VERITEK

Electricity Industry Participation Code Audit Report

For

Bluecurrent NZ Limited
Class A and B
Approved Test House

NZBN:**9429033086354**

Prepared by Steve Woods – Veritek Limited

Date of Audit: 05/03/24

Date Audit Report Complete: 13/03/24

Date Audit Report Due: 24/04/24

Executive Summary

Bluecurrent NZ Ltd (Bluecurrent) is a Class A and B Approved Test House and is required to undergo an audit by 24 April 2024, in accordance with clause 16A.19(b).

Bluecurrent was previously known as Advanced Metering Services Limited.

Non-compliance is recorded in 15 sections of this audit. This is more than the six recorded in the last report. There are three main additional points raised in this audit report, as follows:

- incorrect field practices for two ICPs,
- certification validity periods not recorded for components in the certification reports, and
- type test reports not available and not checked for the latest EDMI meters.

Some of the points raised during the last audit are still present, mainly those relating to the recording of maximum interrogation cycles and services access interfaces. There is still the outstanding issue where test results are not recorded for Category 1 metering installations.

Whilst the quantity of non-compliances has increased, this is not an indication that controls have deteriorated, because several of the issues were one-off exceptions. My overall summary is that some areas remain the same and several areas have undergone improvements or improvements are in progress.

The date of the next audit is determined by the Electricity Authority and is dependent on the level of compliance during this audit. The Future Risk Rating table provides some guidance on this matter and recommends a next audit frequency of six months. After considering Bluecurrent's responses and the remedial actions taken I recommend a next audit period of 12 months.

The matters raised are shown in the tables below.

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Accurate information	2.2	10.6 of Part 10	Incorrect data in some metering installation certification reports, as recorded in other sections.	Moderate	Low	2	Investigating
Metering Installation Type	3.2	8(2) of Schedule 10.7	Each services access interface not recorded correctly for 19 of 66 metering installations.	Moderate	Low	2	Identified
Services Access Interface	3.5	10 of Schedule 10.4	Each services access interface not recorded correctly for 19 of 66 metering installations.	Moderate	Low	2	Identified
Meter Requirements	3.11	26 (4) of Schedule 10.7	19 metering installation certification reports with maximum interrogation cycle incorrectly recorded.	Moderate	Low	2	Identified
Maximum interrogation cycle	3.14	36(3) & (4) of Schedule 10.7	Maximum interrogation cycle not recorded for each services access interface in 19 metering installation certification reports.	Moderate	Low	2	Identified
ATH must not Certify Metering Installations under Certain Circumstances	5.1	8(1) Of Schedule 10.7	ICP 0000005594UN22E certified despite the burden being lower than 25% of the rated burden.	Strong	Low	1	Identified
Certification tests	5.12	9(1) of Schedule 10.7	ATH did not record the accumulation of pulses, register advance or minimum load when conducting raw meter data tests for Category 1 installations.	Moderate	Low	2	Identified
Insufficient Load	5.25	14 of Schedule 10.7	Insufficient load tests not conducted for ICP 0006182453RNFA4.	Strong	Low	1	Investigating

Subject	Section	Clause	Non-compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Record Metering Installation Compensation Factor	5.32	24(2) Of Schedule 10.7	Two different compensation factors (40 and 100) are recorded in the metering installation certification report for ICP 0000001305RC766.	Strong	Low	1	Cleared
Measuring Transformers Used in A Certified Metering Installation.	5.37	28(4)(i) Of Schedule 10.7	Burden not within the allowable range for ICP 0000005594UN22E.	Strong	Low	1	Identified
Burden & Compensation	5.40	31 of Schedule 10.7	Burden not within the allowable range for ICP 0000005594UN22E.	Strong	Low	1	Identified
Data storage device requirements	5.45	5(1) of Schedule 10.8	ATH has not ensured Series 3 EDMI meters comply with the type-test requirements because EDMI has not supplied type test reports. 50 of 66 certification reports do not record the validity period.	Strong	Low	1	Investigating
Meter Certification	5.64	1 of Schedule 10.8	ATH has not ensured Series 3 EDMI meters comply with the type-test requirements because EDMI has not supplied type test reports	Strong	Low	1	Investigating
Measuring Transformer Certification	5.67	3(c)(ii) of schedule 10.8	CT validity period not recorded for 14 CT certification reports.	Strong	Low	1	Disputed
Control Device Certification	5.70	4(2)(b) of Schedule 10.8	Two control device certification reports do not contain the validity period.	Strong	Low	1	Disputed
					Future Risk Rating	**21**	
					Indicative Audit Frequency	**6 months**	

Future risk rating	1-3	4-6	7-8	9-17	18-26	27+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Remedial Action
Certification type	3.2	8(2) of Schedule 10.7	Ensure Category 1 certification reports clarify that certification is both NHH and HHR.	Not adopted
Type test reports	5.45	5(1) of Schedule 10.8	Prepare and populate a schedule of each relevant meter type, the type test report reference, the specific items required for compliance, the date compliance was confirmed and by who.	Identified

Table of Issues

Issue	Description
	Nil

Persons Involved in This Audit

Auditor:

Steve Woods
Veritek Limited
Electricity Authority Approved Auditor

Bluecurrent personnel assisting in this audit were:

Name	Title
Scott Caldwell	Authorised Test House Manager
Paul Gardiner	Technical Advisor
Rae Hughes	Field Process Manager

Contents

1. ADMINISTRATIVE

1.1 Exemptions from Obligations to Comply with Code (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 Authority's website for any relevant exemptions.

Audit commentary

An exemption was granted on 4th August 2021 (Exemption N0. 297) related to the certification of metering installations for the ARC MEP as follows,

Bluecurrent NZ Limited ("Bluecurrent") is exempted from complying with the obligations in clause 5(b)(xii) of Schedule 10.8 of the Electricity Industry Participation Code 2010 ("Code") to ensure that the memory and clock of the metering device continues to operate for at least 15 days after power is lost to the device for ARC metering installations, and clause 21 of schedule 10.7 of the Code which would allow Bluecurrent to certify an ARC metering installation that is outside the accuracy tolerances.

As recorded in **section 5.26**, Bluecurrent completed certification of 49,640 ARC ICPs by statistical sampling under this exemption on 18 March 2022. No further certification or recertification has occurred.

1.2 Scope of Audit

Bluecurrent is a Class A and B ATH, and this audit was performed at their request, to encompass the Electricity Industry Participation Code requirement for an audit to undergo an audit by 24 October 2022, in accordance with clause 16A.19(b).

The audit was conducted in accordance with the ATH Audit Guidelines V1.3 produced by the Electricity Authority.

Bluecurrent provides field Test House services to a number of metering equipment owners, retailers and other Test Houses for category 1 to 4 metering. This work is conducted by a combination of staff, subcontractors and other Test Houses.

Most audit requirements of the Class A Test House are covered in their external ISO 17025 Audit, conducted annually by IANZ.

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

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

<u>Class A Approval:</u>
(a) calibration of—
    (i) working standards:
    (ii) metering components (other than a calibration referred to in paragraph (c)):
    (iii) metering installations:
(b) issuing calibration reports:
(c) calibration of metering components onsite:
(d) installation and modification of metering installations:

(e) installation and modification of metering components:
(f) certification of all categories of metering installations under this Code, and issuing of certification reports:
(g) testing of metering installations under clause 10.44 and production of statements of situation under clause 10.46:
(h) inspection of metering installations.

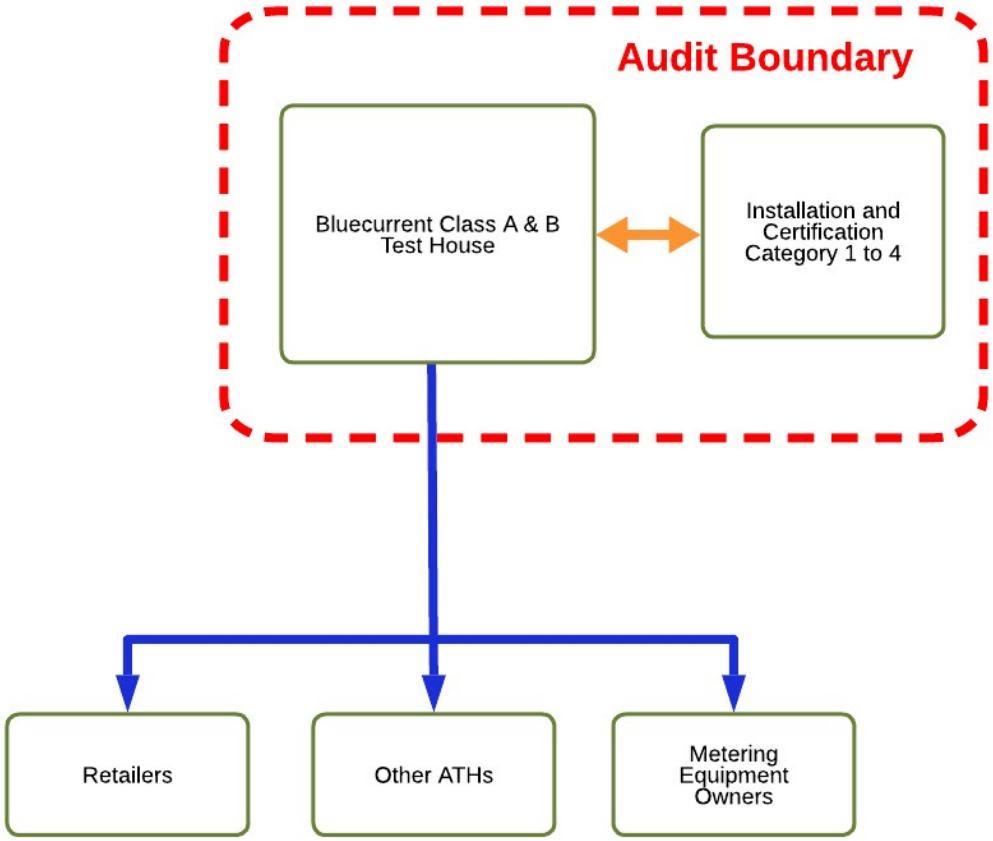
Bluecurrent also requires approval to certify metering components. I note that the Class A functions listed in Clause 3(2) of Schedule 10.3 do not include certification of metering components. The Authority confirmed on 23 December 2021 that if an ATH is approved to certify a metering installation, then they are also approved to certify metering components.

Class B Approval

(b) installation and modification of metering installations:
(c) installation and modification of metering components:
(d) calibration of metering components on site:
(e) certification, using the selected component certification method, of:
    (i) category 1 metering installations:
    (ii) category 2 metering installations:
    (iii) category 3 metering installations with a primary voltage of less than 1kV:
(g) certification, using the comparative recertification method, of category 2 metering installations:
(h) issuing of certification reports in respect of certifications of metering installations under paragraphs (e) to (g):
(i) inspection of:
    (i) category 1 metering installations:
    (ii) category 2 metering installations:
    (iii) category 3 metering installations with a primary voltage of less than 1kV.

Bluecurrent also requires approval to certify metering components. I note that the Class B functions listed in Clause 4(2) of Schedule 10.3 do not include certification of metering components. The Authority confirmed on 23 December 2021 that if an ATH is approved to certify a metering installation, then they are also approved to certify metering components.

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


Audit Boundary
Bluecurrent Class A & B Test House
Installation and Certification Category 1 to 4
Retailers
Other ATHs
Metering Equipment Owners

1.3 Previous Audit Results

The last audit was conducted in October 2022 by Brett Piskulic of Veritek. The findings and current statuses are shown below.

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
Accurate information	2.2	10.6 of Part 10	Each services access interface not recorded correctly in six of 66 metering installation certification reports. Metering installation type recorded incorrectly in six of 66 metering installation certification reports. Incorrect maximum interrogation cycle recorded in 44 of 66 metering installation certification reports. Maximum interrogation cycle not recorded for each services access interface in six of 66 metering installation certification reports.	Still existing
Metering Installation Type	3.2	8(2) of Schedule 10.7	Metering installation type recorded incorrectly for six of 66 metering installations. Each services access interface not recorded correctly for six of 66 metering installations.	Cleared Still existing
Services Access Interface	3.5	10 of Schedule 10.4	Each services access interface not recorded correctly for six of 66 metering installations.	Still existing
Meter Requirements	3.11	26 (4) of Schedule 10.7	44 metering installation certification reports with maximum interrogation cycle incorrectly recorded.	Still existing
Maximum interrogation cycle	3.14	36(3) & (4) of Schedule 10.7	Maximum interrogation cycle not recorded for each services access interface in six metering installations.	Still existing
Certification tests	5.12	9(1) of Schedule 10.7	ATH process does not ensure that minimum load requirement is always met for Category 1 raw meter data tests. ATH did not record the accumulation of pulses when conducting raw meter data tests.	Still existing

Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Status
Metering Component Stickers	4.14	8(2) of Schedule 10.8	Add a “Calibrated by field to the combined metering installation and component certification sticker.	Cleared

2. ATH REQUIREMENTS

2.1 Use of Contractors (Clause 10.3 of Part 10)

Code related audit information

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.

Audit observation

I checked Bluecurrent understands this requirement by conducting a walk-through of contractor management processes. I checked the processes in place to ensure contractors are competent and are following the Bluecurrent instructions.

Audit commentary

The Code states that Bluecurrent "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."

At the time of the audit Bluecurrent had approx. 150 active technicians operating under their Test House.

The training and competency program has the following steps:

- a "buddy" system where the technician works with a trainer,
- technical training sessions, and
- photo checking of 100% of trainees' jobs.

A competency assessment of each technician is completed at least once per year. Live and post job audits are completed as part of the competency assessment. The assessment considers the technicians current competency in relation to both technical and health and safety requirements. The assessment has been extended to also cover personal attributes such as attitude and behaviour.

The results of competency assessments and audits are recorded, and remedial actions are taken as a result of the audit findings.

I consider the management of contractors to be compliant.

Audit outcome

Compliant

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

Code related audit information

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.

Audit observation

I checked compliance with this clause to determine whether compliance had been achieved.

Audit commentary

Five issues were identified during the audit where incomplete or inaccurate information was recorded in metering installation certification reports. The issues are as follows:

- each services access interface not recorded correctly in 19 of 66 metering installation certification reports (**sections 3.2** and **3.5**),
- incorrect maximum interrogation cycle recorded in 19 of 66 metering installation certification reports (**section 3.11**),
- maximum interrogation cycle not recorded for each services access interface in 19 of 66 metering installation certification reports (**section 3.14**),
- for the certification report for ICP 0000001305RC766 there are two conflicting compensation factors; the front page of the report and the meter certification sheet both have a compensation factor of 100, and the CT ratio checks have a compensation factor of 40 which is correct (the registry has a compensation factor of 1, which is an MEP issue and has been raised with them) **(section 5.32)**
- component validity period not recorded for any of the 66 metering installation certification reports **(sections 5.45, 5.67** and **5.70)**,
- ICP 0000017098HB59B had an incorrect uncertainty recorded due to a data entry error; this is now resolved, and
- the certification type for ICP 0000012651HBD03 is recorded as selected component but is comparative.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.2 With: Clause 10.6 of Part 10 From: 01-Aug-22 To: 06-Mar-24	Incorrect data in some metering installation certification reports, as recorded in other sections. Potential impact: Low 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 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
As indicated in the individual sections	TBA	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Majority of the issues were exceptions that occurred up to a year ago. Since then, there have been improvements and process and the test sheets automation. There are several outstanding changes from the previous audit that are still in work due to organization priorities as the changes require constrained IT resource for development and testing. These issues have been defined and are in the backlog for development.	TBA	

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

Code related audit information

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.

Audit observation

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

Audit commentary

Bluecurrent has not needed to resolve any disputes in accordance with these clauses.

Audit outcome

Compliant

2.4 ATH Approval (Clause 10.40 of Part 10)

Code related audit information

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.*

Audit observation

I checked the most recent application for re-certification.

Audit commentary

Bluecurrent has appropriate approval and appropriate facilities and procedures to meet the minimum requirements of the Code.

Audit outcome

Compliant

2.5 ATH Requirements (Clause 10.41 of Part 10)

Code related audit information

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.*

Audit observation

I checked policy and process documentation along with the ISO reports to confirm compliance with these clauses.

Audit commentary

Bluecurrent has only conducted activities that fall within the scope of their approval. I have concluded from this audit that Bluecurrent currently meets the requirements of this clause.

I checked compliance with other enactments, specifically the electricity regulations with regard to safety practices and I confirm the following critical points are managed in a robust manner:

- livening practices, specifically polarity testing - photo checks are conducted for 20% of all work completed by technicians and supply polarity testing using Trailing earth leads are conducted for all new connections,
- safety practices with regard to the management of asbestos switchboards - the instruction is very comprehensive for this activity and the overall regime includes health monitoring, and the agents do not conduct work on asbestos boards, and
- general safety practices and the appropriate use and testing of personal protective equipment - there is good instruction on the use of PPE, working on live installations and the reporting of incidents.

Competency assessments of all technicians include health and safety requirements.

Audit outcome

Compliant

2.6 Quality Management Systems (Clauses 3(1) & 4(1) of Schedule 10.3)

Code related audit information

An ATH must establish, document, implement, maintain, and comply with a quality management system which records its processes and procedures to ensure compliance with this Part.

An applicant applying for approval or renewal of approval, as a class A ATH must, as part of its application, confirm that it holds and complies with AS/NZS ISO 17025 accreditation, for at least the requested term of the approval.

An applicant applying for approval, or renewal of approval, as a class B ATH must, as part of its application to the Authority, confirm that it holds and complies with AS/NZS ISO 9001:2008 or AS/NZS ISO 9001:2016 certification for at least the requested term of the approval.

Audit observation

I obtained and reviewed the most recent ISO reports to confirm the scopes were appropriate and that certification was in place.

Audit commentary

Bluecurrent provided a copy of their most recent ISO 9001:2015 audit report, dated 23 May 2022, which was conducted by Telarc. The issues raised did not have any direct impact of the compliance of the Class A and B ATH operation. The overall findings of the report are as follows:

Overall, the organisation continues to implement its management systems in accordance with the requirements of the Standard. However, one minor non-conformance has been raised highlighting the need to conduct internal audits as planned in your internal audit programme.

Nine opportunities for improvement were also raised. These types of opportunities are presented as 'considerations', taking advantage of having Telarc 'fresh eyes' looking at your management system with a view to adding value to your business.

The scope of the ISO 9001: 2015 certification includes the following statements relevant to the operation of the class A and B ATHs:

> *The management of contracts for the installation, maintenance, testing and certification for Mass-Market and Commercial & Industrial metering installations.*
>
> *The design and specification of Commercial & Industrial customer metering solutions.*
>
> *The management of contracts for the installation, maintenance, testing and certification of metering installations, including the design and specification of customer metering solutions.*
>
> *The provision of Class A Approved Test House metering services, including:*
>
> *1. Category 4 - Low voltage.*
>
> *2. Meter Testing Class 0.2 and Class 0.5*
>
> *The provision of Class B Approved Test House metering services, including:*
>
> *1. Calibration of Class 1 and Class 2 meters and Class 0.5 CTs, and issuing resulting calibrations reports.*
>
> *2. Installation of metering equipment.*
>
> *Commissioning and certifying category 1-3 metering installations under the provisions of the Electricity Industry Participation Code.*

There was no audit conducted in 2023 because Bluecurrent was undergoing a name change and Telarc provided certification until July 2024, which means an audit is being conducted imminently.

Bluecurrent also provided a copy of their most recent ISO 17025 Technical Assessment audit report, dated 14 June 2023, which was conducted by IANZ.

The scope of their ISO 17025 certification is noted as:

Field of operations: *Metrology and Calibration Laboratory*

Subfields: *Energy meters and current transformers*

Key Technical Personnel are noted as:

Scott Caldwell *5.85, 5.89*

Paul Gardiner *5.85, 5.89*

Bain Glanville *5.85, 5.89*

The report states the following in relation to the Metrology & Calibration Laboratory:

With the exceptions of those Corrective Action Requests (CARs) listed below, the assessment found the laboratory was in compliance with the requirements of accreditation.

- *CAR 1 – Measurement uncertainty – Red Phase CT Analyser calibration*
- *CAR 2 – Measurement uncertainty – Site certification*
- *CAR3 - Reporting results*

The assessment team was impressed with the actions taken by the laboratory to verify the performance of the Red Phase CT Analysers as well as the quality of the technical records and measurement uncertainty estimates supporting accredited calibration CMCs. Staff were knowledgeable and competent in the implementation of the management system and a good number of continuous improvement actions were identified and actioned on an on-going basis.

The table below details the CARs and recommendations along with their status.

Issue	Description	Status
Corrective action	**Measurement uncertainty – Red Phase CT Analyser calibration** The laboratory needs to identify the contributions to measurement uncertainty and to evaluate all contributions of significance using an appropriate method of analysis. The laboratory used Excel templates incorporating the MSL Measurement Uncertainty Calculator to estimate its CMCs. The uncertainty estimates reviewed were generally appropriate with significant contributions identified and including additional comments on the origins of the data. Two aspects of non-conformance were identified: a) The laboratory had carried out reproducibility assessments on a range of CTs commonly calibrated to incorporate as a Type A uncertainty component. However, the spreadsheet calculation cell formula for the maximum deviation contained an error where it identified the minimum value and not the maximum value, thereby underestimating the uncertainty contribution. b) The uncertainty evaluations for phase angle error correctly used data in units of minutes (angle). However, the contributions column was labelled as % units. Please advise, and provided supporting evidence, of what actions were undertaken to correct the issues and the results of root cause analysis.	Cleared 17 July 2023
Corrective action	**Measurement uncertainty – Site certification** The laboratory needs to identify the contributions to measurement uncertainty and to evaluate all contributions of significance using an appropriate method of analysis. The laboratory used the MSL Metering Installation Error (MIE) Calculator to evaluate metering errors and uncertainties for determining compliance with EIPC 2010 criteria. For Category 4 low voltage metering installations the laboratory had entered the meter IEC class permissible errors rather than the actual uncertainty reported in the meter calibration certificate. Please advise, and provided supporting evidence, of what actions were undertaken to correct the issues and the results of root cause analysis.	In progress, agreed clearance date September 2023
Corrective action	**Reporting results** The laboratory needs to report calibration results accurately and unambiguously, including all general and specific reporting requirements listed in clauses 7.8.2 and 7.8.4 for calibration reports. The report template for the Field Unit Calibration Report included most reporting requirements, except for the units for both results and measurement uncertainty. Please advise, and provided supporting evidence, of what actions were undertaken to correct the issues and the results of root cause analysis.	Cleared 17 July 2023
Recommendation	It is recommended to enhance training records and KTP appointment records with specific entries for Site Certification to the relevant EIPC 2010 categories.	This will be documented as part of the next quality manual update likely in the next month.

Recommendation	It is recommended to have the reference standard energy meter calibrated at the 0.7 lag power factor so that this can be conveyed to the working standards to confirm a specific CMC and metrological traceability at this test point.	Has been completed with the most recent calibration
Recommendation	It is recommended to estimate the uncertainty of measurement for the Red Phase instruments at all current range test points for CTs, not just at 100 % and 120 % of full load current.	This has been taken under advisement but not implemented at this stage due to the error profile of CTs
Recommendation	It is recommended to improve the laboratory's measurement uncertainty estimates as follows: a. Review the potential impact on measurement uncertainty and CMCs of moving metrological traceability for energy metering to the SM5050 reference standard. b. Carry out further analysis of potential measurement uncertainty due to positioning effects using the Hioki field unit flexible current sensor clamps. c. Check on possible Red Phase lead resistance effects, which can be carried out by adding additional resistance to the circuit	a. being reviewed with most recent calibration. b. have provided guidance on acceptable positioning to field techs. c. will be included in next round of annual checks
Recommendation	It is recommended to improve the laboratory's site certification calculations using the MSL MIE Calculator as follows: a. Establish a set of typical load profiles to enable selection of the most appropriate load profile for a given metering installation. b. Review and enter all data in the metering component sheets, with particular emphasis on using the appropriate temperature range and temperature sensitivity for each metering installation.	WIP with Keith as part of CAR 2.
Recommendation	Reporting of measurement uncertainty can be improved as follows: a. Rounding of coverage factors, for example, rounding *k*=1.99 *to k*=2. b. Report Hioki Field Unit calibration uncertainties to the same level of significance as the results.	Under advisement

Audit outcome

Compliant

2.7 Organisation and Management (Clause 15 of Schedule 10.4)

Code related audit information

An ATH must ensure that it has managerial staff who, unless otherwise permitted in the relevant approval, all have the authority and resources needed to discharge their duties; and the responsibilities, authority, and functional relationships of all its personnel are fully and accurately specified and recorded in the ATH's records.

An ATH must appoint 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 ATH; and a quality manager (however named), with responsibility for the quality management certification and the implementation of the quality management system.

Audit observation

I checked records in the quality manual to confirm compliance.

Audit commentary

An ATH must appoint 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 ATH; and a quality manager (however named), with responsibility for the quality management certification and the implementation of the quality management system.

Bluecurrent has appointed Scott Caldwell as Technical Manager and Quality Manager.

The Bluecurrent quality system was examined and determined to be appropriate. This is also regularly confirmed by Telarc and IANZ. Technical procedures/work instructions are now in a cycle of internal audit.

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. As recorded in **section 2.6**, Bluecurrent conducts regular competency assessments to ensure current competency of all technicians.

Audit outcome

Compliant

2.8 Document Processes and Procedures (Clause 16 Of Schedule 10.4)

Code related audit information

An ATH must establish, document, implement, maintain, and comply with a quality management system which records its processes and procedures.

Audit observation

I checked the Class A and Class B quality documentation, and I reviewed the relevant ISO reports.

Audit commentary

The quality management system meets the requirements of the Code, this is confirmed by the ISO reports.

Audit outcome

Compliant

2.9 Quality Standard Required for Field Work (Clause 17 Of Schedule 10.4)

Code related audit information

If a class A ATH arranges for another person to carry out field work, it must ensure that person is certified to the relevant AS/NZS ISO9001:2008 or AS/NZS ISO9001:2016 standard at all times while the person carries out the work.

Audit observation

Bluecurrent has not required other parties to carry out field work.

Audit commentary

Bluecurrent has not required other parties to carry out field work.

Audit outcome

Not applicable

2.10 Material Change Requirements (Clause 16A.11)

Code related audit information

If the ATH intends to make a material change to any of its facilities, processes, procedures, or the scope of the ATH's ISO accreditation is reduced, the ATH must arrange for an additional audit at least five business days before the change or reduction in scope take place.

Audit observation

I checked whether Bluecurrent had made any material changes during the audit period.

Audit commentary

Bluecurrent has not made any material changes during the audit period.

Audit outcome

Not applicable

2.11 Audit Required for ATH Approval (Clause 16A.12 and 16A.13)

Code related audit information

The ATH must provide an audit report to the Authority by the due date. If there are areas where compliance is not achieved, the ATH must also submit a compliance plan which specifies the actions that the ATH intends to address, any issues identified in the audit report and the time frames to complete those actions.

Audit observation

Bluecurrent is currently undergoing an audit and the report will be provided with a compliance plan.

Audit commentary

Bluecurrent is currently undergoing an audit and the report will be provided with a compliance plan.

Audit outcome

Compliant

2.12 Accommodation & Environment (Clause 1 of Schedule 10.4)

Code related audit information

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.

Audit observation

I checked records to confirm compliance.

Audit commentary

Access to the laboratory is via the storage area which is always manned. The quality manual identifies authorised personnel and entry of other people is controlled by the laboratory staff.

The Class A laboratory is audited annually by IANZ, and this audit considers environmental issues. Recent audits found that the accommodation and environmental conditions were appropriate. Temperature control is being maintained at 23º ±2º Celsius.

Audit outcome

Compliant

2.13 Compensation Factors (Clause 8 of Schedule 10.4)

Code related audit information

If an ATH is approved to certify metering installations, the ATH must have a documented process for the determination of compensation factors.

Audit observation

I checked the documentation in relation to compensation factors.

Audit commentary

Bluecurrent applies compensation factors related to current transformer ratios only. The ratios are confirmed as correct via calculation from primary and secondary values recorded in the installation check sheets by the technicians on site. The documentation achieves compliance with the Code.

In **section 2.1**, I have recorded the incorrect recording of a compensation factor for one metering installation.

Audit outcome

Compliant

2.14 Metering Component Stickers (Clause 8(3) of Schedule 10.8)

Code related audit information

An ATH must ensure that a certification sticker is:

- made of weather-proof material,

- permanently attached,

- filled out using permanent markings.

Audit observation

I checked the Bluecurrent component stickers to confirm compliance.

Audit commentary

All component stickers are compliant with this clause. Bluecurrent is currently updating their stickers to include their new name.

Audit outcome

Compliant

2.15 Interference with Metering Installations (Clause 10.12)

Code related audit information

An ATH may not directly or indirectly interfere with a metering installation unless it is also the MEP or has been instructed to do so by the existing or gaining MEP for the installation.

Audit observation

I audited this clause by exception.

Audit commentary

I did not identify any interference by Bluecurrent during the audit.

Audit outcome

Compliant

2.16 Participants to give access (Clause 16A.4)

Code related audit information

A participant must give the auditor full access to all information that may be required for the purposes of carrying out an audit. The participant must provide the information no later than 15 business days after receiving a request.

Audit observation

I requested a large number of certification reports and other records for the audit.

Audit commentary

All records were provided within the required timeframe.

Audit outcome

Compliant

3. METERING RECORDS AND REPORTS

3.1 Physical Location of Metering Installations (Clause 10.35 of Part 10)

Code related audit information

If it is not practical in the circumstances to locate the metering installation at the point of connection, the reconciliation participant must calculate the quantity of electricity conveyed through the point of connection using a loss compensation process approved by the certifying ATH.

If this occurs the ATH must record the calculation, measurements, and assumptions in the installation certification report.

Audit observation

I checked whether Bluecurrent had certified any installations with loss compensation.

Audit commentary

Bluecurrent has not been required to conduct any loss compensation calculations.

Audit outcome

Compliant

3.2 Metering Installation Type (Clause 8(2) of Schedule 10.7)

Code related audit information

The metering installation certification report must specify whether the installation is half hour, non-half hour or half hour and non-half hour metering.

The metering installation certification report must also record each services access interface and the conditions under which each services access interface may be used.

Audit observation

I checked 66 certification reports to confirm compliance.

Audit commentary

My checks of the 66 records found that the installation type was recorded correctly for all metering installations, but each services access interface was not recorded correctly for 19 metering installations. A breakdown of this is shown in the table below.

Category	Records checked	Installation type correctly recorded	Each services access interface recorded
1	12	12	12
2	43	43	34
3	6	6	1
4	5	5	0

Category 1 metering installation certification reports include the details shown below to confirm that installations are certified as both NHH and HHR, and to record each services access interface. Whilst it can be assumed that certification is NHH and HHR because both services access interfaces are recorded, I recommend further clarification is provided to ensure those reading the report can be certain of the certification type.

Description	Recommendation	Audited party comment	Remedial action
Certification type	Ensure Category 1 certification reports clarify that certification is both NHH and HHR.	I would suggest that NHH/HHR has to be listed with the conditions it applies (SAI and MIC) as it is listed on the certification reports. Would look to any suggestion from the auditor on what clarification would look like. I believe the current SAI/MIC/Type table covers this?	Not adopted

19 Category 2 to 4 installation certification reports did not contain all services access interfaces. These reports only had "local" as the services access interface rather than local (where there is a comms failure or where a trader reads directly) and remote (the normal scenario where either AMCI or NGCM perform the reading function as MEPs.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 8(2) of Schedule 10.7 From: 01-Aug-22 To: 06-Mar-24	Each service's access interface not recorded correctly for 19 of 66 metering installations. Potential impact: Low Actual impact: None Audit history: Twice Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	I have recorded the controls as moderate as not all Bluecurrent processes have been updated to correctly record each service's access interface and installation type. There is no impact because the MEP normally determines the location of the services access interface and metering installation type; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Now aware of the AMCI recommendation from last MEP audit so report template will be updated to reflect Local/Remote capability.	31/3/2024	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

Have made AMCI aware of the expectation that outcomes affecting ATH are expected to be passed on. Will also review final MEP reports to identify any potential impacts in the future.	31/3/2024	

3.3 Record Metering Installation Category (Clause 8(4) Of Schedule 10.7)

Code related audit information

An ATH must record the category of the metering installation in the metering installation certification report.

Audit observation

I checked 66 certification reports to confirm compliance.

Audit commentary

All reports correctly recorded the metering category.

Audit outcome

Compliant

3.4 Calibration Test Points (Clause 7(7) Of Schedule 10.4)

Code related audit information

An ATH may select a test point other than those specified in the relevant standard listed in table 5 of schedule 10.1, or at a lower burden than specified in the standard, but must, if it does this, document its reasons for the selection of these test points in the calibration report.

Audit observation

I checked with Bluecurrent whether any different test points had been used.

Audit commentary

There are some scenarios where Bluecurrent has selected additional test points, and these are recorded in calibration reports.

Audit outcome

Compliant

3.5 Services Access Interface (Clause 10 of Schedule 10.4)

Code related audit information

An ATH must, when preparing a metering installation certification report, determine, and record in the certification report, the services access interfaces and the conditions under which each services access interface may be used. 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.*

Audit observation

I checked a sample of 66 certification records to confirm compliance.

Audit commentary

My checks of the 66 records found that each services access interface was not recorded correctly for 19 metering installations. A breakdown of this is shown in the table below.

Category	Records checked	Installation type correctly recorded	Each services access interface recorded
1	12	12	12
2	43	43	34
3	6	6	1
4	5	5	0

19 Category 2 to 4 installation certification reports did not contain all services access interfaces. These reports only had "local" as the services access interface rather than local (where there is a comms failure or where a trader reads directly) and remote (the normal scenario where either AMCI or NGCM perform the reading function as MEPs.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.5 With: Clause 10 of Schedule 10.4 From: 01-Aug-22 To: 06-Mar-24	Each service's access interface not recorded correctly for 19 of 66 metering installations. Potential impact: Low Actual impact: None Audit history: Twice Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	I have recorded the controls as moderate as not all Bluecurrent processes have been updated to correctly record each service's access interface. There is no impact because the MEP normally determines the location of the services access interface; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
As 3.2	As 3.2	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
As 3.2	As 3.2	

3.6 Certification & Calibration Reports (Clause 11(1) of Schedule 10.4)

Code related audit information

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.*

Audit observation

I requested a sample of 66 certification records to confirm compliance.

Audit commentary

Metering installation certification reports were provided for all 66 installations. The metering installation and metering component certification reports are combined and include all the required information. Bluecurrent calibrates meters and CTs and produces a calibration report that meets the requirements of this clause, this is also confirmed by the ISO 17025 audit report.

Audit outcome

Compliant

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

Code related audit information

The ATH must document and maintain its record keeping system for certificates, reports, and any other records. The records can be stored in any media, such as hard copy or electronically. The records should be stored in a manner that prevents deterioration or damage and that retrieval of a record cannot result in change or damage to the record. Electronic storage should be backed up.

The ATH must securely store all records, certificates, and reports and ensure that each metering installation is:

- uniquely identified,

- sufficiently detailed to verify the tests carried out including test conditions, the test equipment used and the personnel carrying out the tests.

Audit observation

I checked the certification records for 66 metering installations along with the storage practices.

Audit commentary

All records were available, and records are stored indefinitely.

Audit outcome

Compliant

3.8 Retention of Records (Clause 13 of Schedule 10.4)

Code related audit information

The ATH must keep all records, certificates, and calibration reports for all components and installations certified for at least 48 months after the date of decommissioning.

Audit observation

I checked the certification records for 66 metering installations along with the storage practices.

Audit commentary

Records are stored indefinitely.

Audit outcome

Compliant

3.9 Advise MEP of Records, Certificates or Reports for a Metering Installation (Clause 14 Of Schedule 10.4)

Code related audit information

The ATH must provide the MEP responsible for the metering installation with the record, certificate, or report for the metering installation within five business days of certification. The ATH must ensure the MEP receives the record. This can be either as an electronic copy or any other agreed format.

Audit observation

I checked the process for sending records to MEPs.

Audit commentary

As soon as a record is created, it is sent to the MEP, therefore there are no delays.

Audit outcome

Compliant

3.10 Certification at a Lower Category (Clause 6(4) Of Schedule 10.7)

Code related audit information

If the ATH makes a determination to certify a metering installation at a lower category under clause 6 of Schedule 10.7, the certification report must include all information required to demonstrate compliance.

Audit observation

I checked the Bluecurrent processes and one example of certification as a lower category.

Audit commentary

The Bluecurrent process requires the inclusion in the metering installation certification report of details of the lower category certification including advice to the MEP regarding the requirement to monitor the load or the consumption. In the example checked the fusing was 160 amps, therefore monitoring is not required. I checked a further example on-site which included 12 months of historical consumption and load data, which confirmed Bluecurrent's processes are compliant.

Audit outcome

Compliant

3.11 Meter Requirements (Clause 26(3) & (4) of Schedule 10.7)

Code related audit information

The ATH needs to document the following in the metering records:

- the meter manufacturer's required recommendations for regular maintenance,

- any maintenance that has been carried out on the meter, such as battery monitoring and replacement.

An ATH must record in the metering installation certification report, the maximum interrogation cycle for the metering installation before it certifies a metering installation incorporating a meter.

Audit observation

I checked process documentation, conducted a walk-through of the process and checked 66 certification records.

Audit commentary

Bluecurrent as a Class A ATH has not certified any installations where the meter requires maintenance and they have not conducted any maintenance on any components. As a Class B ATH, Bluecurrent is unlikely to deal with any meters where maintenance is required. All AMI devices installed have battery monitoring conducted as part of the data collection function.

I checked 66 certification reports to confirm if the maximum interrogation cycle was recorded. All of the Category 1 reports had the maximum interrogation cycle recorded correctly, however 19 of the Category 2 to 4 reports had a maximum interrogation cycle recorded that differed from that recorded in the registry.

I have also recorded non-compliance in **section 3.14** as the maximum interrogation cycle was not recorded for each services access interface.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.11 With: Clause 26 (4) of Schedule 10.7 From: 01-Aug-22 To: 06-Mar-24	19 metering installation certification reports with maximum interrogation cycle incorrectly recorded. Potential impact: Low Actual impact: Low Audit history: Twice Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as moderate because there is room for improvement. There is very little impact on other participants; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
As 3.2	As 3.2	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
As 3.2	As 3.2	

3.12 Meter Certification Expiry Date (Clause 27(5) of Schedule 10.7)

Code related audit information

The ATH must record the certification expiry date for each meter in a metering installation in the metering installation certification report and the meter certification report.

Audit observation

I checked 66 certification records to confirm compliance.

Audit commentary

Certification expiry dates are correctly calculated and recorded.

Audit outcome

Compliant

3.13 Measuring Transformer Requirements (Clause 28(3) of Schedule 10.7)

Code related audit information

The ATH needs to document the following in the metering records:

- the manufacturer's recommendations for any regular maintenance required for the measuring transformer,

- any maintenance that has been carried out on the measuring transformer.

Audit observation

I checked whether any measuring transformers required maintenance.

Audit commentary

Bluecurrent has not installed any measuring transformers where maintenance is required. Certification reports confirm this fact.

Audit outcome

Not applicable

3.14 Determine Maximum Interrogation Cycle (Clause 36(3) & (4) Of Schedule 10.7)

Code related audit information

An ATH must record the maximum interrogation cycle for each services access interface for the metering installation. The maximum interrogation cycle for a metering installation is the shortest of the following periods:

- the period of inherent data loss protection for the metering installation,

- the period of memory availability given the data storage device configuration,

- the period in which the accumulated drift of a data storage device clock is expected to exceed the maximum time error set out in table 1 of clause 2 of schedule 15.2 for the category of the metering installation.

Audit observation

I checked processes and the records for 66 metering installations to confirm compliance.

Audit commentary

19 of the 66 did not have the maximum interrogation cycle recorded for each available services access interface, as recorded in **section 3.11**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.14 With: Clause 36(3) & (4) of Schedule 10.7 From: 01-Aug-22 To: 06-Mar-24	Maximum interrogation cycle not recorded for each services access interface in 19 metering installation certification reports. Potential impact: None Actual impact: None Audit history: Three times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	I have recorded the controls as moderate because there is room for improvement. There is no impact on MEPs because they are the source of this information anyway; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
As 3.2	As 3.2	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
As 3.2	As 3.2	

4. CALIBRATION AND CERTIFICATION OF METERING COMPONENTS

4.1 Accommodation and Environment (Clause 1(D)-(E) Of Schedule 10.4)

Code related audit information

The ATH must ensure that the environment in which its activities are undertaken is monitored, appropriate for the tests being carried out and unlikely to affect the required accuracy.

Audit observation

I checked the IANZ report which confirmed the test laboratory environment was appropriate.

Audit commentary

I checked the IANZ report which confirmed the test laboratory environment was appropriate.

Audit outcome

Compliant

4.2 Use of Measurement Standards (Clause 1(F) Of Schedule 10.4)

Code related audit information

The ATH must comply with the specific requirements of the applicable standard listed in table 5 of schedule 10.1.

Audit observation

I checked the standards being used and the test points to confirm compliance.

Audit commentary

Bluecurrent uses the correct standards.

Audit outcome

Compliant

4.3 Test Equipment (Clause 2 of Schedule 10.4)

Code related audit information

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. A class B ATH must have and maintain procedures for the purchase of test equipment and associated consumables.

Audit observation

I checked records in the faults log and maintenance log to confirm compliance.

Audit commentary

The requirement for maintenance or repairs to test equipment is an uncommon event. Bluecurrent has a database which contains all maintenance and testing records for all test equipment. Compliance is confirmed.

A class B ATH must have and maintain procedures for the purchase of test equipment and associated consumables. The relevant operating procedure was demonstrated during the audit. The relevant consumables are seals, and stickers.

Audit outcome

Compliant

4.4 Calibration of Reference & Working Standards (Clause 3(1)(a), (b)(i) and (6) of Schedule 10.4)

Code related audit information

An ATH must ensure that any reference standard is calibrated by an approved calibration laboratory and that any working standard is calibrated by an approved calibration laboratory or class A ATH. The calibration reports for the calibrated standards must be held by the ATH and indicate that the standard is within the manufacturer's accuracy specifications.

Audit observation

I checked the records of the Bluecurrent reference and working standards to confirm they had current calibration certificates.

Audit commentary

Bluecurrent provided calibration records confirming the following standards have current calibration:

- Schlumberger SM5050 reference standard, which was last calibrated 19 February 2024,
- Schlumberger SM5050 working standard, which was last calibrated 19 February 2024,
- Avo Phazer T-20 - Meter special test working standard – 12 June 2023, and
- L+G TVH 4.322 – Used to calibrate field working standards – 16 June 2023.

All other standards, including CT comparators and field working standards had current calibration.

Metering installation certification reports have a field for working standard calibration expiry to ensure calibration is current when calibration or certification occurs.

Audit outcome

Compliant

4.5 Calibration Interval (Clause 3(2) of Schedule 10.4)

Code related audit information

Each reference standard or working standard must be calibrated within the applicable calibration interval set out in table 1 of schedule 10.4.

Audit observation

I checked all of the Bluecurrent reference and working standards to confirm they had current calibration certificates.

Audit commentary

Compliance is recorded in **section 4.4**.

Audit outcome

Compliant

4.6 Calibration of Reference Standards (Clause 3(1)(B)(Ii), (2), (3)(C), (4) And (5) Of Schedule 10.4)

Code related audit information

Class A ATHs must ensure that in calibration of reference standards, any uncertainties are sufficiently small so that the overall uncertainty in the measurements used to test a metering installation does not exceed one third of the maximum permitted error set out in table 1 of schedule 10.1 for the category of metering installation that the reference standard will be used to calibrate.

If a reference standard is used in conditions that deviate from those in the calibration report, the class A ATH must calculate and apply adjustments using its own processes and procedures so that the reference standard achieves the reference conditions.

If a reference standard is used in conditions that deviate from those in the calibration report, the class A ATH must calculate and apply adjustments using its own processes and procedures so that the reference standard achieves the reference conditions.

Audit observation

I checked all of the Bluecurrent reference standards to confirm they had current calibration certificates.

Audit commentary

There were no situations where calibration occurred, or standards were used in non-reference situations.

Audit outcome

Compliant

4.7 33kv or above Calibrated by an Approved Calibration Laboratory (Clause 3(3)(B) Of Schedule 10.4)

Code related audit information

Class A ATHs must ensure that a working standard on a system operating at a voltage of 33kV or above has been calibrated by an approved calibration laboratory.

Audit observation

Bluecurrent does not conduct testing of systems of 33kV or above.

Audit commentary

Bluecurrent does not conduct testing of systems of 33kV or above.

Audit outcome

Not applicable

4.8 Metering Component Testing System (Clause 4 of Schedule 10.4)

Code related audit information

An ATH may use a complete calibrated metering component testing system (a test bench) as an alternative to a separately calibrated working standard only if the ATH:

- *calibrates the test bench as if it was a working standard*
- *carries out a testing system accuracy test, using approved reference standards before completing the calibration report.*

Audit observation

Compliance is recorded in **section 4.4**.

Audit commentary

Compliance is recorded in **section 4.4**.

Audit outcome

Compliant

4.9 Calibration Errors (Clause 5 of Schedule 10.4)

Code related audit information

A Standard cannot be used if the ATH believes is 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.

Audit observation

I checked the understanding of this requirement through interview with Bluecurrent. I checked whether this situation had occurred.

Audit commentary

I have recorded compliance with this clause as there have been no cases of unexpected calibration errors. The Bluecurrent process correctly accounts for the known test equipment errors and ensures on-going reliability of results.

Audit outcome

Compliant

4.10 Measurement Traceability (Clause 6 of Schedule 10.4)

Code related audit information

An ATH must document, maintain, and comply with a system that ensures, whenever it undertakes a calibration test or measurement, the ATH can replicate the test or measurement in every respect and the results of the measurements are traceable.

Audit observation

I checked this by reviewing the IANZ audit report.

Audit commentary

The IANZ report confirms compliance.

Audit outcome

Compliant

4.11 Calibration Methods (Clause 7(6) of Schedule 10.4)

Code related audit information

An ATH must only use components that have been certified by an ATH or calibration laboratory.

A Class B ATH must follow 17025 calibration methods for components.

The test points must be those listed in the relevant IEC standard.

An ATH must ensure that uncertainty of measurement does not exceed one third of the error listed in the relevant IEC standard listed in table 5.

If a CT is to be used in a Metering Installation is certified using the selected component method, then it must be tested for errors at 5% to 120% of rated current.

An ATH must have documented instructions for calibration that match the IEC standard.

Audit observation

I checked a sample of calibration and certification reports to confirm compliance with this clause.

Audit commentary

All components are calibrated and certified. Calibration is conducted by the Class A ATH not the Class B ATH. Uncertainty of measurement does not exceed one third of the error listed in the standard. CT test points are compliant.

Audit outcome

Compliant

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

Code related audit information

All data storage devices must be certified before they can be used in a metering installation. The ATH must ensure that the data storage devices in a metering installation have been type tested by an approved test laboratory, that the results for data storage devices are appropriate for that model and version and have a calibration report.

Audit observation

I checked the certification records for 66 metering installations to confirm compliance.

Audit commentary

Bluecurrent certifies data storage devices in accordance with these clauses. The certification report is combined with the metering installation certification report and contains the required details. Bluecurrent has a directory of type test reports for relevant devices.

Bluecurrent recertified 49,640 ARC Innovations ICPs by statistical sampling on 18 March 2022. The data storage devices at these ICPs have been previously found to have not passed type testing. Compliance is confirmed as the certification was completed under exemption number 297 which exempts the Bluecurrent ATH from complying with the obligations in clause 5(b)(xii) of schedule 10.8 of the Electricity Industry Participation Code 2010 ("Code") to ensure that the memory and clock of the metering device continues to operate for at least 15 days after power is lost to the device for ARC metering installations, and clause 21 of schedule 10.7 of the Code which would allow Bluecurrent to certify an ARC metering installation that is outside the accuracy tolerances.

Audit outcome

Compliant

4.13 Metering Component Stickers (8(1) and 8(4) of Schedule 10.8)

Code related audit information

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

If an ATH certifies the metering component on the same day it certifies the metering installation that the metering component is installed in, the ATH may combine the certification stickers and attach it to the metering installation in accordance with clause 41 of Schedule 10.7.

Audit observation

I checked the Bluecurrent component stickers and processes to confirm compliance.

Audit commentary

Bluecurrent attaches metering component stickers in accordance with these clauses. Bluecurrent is currently revising all stickers to include the change of name to Bluecurrent.

Audit outcome

Compliant

4.14 Metering Component Stickers (Clause 8(2) of Schedule 10.8)

Code related audit information

A metering component certification sticker must show:

- the name of the metering component owner (if available),

- if the metering component is a meter or a measuring transformer:

a) *the name of the ATH or the approved calibration laboratory who calibrated the metering component*

b) the name of the ATH who certified the metering component,

c) the date on which the metering component was certified,

d) the initials or other unique identifier of the person who carried out the certification of the metering component.

Audit observation

I checked the Bluecurrent component stickers and processes to confirm compliance.

Audit commentary

Bluecurrent's stickers contain all of the relevant fields, including the party calibrating the component, which was a recommendation in the last audit report.

Audit outcome

Compliant

4.15 Sealing and Monitoring of Seals (Clause 9 of Schedule 10.4 & Clause 47(7) of Schedule 10.7)

Code related audit information

An ATH is required to have a documented system for applying seals to a metering installation to ensure that each metering component in the metering installation that could be expected to affect the accuracy or reliability of the metering installation is sealed. The system of sealing will ensure monitoring of the integrity of the metering installation and that unauthorised access to the metering installation will be identifiable so that the MEP can be notified.

The sealing system will identify:

- the ATH who affixed the seal

- the person (or the sealing tool) who applied the seal

- when the seal was applied.

Audit observation

I checked the quality documentation and a sample of 66 certification records to confirm compliance.

Audit commentary

Bluecurrent uses numbered seals and has appropriate processes for the issue, management, and application of seals.

When a seal is discovered to be broken or missing there is a procedure that ensures the MEP is notified. There is an appropriate policy and procedures contained in the quality manual in relation to the management of sealing.

Audit outcome

Compliant

5. CALIBRATION AND CERTIFICATION OF METERING INSTALLATIONS

5.1 ATH must not Certify Metering Installations under Certain Circumstances (Clause 8(1) Of Schedule 10.7)

Code related audit information

The ATH must not certify a metering installation if the installation does not comply with Part 10.

Audit observation

I checked a sample of 66 certification records to confirm compliance.

Audit commentary

There was one example where a metering installation was certified that did not comply with Part 10.

ICP 0000005594UN22E has 200/5 10VA CTs, where the minimum burden required is 2.5VA, but the white phase had a burden of 2.317 and the blue phase had a burden of 2.358. Despite the certification report indicating the burden tests had failed, the installation was certified on 29 June 2022.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.1 With: Clause 8(1) Of Schedule 10.7 From: 29-Jun-22 To: 06-Mar-24	ICP 0000005594UN22E certified despite the burden being lower than 25% of the rated burden. Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as strong because the certification report clearly indicates the tests have failed. The fact this issue was not identified is an isolated exception. The impact on settlement and participants is minor; therefore, the audit risk rating is low. The overall error of the installation is 0.267%.

Actions taken to resolve the issue	Completion date	Remedial action status
Site will be decertified and return to site to add required burden and recertification.	TBA	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
No change required; validators reminded of process requirements.	6/3/2024	

5.2 Determination of Metering Categories (Clause 5 of Schedule 10.7 & Clause 10.11)

Code related audit information

An ATH is required to determine the category of the metering installation in accordance with table 1 of schedule 10.1 before it certifies a metering installation.

Audit observation

I checked certification records for 66 metering installations to confirm compliance.

Audit commentary

All 66 certification reports had the metering category recorded correctly.

Audit outcome

Compliant

5.3 Requirement for Metering Installation Design Report (Clause 2(4) Of Schedule 10.7)

Code related audit information

The ATH must receive a design report from the MEP before installing or modifying a metering installation or a component in a metering installation.

Audit observation

I checked the current suite of design reports and the certification records for 66 metering installations.

Audit commentary

Bluecurrent has checked and approved design reports. I examined these during the audit. There were no new design reports during the audit period. A design report reference was recorded in the 66 records checked.

Audit outcome

Compliant

5.4 ATH Design Report Obligations (Clause 3 of Schedule 10.7)

Code related audit information

Before certifying a metering installation, the ATH must check the design report to confirm the metering installation will function as designed and that the metering installation will comply with Part 10.

The certifying ATH must update the design report with any changes and provide it to the MEP responsible for the installation within 10 days of installation certification.

Audit observation

I checked the current suite of design reports and the certification records for 66 metering installations.

Audit commentary

Bluecurrent has checked and approved design reports. I examined these during the audit. A design report reference was recorded in the 66 records checked. Compliance is achieved.

Audit outcome

Compliant

5.5 Certification as a Lower Category (Clause 6(1) of Schedule 10.7)

Code related audit information

An ATH may determine that the metering category of a current transformer installation is lower than would otherwise be the case and certify the installation at that lower category only if:

- a protection device, like a fuse or a circuit breaker, is installed so that it limits the maximum current; or

- the MEP provides evidence from historical data that the maximum current will be lower than the current setting of the protection device for the category that metering installation is currently certified at; or

- the components in the metering installation will use less than 0.5 GWh in any 12-month period; or

- the MEP provides evidence from historical data that the installation will use less than 0.5 GWh in any 12-month period.

Audit observation

I checked the Bluecurrent processes and one example of certification as a lower category.

Audit commentary

The Bluecurrent process requires the inclusion in the metering installation certification report of details of the lower category certification including advice to the MEP regarding the requirement to monitor the load or the consumption. In the example checked the fusing was 160 amps, therefore monitoring is not required. I checked a further example on-site which included 12 months of historical consumption and load data, which confirmed Bluecurrent's processes are compliant.

Audit outcome

Compliant

5.6 Use of Current Transformer Rating Lower Than Supply Capacity (Clause 6(2)(a) of Schedule 10.7)

Code related audit information

If the ATH determines the category of a current transformer metering installation is lower than would otherwise be the case and a current limiting device is used, the ATH must:

- confirm the suitability and operational condition of the protection device,

- record the rating and setting of the protection device in the metering records,

- seal the protection device,

- apply, if practicable, a warning tag or label to the seal.

Audit observation

I checked the Bluecurrent processes and one example of certification as a lower category.

Audit commentary

The Bluecurrent process requires the inclusion in the metering installation certification report of details of the lower category certification including advice to the MEP regarding the requirement to monitor the load or the consumption. In the example checked the fusing was 160 amps, therefore monitoring is not required. I checked a further example on-site which included 12 months of historical consumption and load data, which confirmed Bluecurrent's processes are compliant.

Audit outcome

Compliant

5.7 Determining Metering Installation Category at a Lower Category Using Current Transformer Rating (Clause 6(2)(b) & (d) of Schedule 10.7)

Code related audit information

The ATH may determine the metering installation category according to the metering installation's expected maximum current, if:

- there has been a request to do so from the MEP,

- the MEP provides evidence from historical data that the maximum current will be lower than the current setting of the protection device for the category that metering installation is currently certified; and

- the ATH considers it is appropriate to do so in the circumstances.

The MEP must obtain the maximum current that flows through the installation each month from the participant interrogating the installation. From this data the ATH can calculate the maximum current from the raw meter data by either calculation from the kVA by trading period if available or from a maximum current indicator if fitted. If the MEP does not receive the monthly report from the participant interrogating the installation or if the current exceeds the maximum calculated rating of the installation, the certification of the installation is automatically cancelled.

Audit observation

I checked the Bluecurrent processes and one example of certification as a lower category.

Audit commentary

The Bluecurrent process requires the inclusion in the metering installation certification report of details of the lower category certification including advice to the MEP regarding the requirement to monitor the load or the consumption. In the example checked the fusing was 160 amps, therefore monitoring is not required. I checked a further example on-site which included 12 months of historical consumption and load data, which confirmed Bluecurrent's processes are compliant.

Audit outcome

Compliant

5.8 Suitability of Determination of a Metering Installation Category at a Lower Category Using Current Transformer Rating (Clause 6(3) Of Schedule 10.7)

Code related audit information

Before the ATH determines a metering installation to be a lower category, the ATH must first visit the site of the metering installation to ensure it is suitable for the metering installation to be determined to be a lower category.

Audit observation

I checked the Bluecurrent processes and one example of certification as a lower category.

Audit commentary

The Bluecurrent process requires the inclusion in the metering installation certification report of details of the lower category certification including advice to the MEP regarding the requirement to

monitor the load or the consumption. In the example checked the fusing was 160 amps, therefore monitoring is not required. I checked a further example on-site which included 12 months of historical consumption and load data, which confirmed Bluecurrent's processes are compliant.

Audit outcome

Compliant

5.9 Use of Metering Installation Certification Methods (Clause 7(1) Of Schedule 10.7)

Code related audit information

When certifying a metering installation, the ATH must use either of the following methods:

a) the selected component certification method if the metering installation is category 1, 2, or 3; or

b) the fully calibrated certification method.

Audit observation

I checked certification records for 66 metering installations to confirm compliance.

Audit commentary

Bluecurrent correctly uses the fully calibrated method of certification for certification of Category 3 and 4 metering installations and the selected component method for new installations or where components are replaced in Category 1,2 and 3 metering installations.

Audit outcome

Compliant

5.10 Certification of a Metering Installation Using Statistical Sampling or Comparative Recertification (Clause 7(2) Of Schedule 10.7)

Code related audit information

In addition to the selected component and fully calibrated methods, the ATH may also recertify an installation using:

a) an approved statistical sampling process for category 1 metering installations; or

b) the approved comparative recertification method for a category 2 metering installation.

Audit observation

I checked certification records for 66 metering installations and checked if any recertification by statistical sampling had been conducted to confirm compliance.

Audit commentary

Bluecurrent has correctly conducted comparative recertification during the audit period.

Bluecurrent correctly conducted recertification by statistical sampling of 2,143 single phase NGCM ICPs on 6 September 2023 and 1,088 three phase NGCM ICPs on the same date.

Audit outcome

Compliant

5.11 Metering Installation Certification Requirements (Clause 8(3) Of Schedule 10.7)

Code related audit information

An ATH may only certify a metering installation as category 3 or higher if the metering installation incorporates a half hour meter.

Audit observation

I checked certification records for 13 metering installations to confirm compliance.

Audit commentary

All installations had HHR meters.

Audit outcome

Compliant

5.12 Certification Tests (Clause 9(1) of Schedule 10.7)

Code related audit information

An ATH, when required to carry out tests specified in tables 3 or 4 of schedule 10.1, must comply with the provisions of clause 9(1) of schedule 10.7 for the following tests:

- a prevailing load test,

- an installation or component configuration test,

- a raw meter data output test.

A prevailing load test is defined in the Code as a test that is carried out by comparing the output of the metering installation against a working standard connected to the metering installation. For a category 2 or higher metering installation, the prevailing load check must be done against a calibrated instrument (working standard). For a category 1 metering installation industry, best practice has defined a prevailing load test as a measurement of disk revolutions or pulses compared with time and current measurements. The revolutions or pulses are compared against a table or chart to validate the accuracy of the measurement. The prevailing load check is more than simply confirming that the meter operates but is only intended to identify a "gross error" like a phase missing or reversed or a significant metering error.

If the ATH carries out an installation or component configuration test on a metering installation or a metering component, it must ensure that the test equipment configuration is the same as the metering installation or component configuration recorded in the design report.

To carry out a raw meter data output test for a category 1 metering installation or category 2 metering installation, the ATH must apply a load on each phase that is:

- *greater than 5% of the meter's maximum rated current for category 1 installations,*
- *10 amps on each phase for category 2 metering installations.*

In addition, the ATH must use either the working standard referred to in subclause (1)(a) or an ammeter in good working order with an accuracy range of +/-5% to measure the load applied to the metering installation and recording the resulting increment of the meter register value over a measured period of time or recording the resulting accumulation of pulses from the load over a measured period of time.

The ATH must also ensure that the change in the meter register that occurs under subclause (ii)(A) or (ii)(B) is at least "1" in the least significant digit, or one mark if the least significant digit does not have numerical markings.

If the meter is a Ferraris disc meter, the ATH must undertake two raw meter data output tests in which the second test must have a load applied to the meter that is at least double the load applied in the first test.

To carry out a raw meter data output test for a half-hour installation, the ATH must either compare the output from a working standard to the raw meter data from the metering installation for a minimum of one trading period, or if the raw meter data is to be used for the purposes of Part 15, confirm that the MEP's back-office processes include a comparison of:

- *the increment of the accumulating meter registers, and*
- *the sum of the half-hour metering raw meter data for the same period.*

Audit observation

I checked process documentation, and 66 certification reports to confirm compliance.

Audit commentary

This clause was changed from 1st February 2021 introducing minimum load requirements for ATHs when conducting raw meter data tests on Category 1 and 2 metering installations. The minimum load required on each phase is:

- greater than 5% of the meter's maximum rated current for Category 1 installations, and
- 10 amps for Category 2 metering installations.

When conducting a raw meter data test on Category 1 and 2 metering installations the code requires the ATH to record either:

- the resulting increment of the meter register value over a measured period of time, or
- the resulting accumulation of pulses from the load over a measured period of time.

My certification report checks included 12 Category 1 and 43 Category 2 metering installations. The Bluecurrent Category 1 testing process requires the technician to apply an external load to conduct the raw meter data test and the minimum load is now specified as 5% of the meter's maximum rated current. Technicians use heat guns for this purpose which are commonly rated at 1,800 or 2,000 watts, which would meet the 5% requirement for all Category 1 meter types. The technician applies the load and counts the number of pulse and measures the time taken and takes a photo of the register advance. The details of the load applied, number of pulses and time taken are not recorded by the technician. I have recorded non-compliance as the process does not ensure that the minimum load requirement is always met and for not recording the accumulation of pulses.

The ATH must also ensure that the change in the meter register that occurs when conducting a raw meter data test is at least "1" in the least significant digit, or one mark if the least significant digit does not have numerical markings. The technician confirms the meter register by taking a photo of the advanced meter register, this also confirms the meter register advance test has been conducted.

The Bluecurrent Category 2 process specifies a minimum load of 5% of the CT primary current rating. This will meet the Code requirement of a minimum load of 10 amps on each phase for Category 2 metering installations for installations CTs with primary ratings of 200 amps and above. Bluecurrent

records the current at the time of testing in the certification report. My checks of 43 Category 2 certification reports confirmed that the minimum requirement of 10 amps was met in all 43 examples.

Raw meter data output tests for an HHR metering installation which are category 1 or category 2 must be conducted by either:

- comparing the output from a working standard to the raw meter data from the metering installation for a minimum of one trading period, or

- confirming that the metering equipment provider's back-office processes include a comparison of the difference in the increment of the meter registers to the half-hour metering raw meter data, if the raw meter data is to be used for the purposes of Part 15.

Bluecurrent compares the output from a working standard to the raw meter data from the metering installation for a minimum of one trading period for category 2 installations, and the results are recorded in the metering installation certification report. For category 1 installations Bluecurrent has received confirmation from the MEP that the comparison occurs.

Raw meter data output tests for category 3 or higher HHR metering installations must compare the output of a working standard to the raw meter data from the metering installation for a minimum of one trading period. This test is conducted for all HHR metering installations.

Prevailing load tests must be conducted on a metering installation or metering component by using a working standard connected to the metering installation. Bluecurrent has conducted prevailing load tests in accordance with this clause using a working standard for installations at Category 2 and above.

The Bluecurrent processes do not include prevailing load tests when certifying Category 1 installations, Bluecurrent has instructed technicians to replace meters when a single meter category 1 metering installation is recertified. Compliance is recorded.

Installation or component configuration tests must ensure that the actual configuration scheme is the same as the scheme for the metering installation or metering component recorded in the design report. The configuration scheme is recorded on the design report and confirmed in the metering installation certification report.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.12 With: Clause 9(1)(ii)(B) of Schedule 10.7 From: 01-Aug-22 To: 06-Mar-24	ATH did not record the accumulation of pulses, register advance or minimum load when conducting raw meter data tests for Category 1 installations. Potential impact: Low Actual impact: None Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**

Low	I have recorded the controls as moderate as the Bluecurrent process does ensure that testing is conducted but does not meet all of the requirements of the 1 February 2021 Code changes with regard to recording results. The impact is low as the Bluecurrent process has ensured that testing has been conducted; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Current work program to implement into the field app and the generated Certification Reports, due to delays and prioritization this was rolled out as a manual process recorded in the job notes, but not able to be linked to the certification report.	30/4/2024	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
As above	30/4/2024	

5.13 Raw Meter Data Test for all Metering Installations (Clause 9(1A) Of Schedule 10.7)

Code related audit information

If the ATH performs a raw meter data output test under sub-clause (1)(c) or sub-clause (1)(d), for a metering installation that will be certified for remote meter reading, the ATH must:

a) *obtain the raw meter data from the back-office system where the raw meter data is held; or*

b) ensure that the metering equipment provider responsible for the metering installation has a process to validate a meter reading taken at the time of the metering installation certification with a meter reading from the metering equipment provider's back-office system.

Audit observation

I checked process documentation, and 66 certification reports to confirm compliance.

Audit commentary

Bluecurrent has written confirmation from relevant MEPs that this comparison occurs.

Audit outcome

Compliant

5.14 Alternate Raw Meter Data Test for Category 1 and 2 Metering Installations (Clause 9(1)(C) Of Schedule 10.7)

Code related audit information

A raw meter data output test is carried out for a category 1 metering installation or category 2 metering installation by comparing a known load change against the increment of the sum of the meter registers.

Audit observation

Refer to **sections 5.12** and **5.13.**

Audit commentary

Refer to **sections 5.12** and **5.13.**

Audit outcome

Compliant

5.15 Raw Meter Data Output Test (Clause 9(2) And 9(3) Of Schedule 10.7)

Code related audit information

If the ATH performs a raw meter data output test that requires a comparison between two quantities, the ATH must not certify the metering installation unless the test demonstrates that the difference between the two quantities is within the applicable accuracy tolerances set out in table 1 of schedule 10.1.

Audit observation

I checked process documentation and records for 66 metering installations to confirm compliance.

Audit commentary

There were no examples of inaccurate or failed test results.

Audit outcome

Compliant

5.16 Test Results (Clause 10(1) & (2) of Schedule 10.7)

Code related audit information

An ATH must not certify a metering installation if the results of tests on the metering installation or any of its metering components find that:

- a metering component did not pass all the tests,

- the metering installation did not meet the requirements for certification.

Within five business days of reviewing the tests, the ATH must advise the relevant MEP why it did not certify the metering installation.

Audit observation

I checked process documentation and records for 66 metering installations to confirm compliance.

Audit commentary

There were no examples of metering components or installations failing tests, the Bluecurrent processes ensure that certification will not occur if a test fails.

Audit outcome

Compliant

5.17 Selected Component Certification (Clause 11(2) of Schedule 10.7)

Code related audit information

An ATH may only use the selected component certification method to certify a metering installation which complies with the categories and component specifications set out in table 1 of schedule 10.1.

Audit observation

I checked process documentation and records for 45 metering installations to confirm compliance.

I also checked that components were checked to determine they were fit for purpose.

Audit commentary

Selected component certification was used for the appropriate metering categories. All 41 installations complied with the component specifications set out in table 1 of schedule 10.1.

Audit outcome

Compliant

5.18 Selected Component - Circumstances Where Method May Be Used (Clause 11(3) Of Schedule 10.7)

Code related audit information

An ATH must only use the selected component certification method to certify the metering installation if:

- the required tests in table 3 of schedule 10.1 are carried out,

- each data storage device, meter, and measuring transformer has been calibrated and certified,

- each data storage device is certified in accordance with clause 5 of schedule 10.8,

- the ATH provides a certification report for the metering installation.

Audit observation

I checked process documentation and records for 27 metering installations to confirm compliance.

I also checked that components were checked to determine they were fit for purpose.

Audit commentary

The process documentation is clear, and all selected component certification reports were compliant.

Audit outcome

Compliant

5.19 Comparative Recertification – Circumstances Where Method May be Used (Clause 12(2) of Schedule 10.7)

Code related audit information

An ATH may only use the comparative recertification method to recertify a category 2 metering installation if:

- the certification of the current transformers in the metering installation expires before the meter certification expiry date,

- each data storage device and/or meter has been calibrated and certified.

Audit observation

I checked process documentation and records for 31 metering installations to confirm compliance.

Audit commentary

The process documentation is clear, and all comparative certification reports contained confirmation that the meter was replaced by another certified meter.

Audit outcome

Compliant

5.20 Comparative Recertification Tests (Clause 12(3) And 12(5)(A) Of Schedule 10.7)

Code related audit information

An ATH must, when recertifying the category 2 metering installation using the comparative recertification metering installation certification method, ensure that:

- the metering installation has passed the tests set out in table 3 of schedule 10.1 using a working standard,

- the accuracy of the current measurement sensor (current transformer or high accuracy Rogowski coil) enables the metering installation to meet the specified accuracy requirements of table 1 of schedule 10.1

- the overall metering installation accuracy meets the requirements of table 1 of schedule 10.1 and

- the ATH provides a certification report for the metering installation.

Audit observation

I checked process documentation and records for 31 metering installations to confirm compliance.

Audit commentary

The certification reports confirmed that appropriate testing was conducted and the and that the total accuracy was within the requirements of table 1. The results of the tests conducted, and details of the test instruments used, were recorded in the metering installation certification reports for each metering installation checked.

Audit outcome

Compliant

5.21 Fully Calibrated – Circumstances Where Method May be Used (Clause 13(3) of Schedule 10.7)

Code related audit information

An ATH must use the fully calibrated certification method to certify the metering installation:

- by carrying out the tests set out in table 4 of schedule 10.1,

- if each of the components (the data storage device, meter, and measuring transformer) has been calibrated and certified.

Audit observation

I checked process documentation and records for three metering installations to confirm compliance.

Audit commentary

The records confirm the appropriate tests are performed and components are calibrated and certified. The results of the tests conducted, and details of the test instruments used, were recorded in the metering installation certification reports for each metering installation checked.

Audit outcome

Compliant

5.22 Fully Calibrated - Certify Each Metering Component (Clause 13(4) Of Schedule 10.7)

Code related audit information

Each individual metering component in the metering installation must have a current certification report that confirms that the metering component complies with the requirements of its accuracy class; and includes the certification date of the metering component.

Audit observation

I checked process documentation and records for three metering installations to confirm compliance.

Audit commentary

The certification report confirmed that appropriate testing was conducted, and that all components were certified and that certification reports were prepared.

Audit outcome

Compliant

5.23 Fully Calibrated - Additional Metering Installation Certification Report Requirements (Clause 13(5) & (6) Of Schedule 10.7)

Code related audit information

The ATH must provide a certification report for the metering installation. The certification report must include confirmation that:

- the ATH has checked the design report of the metering installation to confirm the metering installation functions in accordance with the report

- the overall metering installation accuracy meets the requirements of table 1 of schedule 10.1

- the accuracy of the metering installation remains within the maximum permitted error for the relevant metering installation

- each metering component in the metering installation is used only in a permitted combination as set out in table 1 of schedule 10.1.

Audit observation

I checked process documentation and records for three metering installations to confirm compliance.

Audit commentary

The certification reports confirmed that appropriate testing was conducted, and that all components were certified and that certification reports were prepared. The certification report recorded all of the points listed above.

Audit outcome

Compliant

5.24 Fully Calibrated – Use Meter Class Accuracy (Clause 13(7) Of Schedule 10.7)

Code related audit information

An ATH must, before it certifies a metering installation, ensure that the ATH uses the meter class accuracy, and not the actual accuracy, to calculate whether the actual error is within the maximum permitted error.

Audit observation

I checked process documentation and records for three metering installations to confirm compliance.

Audit commentary

The certification report and process documentation confirmed that meter class accuracy is used to calculate the overall error.

The most recent ISO 17025 and report recorded a corrective action in relation to this clause, where the report states:

The laboratory used the MSL Metering Installation Error (MIE) Calculator to evaluate metering errors and uncertainties for determining compliance with EIPC 2010 criteria. For Category 4 low voltage metering installations the laboratory had entered the meter IEC class permissible errors rather than the actual uncertainty reported in the meter calibration certificate.

Bluecurrent is working with MSL to resolve this matter.

Audit outcome

Compliant

5.25 Insufficient Load (Clause 14 of Schedule 10.7)

Code related audit information

Every metering installation requires a test to ensure that the installation is correctly recording the energy used at the installation. The tests required are defined in tables 3 and 4 of schedule 10.1. The checks range from a minimum check that the meter registers increment through to a full raw meter data output check against a working standard and a check against the back-office data for a half hour installation.

If the ATH decides to certify half hour metering installation that has insufficient load to complete a prevailing load check, the ATH must ensure that:

- it performs an additional integrity check of the metering installation wiring, and records the results of this check in the certification report,

- it records in the certification report that the metering installation is certified under clause 14 of schedule 10.7.

Once load is present and following a request from the MEP, the ATH must carry out prevailing load tests. If the tests demonstrate that the metering installation performs within the maximum permitted error, the certifying ATH must:

- update the metering installation certification report, within five business days of completing the tests, to include the results of the tests carried out,

- leave the original metering installation certification expiry date unchanged.

Audit observation

I checked the processes and records for two examples of insufficient load certification.

Audit commentary

The Bluecurrent insufficient load process requires the technician to conduct additional checks in the form of visual checks, wiring continuity tests, phase angle checks and CT ratio checks conducted by applying a small amount of load. The metering installation certification report includes an "Insufficient Load Certification" section. My checks found that the additional checks were recorded in the certification report for one of two examples.

ICP 0006182453RNFA4 was certified for insufficient load on 12May 2022, but the insufficient load section in the certification report was not populated.

The front page of metering installation certification reports issued under this clause contain statements advising of the insufficient load certification and the requirement for the MEP to monitor the load and notify the ATH when sufficient load is available.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.25 With: Clause 14 of Schedule 10.7 From: 12-May-22 To: 06-Mar-24	Insufficient load tests not conducted for ICP 0006182453RNFA4. Potential impact: Medium Actual impact: Unknown Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as strong because there is a robust process in place and this example appears to be an exception. The impact on settlement and participants is unknown, so I have recorded the impact as low.

Actions taken to resolve the issue	Completion date	Remedial action status
Site to be investigated and possible return to site to fully certify	TBA	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Validators reminded of process	6/3/2024	

5.26 Statistical Sampling (Clause 16 of Schedule 10.7)

Code related audit information

A group of meters can be sampled by the ATH, and the results of the sample group can be extended to a larger group of the same meters. This is a process of certification by statistical sampling. The ATH must select a sample using a statistical sampling process that is:

- detailed in AS/NZS1284 (or approved and published by the Authority),

- recertify the group by recertifying each metering installation in the sample using the fully calibrated certification method,

- advise the MEP as soon as reasonably practicable whether the sample passes or fails the recertification requirements.

If the ATH carries out a statistical sampling process when recertifying a group of category 1 metering installations on behalf of an MEP, it must document and record:

- the process it follows for selecting samples,

- any assumptions about those samples,

- the metering installations in the sample,

- the metering installations in the recertified group.

An ATH that recertifies a group of metering installations using a statistical sampling process does not need to apply a certification sticker to the remainder of the metering installations in the family or group that was sample tested.

Audit observation

I checked the statistical sampling process and checked if any statistical sampling recertification projects were conducted by Bluecurrent during the audit period.

Audit commentary

Bluecurrent correctly conducted recertification by statistical sampling of 2,143 single phase NGCM ICPs on 6 September 2023 and 1,088 three phase NGCM ICPs on the same date. The process, results and reporting were compliant.

Audit outcome

Compliant

5.27 Statistical Sampling - Certification Method (Clause 7(3) Of Schedule 10.7)

Code related audit information

If the ATH uses statistical sampling, it must use either the selected component method or the fully calibrated method, as applicable, to certify each metering installation in the sample.

Audit observation

Bluecurrent correctly conducted recertification by statistical sampling of 2,143 single phase NGCM ICPs on 6 September 2023 and 1,088 three phase NGCM ICPs on the same date. The process, results and reporting were compliant.

Audit commentary

The selected component method was used to recertify the installations in the sample.

Audit outcome

Compliant

5.28 Certification Validity Periods (Clause 17 of Schedule 10.7)

Code related audit information

A metering installation certification expiry date is the earliest of:

a) the date of commissioning plus the maximum certification validity period for the relevant category of metering installation, as set out in table 1 of schedule 10.1; or

b) the earliest metering component certification expiry date; or

c) a date determined by the ATH if the ATH believes that the circumstances and condition of the components in a metering installation warrant deviation from table 1 of schedule 10.1.

The expiry date for a metering installation in a group recertified using a statistical sampling process, is the earliest expiry date of the metering installations in the sample.

Audit observation

I checked 66 metering installation certification records to confirm compliance.

Audit commentary

The commissioning date and expiry date are recorded correctly in the metering installation certification reports.

Audit outcome

Compliant

5.29 Metering Installation Accuracy (Clause 21 of Schedule 10.7)

Code related audit information

An ATH must, before it certifies a metering installation, ensure that the metering installation does not exceed the relevant maximum permitted error after the application of any external compensation factors.

Audit observation

I checked 66 metering installation certification records to confirm compliance.

Audit commentary

The process documentation stipulates the maximum permitted errors for certification. My checks of 66 certification records confirmed this had been applied correctly and the maximum error did not exceed the maximum permitted error.

The error and uncertainty processes are discussed in more detail in **section 5.30**.

Audit outcome

Compliant

5.30 Error Calculation (Clause 22 of Schedule 10.7)

Code related audit information

If a metering installation is certified using the comparative recertification or fully calibrated methods, the ATH must calculate and record the percentage of overall error of the metering installation. The ATH must calculate this using appropriate mathematical methods that include:

- all sources of measurement error including test instrument errors, reference standard variations when used in conditions that deviate from those in the calibration report, variations in repeated observations, the instrument resolution or discrimination threshold and any assumptions incorporated in the measurement method and procedure

- the error calculation must include the uncertainty in the measurement at a 95% level of confidence using JCGM 100:2008

- the error and its calculation must be recorded in the certification report.

The ATH must not certify the metering installation if the uncertainty is greater than the maximum permitted site uncertainty or the combined error that includes the measured error and the uncertainty, is greater than the maximum permitted installation error.

Audit observation

I checked 66 metering installation certification records and discussed the process for error calculation.

Audit commentary

When conducting certification using the Comparative Recertification and Fully Calibrated methods all sources of error are appropriately accounted for including temperature and load. Uncertainty is calculated using the latest version of the MSL calculator, which considers temperature. The temperature is recorded on site and the calculator uses this to account for variation based on the test instrument temperature coefficient in three different temperature ranges, 11 to 18 degrees, 18 to 28 degrees and 28 to 35 degrees. Category 2 certification is not conducted outside of these temperatures. A randomly generated load profile is used within the calculator to achieve compliance with the requirement to consider the total quantity of electricity conveyed.

Audit outcome

Compliant

5.31 Compensation Factors (Clause 24(1)(b) of Schedule 10.7)

Code related audit information

Before it certifies a metering installation that requires a compensation factor to adjust raw meter data, the ATH must:

- advise the MEP of the compensation factor,

- ensure that the compensation factor that will be applied to raw meter data external to the metering installation is applied as follows:

a) for ratio compensation, on a category 1 metering installation or higher category of metering installation; or

b) for error compensation, on a metering installation that quantifies electricity conveyed through a point of connection to the grid; or

c) for loss compensation, only on a category 3 or higher metering installation.

Audit observation

I checked 66 metering installation certification records, and process documentation.

Audit commentary

Bluecurrent only deals with multipliers, not loss or error compensation factors. Bluecurrent has a documented process for the management of compensation factors (multipliers). The testing procedures provide confirmation of the multiplier and CT ratio, the multiplier is recorded on the metering installation certification report.

I found an issue with the certification report for ICP 0000001305RC766. There are two conflicting compensation factors. The front page of the report and the meter certification sheet both have a compensation factor of 100, and the CT ratio checks have a compensation factor of 40. 40 is correct. The registry has a compensation factor of 1, which is an MEP issue and has been raised with them.

Non-compliance is recorded in **sections 2.2** and **5.32** for the incorrect information in the certification report.

Audit outcome

Compliant

5.32 Record Metering Installation Compensation Factor (Clause 24(2) Of Schedule 10.7)

Code related audit information

If a compensation factor is applied to a metering installation, the ATH must record in the certification report, the methodology, assumptions, measurements, calculation and details of each compensation factor that is included within the internal configuration of the metering installation and each compensation factor that must be applied to the raw meter data.

Audit observation

I checked 66 metering installation certification records, and process documentation.

Audit commentary

Bluecurrent has a documented process for the management of compensation factors (multipliers). The testing procedures provide confirmation of the multiplier and CT ratio, the multiplier is recorded on the metering installation certification report.

I found an issue with the certification report for ICP 0000001305RC766. There are two conflicting compensation factors. The front page of the report and the meter certification sheet both have a compensation factor of 100, and the CT ratio checks have a compensation factor of 40. 40 is correct. The registry has a compensation factor of 1, which is an MEP issue and has been raised with them.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.32 With: Clause 24(2) Of Schedule 10.7 From: 07-Nov-23 To: 06-Mar-24	Two different compensation factors (40 and 100) are recorded in the metering installation certification report for ICP 0000001305RC766. Potential impact: Medium Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as strong because there are tests to confirm the correct compensation factor. The impact on settlement and participants could be medium. In this case the impact is unknown, and the issue has been raised with the MEP. I have recorded the impact as low until the investigation is complete.
Actions taken to resolve the issue	**Completion date** / **Remedial action status**

Both the validators and the TOU team have been advised on this mistake. Certificate to be amended and reissued.	30/3/2024	Cleared
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Validators reminded of process	6/3/2024	

5.33 Installation of Metering Components (Clause 25 of Schedule 10.7)

Code related audit information

Before it certifies a metering installation, the ATH must ensure that the installation of the metering components was carried out by an ATH. However, a suitably qualified person such as a switchboard manufacturer may install the measuring transformers and any required associated burden, the test facilities, potential fuses and switchboard wiring.

Before it certifies a metering installation, the ATH must ensure that each metering component is installed in accordance with the installation design report.

Audit observation

I checked process documentation and conducted a walk-through of the process.

Audit commentary

This clause is designed to allow switchboard manufacturers or electricians to install measuring transformers in switchboards at the time of manufacture. This clause does not allow the installation of meters or data loggers. Bluecurrent has a process to ensure compliance with this clause. CTs are provided to switchboard manufacturers, but not meters. There were no specific examples to examine during the audit.

Audit outcome

Compliant

5.34 Determine Metering Installation Certification Expiry Date (Clause 27(1) & (2) Of Schedule 10.7)

Code related audit information

The ATH needs to determine the meter certification expiry date for each meter in a metering installation. The meter certification expiry date must be the earliest end date of the following periods, calculated from the date of commissioning of the metering installation:

a) the maximum metering installation certification validity period for the relevant category of metering installation; or

b) the maximum meter certification validity period set out in table 2 of schedule 10.1 for the relevant class of meter for the metering installation; or

c) the certification period specified in the meter certification report.

Audit observation

I checked 66 certification records to confirm compliance.

Audit commentary

All meter and metering installation certification expiry dates were correct.

Audit outcome

Compliant

5.35 Meter Certification Shelf Life (Clause 27(4) Of Schedule 10.7)

Code related audit information

If a meter is not installed in a metering installation within 24 months of the date of the meter's certification report, the meter must be recertified before it is installed.

Audit observation

I checked 66 certification records to confirm compliance.

Audit commentary

Bluecurrent understands the requirements of this clause and ensures that all meters are certified at the time of installation.

Audit outcome

Compliant

5.36 Measuring Transformers Must Be Certified (Clause 28(2) Of Schedule 10.7)

Code related audit information

All measuring transformers must be certified before they can be used in a metering installation. If a measuring transformer has previously been used in another metering installation, the ATH must ensure that the measuring transformer has been recalibrated since it was removed from the previous metering installation. This must be undertaken either by an approved calibration laboratory or an ATH.

Audit observation

I checked 56 Category 2 and above certification records to confirm compliance.

Audit commentary

The current transformers were certified in all relevant cases. Bluecurrent has a clear understanding of this requirement.

Audit outcome

Compliant

5.37 Measuring Transformers Used in A Certified Metering Installation (Clause 28(4) Of Schedule 10.7)

Code related audit information

To certify any metering installation incorporating measuring transformers, the ATH must ensure that:

- the installation has certified measuring transformers,

- the installation has a test facility which has provision for isolation, installed as physically close to the meter as practical in the circumstances,

- the test facility is fitted with a transparent cover,

- the installation has securely mounted measuring transformers which are, if practicable, in a sealed enclosure,

- the maximum permitted error is calculated in accordance with clause 22 for the fully calibrated certification method or the comparative recertification method,

- any voltage supplies from a voltage transformer to a meter or that other equipment in the metering installation is protected by appropriately rated fuses or circuit breakers dedicated to the supply. All fuses and circuit breakers must be suitably sealed or located in sealed enclosures,

- the measuring transformer's secondary circuit is earthed and that it is earthed at no more than one point,

- the total in-service burden (magnitude and phase angle, where appropriate), complies with clause 31.

Audit observation

I checked 56 Category 2 and above certification records, and process documentation to confirm compliance.

Audit commentary

The certification reports and process documentation confirmed compliance with regard to all of the above points.

My checks of 56 Category 2 and above metering installation certification reports found the in-service burden was within the burden range of the CTs for all but one metering installation. The burden range was correctly recorded in all records where Bluecurrent certified the CTs. Bluecurrent has a process for installing additional burden when required and the details of this are included in the certification records.

ICP 0000005594UN22E has 200/5 10VA CTs, where the minimum burden required is 2.5VA, but the white phase had a burden of 2.317 and the blue phase had a burden of 2.358. Despite the certification report indicating the burden tests had failed, the installation was certified on 29 June 2022.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.37 With: Clause 28(4)(i) Of Schedule 10.7 From: 29-Jun-22 To: 06-Mar-24	Burden not within the allowable range for ICP 0000005594UN22E. Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as strong because the certification report clearly indicates the tests have failed. The fact this issue was not identified is an isolated exception. The impact on settlement and participants is minor; therefore, the audit risk rating is low. The overall error of the installation is 0.267%.
Actions taken to resolve the issue	**Completion date** / **Remedial action status**

As per 5.1	TBA	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
As per 5.1	6/3/2024	

5.38 Measuring Transformer Certification Expiry Date (Clause 29 of Schedule 10.7)

Code related audit information

The ATH needs to determine the measuring transformer certification expiry date for each measuring transformer in a metering installation. The measuring transformer certification expiry must be within the validity period specified in the measuring transformer certification report.

Audit observation

I checked 56 certification records to confirm compliance.

Audit commentary

The metering installation certification report contains a field for CT expiry date and my checks confirmed this was being calculated and recorded correctly.

Audit outcome

Compliant

5.39 Other Equipment Connected to Measuring Transformers (Clause 30 of Schedule 10.7)

Code related audit information

If the ATH certifies a metering installation incorporating a measuring transformer used by another metering installation, it must ensure that where voltage transformers are connected to more than one meter:

- the meters are included in the metering installation being certified,

- appropriate fuses or circuit breakers are provided to protect the metering circuit from short circuits or overloads affecting the other meter.

While it is desirable that only metering equipment is connected to measuring transformers in a metering installation if, in some circumstances, the MEP connects other equipment to measuring transformers, the ATH must ensure that:

- the accuracy of the metering installation remains within the maximum permitted error for the relevant metering installation category,

- the metering installation certification report confirms that the accuracy of the metering installation remains within the maximum permitted error for the relevant metering installation,

- any wiring between the equipment and any part of the metering installation is continuous,

- the equipment is labelled appropriately, including with any de-energisation restrictions,

- the connection details of the other equipment are recorded in the metering installation design report,

- there are appropriate fuses or circuit breakers provided to protect the voltage transformer and metering circuit from short circuits or overloads affecting the other equipment.

Audit observation

I checked whether the situation arises where other equipment is connected to measuring transformers.

Audit commentary

There were no examples to examine where other equipment was connected to measuring transformers. However, the measurement of burden during certification will address this matter.

Audit outcome

Compliant

5.40 Burden & Compensation (Clause 31 of Schedule 10.7)

Code related audit information

An ATH may certify a metering installation for a POC to the grid that includes error compensation factors as an alternative to the use of burden resistors only if the ATH is satisfied the error compensation factors will provide a more accurate result than the use of burden resistors.

An ATH may change the burden on a voltage transformer, without obtaining the approval of the MEP, if the ATH confirms in the certification report that the difference between the new burden and the burden at the time of the most recent metering installation certification is:

a) less than or equal to 1/30th of the VA rating of the voltage transformer, if the voltage transformer is rated at less than 30 VA; or

b) no greater than 1 VA, if the voltage transformer is rated at equal to or greater than 30 VA.

Before it certifies a metering installation incorporating a measuring transformer:

- *ensure that the in-service burden does not exceed the upper limit of the range specified for the measuring transformer, if specified in the design report for the metering installation,*
- *ensure that the in-service burden on the measuring transformer is within the range specified in the certification report by installing burdening resistors, if necessary,*
- *confirm that a class A ATH has confirmed by calibration that the accuracy of the measuring transformer will not be adversely affect by the in-service burden being less than the lowest burden test point specified in the standard, if the primary voltage of the measuring transformer is greater than 1kV,*
- *confirm that the measuring transformer's manufacturer has confirmed that the accuracy of the measuring transformer will not be adversely affected by the in-service burden being less than the lowest burden test point specified in the standard.*

Audit observation

I checked processes and the records for 56 Category 2 and above certification records to confirm compliance.

Audit commentary

My checks of 56 Category 2 and above metering installation certification reports found the in-service burden was within the burden range of the CTs for 55 metering installations. The burden range was correctly recorded in all records where Bluecurrent certified the CTs. Bluecurrent has a process for installing additional burden when required and the details of this are included in the certification records.

ICP 0000005594UN22E has 200/5 10VA CTs, where the minimum burden required is 2.5VA, but the white phase had a burden of 2.317 and the blue phase had a burden of 2.358. Despite the certification report indicating the burden tests had failed, the installation was certified on 29 June 2022.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.40 With: Clause 31 of Schedule 10.7 From: 29-Jun-22 To: 06-Mar-24	Burden not within the allowable range for ICP 0000005594UN22E. Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as strong because the certification report clearly indicates the tests have failed. The fact this issue was not identified is an isolated exception. The impact on settlement and participants is minor; therefore, the audit risk rating is low. The overall error of the installation is 0.267%.

Actions taken to resolve the issue	Completion date	Remedial action status
As per 5.1	TBA	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
As per 5.1	6/3/2024	

5.41 Alternative Certification (Clause 32(1) of Schedule 10.7)

Code related audit information

If the ATH cannot comply with the requirements for certifying a measuring transformer solely due to the inability to obtain physical access to test the measuring transformers, it can certify the metering installation for a period not exceeding 24 months only if:

- the measuring transformer has not previously been certified due to failure to obtain access,

- the ATH is satisfied that the metering installation will comply with the applicable accuracy requirements,

- the ATH has advised the MEP that the metering installation has been certified by this method,

- the MEP has advised the registry of the certification.

Audit observation

I checked the process documentation and whether any examples had occurred.

Audit commentary

I checked three example of alternative certification by Bluecurrent due to an inability to access the CTs for calibration until CT access could be arranged. The certification report included details of checks conducted by the ATH to satisfy accuracy requirements were met and advise to the MEP that alternative certification was applied.

Audit outcome

Compliant

5.42 Installations Incorporating Control Devices (Clause 33(2) of Schedule 10.7)

Code related audit information

Before the ATH can certify a metering installation incorporating a control device that must be certified, it must ensure:

- that the certification expiry date for each control device is the same as the metering installation certification expiry date and record that date in the installation certification report,

- that the control device complies with the applicable standards listed in table 5 of schedule 10.1,

- the control device is fit for purpose,

- if the metering installation contains a control device that has previously been used in another metering installation, that the control device is still fit for service,

- that the control device is:

a) likely to receive control signals,

b) correctly connected,

c) correctly programmed.

Audit observation

I checked certification records for four metering installations to confirm compliance.

Audit commentary

Bluecurrent is certifying control devices and correctly applying stickers. The control device certification expiry date is correctly recorded in the installation certification report.

Audit outcome

Compliant

5.43 Control Device Reliability (Clause 34(1) & (3) to (5) of Schedule 10.7)

Code related audit information

In order to ensure control device accuracy or the completeness of reconciliation information, the ATH must determine the likelihood of the control device not receiving control signals before it certifies a metering installation incorporating a control device.

If the ATH believes the likelihood of the control device not receiving control signals would affect the accuracy or completeness of the information for consumption reconciliation, the ATH may certify the remainder of the metering components and the installation, excluding the control device. The ATH must advise the MEP within three business days of its decision. The MEP is then responsible for advising both

the reconciliation participant for the POC for the metering installation and the control signal provider of the ATH's determination.

Audit observation

Bluecurrent has a schedule showing all areas with potential signal propagation issues. This schedule is supplied to the contractors so they can take it into account when conducting metering activities which may involve the installation of a control device.

Audit commentary

Bluecurrent has a schedule showing all areas with potential signal propagation issues. This schedule is supplied to the technicians so they can take it into account when conducting metering activities which may involve the installation of a control device. Compliance is confirmed.

Audit outcome

Compliant

5.44 Data Storage Devices (Clauses 36(2) of Schedule 10.7)

Code related audit information

If a data storage device has previously been used in another metering installation, the ATH must ensure that the data storage device has been recalibrated since it was removed from the previous metering installation by an approved calibration laboratory, an approved test laboratory, or an ATH.

Audit observation

I checked processes and the records for 66 metering installations to confirm compliance.

Audit commentary

All data storage devices are recertified prior to being reinstalled.

Audit outcome

Compliant

5.45 Data storage device requirements (Clause 38(1) and (2) of Schedule 10.7 and clause 5(1) of Schedule 10.8)

Code related audit information

An ATH must ensure that each data storage device in the metering installation:

- is installed so that on-site interrogation is possible without the need to interfere with seals,

- has a dedicated power supply unless the data storage device is integrated with another metering component,

- is compatible with each other metering component of the metering installation,

- is suitable for the electrical and environmental site conditions in which it is installed,

- has all of its outputs and inputs appropriately electrically isolated and rated for purpose,

- has no outputs that will interfere with the operation of the metering installation,

- records periods of data identifiable or deducible by both date and time on interrogation,

- has memory capacity and functionality that is suitable for the proposed functions of the data storage device specified in the design report for the metering installation,

- has availability of memory for a period that is suitable for the proposed functions as set out in the design report for the metering installation, and at least for a minimum continuous period of 15 days.

The data storage device must have an event log which records the following:

a) loss of power supply,

b) critical internal alarms,

c) meter phase failure if integral to the meter,

d) software configuration changes,

e) a record of time changes.

Audit observation

I checked the availability of type test reports, and processes for determining environmental suitability.

Audit commentary

The points above, apart from point "d" are documented in the type test report, which is checked as part of the certification process for the data storage device. Bluecurrent is ensuring data storage devices are certified and the maximum interrogation cycle is recorded.

This clause requires the ATH to ensure that several conditions are met by the type test report, including that the type test report "records the tests undertaken by the **approved test laboratory** to confirm compliance under sub-subparagraph (D) and the reasons why the **ATH** considers that they are appropriate." Bluecurrent has not been provided with complete type test reports by EDMI for the most recent series of meters, therefore Bluecurrent cannot confirm the report records the tests undertaken and cannot record why they consider the tests to be appropriate.

I have copied the entire relevant part of the code below, and I've highlighted the areas where compliance cannot be determined without the complete type test report.

5 Data storage device certification requirements

(1) An ATH must, before it certifies a data storage device used for storing information that is used for the purposes of Part 15, ensure that—

(a) an approved test laboratory has—

(i) conducted type-testing that the ATH considers appropriate for the model and version of data storage device; and

(ii) produced a type-test certificate that—

(A) confirms the data storage device's technical characteristics; and

(B) confirms the range of environmental conditions within which the data storage device has been proven accurate and reliable; and

(C) confirms that the data storage device performs the functions for which it was designed; and

(D) confirms that the data storage device complies with this Part; and

(E) records the tests undertaken by the approved test laboratory to confirm compliance under sub-subparagraph (D) and the reasons why the ATH considers that they are appropriate; and

(b) it produces a certification report that—

(i) confirms the data storage device complies with the applicable standards listed in Table 5 of Schedule 10.1; and

(ii) records the tests the ATH has performed to confirm compliance with subparagraph (i) and the results of those tests; and

(iii) confirms that the data storage device has passed the tests; and

(iv) includes the date on which it certified the data storage device; and

(v) includes the certification validity period for the data storage device for each category of metering installation in which the data storage device may be used; and

(vi) records the maintenance requirements for the data storage device; and

(vii) confirms that each period of data is identifiable or deducible by both date and time on interrogation; and

(viii) confirms that the time and date of the following event conditions are recorded in an event log:

(A) a loss of the power supply to the data storage device; and

(B) critical internal alarms such as memory integrity checking, battery low, battery failed, and tampering; and

(C) phase failure to the meter, if the data storage device is integral to the meter; and

(D) any software configuration changes; and

(E) results of time setting comparisons and corrections; and

(F) the transition from, and to, New Zealand daylight time, if the data storage device operates in New Zealand daylight time; and

(ix) confirms that the data storage device has the available memory capacity required by the type-test; and

(x) confirms that the data storage device has the functionality—

(A) to validate instructions from an interrogation system; and

(B) for time comparisons and corrections, in response to a valid instruction; and

(xi) confirms that all information logged is referenced to New Zealand Standard Time or New Zealand daylight time; and

(xii) confirms that the data storage device has data loss protection providing a continued clock and memory operation for a continuous period of at least 15 days when the power supply to the data storage device is lost.

I recommend Bluecurrent prepares and populates a schedule of each relevant meter type, the type test report reference, the specific items required for compliance, the date compliance was confirmed and by who. One of the reasons the detailed report is required is that there is at least one example where a type test report was issued, despite the meter failing on one of the key attributes.

Description	Recommendation	Audited party comment	Remedial action
Type test reports	Prepare and populate a schedule of each relevant meter type, the type test report reference, the specific items required for compliance, the date compliance was confirmed and by who.	This is currently being reviewed, as the original appears to have been misplaced during the server transfers associated with the separation from Vector. If it can not be found a new one will be developed.	Identified

The other point this clause requires is that the validity period is recorded in the certification report for each data storage device. There were 50 examples out of 66 where the validity period was not recorded.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.45 With: Clause 5(1) of Schedule 10.8 From: 01-Aug-22 To: 06-Mar-24	ATH has not ensured Series 3 EDMI meters comply with the type-test requirements because EDMI has not supplied type test reports. 50 of 66 certification reports do not record the validity period. Potential impact: Medium Actual impact: Unknown Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as strong, because the type tests have been requested. The impact on settlement and participants is unknown until the type test reports can be read and approved; therefore, I have recorded the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
A review was done to determine if all the appropriate standards had been tested to as indicated by the first pages of the report provided, but the manufacturer refused to provide the full copies of the reports.	2023	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
The MEP has been advised on the requirement for full type test reports	2023	

5.46 Location of Metering Installation Certification Stickers (Clause 41(1) and 41(9) of Schedule 10.7

Code related audit information

An ATH must confirm the metering installation certification by attaching a metering installation certification sticker as close as possible to the meter, while maintaining reasonable visibility of the certification sticker and the meter.

When attaching a metering installation certification sticker, the ATH must remove or obscure any invalid or expired certification stickers.

Audit observation

I checked the photos for five metering installations to confirm compliance.

Audit commentary

In all cases, the certification stickers contained the appropriate detail and were correctly applied. Old certification stickers are either removed or obscured.

Audit outcome

Compliant

5.47 Alternate Location of Metering Installation Certification Sticker (Clause 41(4) Of Schedule 10.7)

Code related audit information

If attaching a certification sticker is not practicable, the ATH must devise and use an alternative means of documenting the information and keep any metering component certification sticker with the documented information.

Audit observation

I checked with Bluecurrent whether this scenario had arisen.

Audit commentary

This scenario has not arisen and is unlikely to arise.

Audit outcome

Compliant

5.48 Contents of Metering Installation Certification Sticker (Clause 41(2) Of Schedule 10.7)

Code related audit information

The metering installation certification sticker must show:

- the name of the ATH who certified the metering installation,

- the certification date of the installation,

- the metering installation category,

- the ICP,

- the certification number for the metering installation.

Audit observation

I checked the photos for five metering installations to confirm compliance.

Audit commentary

In all cases, the certification stickers contained the appropriate detail and were correctly applied. I also checked the newly created stickers to confirm compliance.

Audit outcome

Compliant

5.49 Combining certification stickers (Clause 41(5) – Clause 41(8) of Schedule 10.7)

Code related audit information

If an ATH certifies a metering component on the same day that the ATH certifies the metering installation, the ATH may combine the metering installation certification sticker with the metering component certification sticker.
If the certification sticker is combined, the ATH must:

- *ensure that the combined sticker shows all the information required by subclause (2) and clause 8(2) of Schedule 10.8,*
- *meet the requirements of subclauses (1), (3) and (4), as if the combined sticker were a metering installation certification sticker.*

The combined sticker is immediately invalid if:

- *the metering installation certification expiry date changes; or*
- *a metering component to which the combined certification sticker relates is removed from the metering installation.*

Audit observation

Bluecurrent uses a combined metering installation and component sticker.

Audit commentary

Bluecurrent's stickers contain all of the relevant fields, including the party calibrating the component, which was a recommendation in the last audit report.

Audit outcome

Compliant

5.50 Enclosures (Clause 42 of Schedule 10.7)

Code related audit information

An ATH must, before it certifies a metering installation, ensure that, if a metering component in the metering installation is housed in a separate enclosure from the meter enclosure, the enclosure is appropriate to the environment in which it is located and has a warning label attached stating that the enclosure houses a metering component.

Audit observation

I checked the photos for five metering installations to confirm compliance.

Audit commentary

Although this clause only refers to enclosures other than the metering enclosure, I have considered this clause to apply to metering enclosures as well.

The photos for five metering installations showed that all enclosures were appropriate for the environment, and the Bluecurrent certification sticker has an appropriate warning.

Audit outcome

Compliant

5.51 Metering Component Certification (Clause 43(1) of Schedule 10.7)

Code related audit information

Before certifying an installation, the ATH must ensure that each component has been certified by an ATH and has been stored appropriately since component certification.

Audit observation

I checked the processes for storage of components, and the records for 66 metering installations to confirm compliance.

Audit commentary

Bluecurrent conducts calibration of components in their laboratory, and they have appropriate arrangements for storage and transportation. Bluecurrent is ensuring components are certified as required by the Code.

Audit outcome

Compliant

5.52 Sealing Requirements (Clause 47(2) (3) (4) and (5) Of Schedule 10.7)

Code related audit information

Before an ATH certifies a metering installation or leaves it unattended, the ATH must ensure that each metering component that could reasonably be expected to affect the accuracy or reliability of the metering installation is sealed.

The metering components which must be sealed include:

- each part and connection of a data storage device in, or attached to, the metering installation except for a port for on-site reading that is not capable of carrying out any other function

- the main switch cover, if the main switch:

a) is on the supply side of the metering installation,

b) has provision for sealing.

Audit observation

I checked process documentation, design reports and the photos for five metering installations to confirm compliance.

Audit commentary

The process documentation, design reports and the photos for five metering installations confirm compliance.

Audit outcome

Compliant

5.53 Seals for Metering Component Enclosures (Clause 47(6) Of Schedule 10.7)

Code related audit information

When applying a seal to a metering component in an enclosure, the ATH must attach a warning label in a prominent position inside the enclosure.

Audit observation

I checked process documentation and the photos for five metering installations to confirm compliance.

Audit commentary

Compliance is confirmed. The warning label is attached in a prominent position.

Audit outcome

Compliant

5.54 Requirements for Sealing System (Clause 47(7) Of Schedule 10.7)

Code related audit information

An ATH must use a sealing system that enables identification of:

- the ATH who affixed the seal,

- the person (or the sealing tool) who applied the seal,

- when the seal was applied.

Audit observation

I checked process documentation and records for 66 installations.

Audit commentary

The certification records contain the relevant details required by this clause.

Audit outcome

Compliant

5.55 Removal or Breakage of Seals (Clause 48(6) of Schedule 10.7)

Code related audit information

When the ATH investigates an unauthorised removal or breakage, it must assess the accuracy and continued integrity of the metering installation. If the ATH considers the accuracy and continued integrity is unaffected, it must replace the removed or broken seals.

If the accuracy and continued integrity is affected, the ATH must replace the removed or broken seal and advise the MEP that the metering installation is potentially inaccurate, defective, or not fit for purpose.

Audit observation

I checked the process documentation to confirm compliance.

Audit commentary

Bluecurrent has appropriate instructions in relation to this requirement and there is the ability to record this information on the commissioning record for the installation. There were no recent examples available to check.

Audit outcome

Compliant

5.56 Wiring (Clause 6 of Schedule 10.8)

Code related audit information

An ATH must, before it certifies a metering installation, ensure that all wiring in the metering installation is suitable for the environment in which the metering installation is located, fit for purpose, securely fastened, and compliant with all applicable requirements and enactments.

The ATH must ensure that the wiring between metering components in the metering installation:

- is run as directly as practicable,

- is appropriately sized and protected,

- does not, to the extent practicable, include intermediate joints for any measuring transformer circuits,

- includes conductors that are clearly and permanently identified, by the use of any one or more of the following:

a) colour coding,

b) marker ferrules,

c) conductor numbering.

If it is not practicable to exclude intermediate joints for any measuring transformer circuits, the ATH must ensure that the intermediate joints are sealed or in a sealed enclosure.

Audit observation

I checked process documentation and the photos for five metering installations to confirm compliance.

Audit commentary

The process documentation and design reports are compliant and the photos for five installations confirmed compliance.

Audit outcome

Compliant

5.57 Fuses and Circuit Breakers (Clause 7 of Schedule 10.8)

Code related audit information

An ATH must, before it certifies a metering installation, ensure that all fuses and circuit breakers that are part of the metering installation are appropriately rated for the electrical duty and discrimination required, clearly labelled and sealed or located in sealed enclosures.

Audit observation

I checked process documentation to confirm compliance.

Audit commentary

The documentation demonstrated compliance with this requirement, metering fuse ratings are recorded in the metering installation certification reports.

Audit outcome

Compliant

5.58 Calibration of Metering Components Where Relevant (Clause 7(1) Of Schedule 10.4)

Code related audit information

Before the ATH certifies a metering installation or metering component, it must ensure that the metering components have been calibrated by an approved calibration laboratory or an ATH with appropriate approval under Schedule 10.3.

Audit observation

I checked process documentation, and 66 certification reports to confirm compliance.

Audit commentary

The Bluecurrent process requires the technician to confirm the calibration details of metering components on-site and certification does not occur if the component does not have a calibration sticker. The calibration details are recorded in the certification report. This was confirmed by my checks of 66 certification reports.

Audit outcome

Compliant

5.59 Requirement for Calibration of Metering Components (Clause 7(2) Of Schedule 10.4)

Code related audit information

Before the ATH certifies a metering component it must ensure that the component is calibrated or adjusted under the physical and electrical conditions specified in table 5 of schedule 10.1 and the conditions permit the calculation of uncertainties at the reference conditions.

Audit observation

I checked process documentation, and 66 certification reports to confirm compliance.

Audit commentary

The Bluecurrent process requires the technician to confirm the calibration details of metering components on-site and certification does not occur if the component does not have a calibration sticker. The calibration details are recorded in the certification report. My checks of 66 metering installation certification reports and a sample of calibration reports confirmed compliance.

Audit outcome

Compliant

5.60 Metering Component Calibration Method (Clause 7(3) Of Schedule 10.4)

Code related audit information

A class B ATH must follow the relevant requirements of ISO17025 for calibration of components and only use methodologies that have been verified in their most recent audit.

Audit observation

The Bluecurrent Class B ATH does not calibrate components. Calibration is conducted by the Class A ATH.

Audit commentary

The Bluecurrent Class B ATH does not calibrate components. Calibration is conducted by the Class A ATH.

Audit outcome

Not applicable

5.61 Metering Component Calibration Test Points (Clause 7(4) Of Schedule 10.4)

Code related audit information

If the ATH calibrates a component, it must ensure that the test points that it uses are either:

- no less than the test points in table 5 of schedule 10.1 or

- sufficient to calculate the metering installation error as defined in clause 22 of Schedule 10.7.

Audit observation

I checked the test points used by Bluecurrent.

Audit commentary

Bluecurrent uses the test points stipulated in the relevant standards. In some instances, they add more test points but always include the minimum requirements.

Audit outcome

Compliant

5.62 Determine Metering Component Error and Record (Clause 7(5) Of Schedule 10.4)

Code related audit information

An ATH must, when calibrating a metering component:

- if necessary, adjust and document the error compensation,

- ensure that any adjustment carried out is appropriate to achieve an error as close as practicable to zero,

- 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.

If the metering component is intended for a metering installation which will be certified using the selected component certification method, the ATH must ensure that the ATH records the errors of a current transformer from 5 % to 120 % of rated primary current.

Audit observation

I checked the Bluecurrent IANZ report to confirm compliance.

Audit commentary

The IANZ report confirms compliance with these points.

Audit outcome

Compliant

5.63 Class B ATH Calibrating Metering Components (Clause 2(3) Of Schedule 10.3)

Code related audit information

If a class B ATH wishes to calibrate components (such as class 0.5 meters, class 1 meters, class 2 meters, class 0.5 current transformers, and class 1.0 current transformers) this must be carried out under the relevant provisions and methodologies of ISO 17025. The final audit report must include a list of all relevant requirements of ISO 17025 for calibrating these metering components and all relevant methodologies audited.

Audit observation

The Bluecurrent Class B ATH does not calibrate components. Calibration is conducted by the Class A ATH.

Audit commentary

The Bluecurrent Class B ATH does not calibrate components. Calibration is conducted by the Class A ATH.

Audit outcome

Not applicable

5.64 Meter Certification (Clause 1 of Schedule 10.8)

Code related audit information

All meters must be certified before they can be used in a metering installation. The ATH must ensure that the meters in a metering installation have been type tested by an approved test laboratory, that the results for the meter are appropriate for that meter model and version and have a calibration report.

Audit observation

I checked the certification records for 66 metering installations and the Bluecurrent directory of type test reports to confirm compliance.

Audit commentary

All meters are certified, and Bluecurrent has a directory of type test reports.

As mentioned in **section 5.45**, this clause requires the ATH to ensure that several conditions are met by the type test report, including that the type test report:

A. confirms the meter's technical characteristics; and

B. confirms the range of environmental conditions within which the meter has been proven accurate and reliable; and

C. confirms that the meter performs the functions for which it was designed; and

D. confirms that the meter complies with the requirements of this Part; and

E. records the tests undertaken by the approved test laboratory and the reasons why the ATH considers that they are appropriate.

Bluecurrent has not been provided with complete type test reports by EDMI for the most recent series of meters, therefore Bluecurrent cannot confirm the report records the tests undertaken and cannot record why they consider the tests to be appropriate.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.64 With: Clause 1 of Schedule 10.8 From: 01-Aug-22 To: 06-Mar-24	ATH has not ensured Series 3 EDMI meters comply with the type-test requirements because EDMI has not supplied type test reports. Potential impact: Medium Actual impact: Unknown Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as strong, because the type tests have been requested. The impact on settlement and participants is unknown until the type test reports can be read and approved; therefore, I have recorded the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
As 5.45	As 5.45	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
As 5.45	As 5.45	

5.65 Meter Requirements When Meter Is Relocated (Clause 26(2) Of Schedule 10.7 and Clause 43(2) Of Schedule 10.7)

Code related audit information

If a meter has previously been used in another metering installation, the ATH must ensure that the meter has been recalibrated since it was removed from the previous metering installation by an approved calibration laboratory or an ATH unless it is less than 12 months since the meter was commissioned in the previous installation.

Audit observation

I checked the process documentation in relation to this clause.

Audit commentary

Bluecurrent ensures that all meters are calibrated by a class A ATH prior to being reinstalled.

Audit outcome

Compliant

5.66 Measuring Transformer Error Testing (Clause 2(1)(A) & (B) Of Schedule 10.8)

Code related audit information

Before certifying a measuring transformer, an ATH must test the measuring transformer's errors at a range of primary values at their rated burdens. If the measuring transformer is a multi-tap current transformer, an ATH must carry out the calibration tests and only certify the transformer for the ratios that have been calibrated.

Audit observation

CTs certified by Bluecurrent are done so in accordance with these clauses. Compliance is confirmed.

Audit commentary

CTs certified by Bluecurrent are done so in accordance with these clauses. Compliance is confirmed.

Audit outcome

Compliant

5.67 Measuring Transformer Certification (Clause 3 of Schedule 10.8)

Code related audit information

Before it certifies a measuring transformer, the ATH must ensure that:

- the measuring transformer has a current calibration report issued by an approved calibration laboratory or an ATH approved to carry out calibration,

- the measuring transformer calibration report:

- confirms that the measuring transformer complies with the standards listed in Table 5 of Schedule 10.1

- records any tests the ATH has performed to confirm compliance,

- confirms that the measuring transformer has passed the tests,

- records any recommendations made by the ATH on error compensation,

- includes any manufacturer's calibration test reports.

The ATH is required to produce a measuring transformer certification report that includes:

- the date on which it certified the measuring transformer,

- the certification validity period for the measuring transformer, which must be no more than 120 months,

- whether the certification was based on batch test certificates,

- if the certification was based on batch test certificates, confirmation that the manufacturer's batch testing facility is, in the ATH's opinion, of an acceptable standard,

- the range that the in-service burden must be within,

The ATH must provide confirmation that the ATH has inspected the manufacturer's test certificates, and carried out any additional tests it considers necessary, to satisfy itself that the measuring transformer meets the accuracy requirements.

Audit observation

I checked the certification records for 56 metering installations to confirm compliance.

Audit commentary

When conducting certification of category 2 and above metering installations under the selected component and fully calibrated methods the Bluecurrent ATH certifies the CTs based on calibration reports provided by Class A ATHs, which covers most of the points raised above. Bluecurrent has added an "Allowed burden range" field to its certification reports which meets the requirement to record the burden range of CTs. This field was correctly populated in all reports checked.

I checked 14 certification reports where Bluecurrent certified CTs, and in all cases, the CT validity period was not recorded.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.67 With: Clause 3(c)(ii) of schedule 10.8 From: 01-Aug-22 To: 06-Mar-24	CT validity period not recorded for 14 CT certification reports. Potential impact: None Actual impact: None Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as strong because all of the other parts of this clause have been complied with and the certification expiry dates are correct. There is no impact; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
The code is saying the report must include the certification validity period, it does not ask for a statement on the validity period, The report gives the 'Cert Date' and 'Expiry Date' which together gives the validity period. As the component certification reports are specific to each metering installation there are no multiple categories per component to worry about.	TBA	Disputed
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Believe current implementation fulfils the code requirements	TBA	

5.68 Measuring Transformers in service burden range (Clause 2(1)(E) Of Schedule 10.8)

Code related audit information

Before certifying a measuring transformer, the ATH must determine the range that the in-service burden must be within to ensure the measuring transformer remains accurate, by using one or more of the following:

- *the measuring transformer's nameplate rating,*

- *the calibration report for the measuring transformer,*
- *the manufacturer's documentation for the measuring transformer,*
- *the standard set out in table 5 of schedule 10.1 the measuring transformer was manufactured to.*

Audit observation

I checked processes and the records for 56 metering installations to confirm compliance.

Audit commentary

When conducting certification of category 2 and above metering installations under the selected component and fully calibrated methods the Bluecurrent ATH certifies the CTs based on calibration reports provided by Class A ATHs. Bluecurrent has added an "Allowed burden range" field to its certification reports which meets the requirement to record the burden range of CTs. This field was correctly populated in all reports checked.

Audit outcome

Compliant

5.69 Measuring Transformer - Epoxy Insulated (Clause 2(2) Of Schedule 10.8)

Code related audit information

Before it certifies an epoxy insulated current transformer, the ATH must ensure that the certification tests allow for, and the metering installation certification report shows, the current transformer's age, temperature, and batch.

Audit observation

I checked the policy regarding epoxy CTs.

Audit commentary

Epoxy insulated CTs are discarded upon discovery**.**

Audit outcome

Compliant

5.70 Control Device Certification (Clause 4 of Schedule 10.8)

Code related audit information

Before it certifies a new control device, the ATH must produce a certification report that:

- confirms that the control device complies with the applicable standards listed in table 5 of schedule 10.1,

- includes the details and results of any test that the ATH has carried out to confirm compliance under paragraph (a),

- confirms that the control device has passed such tests.

Before it certifies an existing installed control device, the ATH must produce a certification report that confirms:

- that the control device is fit for purpose,

- the control device certification validity period that the ATH considers appropriate, which must be no more than 180 months.

Audit observation

I checked the certification records for two metering installations containing control devices to confirm compliance.

Audit commentary

Bluecurrent certifies control devices in accordance with these clauses. The certification report is combined with the metering installation certification report.

Neither of the two control device certification reports contained the validity period.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.70 With: Clause 4(2)(b) of Schedule 10.8 From: 01-Aug-22 To: 06-Mar-24	Two control device certification reports do not contain the validity period. Potential impact: None Actual impact: None Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as strong because compliance is achieved with all other parts of this clause. There is no impact; therefore, the audit risk rating is low. All certification expiry dates were correct.

Actions taken to resolve the issue	Completion date	Remedial action status
As per 5.67	TBA	Disputed
Preventative actions taken to ensure no further issues will occur	**Completion date**	
As per 5.67	TBA	

5.71 Data Storage Devices (Clause 36(2) Of Schedule 10.7)

Code related audit information

If a data storage device has previously been used in another metering installation, the ATH must ensure that the data storage device has been recalibrated since it was removed from the previous metering installation by an approved calibration laboratory, an approved test laboratory, or an ATH.

Audit observation

I checked the certification records for 66 metering installations and the process documentation to confirm compliance.

Audit commentary

The process documentation and certification records confirmed that data storage devices are certified prior to installation.

Audit outcome

Compliant

5.72 On-site Calibration and Certification (Clause 9(1) of Schedule 10.8)

Code related audit information

An ATH may only calibrate a metering component on site in the metering component's normal environment by measuring the influence of all on-site variables and including their estimated effects in the uncertainty calculation. An ATH must ensure that:

- the effects of any departures from the reference conditions can accurately and reliably be calculated

- the metering installation, in which the metering component is incorporated, is within the applicable accuracy tolerances set out in table 1 of schedule 10.1 after taking into account all known influences including temperature and temperature co-efficient measurements.

Audit observation

Bluecurrent conduct on site calibration of current transformers for fully calibrated and some selected component installations. I checked the IANZ report to confirm compliance with this clause.

Audit commentary

The IANZ report confirmed compliance.

Audit outcome

Compliant

5.73 On Site Metering Component Calibration (Clause 9(2) Of Schedule 10.8)

Code related audit information

If the ATH calibrates a metering component on site using manual methods, computers, or automated equipment for the capture, processing, manipulation, recording, reporting, storage, or retrieval of calibration data, it must ensure that its computer software:

- is documented in the ATH's procedures,

- can manipulate the variables that affect the performance of the metering component in a manner that will produce results that would correctly indicate the level of compliance of the metering component with this Code.

Audit observation

Bluecurrent conduct on site calibration of current transformers for fully calibrated and some selected component installations. I checked the IANZ report to confirm compliance with this clause.

Audit commentary

The IANZ report confirmed compliance.

Audit outcome

Compliant

5.74 On site metering component calibration records (Clause 9(3) of Schedule 10.8)

Code related audit information

An ATH that certifies a metering component on site must include confirmation in the metering component certification report that:

- it has calculated the uncertainty of measurement taking into account all environmental factors for both the metering component being calibrated and the working standards,

- the calculation of the uncertainty comprises all uncertainties in the chain of calibration,

- the ATH has used a calibration procedure to calibrate the metering component that was included in the ATH's most recent audit and is appropriate for on-site calibration.

Audit observation

Bluecurrent conduct on site calibration of current transformers for fully calibrated and some selected component installations. I checked the IANZ report to confirm compliance with this clause.

Audit commentary

The IANZ report confirmed compliance.

Audit outcome

Compliant

5.75 Data Storage Device Certification Expiry Date (Clause 37 of Schedule 10.7)

Code related audit information

Before certifying a meter installation which incorporates a data storage device, the ATH must determine the expiry date of the data storage device. The ATH must record the expiry date in the certification report for the metering installation and the certification report for the data storage device.

Audit observation

I checked the records for 66 metering installations to confirm compliance.

Audit commentary

Bluecurrent is correctly applying certification in accordance with this clause.

Audit outcome

Compliant

5.76 All Functions and Activities Must Be Completed (Clause 10.42(2))

Code related audit information

Where Part 10 requires the ATH to complete a function or activity before a metering installation is certified, the ATH must complete that function or activity as part of the process for certifying the metering installation.

Audit observation

I checked the records for 66 metering installations to confirm compliance.

Audit commentary

There was no evidence of incomplete functions.

Audit outcome

Compliant

6. INSPECTION OF METERING INSTALLATIONS

6.1 General Inspection Requirements (Clause 44 (1) (a) to (e) of Schedule 10.7)

Code related audit information

When carrying out an inspection of a metering installation, the ATH must:

- check and confirm that the data storage device in the metering installation operates as required,

- check and confirm that the expected remaining lifetime of each battery in the metering installation will be reasonably likely to meet or exceed the metering installation certification expiry date,

- ensure that no modifications have been made to the metering installation without the change having been documented and certification requirements satisfied,

- visually inspect all seals, enclosures, metering components, and wiring of the metering installation for evidence of damage, deterioration, or tampering,

- ensure that the metering installation and its metering components carry appropriate certification stickers.

Audit observation

I checked the Bluecurrent process and a sample of 13 completed inspection reports to confirm compliance.

Audit commentary

Bluecurrent has appropriate process documentation for conducting inspections of CT metered installations, and their records are compliant with these clauses. My checks of five inspection reports confirmed that the above points were met.

When conducting inspections of AMI metered Category 1 installations, which contain data storage devices. The following information is obtained from the MEP prior to the inspection being conducted:

- confirmation that there are no events recorded which could affect the operation of the data storage device,
- date of the last sum-check and confirmation that it passed, and
- confirmation that there are no battery alarms present.

Audit outcome

Compliant

6.2 Raw Meter Data Test (Clause 44(1)(F) Of Schedule 10.7)

Code related audit information

When carrying out an inspection of a category 1 metering installation, the ATH must also check and confirm there is no difference between the volume of electricity recorded by the master accumulation register of a data storage device, and the sum of the meter registers.

Audit observation

I checked the Bluecurrent process and a sample of ten completed inspection reports to confirm compliance.

Audit commentary

When conducting inspections of AMI metered Category 1 installations, which contain data storage devices. The process includes confirmation from the MEP that the most recent sum-check has passed.

Audit outcome

Compliant

6.3 Prepare Inspection Report (Clause 44(2) Of Schedule 10.7)

Code related audit information

An ATH must prepare an inspection report for each inspection of a metering installation that it carries out, which includes the following:

- details of the checks carried out, the results, and the installation certification expiry date,

- the serial numbers of all components in the metering installation,

- any non-compliances and the action taken to remedy the non-compliance,

- the name of the inspector and the date on the inspection.

Audit observation

I checked the Bluecurrent process and a sample of 13 completed inspection reports to confirm compliance.

Audit commentary

Bluecurrent inspection reports contain all of the relevant information above.

Audit outcome

Compliant

6.4 Provide Inspection Report to MEP (Clause 44(3) Of Schedule 10.7)

Code related audit information

The ATH must, within ten business days of carrying out the inspection, provide the inspection report to the MEP.

Audit observation

I checked the timeframes for sending inspection reports by checking Bluecurrent records.

Audit commentary

No late inspection reports were identified.

Audit outcome

Compliant

6.5 Inspections for Category 2 & Above Installations (Clause 46(2) of Schedule 10.7)

Code related audit information

When carrying out an inspection of a category 2 or higher metering installation, the ATH must also conduct the following additional checks:

- a visual inspection of each metering component in the metering installation for damage, tampering, or defect,

- if the current transformer can be safely accessed, check the position of the current transformer tap to ensure it is still appropriate for the expected maximum current for the metering installation,

- check for the presence of appropriate voltages at the metering installation,

- *check the voltage circuit alarms and fault indicators.*

Audit observation

I checked the Bluecurrent process and a sample of three completed inspection reports to confirm compliance.

Audit commentary

Bluecurrent inspection reports contain all of the relevant information above.

Audit outcome

Compliant

7. PROCESS FOR HANDLING FAULTY METERING INSTALLATIONS

7.1 Investigation of Faulty Metering Installations (Clause 10.43(3) of Part 10)

Code related audit information

As a participant, the ATH must inform the MEP if it believes a metering installation is faulty, inaccurate, defective, or not fit for purpose.

Audit observation

I checked the Bluecurrent process documentation to confirm compliance.

Audit commentary

The process documentation confirmed compliance. There was one example where the technician identified phase failure during a recertification. The certification report contained the details of the phase failure.

Audit outcome

Compliant

7.2 Testing of Faulty Metering Installations (Clause 10.44 of Part 10)

Code related audit information

When advised by an MEP that a metering installation is faulty, inaccurate, defective, or not fit for purpose, the ATH must test the metering installation as soon as practical and provide a statement of situation.

Audit observation

I checked the Bluecurrent process documentation to confirm compliance.

Audit commentary

No specific examples of faulty metering installations have been identified where the MEP provided notification. Bluecurrent has a process which is compliant with the Code. I viewed Bluecurrent's Statement of Situation form and confirmed that it includes all relevant detail.

Audit outcome

Compliant

7.3 Statement of Situation (Clause 10.46(1) of Part 10)

Code related audit information

The ATH must include the following in the statement of situation:

- the details and results of the tests carried out,

- a conclusion, with reasons, as to whether or not the metering installation is faulty,

- an assessment of the risk to the completeness and accuracy of the raw meter data,

- the remedial action proposed or undertaken,

- any correction factors to apply to raw meter data to ensure that the volume information is accurate,

- the period over which the correction factor must be applied to the raw meter data.

Audit observation

I checked the Bluecurrent process documentation to confirm compliance.

Audit commentary

No specific examples of faulty metering installations have been identified where the MEP provided notification. Bluecurrent has a process which is compliant with the Code. I viewed Bluecurrent's Statement of Situation form and confirmed that it includes all relevant detail.

Audit outcome

Compliant

7.4 ATH to keep records of modifications to correct defects (Clause 10.47 of Part 10)

Code related audit information

When taking action to remedy an inaccuracy or defect within a metering installation, the ATH must ensure that records of any modifications that are carried out to the metering installation are kept for each metering component of the metering installation in the metering records and in a manner reasonable in the circumstances to ensure that further investigation can be carried out.

Audit observation

I checked the Bluecurrent process documentation to confirm compliance.

Audit commentary

The process documentation confirmed compliance. There was one example where the technician identified phase failure during a recertification. The certification report contained the details of the phase failure.

Audit outcome

Compliant

8. CONCLUSIONS

Non-compliance is recorded in 15 sections of this audit. This is more than the six recorded in the last report. There are three main additional points raised in this audit report, as follows:

- incorrect field practices for two ICPs,
- certification validity periods not recorded for components in the certification reports, and
- type test reports not available and not checked for the latest EDMI meters.

Some of the points raised during the last audit are still present, mainly those relating to the recording of maximum interrogation cycles and services access interfaces. There is still the outstanding issue where test results are not recorded for Category 1 metering installations.

Whilst the quantity of non-compliances has increased, this is not an indication that controls have deteriorated, because several of the issues were one-off exceptions. My overall summary is that some areas remain the same and several areas have undergone improvements or improvements are in progress.

The date of the next audit is determined by the Electricity Authority and is dependent on the level of compliance during this audit. The Future Risk Rating table provides some guidance on this matter and recommends a next audit frequency of six months. After considering Bluecurrent's responses and the remedial actions taken I recommend a next audit period of 12 months.

9. BLUECURRENT RESPONSE