PERFORMANCE AUDIT REPORT UNDER THE SWITCHING ARRANGEMENTS AND DOWNSTREAM RECONCILIATION RULES

Advanced Metering Services Limited as Meter Owner

Audit date: 19 to 21 March 2018

Report date: 10 July 2018

Under the Gas (Switching Arrangements) Rules 2008 and the Gas (Downstream Reconciliation) Rules 2008 the Gas Industry Company commissioned Langford Consulting to undertake a performance audit of Advanced Metering Services Limited in its role as meter owner. The purpose of the audit is to assess compliance with the rules and the systems and processes put in place to enable compliance.

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Executive Summary

Under the Gas (Switching Arrangements) Rules 2008 and the Gas (Downstream Reconciliation) Rules 2008 the Gas Industry Company commissioned Langford Consulting to undertake a performance audit of Advanced Metering Services Ltd (AMS) in its role as meter owner.

The purpose of the audit is to:

- assess compliance with the rules
- assess the systems and processes put in place to enable compliance with the rules

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

The summary of report findings shows that the AMS control environment, for the eight areas evaluated, is "effective" for five areas, "adequate" for two areas and "not adequate" for one area.

Six breach allegations are made in relation to AMS regarding the non-compliant areas and there are alleged breaches against several retailers for incorrect status and profile codes. The breach allegations are summarised in the following table. The following observations and recommendations are also made:

RECOMMENDATION: That AMS commence a routine check process to review the size of meter installed by their field service provider (FSP) against the information held about expected load to ensure gas measurement system (GMS) installations are correctly sized to ensure accuracy to the maximum permissible error (MPE) in NZS5259. AMS are already working on implementing such a process.

OBSERVATION: When designing a GMS for larger sites AMS engineers consider the MPEs of the individual components and ensure they are within the requirements of NZS5259 for the expected conditions, however no consideration is given to the MPE of the overall GMS.

RECOMMENDATION: AMS should ask its engineers to consider the interaction of components and the resulting compliance of the overall GMS with the MPE requirements of NZS5259 when designing bespoke GMS for larger sites and request a sign off on the design to that effect.

RECOMMENDATION: The auditor recommends that AMS identify and separately log any registry participant requests for charge information as disclosure requests under rule 50 and record their responses in such a way that future auditors can assess compliance with rule 50.

Summary of breach allegations

Section	Summary of issue	Rules potentially breached
3.1	Failure to keep participant register information up to date – both the physical and postal addresses were out of date.	r10.1.1
4.1	For 15 ICPs out of 840 installed in October and November 2017, metering equipment wrongly sized for the possible load such that the margin of error may not have been within the MPE accuracy requirements of NZS5259 for flow rates that might be reasonably anticipated.	Reconciliation rules r27.1.2.
4.4	In a sample of 46 new ICPs, information for 3 ICPs had not been entered into the registry within 2 business days of confirmation that the metering equipment had been installed.	r56.2
4.5	16 ICPs with the incorrect number of register reading digits.	r58.1
4.5	Breaches are alleged against the following retailers for having the wrong status codes at ICPs with no meter: • Contact Energy for 5 ICPs • Genesis Energy (mass market) for 64 ICPs • Energy Online (Genesis) for 1 ICPs • Pulse Utilities for 2 ICPs	r58.1
4.5	28 active ICPs where the retailer has provided information about installed meters, but the registry shows the meter as being REMOVED or NOT FOUND.	r58.1
4.5	Out of a sample of 49 established ICPs one was found to have an incorrect meter pressure in the registry.	r58.1
4.5	A breach is alleged against the following retailers for having a profile code of XTOU for ICPs where there was no time of use meter installed: • Energy Online (Genesis) for 30 ICPs • Genesis Energy (mass market) for 2 ICPs • Contact Energy for 1 ICP	r61.1
4.5	A breach is alleged against OnGas (Vector) for having an incorrect responsible meter owner in the registry for 2 ICPs	58.1

Summary of report findings

Issue	Section	Control Rating (refer to appendix 1 for definitions)	Compliance Rating	Comments
Participant registration information	3.1	Adequate	Not Compliant	There were current contacts, but the physical and postal address details were not up to date
Obligation to act reasonably	3.2	Effective	Compliant	No examples of AMS acting unreasonably were found
Obligation to use registry software competently	3.3	Effective	Compliant	No examples of AMS using software incompetently were found
Compliance with NZS5259	4.1	Adequate	Not compliant	It is recommended AMS instigate reporting to confirm their FSP installs correctly sized meters. They should also consider the overall MPE of their more complex GMS.
Provision of metering price codes	4.2	Effective	Compliant	No issues found with this process
Disclosure of ICP information	4.3	Not adequate	Compliant	Compliance has been inferred by a lack of alleged breaches by participants. However, it is recommended AMS initiate a log of disclosure applications, so compliance can be verified
Registry information for new ICPs	4.4	Effective	Not compliant	In a sample of 46 new ICPs 3 did not have the registry information entered within the required 2 business days.
Maintenance of ICP information	4.5	Effective	Not compliant	A few errors in the registry information were found, but they were minimal compared with the number of GMS owned by AMS.

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1. Introduction

Under the Gas (Switching Arrangements) Rules 2008 (the switching rules) and the Gas (Downstream Reconciliation) Rules 2008 (the reconciliation rules) the Gas Industry Company commissioned Langford Consulting to undertake a performance audit of Advanced Metering Services Limited (AMS) in its role as meter owner.

The purpose of the audit is to:

- assess compliance with the rules
- assess the systems and processes put in place to enable compliance with the rules

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

The engagement commenced on 19 December 2017 and involved a site visit to the AMS offices in Auckland on 19 to 21 March 2018.

The focus of the audit is predominantly the switching rules but extends to the reconciliation rules with respect to AMS's role as meter owner, in particular to rules 26.5 and 27 of the reconciliation rules. These rules specifically require meter owners to support compliance with and verify accuracy in accordance with NZS5259. Compliance with this standard is therefore included within the scope of this audit.

2. General Compliance

2.1 Switch Breach Report

There were no breaches for AMS in the period 1 January 2014 to the end of 2017.

2.2 Summary of previous audit

This is the first audit for AMS under these rules with respect to its meter owner responsibilities.

2.3 Provision of Information to the Auditor

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

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

3. General Obligations

3.1 Participant registration information

The AMS participant information was reviewed. The phone and e-mail details were accurate and current, although AMS took the opportunity of this review to make one revision to give a more direct route to the correct business area. The addresses however were out of date. AMS have now revised these.

> **ALLEGED BREACH:** Failure to keep participant register information up to date – both the physical and postal addresses were out of date (rule 10.1.1).

3.2 Obligation to act reasonably

No instances of AMS acting unreasonably were found as a part of this audit.

3.3 Obligation to use registry software competently

No instances of AMS using registry software incompetently were found as a part of this audit.

4. Obligations as Meter Owner

AMS uses three systems to manage its processes. Salesforce (also known as Servicemax or GMMS but referred to as Salesforce in this report) holds the information used in the registry, SAP records their planned maintenance and Siebel manages their work order process. The registry is kept up to date by an automated update from Salesforce in close to real time. They use the installation ID as the unique reference which links records to the ICP. They used to use Gentrack for asset management so for some older sites they have history from that system.

Salesforce receives data from the registry to keep the network pressure, altitude, gas gate and status code information up to date. The number of register reading digits, multiplier and meter pressure fields are completed by data entry. All e-mail enquiries into the gas enquiries inbox are automatically tracked and case managed through Salesforce.

Registry updates from Salesforce are automated, work lists are created if there is a data clash based on pre-set rules. They also have a suite of regular monthly reports which they run to check for data quality issues. These look for data inconsistencies which are then worked and resolved. This data quality reporting is relatively new and is continuously being improved.

AMS uses Electrix as its field service provider (FSP) but Wells I+E completes electrical re-certification. AMS and their FSP both use the same call centre for reactive (emergency) call management. The gas metering responsibilities within AMS are split between two teams, one focusing on data quality, the FSP and the retailer relationships and one focusing on the TOU sites.

The AMS fleet of meters include rotary, diaphragm and turbine meters. They own approximately 220,000 GMS of which approximately 140,000 were purchased from Contact in July 2013. 95% of their fleet are for flows less than 10 scm/hour, approximately 300 are TOU of which about 100 have telemetry.

4.1 Compliance with NZS 5259

AMS have a suite of procedure documentation, which were made available to the auditor. In particular copies of the following were provided:

GMS1 GMS Design

GMS2 GMS capacities for standard AMS meter types

GMS28 GMS maintenance

Installation of correctly sized meters

Rule 27.1.1 of the downstream reconciliation rules requires every meter owner to ensure all metering equipment complies with NZS5259 and that metering equipment needs to have a margin of error less than that specified in NZS5259 to be considered accurate. (r27.1.2)

AMS hold the original data relating to the anticipated load for new ICPs in their Siebel system. Their procedure document GMS2 has a capacity table which indicates the GMS that should be installed for different anticipated loads and pressures to ensure their GMS comply with the maximum permissible error (MPE) requirements in NZS5259. As a part of the audit a sample of GMS that were installed in October and November 2017 were checked to see if the equipment installed by the FSP was correctly sized for the anticipated load against this table. This was not a check that AMS had routinely done before.

Of 840 ICPs 15 were found to have the incorrect meter size installed when compared to GMS2 AMS GMS Capacities which provide guidelines for GMS selection.

Of these 15, 13 had meters installed that were too small for the advised total load, although some by a very small margin. 12 of these were at residential installations with multiple appliances installed. E750 meters were installed but the next sized GMS up, an AL425 meter, should have been installed. Due to diversity factor, that is, not all appliances being switched on simultaneously or operating at maximum rated capacity when on, AMS have confirmed they have not received any communications regarding poor pressure issues at these sites.

For one small commercial installation, an AL425 was installed where an AL1000 should have been used. Similarly, diversity due to multiple appliances means this GMS is understood to be coping with the customer's usage.

For 2 other installs, a meter size that was larger than required was installed. Both have larger diaphragm meters, which have high rangeability, so are still very accurate even at the lower flowrates.

AMS have reviewed these sites and have decided that, for 6 sites, as diversity can be applied, and the total load is only marginally above the maximum capacity of the meter, to leave the current meter on site. The other sites are being changed to the correct size meter.

From this finding AMS is widening the size check sample to include December 2017 to March 2018 and beginning a routine monthly check.

AMS are working with their FSP to ensure there is no reoccurrence of this in the future.

> **Alleged breach:** That for 15 ICPs out of 840 installed in October and November 2017, AMS installed metering equipment wrongly sized for the possible load such that the margin of error may not have been within the maximum permissible error accuracy requirements of NZS5259 for flow rates that might be reasonably anticipated at these points (reconciliation rules 27.1.2).

1002034226QTE5F
1002023887QTC8E
1002036290QTE22
1002036544QTD68
1002037110QT9CB
1001294321QTF6A
1002037852QT2E2
1002039128QT4E7
1002039168QT642
1002039490QT144
1001294799NG50B
1002037385QT164
1001294919NG64A
1001294888NGCEC
1001294935NG801

> **RECOMMENDATION:** That AMS commence a routine check process to review the size of meter installed by their FSP against the information held about expected load to ensure GMS installations are correctly sized to ensure accuracy to the MPE requirements in NZS5259. AMS are already working on implementing such a process.

For larger sites a bespoke GMS is designed for the site by an engineer. The auditor was shown examples. It could be seen that consideration was given to the individual components being within the MPE requirements of NZS5259 but there was no consideration of whether the GMS in its entirety was within the MPE.

NZS 5259 says the following:

> ***2.2.4 Interaction of components***
>
> *Components of a GMS shall be selected and laid out in such a way that the MPEs specified in Table 2 are not exceeded.*
>
> ***2.6 GMS design, construction, and transportation***
>
> *All GMS components shall be selected and installed, and the GMS designed and constructed to ensure the overall accuracy requirements of Table 2 and Table 3 are met.*
>
> ***2.4.1 Management of gas measurement systems***
>
> *Gas measurement systems, including component devices and factors, shall be selected, designed, installed, operated, maintained, and applied to ensure that the requirements of Tables 1, 2, and 3 are met.*

NZS 5259 also suggests the following in appendix C, its compliance checklist:

2.2.4	*Interaction of components*	*GMS components selected to meet Table 3 MPEs*
2.4.1	*Management of gas measurement systems*	*Components when installed accurate to the requirements of Table 2 and Table 3*
2.6	*Selection and installation*	*Components selected and installed, to ensure the overall accuracy requirements of Table 2 and Table 3 are met*
2.6	*Design and construction*	*GMS designed and constructed to ensure the overall accuracy requirements of Table 2 and Table 3 are met*

The auditor therefore believes it is reasonable to expect that a meter owner considers the overall error of its GMS for compliance with the MPE requirements of NZS 5259, as well as that of the discrete components of the GMS.

> **OBSERVATION:** When designing a GMS for larger sites AMS engineers consider the MPEs of the individual components and ensure they are within the requirements of NZS5259 for the expected conditions, however no consideration is given to the MPE of the overall GMS.
>
> **RECOMMENDATION:** AMS should ask its engineers to consider the interaction of components and the resulting compliance of the overall GMS with the MPE requirements of NZS5259 when designing bespoke GMS for larger sites and request a sign off on the design to that effect.

Maintenance and testing

AMS has a process document which details their maintenance processes (GMS28), which was provided to the auditor. AMS also supplied the auditor with test results for the last 4 months from the First Gas and the Landis and Gyr laboratories. These are received weekly and added to a master record. This included acceptance testing for newly purchased meters.

AMS schedule their planned meter maintenance out of SAP. Their FSP have access to these SAP records and this generates the jobs for the FSP to complete the field maintenance each month. Note that AMS do not schedule planned maintenance for sites with loads less than 10 scm/hour, mainly domestic sites.

AMS provided the auditor with a spreadsheet of the planned maintenance work, together with what was completed over the most recent 6 months. AMS use this to review what is outstanding at the end of each month.

As a part of the on-site audit a sample of the records for 53 ICPs were reviewed using a combination of the Salesforce and SAP systems. These records enabled the confirmation of installation dates, maintenance results, meter pressures and dates of future planned maintenance. When appropriate, records for correctors as well as meters, including BVI checks, were also available. One issue was identified, where a subset of ICPs had maintenance dates scheduled out for a shorter period than they should have. This was an issue with a subset of ICPs which had not previously been identified by AMS. AMS have now extended the call horizon for these sites. No other issues arose from the review of maintenance and testing records.

AMS provided comment on this section 4.1, which is recorded in Appendix B of this final report.

4.2 Provision of metering price codes

As at January 2018 AMS has 284 metering price codes loaded on to the gas registry. The auditor reviewed the metering price codes published on the registry by AMS against the bill codes for the AMS meters in their own systems to see if there were any codes not loaded into the registry. No issues arose.

4.3 Disclosure of ICP information

AMS make all their meter price codes available on the registry but do not make the associated charges available publicly. Retailers are aware of the charges that relate to their ICPs through their contractual arrangements with AMS and there is supporting information in their invoicing.

AMS receives queries from participants on an ad hoc basis regarding charges. In effect these are applications under rule 50 although neither the requesting participant nor AMS have explicitly thought of them as such to date.

By not making metering charges publicly available AMS are effectively requiring participants to make disclosure applications under rule 50 if they wish to know GMS fees, although neither participant has to date recognised that this is what is occurring. As these are not being separately logged and monitored it is difficult for the auditor to assess whether AMS processes are compliant. However, on the basis that participants have not raised any alleged breaches about disclosure applications being required, being declined or not being responded to within the time requirements of rule 50, the auditor has assumed that the process is working appropriately.

The auditor would remind any participants that feel AMS is not complying with rule 50 regarding disclosure on application, whether by requiring disclosure on application unreasonably; by not responding to the initial request within 1 business day; by unreasonably withholding information or by not providing the requested information within a further business day, that they can allege a breach to the market administrator and have the matter investigated. They could also choose to comment on this report.

> **RECOMMENDATION:** The auditor recommends that AMS identify and separately log any registry participant requests for charge information as disclosure requests under rule 50 and record their responses in such a way that future auditors can assess compliance with rule 50.

4.4 Meter owner information for new ICPs

The new ICP process is initiated by the end user approaching either the distributor or a retailer. The retailer nominates the meter owner. If they nominate AMS this is done through Siebel. There may be some dialogue prior to the Siebel request if the consumer is very large.

The registry sends alerts to AMS as meter owner when the ICP is READY, which is of interest to AMS but doesn't drive their process. Their process is driven in the first instance by the retailer requesting a meter through Siebel, which in turn generates a work order for the FSP. AMS showed the auditor the Siebel screens which drive the meter request process. There were two versions, full Siebel when Vector was the distributor as both distributor and meter owner information needs to be captured, and Siebel 'lite' when Vector was not the distributor. Siebel catches location; desired meter pressure; maximum flow rate; if the site is above 10 TJs/annum and needs a corrector. If they need a bespoke price they end up with a new meter price code.

The entry of the meter information for the new ICP is driven by information provided by the FSP into Salesforce to confirm that the meter has been hung. The FSP collects the relevant data from site when they hang the meter and are responsible for entering this directly into Salesforce, which in turn automatically updates the registry in close to real time. The update of Salesforce by the FSP is considered by AMS to be confirmation that the installation has been completed.

The FSP is responsible for the entry of data relating to new ICPs. There is a quality check of this data entry done by the FSP, but the AMS team also manually review that the registry/Salesforce and related documents all match.

During the on-site audit a sample of 46 new ICPs created in the last 60 months were reviewed. These were reviewed to see if AMS had met the obligation of rule 56.2. Rule 56.2 requires that within 2 business days of confirming that the metering equipment has been installed, the meter owner enters into the registry the required information. The date recorded by the auditor as confirmation of installation was the date the FSP confirmed to AMS that the installation had been completed, which is not necessarily the date the installation occurred. The following exceptions were found:

ICP	Confirmation of installation	Entered in registry
1000542552PG06C	27/11/13	6/5/17
1001268120NG1F2	22/7/15	4/8/15
1001264090QT702	19/5/14	22/5/14

Alleged Breach: In a sample of 46 new ICPs, information for 3 ICPs had not been entered into the registry within 2 business days of confirmation that the metering equipment had been installed (rule 56.2).

Next the registry meter pressure and number of register reading digits were confirmed back to install dockets attached to the Salesforce record for meters that had been installed by AMS. Some of the meters had been installed by Contact so AMS didn't have the install sheet, but for many of these there was still additional information available, brought over from Contact systems and available through Siebel, to enable registry fields to be verified. There were only 3 ICPs out of a sample of 46 new ICPs where additional verification of information from site could not be found to verify registry data. Of those that could be verified no errors in the registry information were found.

Not all TOU data can be shared via the registry. Correctors have multiple sets of dials for corrected, uncorrected and mechanical and retailers need to know additional information such as that necessary to access telemetry services and to enable download (e.g. phone numbers and passwords). The information is shared with retailers by supplying the install sheet and otherwise via e-mail.

The AMS team has weekly communications with the retailers which include updates on new ICPs.

4.5 Maintenance of ICP information

In the last year AMS has been establishing a reporting capability to ensure the integrity of its data. At first, they found a lot of inconsistencies, but this is now improving. They also do monthly billing checks where there have been switches between retailers.

For changes on site, such as meter exchanges, the process for the data updates is similar to that for new ICPs. The FSP collect and enter the data and do quality checks, AMS manually confirm that the registry, Salesforce and the documentation match.

The auditor did an initial analysis of registry information for all active or ready ICPs with AMS as the meter owner (216k records) against an extract from AMS's own systems. The auditor focused on the

most significant fields of meter pressure, number of register reading digits and the multiplier. Note AMS assets all use a multiplier of "1", including their TOU assets.

In general, there was good alignment between the AMS system and the registry, but some differences were found. Further analysis of these differences identified most were a consequence of explainable reasons:

- Timing differences between when the extract was pulled from the registry and the report was pulled by AMS from its system
- TOU data where meter fields are expected to be blank but where AMS holds relevant information in their system
- Issues with the report extracted from the AMS system

Once these explainable differences had been accounted for there were some remaining differences regarding the number of register reading digits.

There were 16 ICPs where the number of register reading digits was different in the AMS system rather than the registry and it was confirmed that the AMS system was correct. AMS believe this was a "push" error in the automated update process. AMS have now updated the registry.

ICP				No of digits in registry	No of digits in AMS system
0000325201QTA08	ACTC	GAS	MET-7153395	4	5
0000328651QT421	ACTC	GAS	MET-7153475	4	5
0000338561QT83B	ACTC	GAS	MET-7153502	4	5
0000341661QTD21	ACTC	GAS	MET-7153505	4	5
0000344351QT8FC	ACTC	GAS	MET-7153517	4	5
0000346061QTF47	ACTC	GAS	MET-7153521	4	5
0000347181QTD59	ACTC	GAS	MET-7153590	4	5
0000347741QTCB0	ACTC	GAS	MET-7153542	4	5
0000353071QTA2B	ACTC	GAS	MET-7153555	4	5
0002000819NG156	ACTC	GAS	MET-7176484	4	5
0002003194NG0AE	ACTC	GAS	MET-7478047	4	5
0002085181QTB6F	ACTC	GAS	MET-6652870	4	5
0002233031QT3C8	ACTC	GAS	MET-6677606	4	5
0002278391QTCA1	ACTC	GAS	MET-6648817	4	5
0003002442NGE7F	ACTC	GAS	MET-7379421	5	4
0003012167NG381	ACTC	GAS	MET-7379401	5	4

Alleged breach: 16 ICPs with the incorrect number of register reading digits. (r58.1)

There were a number of ICPs where the retailer had a status of ACTC or ACTV but AMS had either noted in the registry the meter as being REMOVED or where there was no metering information as AMS believe they have never installed a meter. A breach is therefore alleged against the responsible retailer for inaccurate ICP status (rule 58.1).

Responsible retailer is CTCT

ICP	ICP Status Code	ICP Connection Status Code
0000183591QT11D	ACTV	GAS
0000196111QT797	ACTV	GAS
0000600021QTE64	ACTC	GAS
0000816411QT2AA	ACTV	GAS
0003023487NGCB2	ACTC	GAS

Alleged breach: A breach is alleged against Contact Energy for having the wrong status against 5 ICPs where there is no meter (rule 61.1).

Responsible retailer is GENG

ICP	ICP Status Code	ICP Connection Status Code
0001034426NG91B	ACTC	GAS
0001663161QT3C4	ACTC	GAS
0003004049NG96A	ACTV	GAS
0003034102NGD33	ACTV	GAS
0007002867NG082	ACTV	GAS
0006001327NG570	ACTV	GAS
0007002727NGD28	ACTV	GAS
0003036639NG85D	ACTV	GAS
0003015515NGE38	ACTV	GAS
0009000751NG0F5	ACTV	GAS
0003007296NG311	ACTV	GAS
0003014550NG072	ACTV	GAS
0003439162NG15C	ACTV	GAS
0003475138NGBD0	ACTV	GAS
0002028177NG0F9	ACTV	GAS
0004001919NG66B	ACTV	GAS
0002006967NGB54	ACTV	GAS
0003029151NGB3A	ACTV	GAS
0003021567NGC4C	ACTV	GAS
0002008069NG906	ACTV	GAS
0003017933NGDAE	ACTV	GAS
0001005590NG3AE	ACTV	GAS
0002008185NG9A6	ACTV	GAS

0003015505NG495	ACTV	GAS
0002000538NG54E	ACTV	GAS
0003021398NG583	ACTV	GAS
0003024181NGC58	ACTC	GAS
0003036102NGE73	ACTV	GAS
0001006344NGB00	ACTV	GAS
0001010802NG605	ACTV	GAS
0002005762NG2F0	ACTV	GAS
0003014899NGCC4	ACTV	GAS
0003002675NGE4A	ACTV	GAS
0003032680NG23E	ACTV	GAS
0003023728NG870	ACTV	GAS
0003066211NG869	ACTV	GAS
1001249978QT548	ACTV	GAS
0003018232NGB85	ACTV	GAS
0003037088NG10C	ACTV	GAS
0003064385NGCC0	ACTC	GAS
0003029072NG3AB	ACTV	GAS
0003017113NG0F6	ACTV	GAS
0003009047NG0D1	ACTV	GAS
0003010166NGC84	ACTV	GAS
0003007389NGF66	ACTV	GAS
0004003057NGD1C	ACTV	GAS
0004009318NGD24	ACTC	GAS
0002007733NG5FD	ACTC	GAS
0004008674NG56F	ACTV	GAS
0004008920NG362	ACTV	GAS
0004009337NGFAF	ACTV	GAS
0003001808NG0A7	ACTV	GAS
0003000808NG107	ACTV	GAS
0003004318NGE24	ACTV	GAS
0003012718NGF04	ACTV	GAS
0003066809NGADA	ACTV	GAS
0002036651QT5C6	ACTV	GAS
1001118469QT8C8	ACTV	GAS
0001549801QTE04	ACTV	GAS
0003018896NG89A	ACTV	GAS
0002000457NGC64	ACTV	GAS
1000754827QT231	ACTV	GAS
0001641121QTBEC	ACTV	GAS
0003017294NGB75	ACTC	GAS

Alleged breach: A breach is alleged against Genesis Energy (mass market) for having the wrong status against 64 ICPs where there is no meter (rule 61.1).

Responsible retailer is GEOL

ICP	ICP Status Code	ICP Connection Status Code
0003031758NG68C	ACTC	GAS

Alleged breach: A breach is alleged against Energy Online (Genesis) for having the wrong status against 1 ICP where there is no meter (rule 61.1).

Responsible retailer is PUNZ

ICP	ICP Status Code	ICP Connection Status Code
0003010665NGF46	ACTC	GAS
0004001473NGE02	ACTC	GAS

Alleged breach: A breach is alleged against Pulse Utilities for having the wrong status against 2 ICPs where there is no meter (rule 61.1).

In the draft report the alleged breach against Genesis Energy (mass market) included an additional 28 ICPs where the registry status was ACTC or ACTV but AMS had either noted in the registry the meter as being REMOVED or NOT FOUND. Genesis investigated these and found meters still active. The further information provided by Genesis has been passed on to AMS to investigate and can also be seen in Appendix B of this report. Consequently, an additional breach is added here for these 28 ICPs. AMS has also commented on this issue, which can also be seen in Appendix B.

ICP	ICP Status Code	ICP Connection Status Code
0000091881QT175	ACTC	GAS
0000197631QT460	ACTC	GAS
0000219051QT6C7	ACTC	GAS
0000242151QT357	ACTC	GAS
0000248681QTF57	ACTC	GAS
0000284791QT3CE	ACTC	GAS
0000327771QT910	ACTC	GAS
0000338221QT59C	ACTC	GAS
0001006606NGC25	ACTC	GAS

0001452736QT854	ACTC	GAS
0001578201QT482	ACTC	GAS
0001819921QTF83	ACTC	GAS
0002001226NG2DA	ACTC	GAS
0002003223NGCD5	ACTC	GAS
0002006133NG25B	ACTC	GAS
0002080581QT04E	ACTC	GAS
0002341791QT940	ACTC	GAS
0003000557NG3D9	ACTC	GAS
0003001098NGF4D	ACTC	GAS
0003001470NGBE2	ACTC	GAS
0003009942NG497	ACTC	GAS
0003013218NGBA1	ACTC	GAS
0003018677NG86E	ACTC	GAS
0003026879NG412	ACTC	GAS
0004009428NG5DE	ACTC	GAS
0007001732NG82A	ACTC	GAS
1001110695QTCC6	ACTC	GAS
1001161755QT934	ACTC	GAS

Alleged breach: 28 active ICPs where the retailer has provided information about installed meters, but the registry shows the meter as being REMOVED or NOT FOUND.

While on-site at AMS the auditor reviewed a sample of 49 established ICPs (i.e. created more than 60 months ago) to confirm the registry entries for meter pressure, the number of reading digits and the multiplier, including information available from site activities.

Of these 49 established ICPs one ICP had a meter pressure of 2.5kPa in the registry, which aligned with AMS own database. However, when the site paperwork was reviewed this showed that the meter pressure at this site was actually 2.75 kPa. The meter pressure at site was recorded in 2 separate occasions as having a meter pressure of 2.75 kPa. The registry has now been updated for this human error.

ICP	Meter Pressure in registry	Actual meter pressure (from site paperwork)
0003034186NG973	2.5 kPa	2.75 kPa

Alleged breach: Out of a sample of 49 established ICPs one was found to have an incorrect meter pressure in the registry (rule 61.1).

No other issues arose from this check.

During the audit, while extracting a sample of TOU sites, it was noticed that some ICPs were noted as "XTOU" in the registry by the retailer in the profile code field, while the meter owner has them marked as "N" in the TOU field. The auditor therefore reviewed all the ICPs where AMS was the meter owner and in total found 35 active ICPs marked by the retailer as XTOU where AMS had "N" in the TOU field. This is therefore an alleged breach against the retailer for the following ICPs.

ICP	Responsible Retailer
0000062181QTF00	GEOL
0000098771QT2CD	GEOL
0000226951QT782	GEOL
0000303261QT9F5	GEOL
0000381091QTF80	GEOL
0000525441QTFCC	GEOL
0000661431QTB30	GEOL
0000678261QT17F	GEOL
0000704001QT1DD	GEOL
0001002178NG361	GEOL
0001003125NG592	GEOL
0001010402NGA09	GEOL
0001850871QT9BA	GEOL
0002000153NG86B	GEOL
0002002464NG41C	GEOL
0002006110NG3CE	GEOL
0002128811QT525	GEOL
0002354871QT334	GEOL
0002376960QT655	GEOL
0003004607NGE52	GEOL
0003004725NGA86	GEOL
0003007504NG371	GEOL
0003009078NG8F7	GEOL
0003014732NG500	GEOL
0003040461NG73F	GEOL
1001154410QT3D1	GEOL
1001157853QT358	GEOL
1001289838QTA59	GEOL
1001294713NG2D0	GEOL
1001299510QT8F1	GEOL

Alleged breach: A breach is alleged against Energy Online (Genesis) as retailer for having a profile code of XTOU for 30 ICPs even though there was no time of use meter installed (rule 61.1).

ICP	Responsible Retailer
0002104321QT39E	GENG
0007002326NGD6C	GENG

Alleged breach: A breach is alleged against Genesis Energy (mass market) as retailer for having a profile code of XTOU for 2 ICPs even though there was no time of use meter installed (rule 61.1).

ICP	Responsible Retailer
0008000003NG1C3	CTCT

Alleged breach: A breach is alleged against Contact Energy as retailer for having a profile code of XTOU for 1 ICPs even though there was no time of use meter installed (rule 61.1).

In the draft report OnGas (Vector) were breached for having incorrect status code and profile code for 2 ICPs. On receipt of the draft report OnGas investigated and supplied further information, which can be seen in Appendix B, that these were direct connect sites. They have now changed the meter owner to First Gas and asked First Gas to add the relevant metering information. The alleged breach has therefore been revised as follows:

ICP	Responsible Retailer	Original meter owner	Revised meter owner
0008000029NGE07	GNGC	NGCM	VCTX
0008000033NG63B	GNGC	NGCM	VCTX

Alleged breach: A breach is alleged against OnGas (Vector) for having an incorrect responsible meter owner in the registry for 2 ICPs (rule 58.1).

The auditor asked about the AMS process for dealing with retailer/consumer queries and asked to see a log of issues raised over the last 6 months. A log was supplied which showed 229 jobs over the period. This showed the date received, retailer, issue, outcome and closure date. The log of jobs is worked every day and is reviewed monthly to ensure all jobs are being managed well. They are also reported monthly to the FSP.

The auditor was also given a log of metering related retailer complaints for the period since 1 July 2017 which totalled 9, of which only 3 were found by AMS to be valid.

The auditor reviewed the log of retailer jobs for the last 6 months. This contained 190 completed jobs. Of these completed jobs the average time to complete the job, from the data the retailer approved the price, was 7.6 days, 18 took more than 2 weeks to complete and the longest job took 83 days.

The notes relating to the completed job that took 83 days indicated that the FSP had been to site to do a pressure upgrade, but after completion of the job discovered the gasfitter was not ready for this to be done. The FSP returned to site to reinstall the old regulator and then again to finish the job. So, there were multiple visits to site during this 83 days, so this doesn't represent inactivity on the part of AMS.

The auditor asked how AMS support retailers requesting site upgrades to TOU. When retailers identify that a site needs to be upgraded to TOU the rules give the retailer 3 months to do this. If a retailer asks AMS to upgrade a site AMS provide them with a price. Once the retailer accepts the price AMS asks the FSP to start the job. Progress would be reported to retailers in their monthly issues sheet. Getting correctors can have a long lead time and is usually the cause of any delay.

5. Breach Allegations

Section	Summary of issue	Rules potentially breached
3.1	Failure to keep participant register information up to date – both the physical and postal addresses were out of date.	r10.1.1
4.1	For 15 ICPs out of 840 installed in October and November 2017, metering equipment wrongly sized for the possible load such that the margin of error may not have been within the MPE accuracy requirements of NZS5259 for flow rates that might be reasonably anticipated.	Reconciliation rules r27.1.2.
4.4	In a sample of 46 new ICPs, information for 3 ICPs had not been entered into the registry within 2 business days of confirmation that the metering equipment had been installed.	r56.2
4.5	16 ICPs with the incorrect number of register reading digits.	r58.1
4.5	Breaches are alleged against the following retailers for having the wrong status codes at ICPs with no meter: • Contact Energy for 5 ICPs • Genesis Energy (mass market) for 64 ICPs • Energy Online (Genesis) for 1 ICPs • Pulse Utilities for 2 ICPs	r58.1
4.5	28 active ICPs where the retailer has provided information about installed meters, but the registry shows the meter as being REMOVED or NOT FOUND.	r58.1

4.5	Out of a sample of 49 established ICPs one was found to have an incorrect meter pressure in the registry.	r58.1
4.5	A breach is alleged against the following retailers for having a profile code of XTOU for ICPs where there was no time of use meter installed: • Energy Online (Genesis) for 30 ICPs • Genesis Energy (mass market) for 2 ICPs • Contact Energy for 1 ICP	r61.1
4.5	A breach is alleged against OnGas (Vector) for having an incorrect responsible meter owner in the registry for 2 ICPs	58.1

6. Conclusion

The summary of report findings shows that the AMS control environment, for the eight areas evaluated, is "effective" for five areas, "adequate" for two areas and "not adequate" for one area.

Six breach allegations are made in relation to AMS regarding the non-compliant areas and there are alleged breaches against several retailers for incorrect status and profile codes. The breach allegations are summarised in the following table. The following observations and recommendations are also made:

RECOMMENDATION: That AMS commence a routine check process to review the size of meter installed by their field service provider (FSP) against the information held about expected load to ensure gas measurement system (GMS) installations are correctly sized to ensure accuracy to the maximum permissible error (MPE) in NZS5259. AMS are already working on implementing such a process.

OBSERVATION: When designing a GMS for larger sites AMS engineers consider the MPEs of the individual components and ensure they are within the requirements of NZS5259 for the expected conditions, however no consideration is given to the MPE of the overall GMS.

RECOMMENDATION: AMS should ask its engineers to consider the interaction of components and the resulting compliance of the overall GMS with the MPE requirements of NZS5259 when designing bespoke GMS for larger sites and request a sign off on the design to that effect.

RECOMMENDATION: The auditor recommends that AMS identify and separately log any registry participant requests for charge information as disclosure requests under rule 50 and record their responses in such a way that future auditors can assess compliance with rule 50.

Appendix A – Control Rating Definitions

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

Appendix B – Comments on draft report

OnGas

OnGas have investigated the alleged breaches in section 4.5 of the draft report for 2 ICPs with the wrong status and profile codes and provided the following comment:

> *We can advise both GNGC sites listed in your report as being incorrect in the Gas Registry have now been updated. They are First Gas direct correct meters. We have:*
>
> - *updated the responsible meter owner to VCTX (First Gas)*
> - *had First Gas populate the metering information.*

Consequently, OnGas have been removed from these two alleged breaches in section 4.5 relating to incorrect profile and status codes and a new alleged breach of having an incorrect responsible meter owner has been added.

Genesis

Genesis have investigated their alleged breaches in section 4.5. In relation to the 93 ICPs with alleged incorrect status codes they have commented as follows:

> *The analysis of the ICPs has found:*
>
> - *28 GENG ICPs where we have an active meter on site.*
> - *62 where the staff processing the meter removal at our end had not completed status update. We have arranged for these to be completed and a reminder of process delivered to team responsible.*
> - *1 where removal was not processed at all, so will be corrected.*
> - *2 where we are investigating further (may require a field visit) as we have a record of a re-connection request after the meter removal on one, and a new connection requested on the GEOL ICP.*

Genesis supplied details of the 28 active meters, which has been passed on to AMS.

Consequently, the 28 ICPs with active meters have been removed from the draft alleged breach against GENG and a new alleged breach added for AMS for the active meters that are shown as meter REMOVED or NOT FOUND in the registry.

In relation to the alleged breach for incorrect profile codes Genesis commented as follows and the draft breaches remain:

> *For the ICPs noted as TOU, these are all historical data from sign up errors and have been corrected. The majority of these are EOL sign up errors and is an artefact of the billing system/process (standard process as to go back and correct at time). EOL is migrating to the Genesis billing platform in a few weeks so will inherit the tighter controls. The GENG errors*

were both ICPs that were TOU sites that downgraded and profile change was missed in process.

Advanced Metering Services Ltd

The AMS feedback responds to the comments on Maximum Permissible Error (MPE) under section 4.1 and provides an update on the 28 ICPs identified by Genesis Energy to have an active meter on site.

MPE under section 4.1 of the Draft Audit Report

Vector Advanced Metering Services (VAMS) disagree with the comments made on MPE under section 4.1 of the Draft Audit Report.

We select the components for our Gas Measurement Systems (GMS), taking into consideration the MPE requirements specified in NZS 5259:2015 (NZS 5259). In our GMS 1 Gas Measurement System (GMS) Design for Networks, we also take into consideration other aspects that contribute to the overall accuracy of a complete GMS. These include:

- *network pressure variations;*
- *maximum and minimum operating temperatures for meter, regulator, and where fitted, corrector;*
- *gas velocity at different areas of the GMS;*
- *filtration;*
- *positioning of pressure sensing points so as not to compromise manufacturers' minimum requirements;*
- *pipework configuration upstream and downstream of the meter, and regulator conforms with manufacturers' recommendations to ensure stable and accurate functioning of the GMS;*
- *positioning of thermowells (for correctors); and*
- *references to standards, including international standards for meter installation design.*

VAMS engage qualified engineers with significant industry experience who work collaboratively in designing and managing our GMS assets.

It is our view that we meet the requirements of NZS 5259 for GMS design and operation within our areas of responsibility. The application of fixed factors such as pressure, temperature, altitude, compressibility, and calorific value are beyond our control.

The Draft Audit Report indicates there were no issues relating to the testing of our new and removed meters, and ongoing maintenance of our existing GMS.

Through our suite of GMS processes and procedures, in particular GMS 1, we consider that we are compliant with the requirements of NZS 5259. We therefore have concerns around the comment in the Draft Audit Report that there was "no consideration of whether the GMS in its entirety was within MPE" (page 4). As indicated above, we believe we meet the MPE requirements within our immediate control, and note that there are other parties responsible for certain aspects that contribute to the overall MPE for gas measurement for an installation.

28 ICPs identified by Genesis Energy to have an active meter on site

VAMS are conducting a review of the 28 ICPs identified by Genesis Energy to have an active meter on site. Our review includes installation visits to confirm the status of these meters.

We will be liaising with Genesis Energy once we have obtained installation visit details, including confirming the status of these meters.