

**ELECTRICITY INDUSTRY PARTICIPATION CODE
METERING EQUIPMENT PROVIDER AUDIT REPORT**

For



Prepared by: Steve Woods – Veritek Limited

Date audit commenced: 11 February 2019

Date audit report completed: 16 July 2019

Audit report due date: 28-Feb-19

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EXECUTIVE SUMMARY

Legacy Metering Group Limited (LMGL) is a Metering Equipment Provider (MEP) and is required to undergo an audit by 28 February 2019, in accordance with clause 1(1)(b) of schedule 10.5.

The audit identified nine non-compliances.

The main issue found is that the statistical sampling processes for two populations of meters at 29,353 ICPs do not comply with the Code or with AS/NZS 1284.13. This audit concludes that certification for these metering installations is not valid. The issue has three main points, as follows:

1. Populations with different MEPs were combined into one population.
2. The additional three phase test point was originally excluded from the pass/fail calculation.
3. 16 of a sample of 116 meters were excluded from the pass/fail calculation. Seven of the 16 meters excluded had errors greater than 3%. The last two meters on the list were three phase and both had errors greater than 3%.

Additional information was provided by the Authority on 23/04/19 and LMGL on 24/04/19. This information was considered, and further comment is included in Sections 6.4, 7.13 and 8.1. There are minor changes to some findings, but the main issues are still present, particularly in relation to non-compliant statistical sampling processes.

Several issues were found with certification practices, as follows:

1. Some certification reports did not have prevailing load or register advance results recorded.
2. Some Category 2 installations were certified using the comparative method, but the uncertainty calculations did not take temperature into account.
3. Some Category 2 installations were certified without low burden being addressed.

Registry information accuracy and timeliness of updates has a high level of compliance.

The date of the next audit is determined by the Electricity Authority and is dependent on the level of compliance during this audit. The table below provides some guidance on this matter and recommends an audit frequency of three months. I recommend the Authority considers a longer period of six months to allow sufficient time to resolve the issues surrounding statistical sampling and Category 2 installations where recertification may be required.

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Provision of accurate information	2.5	11.2 and Clause 10.6	Invalid certification for two ICPs due to uncertainty being greater than 0.6% certification not corrected since the last audit	Moderate	Low	2	Disputed
Registry updates	3.2	2 of Schedule 11.4	185 registry updates later than 15 business days.	Moderate	Low	2	Identified
Metering Installation Design & Accuracy	4.3	4(1) of Schedule 10.7	Delta ATH not calculating uncertainty in accordance with the Code. Total uncertainty greater than 0.6% for ICPs 0000004050DE261 and 0000004057DEFAB.	Weak	Low	3	Investigating
Changes to registry records	4.10	3 of Schedule 11.4	Some records updated on the registry later than 10 business days.	Strong	Low	1	Identified
Provision of Registry Information	6.2	7 (1), (2) and (3) of Schedule 11.4	Some registry records incomplete or incorrect.	Strong	Low	1	Identified
Cancellation of certification	6.4	20 of Schedule 10.7	Certification cancelled for following ICPs and the registry was not updated within 10 business days: 5 ICPs with low burden 29,353 ICPs with incorrect statistical sampling certification applied	Weak	Medium	6	Disputed

Certification of metering installations	7.1	10.38 (a), clause 1 and clause 15 of Schedule 10.7	Certification expired or cancelled for 29,358 ICPs	Weak	Medium	6	Disputed
Certification tests	7.2	10.38(b) and clause 9 of Schedule 10.6	Register advance and prevailing load tests not conducted for four installations	Moderate	Low	2	Disputed
Inspections	8.1	45 of Schedule 10.7	Incorrect Category 1 sample selection	Moderate	Low	2	Cleared
Future Risk Rating						25	
Indicative Audit Frequency						3 months	

Future risk rating	1-2	3-6	7-9	10-19	20-24	25+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Recommendation	Description
Statistical sampling	7.13	Regarding Clauses 16(1) and (5) of Schedule 10.7	Ensure future statistical sampling separates single and three phase meters into separate populations.

ISSUES

Subject	Section	Recommendation	Description
		Nil	

1. ADMINISTRATIVE

1.1. Exemptions from Obligations to Comply With Code (Section 11)

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit observation

I checked the Electricity Authority website and I confirm there are no exemptions in place.

Audit commentary

I checked the Electricity Authority website and I confirm there are no exemptions in place.

1.2. Structure of Organisation

LMGL is operated by the two directors, Gary Nightingale and Mike Bickers.

1.3. Persons involved in this audit

Auditor: Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

LMGL personnel assisting in this audit were:

Name	Title
Gary Nightingale	Director
Mike Bickers	Director

1.4. Use of Agents (Clause 10.3)

Code reference

Clause 10.3

Code related audit information

A participant who uses a contractor

- *remains responsible for the contractor's fulfillment of the participants Code obligations*
- *cannot assert that it is not responsible or liable for the obligation due to the action of a contractor*
- *must ensure that the contractor has at least the specified level of skill, expertise, experience, or qualification that the participant would be required to have if it were performing the obligation itself.*

Audit observation

LMGL engages with ATHs to conduct certification activities. LMGL relies on these ATHs to act as agents for the management and storage of certification records. I requested certification reports for 50 ICPs to confirm their compliance and availability.

Audit commentary

Complete certification records were provided for all 50 installations

1.5. Hardware and Software

LMGL has a spreadsheet which is used as the master list containing all relevant metering fields.

They also have a workflow system. Backup is in accordance with standard industry protocols.

1.6. Breaches or Breach Allegations

LMGL confirmed there are no breach allegations related to the scope of this audit.

1.7. ICP Data

Metering Category	Number of ICPs
1	37,220
2	307
3	6
4	0
5	0
9	3

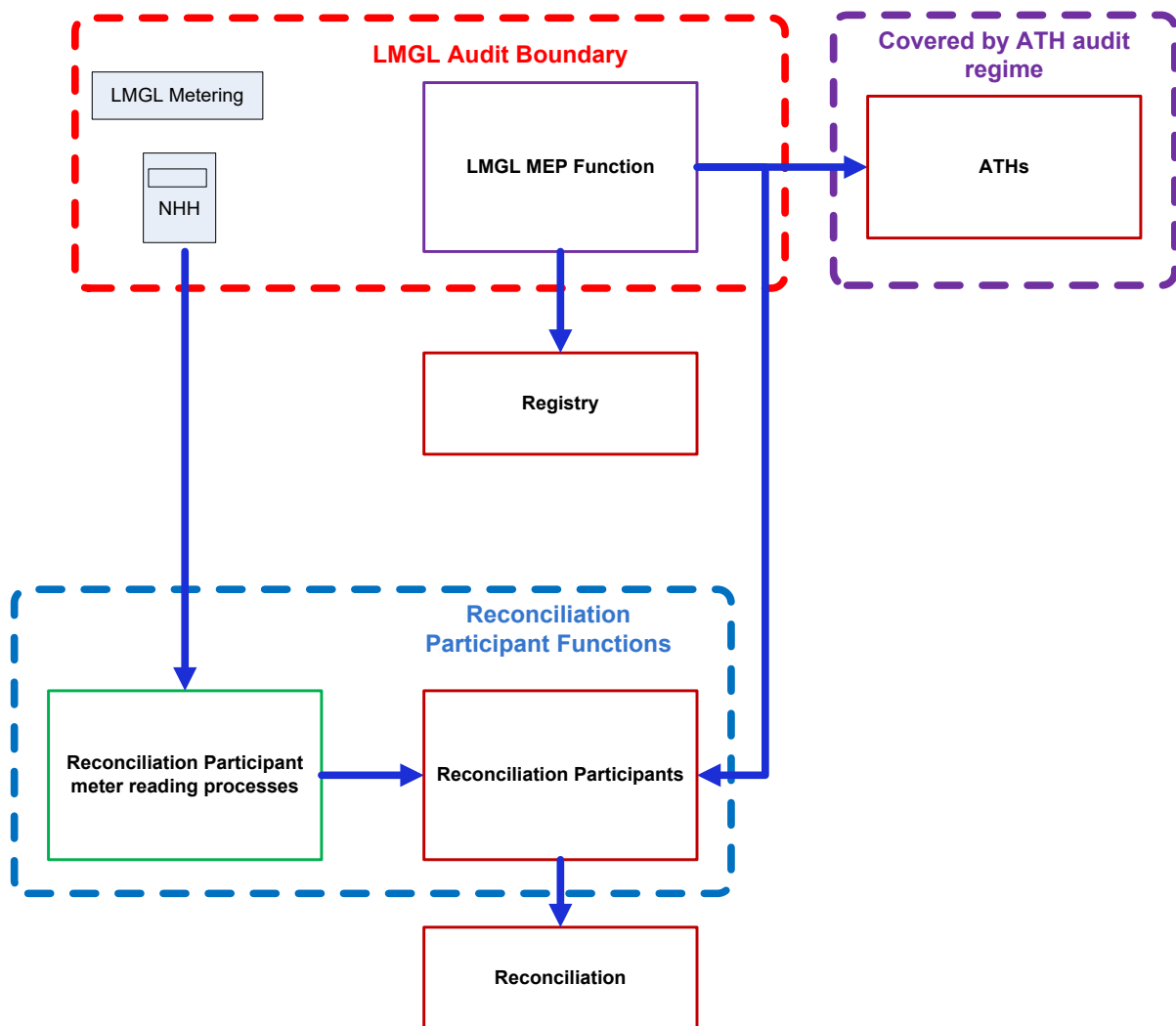
1.8. Authorisation Received

A letter of authorisation was not required or requested.

1.9. Scope of Audit

This audit was conducted in accordance with the Guideline for Metering Equipment Provider Audits V2.2, which was published by the Electricity Authority.

The boundaries of this audit are shown below for greater clarity.



1.10. Summary of previous audit

The previous audit was conducted in July 2018 by Steve Woods of Veritek Limited. The table below shows the status of the issues raised.

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
Provision of accurate information	2.5	11.2 and Clause 10.6	Invalid alternative certification not corrected since the last audit.	Cleared
Registry updates	3.2	2 of Schedule 11.4	145 registry updates later than 15 business days.	Still existing
Metering Installation Design & Accuracy	4.3	4(1) of Schedule 10.7	Delta ATH not calculating uncertainty in accordance with the Code. Total uncertainty greater than 0.6% for ICPs 0000004050DE261 and 0000004057DEFAB.	Still existing
Changes to registry records	4.10	3 of Schedule 11.4	Some records updated on the registry later than 10 business days.	Still existing
Notification of decommissioning	4.12	11.18B(3)	Trader not notified to carry out a final interrogation for three ICPs.	N/A
Provision of Registry Information	6.2	7 (1), (2) and (3) of Schedule 11.4	Some registry records incomplete or incorrect.	Still existing
Registry validation	6.3	6 of Schedule 11.4	Registry records not compared to LMGL's records.	Cleared
Cancellation of certification	6.4	20 of Schedule 10.7	Certification cancelled for six ICPs and the registry was not updated within 10 business days.	Still existing
Certification of metering installations	7.1	10.38 (a), clause 1 and clause 15 of Schedule 10.7	Certification expired for 23,226 ICPs.	Still existing for a smaller number

Subject	Section	Clause	Non-compliance	Status
Insufficient load	7.7	14(3) and (4) of Schedule 10.7	ICP 0000130696ENB89 certified for insufficient load but monitoring not conducted.	Cleared
Alternative certification	7.9	32(2), (3) and (4) of Schedule 10.7	Invalid alternative certification applied.	Cleared

Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Status
			Nil	

1.11. Audit approach

This audit involved considerable discussion and debate about whether compliance had been achieved or not in relation to a number of clauses in the Code. Most of this discussion centered around the statistical sampling regime, where the report records non-compliance.

In this section I have clarified the responsibilities on auditors to audit in accordance with the wording of the Code, regardless of information available from other sources. The Terms and Conditions for approval as an auditor has the following clause:

Duty of care

3. You acknowledge that the Authority relies on the reports you produce to determine the compliance of the relevant electricity industry participant (Participant) with its obligations under the Code.

4. In conducting the audits and preparing audit reports, you must:

(a) maintain a detailed knowledge of the relevant clauses in the Code and any relevant changes to the Code;

(b) act honestly, fairly, independently and objectively;

(c) exercise a standard of skill, care, and diligence that would be reasonably expected of a person who is skilled and who has experience in the provision of services of a similar nature to those you are providing; and

(d) comply with the relevant clauses of the Code concerning an audit at the time of the audit.

5. The Authority may publish material (including guidelines for auditors) to assist auditors from time to time. You acknowledge that any such material is intended to be for guidance only and does not relieve you from your obligation to comply with the Code.

6. You will conduct audits in accordance with any guidelines (e.g. in relation to the form of audit report) set by the Authority. However, in the event of inconsistency between the Code and any guidelines or other material, the Code will prevail.

Auditors are required to comply with the “Auditor Protocol”. The auditor protocol contains a section on professional and ethical requirements. The details are as follows:

3 Professional and ethical requirements

Fundamental principles of audit best practice

3.1 Auditors must comply with the following five fundamental principles of audit best practice:

- (a) integrity: to be straightforward and honest
- (b) objectivity: to not allow bias, conflict of interest, or undue influence override professional judgement
- (c) professional competence and due care: to maintain knowledge and skill at a level necessary to competently undertake the relevant audit
- (d) confidentiality: to respect confidentiality of information acquired in the course of audits and not disclose such information to third parties without proper authority (unless there is a legal/regulatory reason to do so)
- (e) professional behavior: to be compliant with relevant laws and regulations and not act in a manner that discredits the auditor’s profession.

Point “b” is important in the context of this audit. The audit findings are based on my professional judgement, and the other information available has been considered but has not affected objectivity.

2. OPERATIONAL INFRASTRUCTURE

2.1. MEP responsibility for services access interface (Clause 10.9(2))

Code reference

Clause 10.9(2)

Code related audit information

The MEP is responsible for providing and maintaining the services access interface.

Audit observation

I checked certification records for 50 metering installations, covering all relevant ATHs.

Audit commentary

The Code places responsibility for maintaining the services access interface on the MEP and places responsibility for determining and recording it with ATHs. I checked the certification records for all relevant ATHs and the services access interface was recorded correctly in all cases.

Audit outcome

Compliant

2.2. Dispute Resolution (Clause 10.50(1) to (3))

Code reference

Clause 10.50(1) to (3)

Code related audit information

Participants must in good faith use its best endeavours to resolve any disputes related to Part 10 of the Code.

Disputes that are unable to be resolved may be referred to the Authority for determination.

Complaints that are not resolved by the parties or the Authority may be referred to the Rulings Panel by the Authority or participant.

Audit observation

I checked whether any disputes had been dealt with during the audit period.

Audit commentary

LMGL has not been required to resolve any disputes in accordance with this clause.

Audit outcome

Compliant

2.3. MEP Identifier (Clause 7(1) of Schedule 10.6)

Code reference

Clause 7(1) of Schedule 10.6

Code related audit information

The MEP must ensure it has a unique participant identifier and must use this participant identifier (if required) to correctly identify its information.

Audit observation

I checked the registry data to ensure the correct MEP identifier was used.

Audit commentary

LMGL uses the LMGL identifier in all cases.

Audit outcome

Compliant

2.4. Communication Equipment Compatibility (Clause 40 Schedule 10.7)

Code reference

Clause 40 Schedule 10.7

Code related audit information

The MEP must ensure that the use of its communication equipment complies with the compatibility and connection requirements of any communication network operator the MEP has equipment connected to.

Audit observation

I checked whether there were any installations where communication equipment was present and whether the type test reports confirmed compliance.

Audit commentary

LMGL is the MEP for some metering installations where communication equipment is present, and this equipment complies with the telecommunications requirements.

Audit outcome

Compliant

2.5. Participants to Provide Accurate Information (Clause 11.2 and Clause 10.6)

Code reference

Clause 11.2 and Clause 10.6

Code related audit information

The MEP must take all practicable steps to ensure that information that the MEP is required to provide to any person under Parts 10 and 11 is complete and accurate, not misleading or deceptive and not likely to mislead or deceive.

If the MEP becomes aware that in providing information under Parts 10 and 11, the MEP has not complied with that obligation, the MEP must, as soon as practicable, provide such further information as is necessary to ensure that the MEP does comply.

Audit observation

The content of this audit report was reviewed to determine whether all practicable steps had been taken to provide accurate information.

Audit commentary

The content of this audit report indicates that LMGL has taken all practicable steps to ensure that information is complete and accurate in most instances, except for the matter raised in **Section 6.4**, where two metering installations were incorrectly certified, and recertification has not yet occurred, and the registry has not been updated.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.5 With: Clause 11.2 and Clause 10.6 From: 12-Jun-18 To: 30-Jan-19	Invalid certification for two ICPs due to uncertainty being greater than 0.6% certification not corrected since the last audit. Potential impact: Medium Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The two installations in question had total errors within the allowable 2.5%. I have recorded the impact as minor and the audit risk rating as low.		
Actions taken to resolve the issue		Completion date	Remedial action status
Our advice from the ATH was that the certification still stands. Other notes below on this point. The data provided to the registry (so far as we continue to be advised) is that it is correct.		1/3/2019	Disputed
Preventative actions taken to ensure no further issues will occur		Completion date	<u>Post audit comment</u>

The MEP will continue to monitor data received to the best of its technical knowledge and follow up directly with ATHs if there is anything that looks incorrect. The MEP will also undertake desktop audits (documentation, photographs etc) to ensure to the best of its technical ability that the data received is robust.	1/3/2019	Table 1 states that the maximum uncertainty allowable is 0.6%. An extract of the table is pasted below.
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Table 1: Metering installation characteristics and associated requirements

Defining Characteristics				Associated Requirements		
Metering installation category	Primary voltage (V)	Primary current (I)	Measuring transformers	Metering installation certification type	Accuracy tolerances	
					Maximum permitted error	Maximum site uncertainty
1	V < 1kV	I ≤ 160A	None	NHH or HHR	± 2.5%	0.6%
2	V < 1kV	I ≤ 500A	CT	NHH or HHR	± 2.5%	0.6%

3. PROCESS FOR A CHANGE OF MEP

3.1. Payment of Costs to Losing MEP (Clause 10.22)

Code reference

Clause 10.22

Code related audit information

The MEP for a metering installation may change only if the responsible participant enters into an arrangement with another person to become the MEP for the metering installation, and if certain notification requirements are met (in relation to the registry and the reconciliation manager).

The gaining MEP must pay the losing MEP a proportion of the costs within 20 business days of assuming responsibility.

The costs are those directly and solely attributable to the certification and calibration tests of the metering installation or its components from the date of switch until the end of the current certification period.

Audit observation

LMGL has not sent or received any invoices in relation to this clause.

Audit commentary

LMGL has not sent or received any invoices in relation to this clause.

Audit outcome

Compliant

3.2. Registry Notification of Metering Records (Clause 2 of Schedule 11.4)

Code reference

Clause 2 of Schedule 11.4

Code related audit information

The gaining MEP must advise the registry of the registry metering records for the metering installation within 15 days of becoming the MEP for the metering installation.

Audit observation

I checked the event detail for the period 01/08/18 to 01/12/18 for all records where LMGL became the MEP to evaluate the timeliness of updates.

Audit commentary

The table below shows there were 185 late updates to the registry out of 459 events. All but three of the late updates were due to late nomination by traders.

During the previous audit, I recorded that many of the late nominations were due to late notification by LMGL to the relevant traders that a nomination was required. This was for ICPs where there was a trader change from Trustpower to another trader. Contact Energy was still the MEP for some ICPs where LMGL is the meter owner and once the switch occurred, LMGL notified the gaining trader that a nomination was required. This process occurred approximately every two months. I recommended it occurred more frequently to allow both the trader and LMGL to achieve compliance. LMGL is now the MEP for all of the ICPs where they were previously the meter owner but not the MEP.

Year	Total	Over 15 days	% compliance	Average	Late nomination
Dec 2016	10,501	843	92%		323
Oct 2017	4,928	345	93%	4.9	326
June 2018	548	145	74%	20	145
Feb 2019	459	185	60%	27	182

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 2 of Schedule 11.4 From: 01-Aug-18 To: 01-Dec-18	185 registry updates later than 15 business days. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	Rationale for audit risk rating

Low	Controls are in place to ensure the timeliness of updates, but LMGL is often prevented from updating the registry due to late nomination or late field notification. The impact on other participants is minor; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
Reminders to Retailers as per previous Audit reports has little impact. Usually the offenders are only a couple of Retailers.		Ongoing	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
LMG will continue to monitor and update all metering data as soon as it has access to the nominations and metering information. Reminders and follow-ups in place with retailers and ATHs. Routine reports from all ATHs in place.		1/3/2019	

3.3. Provision of Metering Records to Gaining MEP (Clause 5 of Schedule 10.6)

Code reference

Clause 5 of Schedule 10.6

Code related audit information

During an MEP switch, a gaining MEP may request access to the losing MEP's metering records.

On receipt of a request from the gaining MEP, the losing MEP has 10 business days to provide the gaining MEP with the metering records or the facilities to enable the gaining MEP to access the metering records.

The losing MEP must ensure that the metering records are only received by the gaining MEP or its contractor, the security of the metering records is maintained, and only the specific metering records required for the purposes of the gaining MEP exercising its rights and performing its obligations are provided.

Audit observation

I checked with LMGL to confirm whether there had been any requests from other MEPs.

Audit commentary

There have not been any requests in relation to this clause during the audit period.

Audit outcome

Compliant

3.4. Termination of MEP Responsibility (Clause 10.23)

Code reference

Clause 10.23

Code related audit information

Even if the MEP ceases to be responsible for an installation, the MEP must either comply with its continuing obligations; or before its continuing obligations terminate, enter into an arrangement with a participant to assume those obligations.

The MEP is responsible if it:

- *is identified in the registry as the primary metering LMGL or*
- *is the participant who owns the meter for the POC or to the grid or*
- *has accepted responsibility under clause 1(1)(a)(ii) of schedule 11.4 or*
- *has contracted with a participant responsible for providing the metering installation.*

MEPs obligations come into effect on the date recorded in the registry as being the date on which the metering installation equipment is installed or, for an NSP the effective date set out in the NSP table on the Authority's website.

An MEPs obligations terminate only when;

- *the ICP changes under clause 10.22(1)(a);*
- *the NSP changes under clause 10.22(1)(b), in which case the MEPs obligations terminate from the date on which the gaining MEP assumes responsibility;*
- *the metering installation is no longer required for the purposes of Part 15; or*
- *the load associated with an ICP is converted to be used solely for unmetered load.*

Audit observation

I confirmed that LMGL has ceased to be responsible for some metering installations by checking the event detail report.

Audit commentary

LMGL continues with their responsibilities, mainly in relation to the storage of records, which are kept indefinitely. I requested the records for five installations where LMGL had ceased to be responsible and these were all available and checked.

Audit outcome

Compliant

4. INSTALLATION AND MODIFICATION OF METERING INSTALLATIONS

4.1. Design Reports for Metering Installations (Clause 2 of Schedule 10.7)

Code reference

Clause 2 of Schedule 10.7

Code related audit information

The MEP must obtain a design report for each proposed new metering installation or a modification to an existing metering installation, before it installs the new metering installation or before the modification commences.

Clause 2(2) and (3)—The design report must be prepared by a person with the appropriate level of skills, expertise, experience and qualifications and must include a schematic drawing, details of the configuration scheme that programmable metering components are to include, confirmation that the configuration scheme has been approved by an approved test laboratory, maximum interrogation cycle, any compensation factor arrangements, method of certification required, and name and signature of the person who prepared the report and the date it was signed.

Clause 2(4)—The MEP must provide the design report to the certifying ATH before the ATH installs or modifies the metering installation (or a metering component in the metering installation).

Audit observation

LMGL has engaged several ATHs for certification activities. All ATHs have provided design reports for this work which I have checked.

Audit commentary

The design reports used by ATHs include all relevant details required by the Code. The design report was not recorded by Delta for two ICPs, which is raised as non-compliance in Section 4.3.

Audit outcome

Compliant

4.2. Contracting with ATH (Clause 9 of Schedule 10.6)

Code reference

Clause 9 of Schedule 10.6

Code related audit information

The MEP must, when contracting with an ATH in relation to the certification of a metering installation, ensure that the ATH has the appropriate scope of approval for the required certification activities.

Audit observation

I confirmed that LMGL has used the VEMS, Delta, Vector, Wells, Accucal, Metrix and IndeServe ATHs during the audit period. These were then checked against the Authority's website for scope of approval.

Audit commentary

I have checked the Authority's website and confirm that all ATHs have current and appropriate scopes of approval.

Audit outcome

Compliant

4.3. Metering Installation Design & Accuracy (Clause 4(1) of Schedule 10.7)

Code reference

Clause 4(1) of Schedule 10.7

Code related audit information

The MEP must ensure:

- *that the sum of the measured error and uncertainty does not exceed the maximum permitted error set out in Table 1 of Schedule 10.1 for the category of the metering installation*
- *the design of the metering installation (including data storage device and interrogation system) will ensure the sum of the measured error and the smallest possible increment of the energy value of the raw meter data does not exceed the maximum permitted error set out in Table 1 of Schedule 10.1 for the category of installation*
- *the metering installation complies with the design report and the requirements of Part 10.*

Audit observation

I checked the processes used by LMGL to ensure compliance with the design and with the error thresholds stipulated in Table 1. I also checked the certification records for 29 CT metered metering installations.

Audit commentary

For Category 2 comparative certification, Delta's error and uncertainty calculation does not consider the temperature coefficient of the working standard. This matter has been present for several years. Delta certified one metering installation at ICP 0000004099DEBDF during the audit period. The temperature was 22° Celsius so the uncertainty is likely to remain within 0.6%. During the previous audit, I requested copies of certification records for six metering installations. Uncertainty calculations were not conducted in a compliant manner for any of the six. Two of the installations will have uncertainty figures greater than 0.6% when temperature is taken into consideration. Certification is therefore cancelled. The ICPs are 0000004050DE261 and 0000004057DEFAB. Certification is not yet cancelled on the registry, which is recorded as non-compliance in Section 6.4.

With regard to the design of the installation (including data storage device and interrogation system), LMGL ensures the sum of the measured error and the smallest possible increment of the energy value of the raw meter data does not exceed the maximum permitted error set out in Table 1 of Schedule 10.1 for the category of installation. There are no components installed where "coarse" rounding is in place for the data, or where meters with a low pulse rate are connected to separate data storage devices.

LMGL has a process to ensure the metering installation complies with the design report and the requirements of Part 10 by requiring ATH's to confirm the installations match the design, or by requiring updates to be provided if the installation does not match the design.

I checked 50 recent certification records and found that the design report was populated in 48 cases but there were two Delta certificates here the design report was not recorded.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 4.3 With: Clause 4(1) of Schedule 10.7 From: 01-Aug-18 To: 30-Jan-19	Delta ATH not calculating uncertainty in accordance with the Code. Total uncertainty greater than 0.6% for ICPs 0000004050DE261 and 0000004057DEFAB. Two design reports no recorded Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Weak Breach risk rating: 3		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the control effectiveness as weak because this matter has been present and not resolved for several years. The impact is minor; therefore the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
The main point is that the ATH has advised that their calculations are correct. MEPs (like LMG) rely on technical advice of the ATH and the certificates they issue. The controls are strong as we review the certification and records provided by the ATH. <i>IF</i> there is a breach – this is consequential.		Complete	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
The MEP will continue to monitor data received to the best of its technical knowledge and follow up directly with ATHs if there is anything that looks incorrect. The MEP will also undertake desktop audits (documentation, photographs etc) to ensure to the best of its technical ability that the data received is robust.		1/3/2019	

4.4. Subtractive Metering (Clause 4(2)(a) of Schedule 10.7)

Code reference

Clause 4(2)(a) of Schedule 10.7

Code related audit information

For metering installations for ICPs that are not also NSPs, the MEP must ensure that the metering installation does not use subtraction to determine submission information used for the purposes of Part 15.

Audit observation

I asked LMGL to confirm whether subtraction was used for any metering installations where they were the MEP.

Audit commentary

LMGL does not have any metering installations where subtractive metering is used.

Audit outcome

Not applicable

4.5. HHR Metering (Clause 4(2)(b) of Schedule 10.7)

Code reference

Clause 4(2)(b) of Schedule 10.7

Code related audit information

For metering installations for ICPs that are not also NSPs, the MEP must ensure that all category 3 or higher metering installations must be half-hour metering installations.

Audit observation

LMGL is the MEP for six metering installations above Category 2. I checked the registry fields to confirm compliance.

Audit commentary

All six installations have HHR metering.

Audit outcome

Compliant

4.6. NSP Metering (Clause 4(3) of Schedule 10.7)

Code reference

Clause 4(3) of Schedule 10.7

Code related audit information

The MEP must ensure that the metering installation for each NSP that is not connected to the grid does not use subtraction to determine submission information used for the purposes of Part 15 and is a half-hour metering installation.

Audit observation

LMGL is not the MEP for any NSP metering installations.

Audit commentary

LMGL is not responsible for any NSP metering.

Audit outcome

Not applicable

4.7. Responsibility for Metering Installations (Clause 10.26(10))

Code reference

Clause 10.26(10)

Code related audit information

The MEP must ensure that each point of connection to the grid for which there is a metering installation that it is responsible for has a half hour metering installation.

Audit observation

LMGL is not responsible for any grid metering.

Audit commentary

LMGL is not responsible for any grid metering.

Audit outcome

Not applicable

4.8. Suitability of Metering Installations (Clause 4(4) of Schedule 10.7)

Code reference

Clause 4(4) of Schedule 10.7

Code related audit information

The MEP must, for each metering installation for which it is responsible, ensure that it is appropriate having regard to the physical and electrical characteristics of the POC.

Audit observation

I checked the ATH processes for the management of this area.

Audit commentary

The VEMS design report contains reference to workmanship; ensuring access cannot be gained to live conductors; earthing arrangements and compliance with AS/NZS 3000. I have checked the Delta process and confirmed that the MR-002 quality manual/operating instructions ensure compliance with relevant electrical legislation. Indeserve has appropriate instructions regarding this matter. The other ATHs also have appropriate instructions and processes to achieve compliance with this clause.

Audit outcome

Compliant

4.9. Installation & Modification of Metering Installations (Clauses 10.34(2), (2A) and (3))

Code reference

Clauses 10.34(2), (2A) and (3)

Code related audit information

If a metering installation is proposed to be installed or modified at a POC, other than a POC to the grid, the MEP must consult with and use its best endeavours, to agree with the distributor and the trader for that POC, before the design is finalised, on the metering installations:

- *required functionality*
- *terms of use*
- *required interface format*
- *integration of the ripple receiver and the meter*
- *functionality for controllable load.*

Each participant involved in the consultations must use its best endeavours to reach agreement and act reasonably and in good faith.

Audit observation

The Authority determined that MEPs are not required to consult with distributors and traders unless the design of an installation is altered. Some ICPs had design changes from NHH to HHR during the audit period, which is a change of design. I checked whether agreement was sought from the relevant participants.

Audit commentary

LMGL notified all relevant participants with a blanket communication notifying of design intentions, therefore compliance is achieved.

Audit outcome

Compliant

4.10. Changes to Registry Records (Clause 3 of Schedule 11.4)

Code reference

Clause 3 of Schedule 11.4

Code related audit information

The MEP must advise the registry of the registry metering records or any change to the registry metering records for a metering installation for which it is responsible, no later than 10 business days following:

- a) *the electrical connection of an ICP that is not also an NSP*
- b) *any subsequent change in any matter covered by the metering records.*

Audit observation

I checked the event detail report for the period 01/08/18 to 01/12/18 to evaluate the timeliness of registry updates.

Audit commentary

The table below shows that 89% of new connection updates and 96% of corrections were within 10 business days. 14 of the 23 late new connection updates were caused by late nomination by the trader. The other main issue was late field notification.

Event	Year	Total ICPs	ICPs Notified Within 10 Days	ICPs Notified Greater Than 10 Days	Average Notification Days	Percentage Compliant
New Connection	2016	436	351	85	8.7	80%
	2017	535	493	42	5.3	92%
	2018	452	418	34	5.3	93%
	2019	214	23	191	6	89%
Updates	2016	32,112	31,178	934	1.7	97%
	2017	18,200	17,599	601	10.5	97%
	2018	4,501	4,154	347	12.8	92%
	2019	2,231	2,132	99	9.9	96%

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 4.10 With: Clause 3 of Schedule 11.4 From: 01-Aug-18 To: 30-Jan-19	Some records updated on the registry later than 10 business days. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the controls as strong in this area. The late new connection updates have a minor impact on participants, customers and settlement, therefore the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
So far as is known any outstanding updates have been completed		Completed	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
LMG will continue to monitor and update all metering data as soon as it has access to the nominations and metering information. Reminders and follow-ups in place with retailers and ATHs. Routine reports from all ATHs in place.		1/3/2019	

4.11. Metering Infrastructure (Clause 10.39(1))

Code reference

Clause 10.39(1)

Code related audit information

The MEP must ensure that for each metering installation:

- *an appropriately designed metering infrastructure is in place*
- *each metering component is compatible with, and will not interfere with any other component in the installation*
- *collectively, all metering components integrate to provide a functioning system*
- *each metering installation is correctly and accurately integrated within the associated metering infrastructure.*

Audit observation

LMGL has some HHR metering. I checked the meter type to confirm whether the type test report recorded compatibility with regard to telecommunication standards and whether the overall infrastructure operated as intended.

Audit commentary

Type test reports confirm compatibility and the output to host test confirms the appropriate functionality of the system.

Audit outcome

Compliant

4.12. Responsibility for Metering at ICP (Clause 10.23A)

Code reference

Clause 10.23A

Code related audit information

If a metering installation at an ICP is to be decommissioned, but the ICP is not being decommissioned, the metering equipment provider that is responsible for decommissioning the metering installation must,—

(a) if the metering equipment provider is responsible for interrogating the metering installation—

(i) arrange for a final interrogation to take place before the metering installation is decommissioned; and

(ii) provide the raw meter data from the interrogation to the trader that is recorded in the registry as being responsible for the ICP; or

(b) if another participant is responsible for interrogating the metering installation, advise the other participant not less than three business days before the decommissioning—

(i) of the date and time of the decommissioning; and

(ii) that the participant must carry out a final interrogation.

(2) To avoid doubt, if a metering installation at an ICP is to be decommissioned because the ICP is being decommissioned—

(a) the metering equipment provider is not responsible for arranging a final interrogation of the metering installation; and

(b) the trader that is recorded in the registry as being responsible for the ICP must arrange for a final interrogation of the metering installation under clause 11.18(3).

Audit observation

I checked whether LMGL was the MEP at any decommissioned metering installations and whether notification had been provided to relevant traders.

Audit commentary

There were no examples of decommissioned metering installations where the ICP was not decommissioned.

Audit outcome

Compliant

4.13. Measuring Transformer Burden and Compensation Requirements (Clause 31(4) and (5) of Schedule 10.7)

Code reference

Clause 31(4) and (5) of Schedule 10.7

Code related audit information

The MEP must, before approving the addition of, or change to, the burden or compensation factor of a measuring transformer in a metering installation, consult with the ATH who certified the metering installation.

If the MEP approves the addition of, or change to, the burden or compensation factor, it must ensure the metering installation is recertified by an ATH before the addition or change becomes effective.

Audit observation

I asked LMGL whether they had approved any burden changes during the audit period.

Audit commentary

LMGL's processes show that any action leading to a change in burden results in recertification. A check of certification records confirmed compliance.

Audit outcome

Compliant

4.14. Changes to Software ROM or Firmware (Clause 39(1) and 39(2) of Schedule 10.7)

Code reference

Clause 39(1) and 39(2) of Schedule 10.7

Code related audit information

The MEP must, if it proposes to change the software, ROM or firmware of a data storage device installed in a metering installation, ensure that, before the change is carried out, an approved test laboratory:

- *tests and confirms that the integrity of the measurement and logging of the data storage device would be unaffected*
- *documents the methodology and conditions necessary to implement the change*
- *advises the ATH that certified the metering installation of any change that might affect the accuracy of the data storage device.*

The MEP must, when implementing a change to the software, ROM or firmware of a data storage device installed in a metering installation:

- *carry out the change in accordance with the methodology and conditions identified by the approved test laboratory under clause 39(1)(b)*
- *keep a list of the data storage devices that were changed*
- *update the metering records for each installation affected with the details of the change and the methodology used.*

Audit observation

LMGL is not the MEP for any installations where changes to ROM, software or firmware have occurred.

Audit commentary

LMGL is not the MEP for any installations where changes to ROM, software or firmware have occurred.

Audit outcome

Not applicable

4.15. Temporary Electrical connection (Clause 10.28(6))

Code reference

Clause 10.28(6)

Code related audit information

An MEP must not request the temporary electrical connection of a new POC unless authorised to do so by the reconciliation participant responsible for that POC and has an arrangement with that reconciliation participant to provide metering services.

Audit observation

I checked whether there were any examples of temporary electrical connection.

Audit commentary

No examples of temporary electrical connection were identified.

Audit outcome

Not applicable

5. METERING RECORDS

5.1. Accurate and Complete Records (Clause 4(1)(a) and (b) of Schedule 10.6, and Table 1, Schedule 11.4)

Code reference

Clause 4(1)(a) and (b) of Schedule 10.6, and Table 1, Schedule 11.4

Code related audit information

The MEP must, for each metering installation for which it is responsible, keep accurate and complete records of the attributes set out in Table 1 of Schedule 11.4. These include:

- a) the certification expiry date of each metering component in the metering installation*
- b) all equipment used in relation to the metering installation, including serial numbers and details of the equipment's manufacturer*
- c) the manufacturer's or (if different) most recent test certificate for each metering component in the metering installation*
- d) the metering installation category and any metering installations certified at a lower category*
- e) all certification reports and calibration reports showing dates tested, tests carried out, and test results for all metering components in the metering installation*
- f) the contractor who installed each metering component in the metering installation*
- g) the certification sticker, or equivalent details, for each metering component that is certified under Schedule 10.8 in the metering installation:*
- h) any variations or use of the 'alternate certification' process*
- i) seal identification information*
- j) any applicable compensation factors*
- k) the owner of each metering component within the metering installation*
- l) any applications installed within each metering component*
- m) the signed inspection report confirming that the metering installation complies with the requirements of Part 10.*

Audit observation

I requested certification records for 50 metering installations to evaluate compliance with this clause.

Audit commentary

LMGL engages with several ATHs to conduct certification activities. LMGL relies on these ATHs to act as agents for the management and storage of certification records.

I checked LMGL's records and I confirm that all the records listed above are available. I requested certification records for 50 installations to confirm they were available and all 50 were provided.

Audit outcome

Compliant

5.2. Inspection Reports (Clause 4(2) of Schedule 10.6)

Code reference

Clause 4(2) of Schedule 10.6

Code related audit information

The MEP must, within 10 business days of receiving a request from a participant for a signed inspection report prepared under clause 44 of Schedule 10.7, make a copy of the report available to the participant.

Audit observation

I asked LMGL whether any requests had been made for copies of inspection reports.

Audit commentary

LMGL has not been requested to supply any inspection reports, but these are available and can be supplied on request.

Audit outcome

Compliant

5.3. Retention of Metering Records (Clause 4(3) of Schedule 10.6)

Code reference

Clause 4(3) of Schedule 10.6

Code related audit information

The MEP must keep metering installation records for 48 months after any metering component is removed, or any metering installation is decommissioned.

Audit observation

I checked LMGL's processes in relation to this clause.

Audit commentary

LMGL relies on ATHs to store certification records and their audit reports confirm compliance. The registry is used as the main database and it contains an appropriate audit trail with all history.

Audit outcome

Compliant

5.4. Provision of Records to ATH (Clause 6 Schedule 10.6)

Code reference

Clause 6 Schedule 10.6

Code related audit information

If the MEP contracts with an ATH to recertify a metering installation and the ATH did not previously certify the metering installation, the MEP must provide the ATH with a copy of all relevant metering records not later than 10 business days after the contract comes into effect.

Audit observation

LMGL has provided information to ATH's in the past and this may occur in future. There are no current examples to examine.

Audit commentary

LMGL has provided information to ATH's in the past and this may occur in future. There are no current examples to examine.

Audit outcome

Not applicable

6. MAINTENANCE OF REGISTRY INFORMATION

6.1. MEP Response to Switch Notification (Clause 1(1) of Schedule 11.4)

Code reference

Clause 1(1) of Schedule 11.4

Code related audit information

Within 10 business days of being advised by the registry that it is the gaining MEP for the metering installation for the ICP, the MEP must enter into an arrangement with the trader and advise the registry it accepts responsibility for the ICP and of the proposed date on which it will assume responsibility.

Audit observation

I checked the switch breach history detail report to confirm whether all responses were within 10 business days.

Audit commentary

All MN files were sent within 10 business days.

Audit outcome

Compliant

6.2. Provision of Registry Information (Clause 7 (1), (2) and (3) of Schedule 11.4)

Code reference

Clause 7 (1), (2) and (3) of Schedule 11.4

Code related audit information

The MEP must provide the information indicated as being 'required' in Table 1 of clause 7 of Schedule 11.4 to the registry, in the prescribed form for each metering installation for which the MEP is responsible.

From 1 April 2015, a MEP is required to ensure that all the registry metering records of its category 1 metering installations are complete, accurate, not misleading or deceptive, and not likely to mislead or deceive.

The information the MEP provides to the registry must derive from the metering equipment provider's records or the metering records contained within the current trader's system.

Audit observation

I checked the list file for 100% of records and I checked the Category 1 inspection records to identify discrepancies.

Audit commentary

I examined the records for 58 metering installations where LMGL had conducted inspections during 2018. The only data related issues were where the on-site certification date for three installations was unreadable because the sticker was faded, unreadable or missing.

I checked all of LMGL's records to identify discrepancies with their data. The table below shows the results.

Date of analysis				Issue	Resolved
Dec 2018	May 2018	October 2017	Dec 2016		
0	0	0	82	Blank metering records on the registry.	N/A
0	5	0	0	Category 2 on the registry but with interim certification.	N/A
0	1	11	0	Incorrect certification duration.	N/A
0	0	2	2	Category 2 installations without CTs recorded on the registry.	N/A
8	423	2,067	53	ICPs with controlled load and no load control device recorded on the registry.	
0	59	1,318	3	IN register content code but no control device on the registry.	N/A
0	8	9	16	ICPs with a register content code of CN only and a residential ANZSIC code	N/A
0	0	2	2	Day without night.	N/A
4	10	20	16	Night without day.	
49	75	701	1,061	Controlled profiles without certified control device. Note that some of these may be controlled by pilot, which does not have a registry field.	
232	248	259	311	Compensation factor of 3 All were certified after August 2013. Certification is now cancelled	Yes
0	0	0	0	HHR submission, Install is NHH	N/A
0	0	57	37	IN24	N/A
0	0	1	2	UN not 24	N/A
7	1	3	3	Incorrect certification dates	
0	1	48	3,311	Incorrect maximum interrogation cycle of zero	N/A
0	511	840	-	Certification and expiry dates 01/04/00	N/A
0	2	3	-	Incorrect ATH recorded	N/A
75	128	148	-	UN only with load control device	
0	1	0	0	Compensation factor on Cat 1	N/A

0	0	0	0	Active no metering	
16	-	-	-	Metering installations incorrectly recorded as AMI	Yes

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 6.2 With: Clause 7 (1), (2) and (3) of Schedule 11.4 From: 01-Oct-17 To: 31-May-18	Some registry records incomplete or incorrect. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the controls as strong in this area. LMGL is identifying errors and investigating them as soon as practicable. Very few of the discrepancies have an impact on participants, customers or settlement. The only relevant ones in this regard are tariff related and there were only a small number. The audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
Ongoing process of follow ups with retailer (esp) and ATHs to determine the veracity of the data. Subsequent to the Audit there has been a large amount of work to clean up the above numbers.		Now	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Ongoing process of follow ups with retailer (esp) and ATHs to determine the veracity of the data.		Ongoing	

6.3. Correction of Errors in Registry (Clause 6 of Schedule 11.4)

Code reference

Clause 6 of Schedule 11.4

Code related audit information

By 0900 hours on the 13th business day of each reconciliation period, the MEP must obtain from the registry:

- *a list of ICPs for the metering installations the MEP is responsible for*
- *the registry metering records for each ICP on that list.*

No later than five business days following collection of data from the registry, the MEP must compare the information obtained from the registry with the MEP's own records.

Within five business days of becoming aware of any discrepancy between the MEP's records and the information obtained from the registry, the MEP must correct the records that are in error and advise the registry of any necessary changes to the registry metering records.

Audit observation

I checked LMGL's registry validation processes and reporting by conducting a walkthrough.

Audit commentary

LMGL compares their master spreadsheet of metering fields against the registry in accordance with this clause. Errors are resolved immediately upon identification.

Audit outcome

Compliant

6.4. Cancellation of Certification (Clause 20 of Schedule 10.7)

Code reference

Clause 20 of Schedule 10.7

Code related audit information

The certification of a metering installation is automatically cancelled on the date on which one of the following events takes place:

- a) *the metering installation is modified otherwise than under sub clause 19(3) or 19(6)*
- b) *the metering installation is classed as outside the applicable accuracy tolerances set out in Table 1 of Schedule 10.1, defective or not fit for purpose under this Part or any audit*
- c) *an ATH advises the metering equipment provider responsible for the metering installation of a reference standard or working standard used to certify the metering installation not being compliant with this Part at the time it was used to certify the metering installation, or the failure of a group of meters in the statistical sampling recertification process for the metering installation, or the failure of a certification test for the metering installation*
- d) *the manufacturer of a metering component in the metering installation determines that the metering component does not comply with the standards to which the metering component was tested*
- e) *an inspection of the metering installation, that is required under this Part, is not carried out in accordance with the relevant clauses of this Part*

- f) if the metering installation has been determined to be a lower category under clause 6 and the maximum current conveyed through the metering installation at any time exceeds the current rating of its metering installation category as set out in Table 1 of Schedule 10.1*
- g) the metering installation is certified under clause 14 and sufficient load is available for full certification testing and has not been retested under clause 14(4)*
- h) a control device in the metering installation certification is, and remains for a period of at least 10 business days, bridged out under clause 35(1)*
- i) the metering equipment provider responsible for the metering installation is advised by an ATH under clause 48(6)(b) that a seal has been removed or broken and the accuracy and continued integrity of the metering installation has been affected.*

A metering equipment provider must, within 10 business days of becoming aware that one of the events above has occurred in relation to a metering installation for which it is responsible, update the metering installation's certification expiry date in the registry.

Audit observation

I checked for examples of all of the points listed above, and checked whether certification had been cancelled, and whether the registry had been updated within 10 business days.

Audit commentary

I checked for examples of bridged control devices and I confirmed that they were resolved within 10 business days for a sample of ten.

During the previous audit, I recorded that ICP 0001501996ENB0C has 1200/5 CTs and was certified as Category 2 on 12/05/17. There was no information confirming that protection is rated at 500A or less and it has a 500kVA transformer. Monitoring had not occurred; therefore, certification was cancelled from the date the first monitoring report was not obtained, which was June 2017. The registry has been updated with the correct certification expiry. Recertification has not yet occurred.

During the previous audit, I recorded that two ICPs were certified by Delta using the comparative method and the temperature coefficient of the working standard was not considered in the uncertainty calculations. With the coefficient included the uncertainty will be greater than the allowable 0.6%, therefore certification is cancelled. The registry was not updated within 10 business days and has still not been updated.

During the previous audit, I recorded that alternative certification had been applied to ICPs 0000100223UN118 and 0103992006LCF3F, but both had comparative certification conducted and alternative certification was applied. Comparative certification reports have since been produced by VEMS, but ICP 0103992006LCF3F has low burden and there is no evidence burden resistors were installed, therefore certification is cancelled, and the registry has not been updated within 10 business days.

During the previous audit I recorded that ICP 0000130696ENB89 was certified in accordance with the insufficient load provisions of the Code, but the installation is NHH and monitoring had therefore not been conducted, therefore certification is cancelled. This installation has been correctly recertified.

There are 264 installations incorrectly certified by the statistical sampling method since 29/08/13, which are also three phase with one phase metered. Certification has been cancelled because the installations are not fit for purpose and not all electricity conveyed is quantified in accordance with the Code. LMGL updated the registry within 10 business days of becoming aware of this issue.

LMGL's process for selecting Category 1 Inspection samples has been approved but the process does not stipulate how the population will be determined. The methodology for selecting the population is not compliant because it selects ICPs based on a date range of 114 to 126 months since certification rather than by including all ICPs other than those certified or physically inspected in the last 84 months.

Using the registry data from July 2018, the population would be 1,603 and if the population was identified in December 2018 the population would be 1,105, therefore the population as at January 2018 would have been over 500 and possibly over 1,200, so the sample size should have been 80 or 125, not 50.

LMGL provided an update on 24/04/19, confirming that additional sample was drawn from the population of meters with a date range of 84 to 114 months since certification. Inspections were conducted of a sample of this population and a report was provided to the Authority by 01/04/19. Whilst the original sample was incorrectly selected, it appears this matter is now resolved because the Authority has agreed that stratification of sampling is a valid approach.

I originally reported that the Code is clear that certification is cancelled for the population due for sample inspection. That quantity was 1,105 ICPs. My finding was based on the following wording of the Code:

“...for each 12 month period commencing 1 January and ending 31 December, a sample, selected under subclause (2), of the category 1 metering installations for which it is responsible has been inspected by an ATH within the period set out in Table 1 of Schedule 10.1 starting from the date of the earliest certification date of a metering installation in the group.”

Clause 20(1) of Schedule 10.7 goes on to say:

“The certification of a metering installation is automatically cancelled on the date on which any 1 of the following events takes place ... an inspection of the metering installation, that is required under this Part, is not carried out in accordance with the relevant clauses of this Part.”

On 23/04/19, the Authority provided clarification that: *“The Code requirements for inspections of category 1 metering installations undertaken using statistical sampling are insufficiently clear as to when and how the sample inspections must be performed and completed.”* Which means that certification is not cancelled even though the inspections were not completed within the period 01/01/18 to 31/12/18.

The next issue relates to low burden on CT metered installations. The Authority provided a memo on 04/04/16 clarifying that:

The Electricity Industry Participation Code 2010 (Code) requires an ATH to ensure that an approved calibration laboratory or a class A ATH has confirmed that all measuring transformers comply with the standards in Table 5 of Schedule 10.1 (clause 3(b) of Schedule 10.8). If the errors are within the limits set by the standards, the transformer has passed the test and may be certified as accurate within that range of burden (clause 3 of Schedule 10.8 and Table 5 of Schedule 10.1).

If a measuring transformer is installed in a metering installation with the burden lower than the lowest test point used in the measuring transformer's calibration, then burdening resistors must be used to ensure that the measuring transformer operates within its calibration range.¹

The memo also states:

If an ATH certifies a metering installation with under-burdened measuring transformers, and it has not complied with clause 31(7) of Schedule 10.7 of the Code, then:

1. The ATH will breach clause 31(7) of Schedule 10.7 and also clause 43 of Schedule 10.7 by failing to grant certification in accordance with Part 10
2. The metering installation may be classed outside the applicable accuracy tolerances specified in Table 1 of Schedule 10.1, or not be fit for purpose, and if so, the metering installation certification is cancelled (clause 20(1)(b) of Schedule 10.7)
3. In certifying the metering installation, the ATH may breach clause 21 of Schedule 10.7 by certifying a metering installation that exceeds that maximum permitted error set out in Table 1 of Schedule 10.1.

The Authority confirmed on 01/03/18 that certification is cancelled for installations where low burden is not addressed.

Analysis of the certification records for 29 Category 2 metering installations found that four had been certified with burden lower than the lowest test point, without a Class A ATH confirming that the measuring transformers will not be adversely affected. Therefore, in accordance with the Authority's memo, these metering installations are considered "not fit for purpose". This means certification is cancelled. The ICPs are 0000101086EN7AE, 0000551859HBDBA, 0001812940HB92C and 0005001070CNA16.

As recorded in Section 7.13, the statistical sampling methodology is non-compliant for 4,826 ICPs in Project 1 and 24,527 ICPs in project 2, therefore certification is cancelled.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 6.4 With: Clause 20 of Schedule 10.7 From: 15-Jun-17 To: 13-Feb-19	Certification cancelled for following ICPs and the registry was not updated within 10 business days: 5 ICPs with low burden 29,353 ICPs with incorrect statistical sampling certification applied Potential impact: High Actual impact: Medium Audit history: Twice Controls: Weak Breach risk rating: 6		
Audit risk rating	Rationale for audit risk rating		
Medium	I have recorded the controls as weak because some issues identified in the last audit have not been addressed and more issues have arisen. The impact could be significant, particularly the ICPs certified for 7 years where the results show the population is not accurate when the entire sample is considered. Certified metering can end up with a lower priority for replacement than uncertified metering. The audit risk rating is medium.		
Actions taken to resolve the issue		Completion date	Remedial action status
This is disputed and LMGL does not accept that the certification is cancelled. <ul style="list-style-type: none"> Statistical sampling has been undertaken correctly. (As advised by the ATH's and certification and further documentation has been supplied) There is no requirement in the Code to burden CTs (as advised by the ATH's) 		Now	Disputed
Preventative actions taken to ensure no further issues will occur		Completion date	

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6.5. Registry Metering Records (Clause 11.8A)

Code reference

Clause 11.8A

Code related audit information

The MEP must provide the registry with the required metering information for each metering installation the MEP is responsible for and update the registry metering records in accordance with Schedule 11.4.

Audit observation

This clause refers to schedule 11.4 which is discussed in **Section 6.2**, apart from the requirement to provide information in the “prescribed form”. I checked for examples of LMGL not using the prescribed form.

Audit commentary

This clause refers to schedule 11.4 which is discussed in **Section 6.2**, apart from the requirement to provide information in the “prescribed form”. I checked for examples of LMGL not using the prescribed form and did not find any examples.

Audit outcome

Compliant

7. CERTIFICATION OF METERING INSTALLATIONS

7.1. Certification and Maintenance (Clause 10.38 (a), clause 1 and clause 15 of Schedule 10.7)

Code reference

Clause 10.38 (a), clause 1 and clause 15 of Schedule 10.7

Code related audit information

The MEP must obtain and maintain certification for all installations and metering components for which it is responsible. The MEP must ensure it:

- *performs regular maintenance, battery replacement, repair/replacement of components of the metering installations*
- *updates the metering records at the time of the maintenance*
- *has a recertification programme that will ensure that all installations are recertified prior to expiry.*

Audit observation

I conducted the following checks to identify metering installations with expired, cancelled or late certification:

- the registry PR255 report was checked to identify ICPs with expired certification
- the new connections process was checked by using the event detail report, PR255 and the list file to identify ICPs where the certification was not conducted within five business days of energisation
- I checked ICPs where certification was cancelled to ensure the registry was updated accordingly.

Audit commentary

The table below summarises ICPs with expired or cancelled certification.

Quantity 2019	Quantity 2018	Quantity 2017	Details
1	19,445	21,943	Previously interim certified Category 1
3	2,929	3,305	Expired statistical certification
2	334	259	Expired full certification Category 1
11	8	20	Expired full certification Category 2
0	510	840	Cert date and cert expiry dates of 01/04/00
7	-	-	Cancelled Category 2, registry not updated
29,353	-	-	Cancelled due to non-compliant statistical sampling
29,377	23,226	26,367	Total uncertified

Certification had expired for 11 Category 2 metering installations at the time the analysis was conducted. The status of the 11 is shown in the table below.

ICP	Category	Cert date	Expiry date	Comments
0000202088DE02F	2	18-05-07	13-11-15	Inability to gain access due to asbestos.
0001050786AL8A8	2	18-03-08	18-03-18	Another MEP was nominated on 06/03/18.
0001501996ENB0C	2	12-05-17	12-05-17	Certification as a lower category is cancelled because monitoring was not conducted.
0004975515AL42A	2	06-05-08	06-05-18	Another MEP was nominated on 06/03/18.
0005711392AL2DB	2	20-05-08	20-05-18	The trader has not arranged access with the customer.
0000016893NTE65	2	10/09/2018	10/09/2018	Asbestos present
0000017151NT1A6	2	30/01/2018	30/01/2018	In progress
0000273829HB761	2	24/01/2018	24/01/2018	NGCM nominated as MEP
0000566890HB148	2	31/10/2018	31/10/2018	NGCM nominated as MEP
0007519774HBF0E	2	1/04/2015	1/04/2015	Only has one CT. Access not available because it is in a transformer enclosure. 3 phases with one phase metered.
0007600630ALF1B	2	24/03/2009	5/09/2018	It is intended that SMCO will be nominated as MEP

Audit outcome

Non-compliant

Non-compliance	Description
<p>Audit Ref: 7.1</p> <p>With: Clause 10.38 (a), clause 1 and clause 15 of Schedule 10.7</p> <p>From: 01-Oct-17</p> <p>To: 13-Feb-19</p>	<p>Certification expired or cancelled for 30,482 ICPs.</p> <p>Potential impact: High</p> <p>Actual impact: Medium</p> <p>Audit history: Multiple times</p> <p>Controls: Weak</p> <p>Breach risk rating: 6</p>
Audit risk rating	Rationale for audit risk rating

Medium	<p>Whilst a considerable amount of effort has gone into the certification program the statistical sampling process has some non-compliant steps, therefore I have recorded the control effectiveness as weak in this area. There are also some expired Category 2 installations where the non-compliant practices have been present for several years.</p> <p>The accuracy of the 4,826 installations cancelled due to incorrect statistical sampling is poor based on the sample results. This has an impact on settlement accuracy. There is also a settlement impact from those ICPs where low burden is present and not addressed. There is further impact on participants whenever one of these ICPs is reconnected; because the trader is then non-compliant for not ensuring certification occurs within five days of electrical connection.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>Project 1: This is across two MEP identifiers in the registry from one population. See later comments.</p> <p>Project 2: 100 meters tested as required. Refer later notes. LMGL strongly disputes this and believes itself and the party that carried out the testing and certification process has complied with the wording of the Code.</p> <p>‘Settlement Accuracy’ – It is an incorrect assertion that settlement accuracy is impacted. ‘Certification’ and ‘Accuracy’ are too separate things. Especially when accessed across a group rather than individual meters; as permitted by the codes. This comment is misleading to the market.</p>		Done	Disputed
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>Cat 2 sites are regularly monitored and SR’s issued and updated proactively. Non completions are monitored and reissued if appropriate. Considerable progress has been made on this total industry issue. ‘Access’ in its fullest definition of the word is at the heart of the reasons for not being able to certify the Cat2 sites.</p>		Ongoing from 2017	

7.2. Certification Tests (Clause 10.38(b) and clause 9 of Schedule 10.6)

Code reference

Clause 10.38(b) and clause 9 of Schedule 10.6

Code related audit information

For each metering component and metering installation an MEP is responsible for, the MEP must ensure that:

- an ATH performs the appropriate certification and recertification tests
- the ATH has the appropriate scope of approval to certify and recertify the metering installation.

Audit observation

I checked the Authority's website to confirm ATH approvals.

I checked the certification records for 50 metering installations to confirm compliance.

Audit commentary

All ATHs have appropriate scopes of approval.

There are four Category 2 installations where the Landis + Gyr EM3050 meter register does not have decimal places, therefore the register advance and prevailing load tests have not been conducted. One certification record states that load tests have not been conducted and others do not have the results recorded, therefore certification should not have been applied.

The ICPs are 0000101517EN109, 0000551859HBDBA, 0001812940HB92C and 0060059625HB21B. The results of one of the reports is shown below.

It's possible testing was conducted but not recorded; however I only have the certification reports to work with.

Main meter is on a 6 digit and has no decimal point for load check unable to do comparison with check meter.				
Prevailing Load Test				
Prevailing Load Test is required to certify all CT sites				
	NZ STD Time	Main Meter	Working Std	D A
Test Finish Time	11-50		00060.861	Site DA
Test Start Time	11-20	000000	00060.454	Administrator
Difference Between Start and Finish			0.407	Date Called
Site Multiplier	40		40	Time Called
Calculated KWh			16.28 KWh	DA Result
% difference of Working Std vs Main Meter			% difference of Working Std vs DA Reading	

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 7.2</p> <p>With: Clause 10.38(b) and clause 9 of Schedule 10.6</p> <p>From: 07-Aug-18</p> <p>To: 30-Jan-19</p>	<p>Register advance and prevailing load tests not conducted for four installations.</p> <p>Potential impact: Low</p> <p>Actual impact: Low</p> <p>Audit history: None</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>		
Audit risk rating	Rationale for audit risk rating		
Low	<p>The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement.</p> <p>The impact on settlement and participants is minor; therefore, the audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
The ATH advises that the certification for 0000101517EN109 is still valid. ICP: 0060059625HB21B (revisited and completed 10/4/2019) and 0001812940HB92C (revisited and completed 4/4/2019)		Complete	Disputed
Preventative actions taken to ensure no further issues will occur		Completion date	Post audit comment
MEP continues to monitor certificates and query ATH where unsure of any information received.		Ongoing	<p>The registry has not been updated with the revised certification dates for ICPs 0060059625HB21B and 0001812940HB92C.</p> <p>ICP 0000551859HBDBA is now disconnected.</p> <p>ICP 0000101517EN109 has a statement in the certification report that the load check was not conducted.</p>

7.3. Active and Reactive Capability (Clause 10.37(1) and 10.37(2)(a))

Code reference

Clause 10.37(1) and 10.37(2)(a)

Code related audit information

For any category 2 or higher half-hour metering installation that is certified after 29 August 2013, the MEP must ensure that the installation has active and reactive measuring and recording capability.

Consumption only installations that is a category 3 metering installation or above must measure and separately record:

- a) import active energy*
- b) import reactive energy*
- c) export reactive energy.*

Consumption only installations that are a category 2 metering installation must measure and separately record import active energy.

All other installations must measure and separately record:

- a) import active energy*
- b) export active energy*
- c) import reactive energy*
- d) export reactive energy.*

All grid connected POCs with metering installations which are certified after 29 August 2013 should measure and separately record:

- a) import active energy*
- b) export active energy*
- c) import reactive energy*
- d) export reactive energy*

Audit observation

I checked the meter types on HHR installations to confirm compliance.

Audit commentary

All relevant metering components are compliant with this clause.

Audit outcome

Compliant

7.4. Local Service Metering (Clause 10.37(2)(b))

Code reference

Clause 10.37(2)(b)

Code related audit information

The accuracy of each local service metering installation in grid substations must be within the tolerances set out in Table 1 of Schedule 10.1.

Audit observation

This clause relates to Transpower as an MEP.

Audit commentary

This clause relates to Transpower as an MEP.

Audit outcome

Not applicable

7.5. Measuring Transformer Burden (Clause 30(1) and 31(2) of Schedule 10.7)

Code reference

Clause 30(1) and 31(2) of Schedule 10.7

Code related audit information

The MEP must not permit a measuring transformer to be connected to equipment used for a purpose other than metering, unless it is not practical for the equipment to have a separate measuring transformer.

The MEP must ensure that a change to, or addition of, a measuring transformer burden or a compensation factor related to a measuring transformer is carried out only by:

- a) the ATH who most recently certified the metering installation*
- b) for a POC to the grid, by a suitably qualified person approved by both the MEP and the ATH who most recently certified the metering installation.*

Audit observation

I asked LMGL if there were any examples of burden changes or the addition of non-metering equipment being connected to metering CTs.

Audit commentary

There are no examples of burden changes having occurred.

Audit outcome

Not applicable

7.6. Certification as a Lower Category (Clauses 6(1)(b) and (d), and 6(2)(b) of Schedule 10.7)

Code reference

Clauses 6(1)(b) and (d), and 6(2)(b) of Schedule 10.7

Code related audit information

A category 2 or higher metering installation may be certified by an ATH at a lower category than would be indicated solely on the primary rating of the current if the MEP, based on historical metering data, reasonably believes that:

- the maximum current will at all times during the intended certification period be lower than the current setting of the protection device for the category for which the metering installation is certified, or is required to be certified by the Code; or*
- the metering installation will use less than 0.5 GWh in any 12-month period.*

If a metering installation is categorised under clause 6(1)(b), the ATH may, if it considers appropriate, and, at the MEP's request, determine the metering installation's category according to the metering installation's expected maximum current.

If a meter is certified in this manner:

- the MEP must, each month, obtain a report from the participant interrogating the metering installation, which details the maximum current from raw meter data from the metering*

installation by either calculation from the kVA by trading period, if available, or from a maximum current indicator if fitted in the metering installation conveyed through the point of connection for the prior month; and

- *if the MEP does not receive a report, or the report demonstrates that the maximum current conveyed through the POC was higher than permitted for the metering installation category it is certified for, then the certification for the metering installation is automatically cancelled.*

Audit observation

I checked all ICPs for examples where the CT ratio was above the threshold to confirm that protection was appropriate or that monitoring was in place.

Audit commentary

ICP 0001501996ENBOC has 1200/5 CTs and was certified as Category 2 on 12/05/17. There is no information confirming that protection is rated at 500A or less and it has a 500kVA transformer. Monitoring has not occurred; therefore, certification is cancelled from the date the first monitoring report was not obtained, which is June 2017. The registry has been updated with the correct certification expiry. This is the second time this installation has had cancelled certification for lack of monitoring, it was cancelled for the previous MEP. This installation has not yet been recertified.

There are three other examples where compensation factors are over 100, all of these have protection devices limiting current to under 500 amps.

Audit outcome

Compliant

7.7. Insufficient Load for Certification Tests (Clauses 14(3) and (4) of Schedule 10.7)

Code reference

Clauses 14(3) and (4) of Schedule 10.7

Code related audit information

If there is insufficient electricity conveyed through a POC to allow the ATH to complete a prevailing load test for a metering installation that is being certified as a half hour meter and the ATH certifies the metering installation the MEP must:

- *obtain and monitor raw meter data from the metering installation at least once each calendar month to determine if load during the month is sufficient for a prevailing load test to be completed:*
- *if there is sufficient load, arrange for an ATH to complete the tests (within 20 business days).*

Audit observation

I checked if there were any examples of Insufficient load certifications.

Audit commentary

During the previous audit, ICP 0000130696ENB89 was certified in accordance with the insufficient load provisions of the Code, but the installation is NHH and monitoring had therefore not been conducted. Certification is cancelled because monitoring was not conducted. This installation has been recertified.

There were no other examples of insufficient load certification.

Audit outcome

Compliant

7.8. Insufficient Load for Certification – Cancellation of Certification (Clause 14(6) of Schedule 10.7)

Code reference

Clause 14(6) of Schedule 10.7

Code related audit information

If the tests conducted under clause 14(4) of Schedule 10.7 demonstrate that the metering installation is not within the relevant maximum permitted error:

- *the metering installation certification is automatically revoked:*
- *the certifying ATH must advise the MEP of the cancellation within one business day:*
- *the MEP must follow the procedure for handling faulty metering installations (clause 10.43 - 10.48).*

Audit observation

There were no examples of insufficient load certification.

Audit commentary

There were no examples of insufficient load certification.

Audit outcome

Compliant

7.9. Alternative Certification Requirements (Clauses 32(2), (3) and (4) of Schedule 10.7)

Code reference

Clauses 32(2), (3) and (4) of Schedule 10.7

Code related audit information

If an ATH cannot comply with the requirements to certify a metering installation due to measuring transformer access issues, and therefore certifies the metering installation in accordance with clause 32(1) of Schedule 10.7, the MEP must:

- *advise the market administrator, by no later than 10 business days after the date of certification of the metering installation, of the details in clause 32(2)(a) of Schedule 10.7*
- *respond, within five business days, to any requests from the market administrator for additional information*
- *ensure that all of the details are recorded in the metering installation certification report*
- *take all steps to ensure that the metering installation is certified before the certification expiry date.*

If the market administrator determines the ATH could have obtained access the metering installation is deemed to be defective and the MEP must follow the process of handling faults metering installations in clauses 10.43 to 10.48.

Audit observation

I checked the registry records to confirm whether alternative certification had been applied and I checked the records for all three installations.

Audit commentary

During the previous audit, alternative certification had been applied to three installations. The metering for ICP 0006593950RN692 is located up a pole and access could not be gained to the CTs to conduct certification testing. This is now recertified.

ICPs 0000100223UN118 and 0103992006LCF3F both had comparative certification conducted but alternative certification was applied. These are both now recertified.

There were no additional examples of alternative certification.

Audit outcome

Compliant

7.10. Timekeeping Requirements (Clause 23 of Schedule 10.7)

Code reference

Clause 23 of Schedule 10.7

Code related audit information

If a time keeping device that is not remotely monitored and corrected controls the switching of a meter register in a metering installation, the MEP must ensure that the time keeping device:

- a) has a time keeping error of not greater than an average of two seconds per day over a period of 12 months*
- b) is monitored and corrected at least once every 12 months.*

Audit observation

I asked LMGL whether there were any metering installations with timeclocks.

Audit commentary

LMGL confirmed there are no installations with timeclocks.

Audit outcome

Not applicable

7.11. Control Device Bridged Out (Clause 35 of Schedule 10.7)

Code reference

Clause 35 of Schedule 10.7

Code related audit information

The participant must, within 10 business days of bridging out a control device or becoming aware of a control device being bridged out, notify the following parties:

- the relevant reconciliation participant*
- the relevant metering equipment provider.*

If the control device is used for reconciliation, the metering installation is considered defective in accordance with 10.43

Audit observation

I checked the process for the management of bridged control devices, and I checked whether any notifications were required to other parties.

Audit commentary

LMGL has a process for dealing with control devices which have been bridged out. If any are bridged out for more than 10 business days, they notify as required by this clause. I checked the most recent ten examples and the appropriate notification was provided.

Audit outcome

Compliant

7.12. Control Device Reliability Requirements (Clause 34(5) of Schedule 10.7)

Code reference

Clause 34(5) of Schedule 10.7

Code related audit information

If the MEP is advised by an ATH that the likelihood of a control device not receiving signals would affect the accuracy or completeness of the information for the purposes of Part 15, the MEP must, within three business days inform the following parties of the ATH's determination (including all relevant details):

- a) the reconciliation participant for the POC for the metering installation*
- b) the control signal provider.*

Audit observation

I checked the steps LMGL had taken to identify regions with signal propagation issues.

Audit commentary

LMGL has not been advised of any areas by the ATHs.

Audit outcome

Compliant

7.13. Statistical Sampling (Clauses 16(1) and (5) of Schedule 10.7)

Code reference

Clauses 16(1) and (5) of Schedule 10.7

Code related audit information

The MEP may arrange for an ATH to recertify a group of category 1 metering installations for which the MEP is responsible using a statistical sampling process.

The MEP must update the registry in accordance with Part 11 on the advice of an ATH as to whether the group meets the recertification requirements.

Audit observation

LMGL engaged the Delta ATH to conduct two statistical sampling projects. Project 1 was for 40,196 meters and Project 2 was for 20,942 meters. I checked the process and results to determine compliance.

Audit commentary

Project 1 was conducted using the “relative light load” accuracy rather than actual light load accuracy. Clause 8.5 of AS/NZS 1284.13 allows this to occur and states the following:

“The accuracy at light load may be taken as either the measured value or the relative value. Relative light load accuracy is calculated as the measured accuracy at light load minus the measured accuracy at full load.”

The justification for using relative light load accuracy is that light load errors have a lower impact on total measured kWh than the full load errors.

Project 1 achieved a 5-year certification period.

I originally reported the following in relation to Project 1:

The sample contained eight three phase meters, which require testing at an additional test point. Testing was conducted at the additional test point; however, the results have not been used in the overall pass/fail calculation. The ATH stated the three phase meters were excluded from the calculation because they were accurate. The standard does not appear to allow these results to be excluded. The standard states that all test points have equal weight, therefore the 0.5 power factor test point must be considered. The extract from the standard is shown below.

For in-service compliance, the Standard requires testing for errors at 2 points for direct-connected single-phase meters, 3 points for direct-connected polyphase meters and 4 points for CT-operated meters. The errors measured at these points are not averaged (each has equal weight); accordingly there is a greater chance of rejecting a meter sample (and ultimately the population that it represents) at one point of the 2 (3 or 4) test points even though the sample might conform at the other test points. This is consistent with the fact that the rate of consumption will vary in individual installations, both between installations and over time.

Furthermore, I question whether it's appropriate to combine single and three phase results when using the "variables" method. The analysis process should have two full load calculations (power factor of 1.0 and power factor of 0.5) and one light load calculation. This means three phase meters should be in a separate population for testing by variables. Due to the fact that the additional three phase test point has not been used in the calculation, I believe the certification is invalid. The wording of the clause is that the MEP "...may arrange for for an ATH to recertify a group of category 1 metering installations for which the metering equipment provider is responsible using a statistical sampling process set out in subclause (2)". The process does not comply with subclause (2), therefore the ATH is non-compliant but LMGL cannot be non-compliant with this clause. However, certification is not valid, which means certification is cancelled, which is recorded in Section 6.4.

On 24/04/19 LMGL provided results including the additional three phase test point, which indicated a pass. I still strongly recommend three phase and single-phase meters be dealt with as separate populations in future statistical sampling exercises.

Recommendation	Description	Audited party comment	Remedial action
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<p>Regarding Clauses 16(1) and (5) of Schedule 10.7</p>	<p>Ensure future statistical sampling separates single and three phase meters into separate populations.</p>	<p>Stat Sampling – Project 1:</p> <p>This is across two “MEP” identifiers as shown in the registry.</p> <p>As known, LMG purchased one population of meters from Contact Energy and commenced as MEP at that point. Trustpower failed / refused to update LMGL as MEP at that point despite requests from LMGL and Contact Energy to do so. LMG requests a determination that either:</p> <ol style="list-style-type: none"> This was an administrative oversight and the Authority can determine that LMGL was the MEP in fact under 10.21 or that Trustpower failed to update the registry with the correct information at the time and therefore breached 11.2 <p>So far as three-phase meters are concerned. The test points were undertaken as per the requirements. They simply weren’t included in the initial calculation as there is no methodology described in AS1284 for the inclusion of 0.5lag testpoints in the calculation of variables. Subsequent, separate, calculation have demonstrated that should these meters be analysed separately, they would pass variables criteria with a seven-year category pass.</p> <p>The ATH advises that the testing is robust and valid.</p> <p>Project 2</p> <p>The testhouse has provided documentation that the representativeness of the population is acceptable and have confirmed that the order of reporting in the analysis is the same as the order in which the meters were tested – there has not been any alteration of the order of testing.</p> <p>The ATH advises that the certification as originally issued should stand.</p> <p>Suggesting that the observation of errors in the next 16 is an indication of an issue is not consistent with AS1284. The Test House needed the 1st 100 in order to comply with the Standard and that they</p>	<p>It appears that this recommendation will not be adopted.</p>
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		considered the appropriateness of the sample when issuing the certification.	
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LMGL included meters in the Project 1 population where Contact Energy was the MEP. LMGL was the MEO but not the MEP at the time. They are now the MEP from the date certification was applied but were not the MEP when the sampling was conducted. The Code wording is shown below and does not seem to allow a population to be made up of metering installations from more than one MEP. There are approx. 5,400 ICPs included in the population where LMGL was not the MEP.

A metering equipment provider may arrange for an ATH to recertify a group of category 1 metering installations for which the metering equipment provider is responsible using a statistical sampling process.

There has been some discussion about whether LMGL or Contact was the MEP for the period prior to LMGL being recorded in the registry as the MEP. The clauses below clarify that Contact was the MEP for the period they were recorded as the MEP in the registry. Although LMGL was the meter equipment owner, the responsibility for compliance was with the MEP. Clause 10.22 clarifies that it is the trader who decides who the MEP is. Clause 10.22 states:

10.22 Change of metering equipment provider

(1) The metering equipment provider for a metering installation may change only if the participant responsible for ensuring there is a metering installation under clause 10.24, 10.25, or 10.26 enters into an arrangement with another person to become the metering equipment provider for the metering installation and—

(a) in the case of a metering installation for an ICP that is not also an NSP—

(i) the trader for the metering installation records the name of the gaining metering equipment provider in the registry in accordance with Part 11; and

(ii) the gaining metering equipment provider records in the registry that it accepts becoming the metering equipment provider (including the effective date from which the gaining metering equipment provider assumes its responsibility as metering equipment provider for the metering installation) in accordance with Part 11.

I originally reported the following in relation to Project 2:

Project 2 was conducted using actual light load accuracy and a certification period of 7 years was applied. The Project 2 results do not fully comply with AS/NZS 1284.13. The required sample size is 100, but the actual sample was 116. Only 100 results were considered. AS/NZS 1284.13 contains the following information indicating that all 116 results should be considered.

Section 8.4 (Selection of samples) states: *“It is recommended that the number of meters selected should be 10% more than the required sample size to allow for the replacements if some meters are damaged.”*

Section 7.1.2 (Sampling accuracy by variables) states: *“Each meter in a sample shall be tested for accuracy in accordance with Clause 8.4.”*

The graph below shows that the “cutoff” point of 100 excludes a high proportion of inaccurate meters. Clause 8.4 of AS/NZS 1284.13 requires the sample to be *“randomly selected to be representative of the selected meter population.”* The graph below shows that the sample is not representative of the meter population.

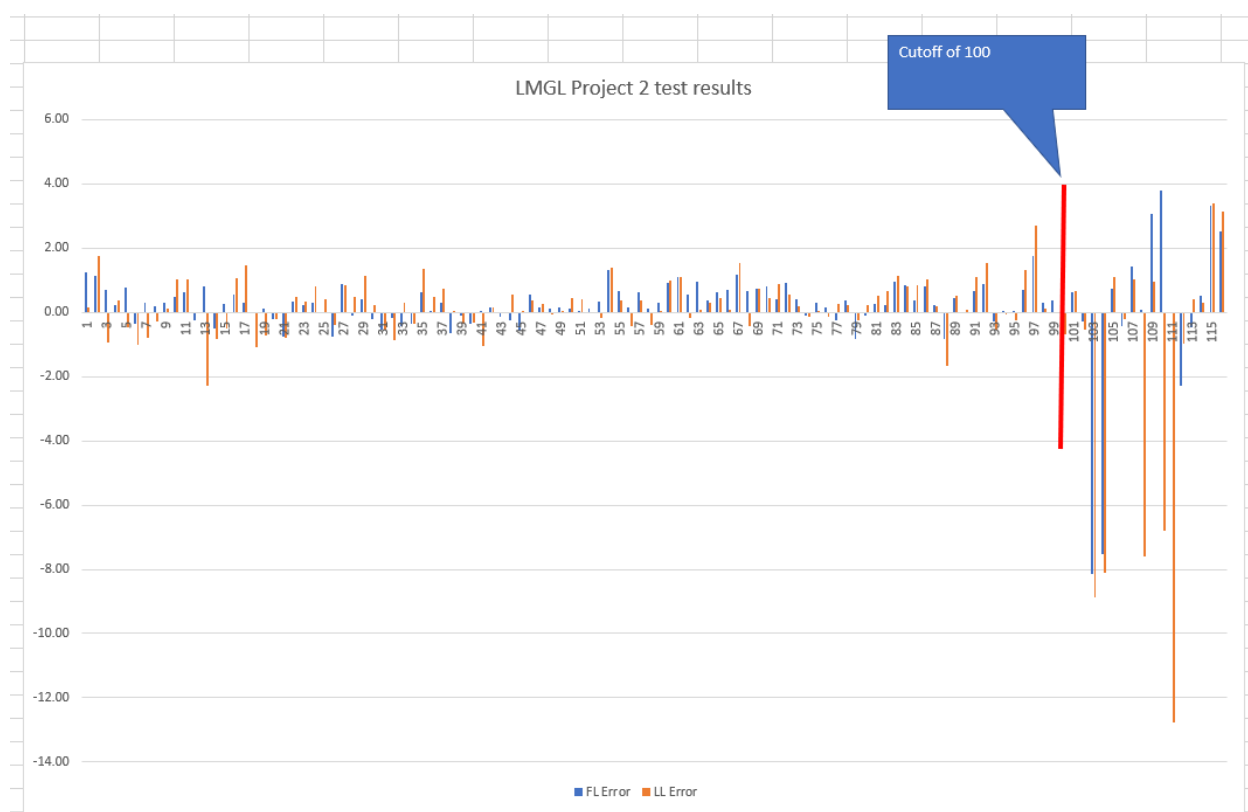
An additional point to note is that there were two three phase meters amongst the 16 not tested. The two three phase meters both had errors over 3% at the 0.5 power factor test point which could mean the entire population fails just on that issue. The standard states that all test points have equal weight,

therefore the 0.5 power factor test point must be considered. The extract from the standard is shown below.

For in-service compliance, the Standard requires testing for errors at 2 points for direct-connected single-phase meters, 3 points for direct-connected polyphase meters and 4 points for CT-operated meters. The errors measured at these points are not averaged (each has equal weight); accordingly there is a greater chance of rejecting a meter sample (and ultimately the population that it represents) at one point of the 2 (3 or 4) test points even though the sample might conform at the other test points. This is consistent with the fact that the rate of consumption will vary in individual installations, both between installations and over time.

The Authority's memo on statistical sampling reinforces this point by stating:

"As the integrity of the statistical sampling process depends on the meter sample being representative of the group, the ATH must satisfy itself that the meter sample properly represents the group. The ATH should keep auditable records to document the factors it considers in forming this view"



Clause 16(1) of Schedule 10.7 allows the MEP to arrange for an ATH to conduct statistical sampling in accordance with AS/NZS 1284. The information provided above shows that the sample was not selected in accordance with AS/NZS 1284 because the it is not representative of the meter population.

The wording of the clause is that the MEP "...may arrange for for an ATH to recertify a group of category 1 metering installations for which the metering equipment provider is responsible using a statistical sampling process set out in subclause (2)". The process does not comply with subclause (2), therefore the ATH is non-compliant but LMGL cannot be non-compliant with this clause. However, certification is not valid, which means certification is cancelled, which is recorded in Section 6.4.

On 24/04/19 LMGL provided the following information:

The inclusion of three phase is problematic because the numbers are low (only 2) – analyzing the 0.5lag as proposed above (Project 1) cannot be undertaken as no average or standard deviation can be meaningfully established. Application of an “Attribute” pass/fail cannot be mixed with a “Variables” analysis methodology so a pass/fail on the basis of 0.5lag performance cannot be applied.

The MEP and ATH have proposed (and undertaken) the retesting of a number (11; i.e. 10% of the population) of single-phase meters at 0.5 lag so that a 0.5 lag performance can be determined by the Variables method to include with the 3-phase test results at 0.5lag. This gives a notional Category 1 pass (7 years).

This approach may be applied in future sampling but only where insufficient three phase results were undertaken to allow for statically relevant analysis. These results and analysis are included separately (Appendix 2)

The approach above of creating a sample of 11 single phase and the two three phase meters is not compliant. As mentioned above, each test point has equal weight, therefore the sample fails at the 0.5 power factor test point and the population cannot be certified. The errors for the two three phase meters at a power factor of 0.5 lagging are 3.78% and 3.05%.

Audit outcome

Compliant

7.14. Compensation Factors (Clause 24(3) of Schedule 10.7)

Code reference

Clause 24(3) of Schedule 10.7

Code related audit information

If a compensation factor must be applied to a metering installation that is an NSP, the MEP must advise the reconciliation participant responsible for the metering installation of the compensation factor within 10 days of certification of the installation.

In all other cases the MEP must advise the registry of the compensation factor.

Audit observation

I checked the records for 29 Category 2 metering installations to confirm that compensation factors were correctly recorded on the registry.

Audit commentary

The compensation factors were correct for all metering installations.

Audit outcome

Compliant

7.15. Metering Installations Incorporating a Meter (Clause 26(1) of Schedule 10.7)

Code reference

Clause 26(1) of Schedule 10.7

Code related audit information

The MEP must ensure that each meter in a metering installation it is responsible for is certified.

Audit observation

I checked the certification records for 50 metering installations to confirm compliance.

Audit commentary

Meters were certified for all 50 metering installations.

Audit outcome

Compliant

7.16. Metering Installations Incorporating a Measuring Transformer (Clause 28(1) of Schedule 10.7)

Code reference

Clause 28(1) of Schedule 10.7

Code related audit information

The MEP must ensure that each measuring transformer in a metering installation it is responsible for is certified.

Audit observation

I checked the certification records for 29 metering installations to confirm compliance.

Audit commentary

Measuring transformer certification records were provided for all metering installations.

Audit outcome

Compliant

7.17. Metering Installations Incorporating a Data Storage Device (Clause 36(1) of Schedule 10.7)

Code reference

Clause 36(1) of Schedule 10.7

Code related audit information

The MEP must ensure that each data storage device in a metering installation it is responsible for is certified.

Audit observation

I checked the certification records for 50 metering installations to confirm compliance.

Audit commentary

Data storage devices were certified for all relevant metering installations.

Audit outcome

Compliant

7.18. Notification of ATH Approval (Clause 7 (3) Schedule 10.3)

Code reference

Clause 7 (3) Schedule 10.3

Code related audit information

If the MEP is notified by the Authority that an ATH's approval has expired, been cancelled or been revised, the MEP must treat all metering installations certified by the ATH during the period where the ATH was not approved to perform the activities as being defective and follow the procedures set out in 10.43 to 10.48.

Audit observation

I checked the ATH register to confirm compliance.

Audit commentary

All relevant ATHs have appropriate approval.

Audit outcome

Compliant

7.19. Interim Certification (Clause 18 of Schedule 10.7)

Code reference

Clause 18 of Schedule 10.7

Code related audit information

The MEP must ensure that each interim certified metering installation on 28 August 2013 is certified by no later than 1 April 2015.

Audit observation

I checked the registry records to identify previously interim certified installations.

Audit commentary

LMGL was not the MEP when the installations expired so I have not recorded non-compliance with this specific clause.

Audit outcome

Not applicable

8. INSPECTION OF METERING INSTALLATIONS

8.1. Category 1 Inspections (Clause 45 of Schedule 10.7)

Code reference

Clause 45 of Schedule 10.7

Code related audit information

The MEP must ensure that category 1 metering installations (other than interim certified metering installations):

- *have been inspected by an ATH within 120 months from the date of the metering installation's most recent certification or*
- *for each 12-month period, commencing 1 January and ending 31 December, a sample of the category 1 metering installations selected under clause 45(2) of Schedule 10.7 has been inspected by an ATH.*

Before a sample inspection process can be carried out, the MEP must submit a documented process for selecting the sample to the Electricity Authority, at least two months prior to first date on which the inspections are to be carried out, for approval (and promptly provide any other information the Authority may request).

The MEP must not inspect a sample unless the Authority has approved the documented process.

The MEP must, for each inspection conducted under clause 45(1)(b), keep records detailing:

- *any defects identified that have affected the accuracy or integrity of the raw meter data recorded by the metering installation*
- *any discrepancies identified under clause 44(5)(b)*
- *relevant characteristics, sufficient to enable reporting of correlations or relationships between inaccuracy and characteristics*
- *the procedure used, and the lists generated, to select the sample under clause 45(2).*

The MEP must, if it believes a metering installation that has been inspected is or could be inaccurate, defective or not fit for purpose:

- *comply with clause 10.43*
- *arrange for an ATH to recertify the metering installation if the metering is found to be inaccurate under Table 1 of Schedule 10.1, or defective or not fit for purpose.*

The MEP must by 1 April in each year, provide the Authority with a report that states whether the MEP has, for the previous 1 January to 31 December period, arranged for an ATH to inspect each category 1 metering installation for which it is responsible under clause 45(1)(a) or 45(1)(b).

This report must include the matters specified in clauses 45(8)(a) and (b).

If the MEP is advised by the Authority that the tests do not meet the requirements under clause 45(9) of Schedule 10.7, the MEP must select the additional sample under that clause, carry out the required inspections, and report to the Authority, within 40 business days of being advised by the Authority.

Audit observation

I checked the process, and the results for the Category 1 inspection regime to confirm compliance.

Audit commentary

LMGL's process for selecting a sample has been approved but the process does not stipulate how the population will be determined. The methodology for selecting the population is not compliant because it

selects ICPs based on a date range of 114 to 126 months since certification rather than by including all ICPs other than those certified or physically inspected in the last 84 months.

Using the registry data from July 2018, the population would be 1,603 and if the population was identified in December 2018 the population would be 1,105, therefore the population as at January 2018 would have been over 500 and possibly over 1,200, so the sample size should have been 80 or 125, not 50.

LMGL provided an update on 24/04/19, confirming that additional sample was drawn from the population of meters with a date range of 84 to 114 months since certification. Inspections were conducted of a sample of this population and a report was provided to the Authority by 01/04/19. Whilst the original sample was incorrectly selected, it appears this matter is now resolved because the Authority has agreed that stratification of sampling is a valid approach.

I originally reported that the Code is clear that certification is cancelled for the population due for sample inspection. That quantity was 1,105 ICPs. My finding was based on the following wording of the Code:

“...for each 12 month period commencing 1 January and ending 31 December, a sample, selected under subclause (2), of the category 1 metering installations for which it is responsible has been inspected by an ATH within the period set out in Table 1 of Schedule 10.1 starting from the date of the earliest certification date of a metering installation in the group.”

Clause 20(1) of Schedule 10.7 goes on to say:

“The certification of a metering installation is automatically cancelled on the date on which any 1 of the following events takes place ... an inspection of the metering installation, that is required under this Part, is not carried out in accordance with the relevant clauses of this Part.”

On 23/04/19, the Authority provided clarification that: *“The Code requirements for inspections of category 1 metering installations undertaken using statistical sampling are insufficiently clear as to when and how the sample inspections must be performed and completed.”* Which means that certification is not cancelled even though the inspections were not completed within the period 01/01/18 to 31/12/18.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 8.1 With: Clause 45 of Schedule 10.7 From: 01-Jan-18 To: 31-Dec-18	Incorrect Category 1 sample selection Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact on settlement and participants is minor; therefore the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status

Additional inspections were undertaken to bring a second population inspected up to the required number and the report was lodged with the Authority as required. Our understanding is that the inspection for 2018 is compliant.	Completed	Cleared
Preventative actions taken to ensure no further issues will occur	Completion date	
Selection methodology now corrected.	2019 Programme	

8.2. Category 2 to 5 Inspections (Clause 46(1) of Schedule 10.7)

Code reference

Clause 46(1) of Schedule 10.7

Code related audit information

The MEP must ensure that each category 2 or higher metering installation is inspected by an ATH at least once within the applicable period. The applicable period begins from the date of the metering installation's most recent certification and extends to:

- 120 months for Category 2
- 60 months for Category 3
- 30 months for Category 4
- 18 months for Category 5.

Audit observation

I checked the registry information to confirm which ICPs were due for inspection. There were no category 2 or 3 metering installations due for inspection.

Audit commentary

I checked the registry information to confirm which ICPs were due for inspection. There were no category 2 or 3 metering installations due for inspection.

Audit outcome

Not applicable

8.3. Inspection Reports (Clause 44(5) of Schedule 10.7)

Code reference

Clause 44(5) of Schedule 10.7

Code related audit information

The MEP must, within 20 business days of receiving an inspection report from an ATH:

- undertake a comparison of the information received with its own records
- investigate and correct any discrepancies
- update the metering records in the registry.

Audit observation

I checked the process and results from inspection regimes to ensure any incorrect records were updated.

Audit commentary

LMGL checked the relevant details during inspections and I observed evidence that updates had occurred where discrepancies were found.

Audit outcome

Compliant

8.4. Broken or removed seals (Clause 48(4) and (5) of Schedule 10.7)

Code reference

Clause 48(4) and (5) of Schedule 10.7

Code related audit information

If the MEP is advised of a broken or removed seal it must use reasonable endeavours to determine

- a) who removed or broke the seal*
- b) the reason for the removal or breakage*

and arrange for an ATH to carry out an inspection of the removal or breakage and determine any work required to remedy the removal or breakage.

The MEP must make the above arrangements within

- a) three business days, if the metering installation is category 3 or higher*
- b) 10 business days if the metering installation is category 2*
- c) 20 business days if the metering installation is category 1.*

Audit observation

I checked all examples of notification of missing seals, which were all as a result of inspection processes or notification by field technicians.

Audit commentary

I checked 20 examples of seals found missing. Appropriate notification was provided in all cases.

Audit outcome

Compliant

9. PROCESS FOR HANDLING FAULTY METERING INSTALLATIONS

9.1. Investigation of Faulty Metering Installations (Clause 10.43(4) and (5))

Code reference

Clause 10.43(4) and (5)

Code related audit information

If the MEP is advised or becomes aware that a metering installation may be inaccurate, defective, or not fit for purpose, it must investigate and report on the situation to all affected participants as soon as reasonably practicable after becoming aware of the information, but no later than;

- a) 20 business days for Category 1,*
- b) 10 business days for Category 2 and*
- c) 5 business days for Category 3 or higher.*

Audit observation

I checked ten examples where LMGL had become aware of faulty metering installations.

Audit commentary

The notification occurred within the allowable timeframes in all cases.

Audit outcome

Compliant

9.2. Testing of Faulty Metering Installations (Clause 10.44)

Code reference

Clause 10.44

Code related audit information

If a report prepared under clause 10.43(4)(c) demonstrates that a metering installation is inaccurate, defective, or not fit for purpose, the MEP must arrange for an ATH to test the metering installation and provide a 'statement of situation'.

If the MEP is advised by a participant under clause 10.44(2)(a) that the participant disagrees with the report that demonstrates that the metering installation is accurate, not defective and fit for purpose, the MEP must arrange for an ATH to:

- a) test the metering installation*
- b) provide the MEP with a statement of situation within five business days of:*
- c) becoming aware that the metering installation may be inaccurate, defective or not fit for purpose; or*
- d) reaching an agreement with the participant.*

The MEP is responsible for ensuring the ATH carries out testing as soon as practicable and provides a statement of situation.

Audit observation

I checked ten examples where LMGL had become aware of faulty metering installations.

Audit commentary

The notification occurred within the allowable timeframes in all cases.

Audit outcome

Compliant

9.3. Statement of Situation (Clause 10.46(2))

Code reference

Clause 10.46(2)

Code related audit information

Within three business days of receiving the statement from the ATH, the MEP must provide copies of the statement to:

- *the relevant affected participants*
- *the market administrator (for all category 3 and above metering installations and any category 1 and category 2 metering installations) on request.*

Audit observation

I checked ten examples where LMGL had become aware of faulty metering installations.

Audit commentary

The statements of situation were provided within the allowable thresholds.

Audit outcome

Compliant

10. ACCESS TO AND PROVISION OF RAW METER DATA AND METERING INSTALLATIONS

10.1. Access to Raw Meter Data (Clause 1 of Schedule 10.6)

Code reference

Clause 1 of Schedule 10.6

Code related audit information

The MEP must give authorised parties access to raw meter data within 10 business days of receiving the authorised party making a request.

The MEP must only give access to raw meter data to a trader or person, if that trader or person has entered into a contract to collect, obtain, and use the raw meter data with the end customer.

The MEP must provide the following when giving a party access to information:

- a) the raw meter data; or*
- b) the means (codes, keys etc.) to enable the party to access the raw meter data.*

The MEP must, when providing raw meter data or access to an authorised person use appropriate procedures to ensure that:

- the raw meter data is received only by that authorised person or a contractor to the person*
- the security of the raw meter data and the metering installation is maintained*
- access to the raw meter data is limited to only the specific raw meter data under clause 1(7)(c) of Schedule 10.6.*

Audit observation

I checked whether any parties had requested access to raw meter data.

Audit commentary

No requests have been received, but LMGL advised access could be granted in accordance with this clause if necessary.

Audit outcome

Compliant

10.2. Restrictions on Use of Raw Meter Data (Clause 2 of Schedule 10.6)

Code reference

Clause 2 of Schedule 10.6

Code related audit information

The MEP must not give an authorised person access to raw meter data if to do so would breach clause 2(1) of Schedule 10.6.

Audit observation

I checked whether any parties had requested access to raw meter data.

Audit commentary

No requests have been received, but LMGL advised access could be granted in accordance with this clause if necessary.

Audit outcome

Compliant

10.3. Access to Metering Installations (Clause 3(1), (3) and (4) of Schedule 10.6)

Code reference

Clause 3(1), (3) and (4) of Schedule 10.6

Code related audit information

The MEP must within 10 business days of receiving a request from one of the following parties, arrange physical access to each component in a metering installation:

- *a relevant reconciliation participant with whom it has an arrangement (other than a trader)*
- *the Authority*
- *an ATH*
- *an auditor*
- *a gaining MEP.*

This access must include all necessary means to enable the party to access the metering components

When providing access, the MEP must ensure that the security of the metering installation is maintained, and physical access is limited to only the access required for the purposes of the Code, regulations in connection with the party's administration, audit and testing functions.

Audit observation

I checked whether any parties had requested access to metering installations.

Audit commentary

No requests have been received, but LMGL advised access could be granted in accordance with this clause if necessary.

Audit outcome

Compliant

10.4. Urgent Access to Metering Installations (Clause 3(5) of Schedule 10.6)

Code reference

Clause 3(5) of Schedule 10.6

Code related audit information

If the party requires urgent physical access to a metering installation, the MEP must use its best endeavours to arrange physical access.

Audit observation

I checked whether any parties had requested access to metering installations.

Audit commentary

No requests have been received, but LMGL advised access could be granted in accordance with this clause if necessary.

Audit outcome

Compliant

10.5. Electronic Interrogation of Metering Installations (Clause 8 of Schedule 10.6)

Code reference

Clause 8 of Schedule 10.6

Code related audit information

When raw meter data can only be obtained from an MEP's back office, the MEP must

- *ensure that the interrogation cycle does not exceed the maximum interrogation cycle shown in the registry*
- *interrogate the metering installation at least once within each maximum interrogation cycle.*

When raw meter data can only be obtained from an MEP's back office, the MEP must ensure that the internal clock is accurate, to within ± 5 seconds of:

- *New Zealand standard time; or*
- *New Zealand daylight time.*

When raw meter data can only be obtained from an MEP's back office, the MEP must record in the interrogation and processing system logs, the time, the date, and the extent of any change in the internal clock setting in the metering installation.

When raw meter data can only be obtained from an MEP's back office, the MEP must ensure that a data storage device in a metering installation does not exceed the maximum time error set out in Table 1 of clause 8(5) of Schedule 10.6.

The MEP must compare the time on the internal clock of the data storage device with the time on the interrogation and processing system clock, calculate and correct (if required by this provision) any time error, and advise the affected reconciliation participant.

When raw meter data can only be obtained from an MEP's back office, the MEP must, when interrogating a metering installation, download the event log, check the event log for evidence of malfunctioning or tampering, and if this is detected, carry out the appropriate requirements of Part 10.

The MEP must ensure that all raw meter data that can only be obtained from the MEPs back office, that is downloaded as part of an interrogation, and that is used for submitting information for the purpose of Part 15 is archived:

- *for no less than 48 months after the interrogation date*
- *in a form that cannot be modified without creating an audit trail*
- *in a form that is secure and prevents access by any unauthorised person*

in a form that is accessible to authorised personnel.

Audit observation

LMGL is not the MEP for AMI metering installations and does not conduct data collection as an MEP.

Audit commentary

LMGL is not the MEP for AMI metering installations and does not conduct data collection as an MEP.

Audit outcome

Not applicable

10.6. Security of Metering Data (Clause 10.15(2))

Code reference

Clause 10.15(2)

Code related audit information

The MEP must take reasonable security measures to prevent loss or unauthorised access, use, modification or disclosure of the metering data.

Audit observation

I checked the security and storage of data by looking at examples of data more than 48 months old.

Audit commentary

All data is secure, and any transmission is via FTP.

Audit outcome

Compliant

10.7. Time Errors for Metering Installations (Clause 8(4) of Schedule 10.6)

Code reference

Clause 8(4) of Schedule 10.6

Code related audit information

When raw meter data can only be obtained from the MEPs back office, the MEP must ensure that the data storage device it interrogates does not exceed the maximum time error set out in Table 1 of clause 8(5) of Schedule 10.6.

Audit observation

LMGL is not the MEP for AMI metering installations.

Audit commentary

LMGL is not the MEP for AMI metering installations.

Audit outcome

Not applicable

10.8. Event Logs (Clause 8(7) of Schedule 10.6)

Code reference

Clause 8(7) of Schedule 10.6

Code related audit information

When raw meter data can only be obtained from the MEP's back office, the MEP must, when interrogating a metering installation:

- a) *ensure an interrogation log is generated*
- b) *review the event log and:*
 - i. *take appropriate action*
 - ii. *pass the relevant entries to the reconciliation participant.*
- c) *ensure the log forms part of an audit trail which includes:*
 - i. *the date and*

- ii. *time of the interrogation*
- iii. *operator (where available)*
- iv. *unique ID of the data storage device*
- v. *any clock errors outside specified limits*
- vi. *method of interrogation*
- vii. *identifier of the reading device used (if applicable).*

Audit observation

LMGL is not the MEP for AMI metering installations.

Audit commentary

LMGL is not the MEP for AMI metering installations.

Audit outcome

Not applicable

10.9. Comparison of HHR Data with Register Data (Clause 8(9) of Schedule 10.6)

Code reference

Clause 8(9) of Schedule 10.6

Code related audit information

When raw meter data can only be obtained from the MEP's back office, the MEP must ensure that each electronic interrogation that retrieves half-hour metering information compares the information against the increment of the metering installations accumulating meter registers.

Audit observation

LMGL is not the MEP for AMI HHR metering installations.

Audit commentary

LMGL is not the MEP for AMI HHR metering installations.

Audit outcome

Not applicable

10.10. Correction of Raw Meter Data (Clause 10.48(2),(3))

Code reference

Clause 10.48(2),(3)

Code related audit information

If the MEP is notified of a question or request for clarification in accordance with clause 10.48(1), the MEP must, within 10 business days:

- *respond in detail to the questions or requests for clarification*
- *advise the reconciliation participant responsible for providing submission information for the POC of the correction factors to apply and period the factors should apply to.*

Audit observation

LMGL has not received any requests in relation to this clause.

Audit commentary

LMGL has not received any requests in relation to this clause.

Audit outcome

Not applicable

CONCLUSION

The audit identified nine non-compliances.

The main issue found is that the statistical sampling processes for two populations of meters at 29,353 ICPs do not comply with the Code or with AS/NZS 1284.13. This audit concludes that certification for these metering installations is not valid. The issue has three main points, as follows:

4. Populations with different MEPs were combined into one population.
5. The additional three phase test point was originally excluded from the pass/fail calculation.
6. 16 of a sample of 116 meters were excluded from the pass/fail calculation. Seven of the 16 meters excluded had errors greater than 3%. The last two meters on the list were three phase and both had errors greater than 3%.

Additional information was provided by the Authority on 23/04/19 and LMGL on 24/04/19. This information was considered, and further comment is included in Sections 6.4, 7.13 and 8.1. There are minor changes to some findings, but the main issues are still present, particularly in relation to non-compliant statistical sampling processes.

Several issues were found with certification practices, as follows:

4. Some certification reports did not have prevailing load or register advance results recorded.
5. Some Category 2 installations were certified using the comparative method, but the uncertainty calculations did not take temperature into account.
6. Some Category 2 installations were certified without low burden being addressed.

Registry information accuracy and timeliness of updates has a high level of compliance.

The date of the next audit is determined by the Electricity Authority and is dependent on the level of compliance during this audit. The table below provides some guidance on this matter and recommends an audit frequency of three months. I recommend the Authority considers a longer period of six months to allow sufficient time to resolve the issues surrounding statistical sampling and Category 2 installations where recertification may be required.

PARTICIPANT RESPONSE

The main issues coming from the audit are the completion of the two statistical sampling projects as undertaken by the ATH. Readers of this audit need to ensure they have a good level of understanding of the metering codes to know why LMGL strongly disputes the major findings.

As described earlier in the paper:

Statistical Sampling

Project 1:

Trustpower was aware of the sale of one population of assets to LMGL by Contact in 2016. Both Contact Energy and LMGL requested Trustpower to nominate LMGL as the MEP. Trustpower, however, did not update the registry with the correct information as requested.

The issue of non-nomination of the LMGL sites had been signaled to the auditor and the authority in earlier MEP audits and conversations. LMGL and Delta had commenced the statistical sampling programme in early 2017.

If this was not an administrative issue under which the Authority could determine that LMGL was *in fact* the MEP (per 10.21) then this must be a breach of 11.2 (Requirement to provide complete and accurate information) by Trustpower. The consequence of which is that LMG and Delta undertook a population

selection across two different MEPs as shown in the registry and an unintended consequential breach has therefore occurred.

The inclusion of three phase metering was advised as acceptable by the ATH on the basis of advice received by an auditor. Three phase metering was tested at all testpoints as required by AS1284, however, as there is no prescribed methodology for the assessment of the 0.5 lag testpoint for variables in AS1284, these test point results were not included in the original analysis submitted.

Project 2:

The testhouse has confirmed in writing that the order of analysis was the order in which the results were received (the order in which the meters were tested). The testhouse has also separately confirmed that they are satisfied with the representativeness of the sample as tested. These statements are provided as documents separate to this audit document.

Statistical Sampling in General

The key is the wording of the code and the consideration of all meters returned and tested and the experience of the Test House that performed the function and considered not just the meters but LMGLs population and other programmes they have reviewed.

LMGL contracted Delta's Class-A test lab to follow the approved processes Delta have used for other MEPs' sample programmes for population determination, Test Lab processes and Accuracy and Certification determination. The Test House issues the certification.

Delta Test House concluded from the individual results, the combined population, their own experience with the programmes and the meters concerned, that the conditions were acceptable to both them and complied with AS1284.

As described above for Project 1, LMGL seeks a determination that it is and was the MEP of the population for Project 1 either because:

- The non-nomination by Trustpower was an administrative oversight (10.21 of the Metering Codes) after being requested by Contact Energy and LMGL to nominate or that;
- The non-nomination was a result of incorrect information supplied to the registry and was a breach of clause 11.2 (not necessarily intentionally)

In either case, the population was sold to LMGL as one population by Contact Energy (not differentiated by retailer). LMGL operated functionally as the MEP for these sites where all operational issues relating to the meters were directed to LMGL (including maintenance and BAU changes).

CT Burdening

The ongoing issue of CT Burdening is raised in this audit. The ATHs advise (as per the detail in the document) that they consider that the Code does not require CT burdening to be undertaken upon comparative recertification of the Cat2 sites in question. Whilst there is a subsequent memo, this does not appear to clarify an apparent intention for CT burdening to take place for comparative recertification. This issue was discussed heavily at the most recent MEP and Test House forum. All industry participants have issue with the wording of the code on this matter.

General Compliance

0001501996ENB0C - Gisborne Girls High School - The audit comments fail to mention the amount of work, since acquiring this site, that LMGL has put in to try and solve this issue. It has now come to the point where the 3rd Retailer to trade on it since LMGL became MEP is replacing the metering once the site customer has modified their switchboard to allow for the lower capacity CTs to be installed. A recent attempt to change the CTS for the lower category failed due to the switchboard findings. Once changed

the Category will become Cat2. We have been advised by the new Retailer, who will also become the new MEP, that these changes will be completed shortly.

LMGL is striving to achieve compliance in all aspects of its operation and continues to work closely with ATHs and retailers to ensure that the operations and the data is compliant and correct.

As an MEP, LMGL relies on the certification and information that is it provided by the testhouses and expends considerable energy in ensuring that the material that it is provided is as robust and as correct as possible, to its knowledge.