for new connections, which are discussed in **section 3**. No evidence of incorrect statuses or status dates, or late updates were found.

4.9 Registry validation and correction (Rules 61.1 and 62)

If the distributor becomes aware that registry information is incorrect or requires updating, the responsible distributor must update or correct the registry as soon as practicable.

The distributor registry report should be reviewed, and any corrections required should be entered on the registry by 4pm on the 15th business day of the month.

Nova carries out a daily validation to identify and resolve discrepancies identified. As discussed in **section 4**, a registry list is imported into CMMS daily, and a daily discrepancy report for network and metering data is produced. ICPs only appear on the discrepancy report if there is a discrepancy between the values recorded in CMMS and on the registry, and the fields are compared by the report process. The following distributor discrepancies were included in the reports provided for 27 November 2020 and 21 January 2021:

- ICP not found in CMMS,
- ICP not found in registry list,
- ICP status,
- gas gate, and
- network pressure.

Reported discrepancies are investigated to confirm the correct values before CMMS and/or the registry is updated as required. I saw evidence that the number of discrepancies is reducing over time. The majority of discrepancies on the report do not relate to distributor fields maintained by Nova.

I found that not all discrepancies are reviewed and resolved daily, and some network pressure discrepancies found during the audit did not appear on the reports during the date range that the issue was present, as described in **section 4.1**. The monthly distributor registry report is not separately reviewed.

Some distributor maintained fields on the registry are excluded from CMMS. I viewed changes in the CMMS test system which will add the fields recorded on the registry which are not currently recorded in CMMS. Once the new fields are live and data in all CMMS fields recorded on the registry has been populated and cleansed, Nova intends to create an extract to produce gas registry updates which will manually be transferred to the registry. These changes are expected to be material, and Nova is expected to undergo a major change audit before the changes are implemented. The following fields are recorded on the registry but not in CMMS:

Registry field excluded from CMMS	Comment
Altitude	The altitude is visible in the Mapviewer, but not stored in a field in CMMS
ICP type	The ICP type is "GN" for all ICPs on Nova's networks
Installation details	This is an optional notes field on the registry
Load shedding category	The load shedding category varies by ICP and is not recorded in CMMS

Registry field excluded from CMMS	Comment
Loss factor code	The loss factor is "NA" for all ICPs on Nova's networks
Maximum hourly quantity	The MHQ is recorded as zero for most ICPs
Network price details	This is an optional notes field on the registry
Physical address postcode	The postcode can be derived from other address information

I recommend that Nova proceeds with their changes to add the missing registry fields to CMMS, and cleanse the data to ensure that it is consistent with the registry requirements. I also recommend that:

Recommendation	Audited party comment
The daily discrepancy report should be expanded to include discrepancies between CMMS and the registry for all distributor maintained fields (including pricing and addresses), once all these fields are live in CMMS.	Response: Agree Comments: CMMS development underway
Until the daily discrepancy report is expanded to include all fields and daily discrepancies are consistently resolved, the monthly distributor registry report should be compared to CMMS and any discrepancies should be resolved by 4pm on the 15th business day of the month.	Response: Disagree Comments: We current run a daily discrepancy report between CMMS and gas registry. Now that all Gas Registry files are in CMMS then we will actively manage and correct discrepancies on a weekly basis
Once the registry update process is partially automated (i.e. updates are no longer individually processed through the web interface), review acknowledgement files to confirm that the updates have been processed successfully.	Response: Agree Comments: Yes we will do this

Non-Conformance	Description	Audited party comment
Regarding: Rule 58.1 Control Rating: Adequate	Network pressure corrections for 0000073200NAAB7, 0000073220NA7E2, 0000073162NA6C1, 0001549724NA7EB and 0000073584NA1F5 were not made as soon as practicable. The late updates did not result in errors outside the allowable thresholds in NZS 5259. 23 ICPs were found to have incorrect network pressures during the	Response: Agree Comments: On-going CMMS development and active management of discrepancy reporting will reduce these discrepancies

Non-Conformance	Description	Audited party comment
	<p>previous audit, and were updated during this audit. The affected ICPs were 0000073254NA3B5, 0000073220NA7E2, 0000071569NA754, 0000073198NA447, 0000073234NAC45, 0000072849NADE9, 0000071576NA227, 0000122483NA383, 0000092681NA364, 0000071393NA3D4, 0000071410NA55C, 0000071411NA919, 0000071473NA66C, 0000071484NABB1, 0000071537NACC7, 0000071540NA450, 0000071548NA644, 0000071615NA214, 0000072141NA6F4, 0000072161NABA1, 0000074497NAAFC, 0000074498NA522, and 0000075044NA6DF.</p> <p>Reasonable endeavours were not used to maintain current and accurate information.</p>	

5. Creation and decommissioning of a gas gate (Rule 45.1 and 45.2)

If a distributor intends to create or decommission a gas gate, the distributor must, at least 20 business days before the creation or decommissioning takes effect, give notice of that gas gate creation or decommissioning. The notice must contain the gas gate codes, the creation or decommissioning date, the parent gas gate if applicable and the ICP identifiers affected.

No gas gates were created or decommissioned during the audit period, and Nova are aware of the notification requirements.

6. Management of network price category codes (Rule 46)

Each distributor must determine, publish, and maintain a schedule of its network price categories and the respective network price category codes and, except where the distributor requires disclosure on application in accordance with rule 50, the charges associated with each of those codes.

Nova is a private pipeline owner and there is no requirement for pricing categories to be recorded for its ICPs. All ICPs have network price category DOA assigned.

7. Management of loss factor codes

7.1 Distributors to determine loss factor codes (Rule 47.1 and 47.2)

Each distributor must publish and maintain a schedule of all the loss factors (if any) which apply to gas gates on the distributor's distribution system; and maintain the respective codes for those loss factors.

All ICPs which are not decommissioned have loss factor code NA (not applicable) applied. The loss factor codes were examined on the Gas Registry. No loss factor codes have been changed, added, or removed since NA was last updated in 2013.

7.2 The addition or deletion of loss factor codes (Rule 48)

If a distributor intends to add or delete any loss factor codes, the distributor must give at least 20 business days' notice to the registry operator, the allocation agent, and all retailers that will be affected by the change.

Nova are aware of the notification requirements. The loss factor codes were examined on the Gas Registry. No loss factor codes have been changed, added, or removed since NA was last updated in 2013.

8. Disclosure on application (Rule 50)

Disclosure on application may only be used where the participant does not have a reasonably practicable alternative method of protecting its commercial interest in that information, and to the extent necessary to reasonably protect that interest.

Requests for disclosure on application must be responded to within one business day, to confirm whether the information will be provided. The information must be provided within a further business day.

Nova's policy is to provide information requested on application as soon as possible, and provided examples which confirmed that the timeframes for information disclosure were met.

Recommendations

As a result of this performance audit, I recommend Nova:

- complete a major change audit prior to automation of the registry update process,
- check load shedding categories for reasonableness when changes are requested, and at least quarterly, and follow up any exceptions with Nova's retail team,
- expand the daily discrepancy report to include discrepancies between CMMS and the registry for all distributor-maintained fields (including pricing and addresses), once all these fields are live in CMMS,
- until the daily discrepancy report is expanded to include all fields and daily discrepancies are consistently resolved, the monthly distributor registry report should be compared to CMMS and any discrepancies should be resolved by 4pm on the 15th business day of the month, and
- once the registry update process is partially automated (i.e., updates are no longer individually processed through the web interface), review acknowledgement files to confirm that the updates have been processed successfully.

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 – Additional Nova Comments

Nova have reviewed this report and their comments are contained within its body.