

Electricity Industry Participant Code Audit Report

for



Class A Approved Test House

Prepared by Steve Woods – Veritek Limited

Date of Audit: 10/03/16

Date Audit Report Complete: 08/04/16

Executive Summary

Landis + Gyr is a meter manufacturer with an associated National Association of Testing Authorities Australia (NATA) approved Electricity Metering Laboratory. Landis + Gyr is also an Electricity Authority approved Test House. This audit was performed at their request, to encompass the Electricity Participation Code requirement for an audit, in accordance with clause 2 of schedule 10.3.

The audit found compliance with the Code and only one minor recommendation is made.

Table of Non Compliance

Subject	Section	Clause	Non compliance	Impact	Audit History	Remedial Action
			Nil			

Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Status
Organisation and management	3.7	15 of schedule 10.4	Include the specific responsibilities of the Technical Manager in the quality manual.	Identified

Persons Involved in This Audit

Auditor:

Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

Landis + Gyr Test House personnel assisting in this audit were.

Name	Title
Gerard Meichan	Business Excellence Manager
Jorge Anquetil	Quality Manager

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1. Scope of Audit

Landis + Gyr is a meter manufacturer with an associated NATA approved Electricity Metering Laboratory. Landis + Gyr is also an Electricity Authority approved Test House. This audit was performed at their request, to encompass the Electricity Participation Code requirement for an audit, in accordance with clause 2 of schedule 10.3.

The audit was conducted in accordance with an ATH audit guideline prepared by Veritek Ltd.

Landis + Gyr wishes its ATH approval to include the following functions of Clauses 3(2) 4(2) of Schedule 10.3:

Class A Approval:

(a) calibration of—

(i) working standards:

(ii) metering components (other than a calibration referred to in paragraph (c)):

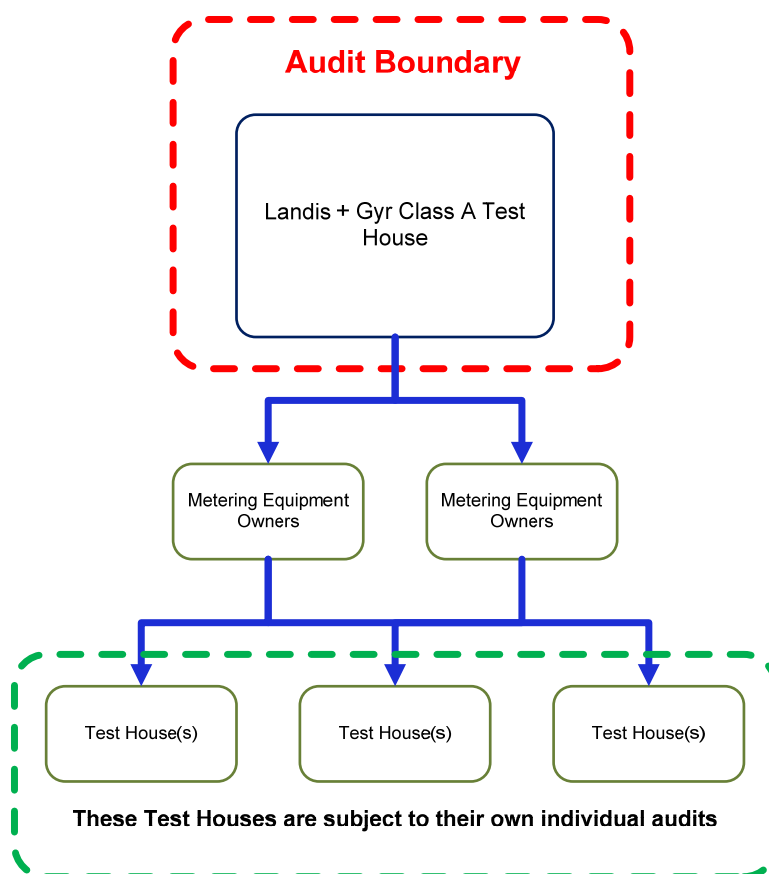
(b) issuing calibration reports:

Landis + Gyr also requires approval to certify metering components. I note that the Class A functions listed in Clause 3(2) of Schedule 10.3 do not include certification of metering components.

Landis + Gyr does not perform any field installation or certification work, however they do provide certification and calibration reports to metering equipment owners and other Test Houses that will form part of the site certification documentation for the relevant installations.

Many audit requirements of the Class A Test House are covered in their external ISO 17025 audit, conducted at 18 month intervals by NATA.

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



2. Previous Audit Results

The previous audit was conducted in 2013 by Veritek Limited. The audit found compliance with the Code.

Table of Non Compliance

Subject	Section	Clause	Non compliance	Status
			None	

Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Status
			Nil	

3. Approved Test House Requirements

3.1 Use of Contractors (Clause 10.4(1) of Part 10)

A participant may perform its obligations and exercise its rights under this Part by using a contractor. A participant who uses a contractor to perform the participant's obligation under this Part remains responsible and liable for, and is not released from, the obligation, or any other obligation under this Part.

Landis + Gyr does not use any contractors in any part of their operation.

3.2 Provision of Accurate Information (Clause 10.6 of Part 10)

A participant must take all practicable steps to ensure that information that it provides under this Part is:

- Complete and accurate
- Not misleading or deceptive
- Not likely to mislead or deceive.

If a participant, having provided information under this Part, becomes aware that the participant has not complied with these requirements, the participant must, except if clause 10.43 applies, as soon as practicable provide such further information, or corrected information, as is necessary to ensure that the participant complies.

I did not find any information that was incorrect and compliance is confirmed.

3.3 Dispute Resolution (Clause 10.50(1) to (3) of Part 10)

Participants must in good faith use 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.

Landis + Gyr confirms there have not been any disputes resolved under this clause.

3.4 ATH Approval (Clause 10.40 of Part 10)

A person wishing to be approved as an ATH, or an ATH wishing to renew its approval, must apply to the Authority:

- At least two months before the intended effective date of the approval or renewal
- In writing
- In the prescribed form
- In accordance with Schedule 10.3.

A person making an application must satisfy the Authority (providing, where appropriate, suitable evidence) that the person:

- Has the facilities and procedures to reliably meet, for the requested term of the approval, the minimum requirements of this Code for the class or classes of ATH for which it is seeking approval
- Has had an audit under Schedule 10.3
- Is a fit and proper person for approval.

Landis + Gyr has appropriate approval, and appropriate facilities and procedures to meet the requirements of the Code.

3.5 ATH Requirements (Clause 10.41 of Part 10)

An ATH must, when carrying out activities under this Part:

- Only carry out activities for which it has been approved by the Authority
- Exercise a degree of skill, diligence, prudence, foresight, and economic management, taking into account the technological complexity of the metering components and metering installations being tested:
 - Determined by reference to good industry practice
 - That would reasonably be expected from a skilled and experienced ATH engaged in the management and operation of an approved ATH
- Comply with all applicable safety, employment, environmental, and other enactments
- Exercise any discretion given to it under this Part by:
 - Taking into account the relevant circumstances of the particular instance
 - Acting professionally
- Recording the manner in which it carried out its activities and its reasons for carrying the activities out in that manner.

Landis + Gyr has only conducted activities that fall within the scope of their approval. I have concluded from this audit that Landis + Gyr has met the requirements of this clause. I checked compliance with other enactments, specifically those related to safety and environmental practices. Landis + Gyr has ISO 18001 accreditation for Occupational Health and Safety Management and ISO 14001 for Environmental Management.

3.6 Quality Management Systems (Clauses 3(1) & 4(1) of Schedule 10.3 & Clause 16 of Schedule 10.4

Landis + Gyr provided a copy of their two most recent ISO/IEC 17025:2005 audit reports, from April 2015 and September 2015. The September 2015 audit was additional to the normal schedule because Landis + Gyr had recently moved their laboratory from Sydney to Melbourne.

The site audited is noted as “Gas and Electricity Meter Testing Laboratories” and the field of test is noted as “Calibration”.

Signatories are noted as:

Jorge Anquetil – Meter Test Laboratory and Verification Laboratory

Gerard Meichan – Verification Laboratory

Leonel Ramirez - Meter Test Laboratory and Verification Laboratory

Juhandi Pit - Meter Test Laboratory and Verification Laboratory

Shitao Tan - Meter Test Laboratory and Verification Laboratory

The report from April 2015 contained a “minor condition” but this related to gas metering not electricity metering. The September 2015 report did not contain any conditions.

3.7 Organisation and Management (Clause 15 of Schedule 10.4)

Clause 15 of Schedule 10.4 requires the following:

(1) An ATH must ensure that—

(a) it has managerial staff who, unless otherwise permitted in the relevant approval, all have the authority and resources needed to discharge their duties; and

(b) the responsibilities, authority, and functional relationships of all its personnel are fully and accurately specified and recorded in the ATH's records.

(2) An ATH must appoint—

(a) a technical manager (however named) with overall responsibility for technical operations, who must have appropriate engineering qualifications and experience in the operation of an approved test house; and

(b) a quality manager (however named), with responsibility for the quality management certification and the implementation of the quality management system.

(3) An ATH must ensure that all staff who perform or supervise work or activities regulated under this Part are technically competent, experienced, qualified, and trained for the functions they perform.

Landis + Gyr has a functional and easily understood system of authority that includes the functions of Technical Manager (Gerard Meichan) and Quality Manager (Jorge Anquetil). The quality manual contains a paragraph describing the responsibilities of the Quality Manager. I recommend the specific responsibilities of the Technical Manager are also included in the quality manual.

Recommendation	Description	Audited party comment	Remedial action
Regarding: Clause 15 of schedule 10.4	Include the specific responsibilities of the Technical Manager in the quality manual.	The specific responsibilities of the Technical Manager will be included in the quality manual	Identified

During the audit, I confirmed that managerial staff are at an appropriate level in the organisation and that they have the education, skill and experience to discharge their duties. Landis + Gyr have a robust talent management system and this was viewed during the audit. The “Skills Matrix” was also viewed and it is up to date. Staff regularly attend measurement and uncertainty courses run by NMI.

Landis + Gyr’s Quality Manual was reviewed and it is comprehensive, well laid out and appropriate for the functions performed. The manual exists electronically on the Landis + Gyr system.

3.8 Accommodation & Environment (Clause 1 of Schedule 10.4)

An ATH must maintain a list of personnel who are authorised to access and use its laboratory and storage facilities and restrict access to its laboratory and storage facilities to:

- (i) The personnel specified
- (ii) The Authority
- (iii) An auditor conducting an audit
- (iv) Any other person who is, at all times, directly supervised by a member of personnel specified.

During the audit I confirmed that access to the laboratory and to records is limited to those personnel who are authorised and have a “swipe card” and a login for access to records. Any other personnel who enter the laboratory area (including myself) are directly supervised by an authorised person. As mentioned at the beginning of this section, the environment is suitably maintained and monitored in accordance with IEC standards.

An ATH must restrict access to its metering records to:

- (i) The relevant metering equipment provider
- (ii) The Authority
- (iii) An auditor conducting an audit

(iv) The relevant metering equipment owner.

Landis + Gyr's records are all electronic and are secure by way of password protection. Backup is in accordance with standard industry protocols.

An ATH must ensure that the environment in which its activities are undertaken does not, or could not reasonably be expected to, invalidate test results or adversely affect the required accuracy of measurement; and they must monitor and record the environmental conditions within its approved ATH's laboratory and storage facilities; and comply with the specific requirements of the applicable standard listed in Table 5 of Schedule 10.1 for the calibrations or tests being carried out.

Landis + Gyr controls their laboratory environment to $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$. If the temperature is outside these limits, an alarm alerts relevant personnel and all calibration work is stopped.

3.9 Test Equipment (Clause 2 of Schedule 10.4)

An ATH must, at all times, ensure that it has access to all items of equipment required for the performance of the calibrations and tests it is approved to undertake under this Part; and each item of equipment it uses is maintained in accordance with the manufacturer's recommendations and this Code.

Landis + Gyr have a comprehensive maintenance programme with detailed records for all test equipment. This system was demonstrated during the audit. Each test board has a weekly maintenance schedule, which includes cleaning of terminals and checking that the "pickups" are correctly set. Landis + Gyr is in the process of moving the maintenance monitoring schedule into SAP.

3.10 Calibration of Reference & Working Standards (Clause 3 of Schedule 10.4)

A Working standard is a standard that has been calibrated by an ATH or a calibration laboratory that is used routinely for the calibration of metering components and metering installations.

A reference standard means a measuring instrument that has been calibrated by an approved calibration laboratory and is not used as a working standard.

Landis + Gyr has 15 "Test Boards" which would be considered "test benches" in the Electricity Industry Participation Code. These Test Boards are also considered working standards and are calibrated against one of three Radian standards (reference standards) on a continuous rotating basis during the year, and at the end of each year a calibration report is prepared based on the results. During the audit I was shown a Radian connected to a Test Board. One of the Radians is considered a "Master" reference standard and is calibrated by Ausgrid. The other Radians are calibrated against this standard.

I checked Landis + Gyr's calibration schedule and results and I confirm compliance. The Radian standards were all calibrated in August 2015.

3.11 Calibration Errors (Clause 5 of Schedule 10.4)

A Standard cannot be used if the ATH believes it has a calibration error. If an error is found then all ATH's that have used the standard must be notified. All metering installations certified using the standard must be treated as defective in accordance with Clause 10.43.

There are no examples of standards being found to have calibration errors. Daily comparison checks are conducted so calibration errors, although unlikely to occur, would be picked up at the earliest opportunity.

3.12 Calibration Methods (Clause 7 of Schedule 10.4)

An ATH must, before it certifies a metering installation or metering component, ensure that one of the following persons has calibrated the metering components under this Part:

- a) An approved calibration laboratory; or
- b) An ATH with the appropriate approval under Schedule 10.3.

Landis + Gyr is an approved calibration laboratory and an approved Test House. Landis + Gyr calibrates meters and they also certify them for those participants who request certification.

An ATH must, before it certifies a metering component, ensure that the metering component is calibrated or adjusted under the appropriate physical and electrical reference conditions detailed in the standard listed in Table 5 of Schedule 10.1; or conditions which permit the ATH to calculate the results and their uncertainty at the reference conditions detailed in the standard listed in Table 5 of Schedule 10.1. Landis + Gyr controls their laboratory environment to $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$ as recorded in Section 3.8.

If an ATH calibrates a metering component, it must ensure that the individual test points that it uses are no less than the minimum set out in the standards listed in Table 5 of Schedule 10.1; or sufficient and appropriate in the circumstances to ensure that the calibration allows calculation of the metering installation error as set out in clause 22 of Schedule 10.7. The individual test points are those listed in the relevant table.

An ATH must, when calibrating a metering component, if necessary, adjust and document the error compensation; and ensure that any adjustment carried out is appropriate to achieve an error as close as practicable to zero; and ensure that the uncertainty of measurement during the calibration of the metering component does not exceed one third of the maximum permitted error in the relevant standard listed in Table 5 of Schedule 10.1.

Uncertainties are calculated and recorded in accordance with the Code. This is also confirmed by the NATA audits.

An ATH must ensure that it has documented instructions on the use and operation of all relevant equipment it uses for calibration; and it has documented calibration procedures that it must make available to, and ensure are followed by, its staff carrying out the calibration; and its calibration procedures are aligned with the standards listed in Table 5 of Schedule 10.1. Landis + Gyr has documented instructions in accordance with this clause for all relevant equipment. The procedures match the minimum requirements of the relevant IEC standards. Compliance is confirmed.

3.13 Sealing and Monitoring of Seals (Clause 9 of Schedule 10.4)

An ATH must have a documented system for applying seals to a metering installation that meets the requirements of clause 47 of Schedule 10.7; and is appropriate in the circumstances to ensure:

- The ATH's ability to monitor the metering installation's continued integrity.
- The relevant metering equipment provider is alerted as soon as practicable to any unauthorised access to the metering installation.

Certification of metering installations is not conducted by Landis + Gyr; therefore this matter is outside the scope of this audit. Despite this, I still checked the process for the application of seals to meter covers during the manufacturing process. The wire and ferrule method is used and the ferrules have a number provided by the National Measurement Institute (NMI). The documentation in the quality manual was appropriate and included diagrams and pictures to ensure clarity.

3.14 Services Access Interface (Clause 10 of Schedule 10.4)

An ATH must, when preparing a metering installation certification report, determine, and record in the certification report, the location of the services access interface. The services access interface means the point, at which access may be gained to the services available from a metering installation, that is:

- Recorded in the certification report by the certifying ATH for the metering installation
- Where information received from the metering installation can be made available to another person
- Where signals for services such as remote control of load (but not ripple control) can be injected.

Certification of metering installations is not conducted by Landis + Gyr; therefore this matter is outside the scope of this audit.

3.15 Certification & Calibration Reports (Clause 11 of Schedule 10.4)

An ATH must, for each metering installation that it certifies, produce a certification report in accordance with Schedule 10.7. An ATH must, for each metering component:

- That it calibrates, produce a calibration report in accordance with Schedule 10.8.
- That it certifies, produce a certification report in accordance with Schedule 10.8.

As mentioned in Section 2.6, Landis + Gyr produce appropriate calibration reports.

Landis + Gyr also prepares compliant certification reports for meters and data storage devices, which include:

- Date of Certification
- Certification validity period

- Conditions of certification (this section would be used to record maintenance requirements)
- Reference number of the calibration report (the calibration report contains the test points and results of tests)
- Reference number for the type test certificate (this certificate will confirm compliance with all relevant certification requirements).

Compliance is confirmed.

4. Requirements of Metering Installations

Certification of metering installations is not conducted by Landis + Gyr, but one clause has relevance and is included below.

4.1 Metering Component Stickers (Clause 8 of Schedule 10.8)

An ATH must, when certifying a metering component under this Part, confirm the certification by attaching a metering component certification sticker to the metering component or, if not practicable, provide the sticker with the metering component.

An ATH must ensure that a metering component certification sticker shows:

- The name of the metering component owner (if available)
- If the metering component is a meter or a measuring transformer, the name of the ATH or the approved calibration laboratory who calibrated the metering component
- The name of the ATH who certified the metering component
- The date on which the metering component was certified
- The initials or other unique identifier of the person who carried out the certification of the metering component.

An ATH must ensure that a certification sticker is:

- Made of weather-proof material
- Permanently attached.
- Filled out using permanent markings.

Landis + Gyr produces and attaches component stickers to confirm calibration and certification.

5. Alternative Certification (Clause 32 of Schedule 10.7)

Certification of metering installations is not conducted by Landis + Gyr; therefore this matter is outside the scope of this audit.

6. Inspections

Inspection of metering installations is not conducted by Landis + Gyr; therefore this matter is outside the scope of this audit.

7. Sealing

Certification of metering installations is not conducted by Landis + Gyr; therefore this matter is outside the scope of this audit.

8. Metering Component Requirements

8.1 Metering Component Certification (Clause 42 of Schedule 10.7)

An ATH must, before it certifies a metering installation, ensure that each metering component that is required to be certified under this Part and which is in the metering installation:

- Is certified by an ATH in accordance with this Part
- Since certification, has been appropriately stored and not used.

Landis + Gyr calibrate metering components in accordance with the relevant IEC standards. During the audit they demonstrated their calibration processes, including the calculation of uncertainties. I confirm compliance with these clauses. This matter is also evaluated by NATA during their audit process.

8.2 Meter Certification (Clause 1 of Schedule 10.8)

The main requirements for meter certification are:

- Each meter must have been type tested and have a type test report
- Each meter must have a calibration report
- Each meter certified must have a certification report.

Landis + Gyr demonstrated that the meters currently being supplied to New Zealand have appropriate type test certificates. The process for calibrating meters and producing a calibration report was demonstrated during the audit. Each calibration report is for a group of meters and includes a table of results for each individual meter. Certified meters have an appropriate certification report. Compliance is confirmed.

8.3 Measuring Transformer Certification (Clauses 2 & 3 of Schedule 10.8)

Landis + Gyr does not certify measuring transformers.

8.4 Control Device Certification (Clause 4 of Schedule 10.8)

Landis + Gyr does not certify control devices. Some devices have an in-built ripple receiver, but this is not certified by Landis + Gyr. The installing ATHs have the ability to certify these control devices.

8.5 Data Storage Device Certification (Clause 5 of Schedule 10.8)

The main requirements for data storage device certification are:

- Each component must have been type tested and have a type test report
- Each component must have a calibration report
- Each component certified must have a certification report.

Landis + Gyr demonstrated that the meters currently being supplied to New Zealand have appropriate type test certificates. The process for calibrating meters and producing a calibration report was demonstrated during the audit. Each calibration report is for a group of meters and includes a table of results for each individual meter. Certified data storage devices have an appropriate certification report. Compliance is confirmed.

8.6 On-site Calibration and Certification (Clause 9 of Schedule 10.8)

Landis + Gyr does not conduct on-site calibration or certification.

9. Record Keeping

9.1 ATH Record Keeping Requirements (Clause 12 of Schedule 10.4)

An ATH must ensure it documents and maintains a record system for all records, certificates, and reports for any activity regulated under this Part.

An ATH must ensure that:

- All its records, certificates, and reports are stored securely
- Each of its test records for a metering installation is identified by a unique identifier
- All of its records, certificates, and reports are sufficiently detailed to enable verification of all aspects of all tests it carries out, including the following:
 - Test conditions.
 - Specific test equipment used.
 - Personnel carrying out the tests.

I checked the records for an entire shipment to an MEP and confirm compliance with all of the requirements above.

9.2 Retention of Records (Clause 13 of Schedule 10.4)

An ATH must, for each activity regulated under this Part in relation to a metering installation and metering component that it certifies and a metering component that it calibrates, retain, for at least 48 months after the date of decommissioning the metering installation or removal of a metering component, all of its records, certificates, and reports and all certification reports produced by the ATH.

Landis + Gyr keeps records indefinitely. Compliance is confirmed.

9.3 Availability of Records (Clause 14 of Schedule 10.4)

An ATH must, within five business days of creating a record, certificate, or report for a metering installation that it certifies, send, in electronic form or such other form as may be agreed between the parties, a copy of the record, certificate, or report to the metering equipment provider responsible for the metering installation and ensure that the metering equipment provider receives the record, certificate, or report.

Landis + Gyr have a robust and secure records management system. All records are kept indefinitely and I checked the records for a specific date from an earlier year to confirm this. Compliance is confirmed.

10. Material Change (Clause 1 of Schedule 10.3)

If an ATH intends to make a material change to any of its facilities, processes, or procedures or the scope of the ATH's ISO accreditation is reduced during the term of its approval, the ATH must, at least five business days before the change is to take place or reduction in scope is effected:

- a) advise the Authority of all relevant details of the change or reduction in scope; and
- b) in the case of a material change, submit to the Authority an audit report confirming that, after the change has come into effect, the ATH will continue to meet the requirements under clause 10.40(2)(a).

Landis + Gyr moved their laboratory from Sydney to Melbourne in 2015. Appropriate testing was conducted and a special NATA audit was conducted to ensure ongoing compliance. The most recent Test House application included notification of the intention to move the laboratory.

11. Data Transmission and Audit Trails

11.1 Data Transmission (Clause 20 of Schedule 15.2)

Landis + Gyr provide calibration reports to its customers (metering equipment owners) in pdf format. This is the only information transferred to other participants, and there is no opportunity to handle or transfer metering information under this clause.

There is no "extraction and compilation" or "manipulation" of data involved in any transfer, therefore the data sent will reflect the data held.

11.2 Audit Trails (Clause 21 of Schedule 15.2)

Audit trails exist within the system as electronic records for all calibration activities.

12. Conclusions

The audit found compliance with the Code and only one minor recommendation is made.

Table of Non Compliance

Subject	Section	Clause	Non compliance	Impact	Audit History	Remedial Action
			Nil			

Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Status
Organisation and management	3.7	15 of schedule 10.4	Include the specific responsibilities of the Technical Manager in the quality manual.	Identified

13. Signatures

Signed By:

A handwritten signature in blue ink, appearing to be 'Steve Woods', is shown on a light-colored, textured background.

**Steve Woods – Veritek Limited
Electricity Authority Approved Auditor**

Signed By:

**Jorge Anquetil
Quality Manager**

15. Audit Summary for Electricity Authority Website

As per clause 9 of schedule 10.2 of the Electricity Industry Participation Code, the Authority is required to publish a summary of each audit report.

Date of audit report:	08/04/16
Participant involved:	Landis + Gyr
Auditor involved:	Steve Woods – Veritek Limited
Scope of the audit:	<u>Clause 3(2) of Schedule 10.3 (Class A) - Functions requiring approval:</u> (a) calibration of— (i) working standards: (ii) metering components (other than a calibration referred to in paragraph (c)) (b) issuing calibration reports
Outcome of the audit:	Compliant

16. Landis + Gyr Response

The specific responsibilities of the Technical Manager will be included in the Landis & Gyr quality manual.