

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

For

INTELLIHUB LIMITED

Prepared by: Steve Woods – Veritek Limited

Date audit commenced: 21 April 2020

Date audit report completed: 27 May 2020

Audit report due date: 27-May-20

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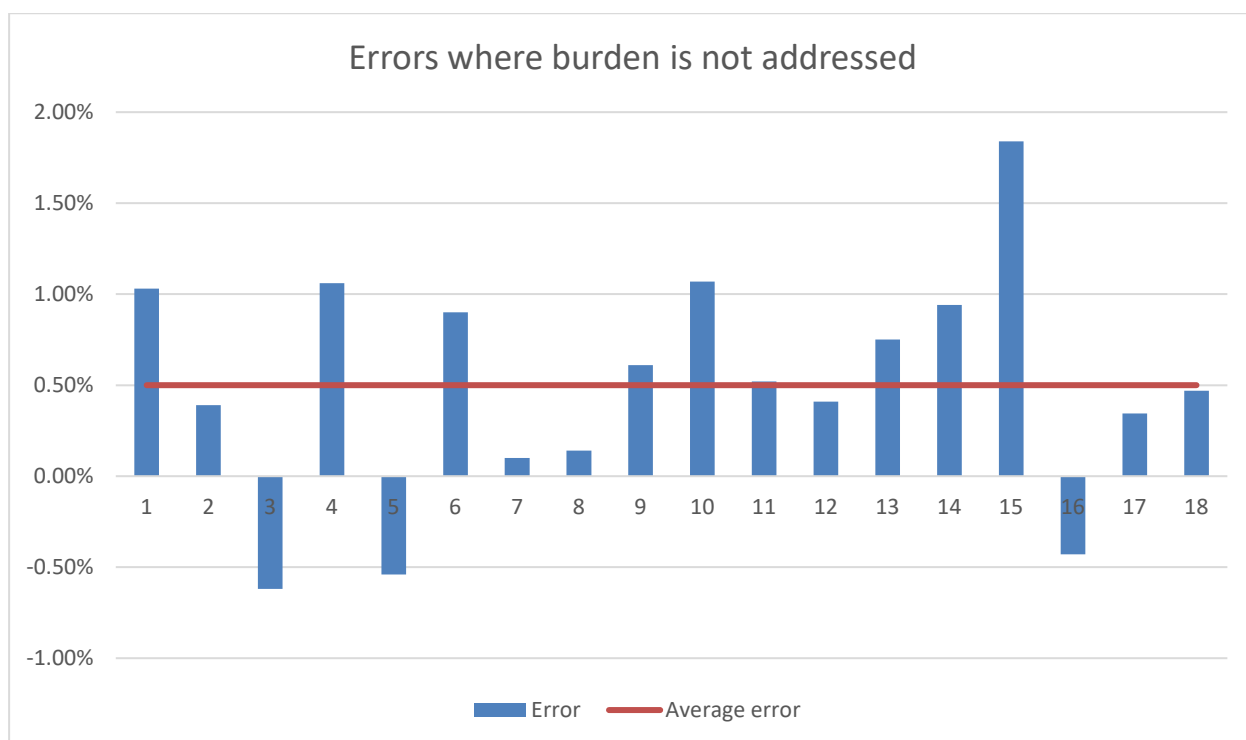
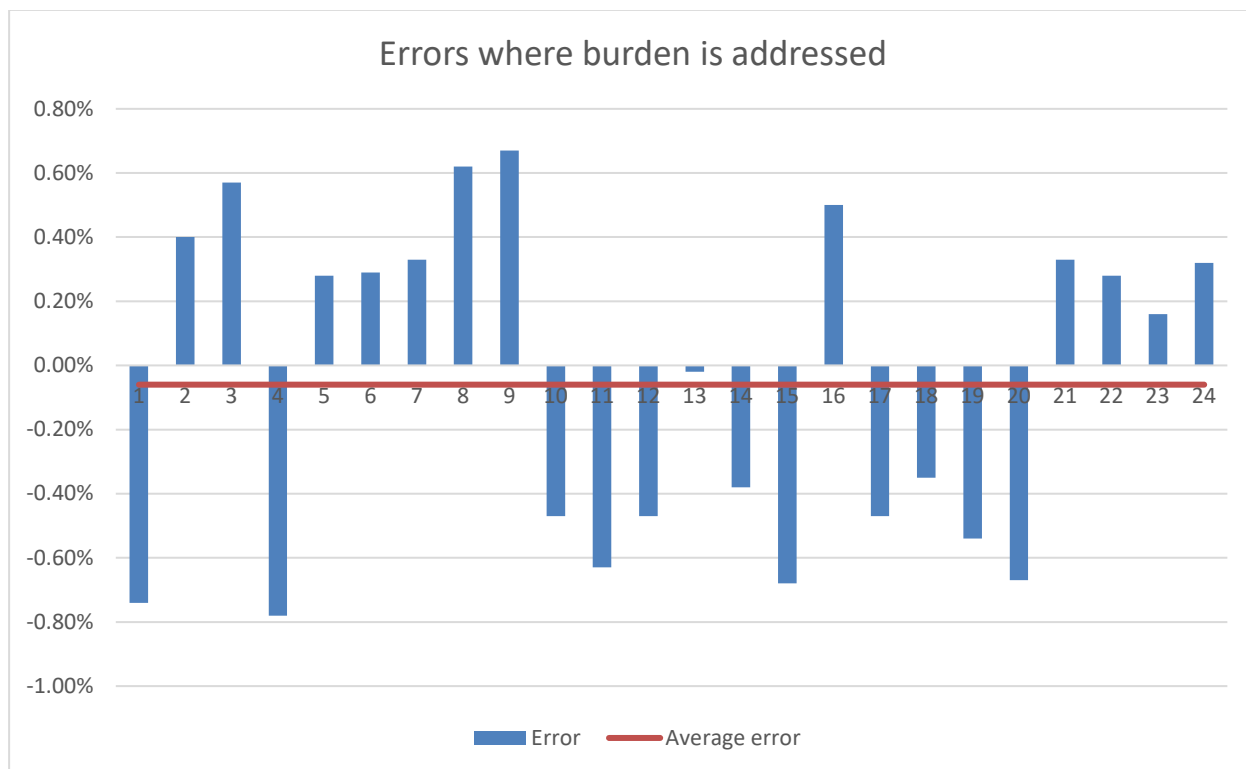
EXECUTIVE SUMMARY

Intellihub Limited (Intellihub) is a Metering Equipment Provider (MEP) and is required to undergo an audit by 31/05/20 in accordance with clause 16A.17(a).

14 non-compliances were identified, which is an increase of 10 in the last audit. The main reason for the increase appears to be that controls in relation to the management of recertification, ATH field practices and certification record accuracy are not as strong as in previous audits. The quantity of metering installations with expired certification has remained similar to the previous audit, and the number of Category 2 installations with expired or late certification has increased considerably. ATHs are still not routinely addressing installations with low burden and their certification reports contained a large number of errors. I have made several recommendations to improve controls in relation to the monitoring of ATH practices and records.

With regard to the management of low burden, Clause 31(7) of Schedule 10.7 requires the addition of burden before the ATH “certifies a measuring transformer” Some participants, including Intellihub” believe they are compliant because when the comparative method is used, the ATH is not “certifying the measuring transformers” Whilst this is correct, the non-compliance does not refer to this clause, there are other relevant clauses in the Code and I believe clarification is required. Firstly, whether CTs operating at low burden are a problem or not. Clauses 11(4)(d) and 12(5)(b) of Schedule 10.7 require ATHs to *“ensure that each metering component in the metering installation is fit for purpose”* A common definition of “fit for purpose” is *“good enough to do the job it was designed to do”* In relation to this specific point, a CT is designed to accurately measure consumption where the in-service burden is between 25% and 100% of the rated burden. In most cases the rated burden is 5VA, so the CT is designed to accurately record consumption where the in-service burden is between 1.25VA and 5VA. If the in-service burden is 0.6VA for example, the CTs are not designed to record consumption accurately and are therefore not fit for this purpose.

To further strengthen my argument, I checked the burden and accuracy of 40 Category 2 records during this audit. 24 had TWS 500/5 CTs, where TWS has confirmed accuracy at low burden, or burden resistance was added. The average burden was 0.80VA and the average error was -0.060%. For the other 16, where there has not been confirmation of accuracy at low burden, the average burden was 0.70VA and the average error was 0.523% over recording. Four of the 16 had errors over 1.0% fast. This is not a “one-off” set of data, I’ve checked hundreds of results over many years, and when CTs are under burdened, they over record by approximately 0.5%. Whilst these errors include meter errors, the meters are all newly calibrated and there is no difference in meters between the “accurate” installations and those that are not “fit for purpose” The two graphs below illustrate my point.



The date of the next audit is determined by the Electricity Authority and is dependent on the level of compliance during this audit. The table below provides some guidance on this matter and although it recommends an audit frequency of three months, my recommendation is that the Authority considers a frequency of nine months to allow enough time to resolve the matters raised.

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Services access interface	2.1	10.9(2)	Services access interface not identified for two installations.	Weak	Low	3	Identified
Provision of accurate information	2.5	11.2 and 10.6	All practicable steps not taken to ensure data is correct and that incorrect data is corrected as soon as practicable. Revised AMI data only supplied for a 15-day period. 147 examples of incorrect timestamps for register reads.	Moderate	Low	2	Identified
Registry updates	3.2	2 of Schedule 11.4	304 registry updates later than 15 business days.	Moderate	Low	2	Identified
Changes to registry records	4.10	3 of Schedule 11.4	Some records updated on the registry later than 10 business days.	Moderate	Low	2	Investigating
Accurate and complete records	5.1	4(1)(a) and (b) of Schedule 10.6	Certification records not accurate and complete for 31% of a sample of 100.	Weak	Low	3	Identified
Provision of registry information	6.2	7 (1), (2) and (3) of Schedule 11.4	Some registry records incomplete or incorrect.	Moderate	Low	2	Identified
Error correction	6.3	6 of Schedule 11.4	Discrepancies not resolved within 5 business days.	Moderate	Low	2	Identified
Certification cancellation	6.4	20 of Schedule 10.7	Certification not cancelled on the registry for 31 metering installations where low burden is present.	Moderate	Low	2	Investigating

Certification of metering installations	7.1	10.38 (a), clause 1 and clause 15 of Schedule 10.7	Certification expired, cancelled or late for 2,983 ICPs.	Weak	Medium	6	Investigating
Insufficient load	7.7	14(3) of Schedule 10.7	Monitoring not conducted for at least 20 ICPs.	Weak	Low	3	Investigating
Interim certification	7.19	18 of Schedule 10.7	751 ICPs with expired interim certification.	Moderate	Medium	4	Investigating
Max interrogation cycle	10.5	8 of Schedule 10.6	One ICP not read during the maximum interrogation cycle.	Strong	Low	1	Identified
Time errors	10.7	8(4) of Schedule 10.6	36 examples of clock errors outside the allowable thresholds in the most recent reports.	Strong	Low	1	Disputed
Sum-check validation	10.9	8(9) of Schedule 10.6	Approx. 3% of sum-check validations conducted using estimated midnight reads because the register read is for a time other than midnight.	Moderate	Low	2	Identified
Future Risk Rating						35	
Indicative Audit Frequency						3 months	

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

RECOMMENDATIONS

Subject	Section	Recommendation	Remedial action
Accurate and complete records	5.1	Check metering installation certification reports to ensure compliance.	Identified
Accurate and complete records	5.1	Require metering installation certification reports to be titled as such.	Identified
Accurate and complete records	5.1	Require Wells to remove “default” details from certification reports.	Identified
Accurate and complete records	5.1	Improve controls to ensure certification records are complete and accurate.	Identified
Estimated AMI data	10.5	Develop reporting to show the total quantify of estimated data per retailer per month, including the total quantity of estimated data that is not replaced with actual data where actual data exists.	Identified

ISSUES

Subject	Section	Recommendation	Description
		Nil	

1. ADMINISTRATIVE

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

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

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

Audit observation

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

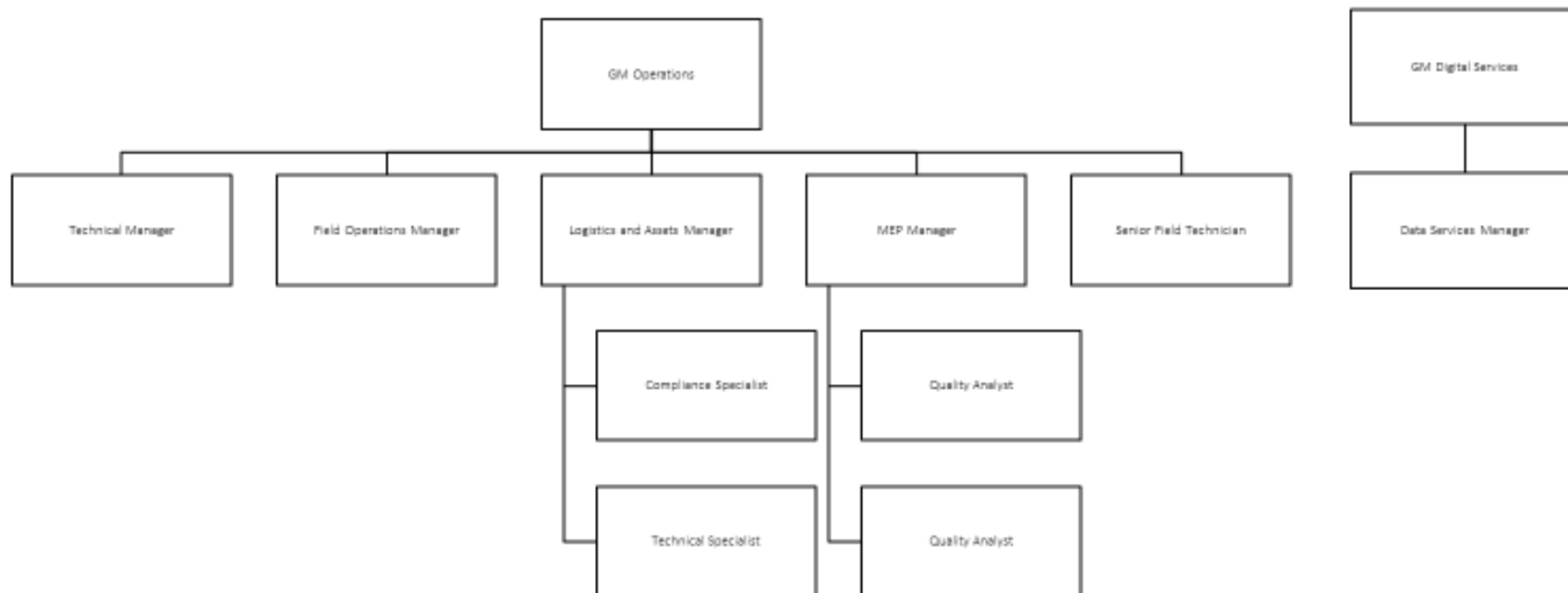
Audit commentary

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

1.2. Structure of Organisation

The Intellihub organisation chart is shown below.

Team members involved in MEP audit



1.3. Persons involved in this audit

Auditor: Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

Intellihub personnel assisting in this audit were.

Name	Title
Niu Nelson	MEP Manager
Chris Chambers	Compliance Co-ordinator
Daniel Pinny	Data Services Manager (AMI)
Paul Thornton	Technical Manager
Paul Wilson	Contractor Manager
Dennis Baldwin	Network Performance Manager
Shane Broom	Logistics and Asset Manager

1.4. Use of Agents (Clause 10.3)

Code reference

Clause 10.3

Code related audit information

A participant who uses a contractor

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

Audit observation

Intellihub engages with ATHs to conduct certification activities, and Intellihub is an ATH. As an MEP, they have copies of all relevant records for installations above Category 1. They have copies of records attached to SAP for recent ICPs, but they rely on ATHs to manage and store Category 1 certification records for most ICPs. I requested certification reports for 100 ICPs to confirm their compliance and availability.

Audit commentary

All certification records were provided, which achieves compliance with this clause.

1.5. Hardware and Software

Intellihub MEP data is held in SAP, which is subject to backup arrangements in accordance with standard industry protocols.

AMI data collection occurs using four different head ends and the data is stored and managed in a Meter Data Management System (MDM), which is described further in **section 10**. These systems are also subject to backup arrangements in accordance with standard industry protocols.

1.6. Breaches or Breach Allegations

Intellihub confirmed there are no breach allegations relevant to the scope of this audit.

1.7. ICP Data

Metering Category	Number of ICPs
1	411,757
2	2,854
3	11
4	1
5	0

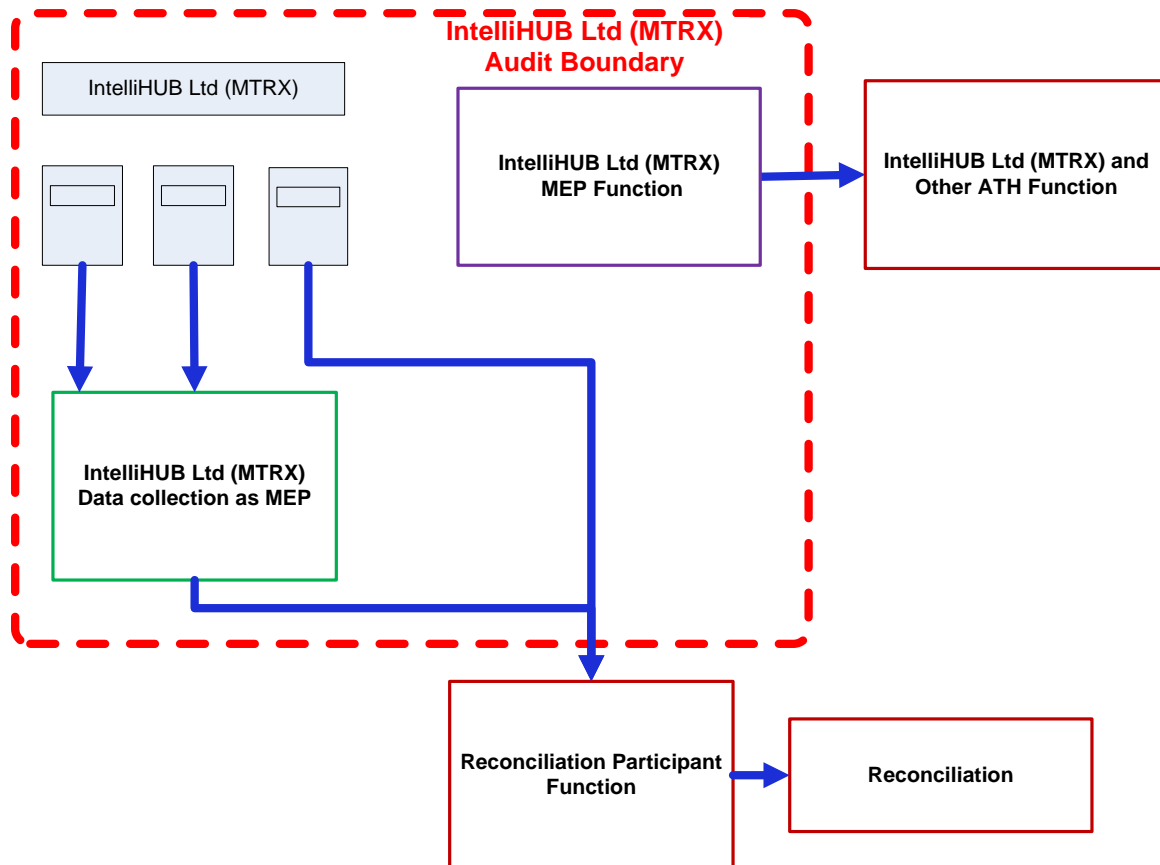
1.8. Authorisation Received

A letter of authorisation was not required or requested.

1.9. Scope of Audit

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

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



1.10. Summary of previous audit

The previous audit was conducted in May 2019 by Steve Woods of Veritek Limited. The table below shows that all of the issues remain.

TABLE OF NON-COMPLIANCE

Subject	Section	Clause	Non-Compliance	Status
Provision of accurate information	2.5	11.2 and 10.6	All practicable steps not taken to ensure data is correct and that incorrect data is corrected as soon as practicable. Revised AMI data only supplied for a 15-day period.	Still existing
Registry updates	3.2	2 of Schedule 11.4	199 registry updates later than 15 business days.	Still existing
Changes to registry records	4.10	3 of Schedule 11.4	Some records updated on the registry later than 10 business days.	Still existing
Provision of registry information	6.2	7 (1), (2) and (3) of Schedule 11.4	Some registry records incomplete or incorrect.	Still existing
Error correction	6.3	6 of Schedule 11.4	Discrepancies not resolved within 5 business days.	Still existing
Certification cancellation	6.4	20 of Schedule 10.7	Certification not cancelled on the registry for 17 metering installations where low burden is present.	Still existing
Certification of metering installations	7.1	10.38 (a), clause 1 and clause 15 of Schedule 10.7	Certification expired, cancelled or late for 3,010 ICPs.	Still existing
Insufficient load	7.7	14(3) of Schedule 10.7	Monitoring not conducted for three ICPs.	Still existing
Interim certification	7.19	18 of Schedule 10.7	827 ICPs with expired interim certification.	Still existing
Time errors	10.7	8(4) of Schedule 10.6	42 examples of clock errors outside the allowable thresholds in the most recent reports.	Still existing

TABLE OF RECOMMENDATIONS

Subject	Section	Clause	Description	Status
			Nil	

2. OPERATIONAL INFRASTRUCTURE

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

Code reference

Clause 10.9(2)

Code related audit information

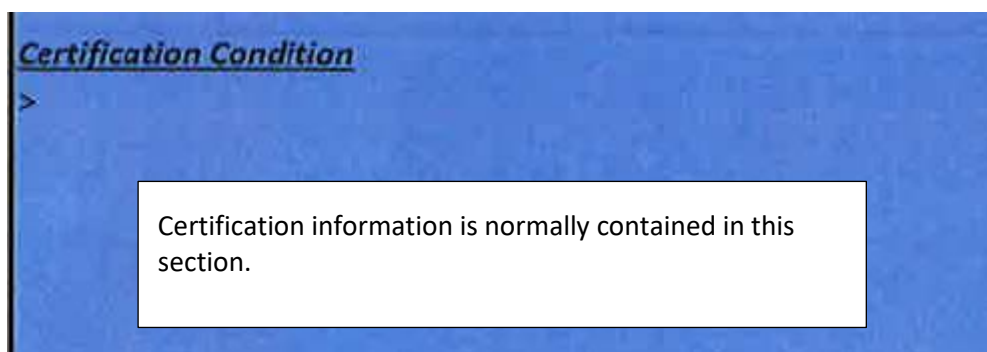
The MEP is responsible for providing and maintaining the services access interface.

Audit observation

I checked certification records for 100 metering installations, covering all relevant ATHs.

Audit commentary

The Code places responsibility for maintaining the services access interface on the MEP and places responsibility for determining and recording it with ATHs. I checked the certification records for all relevant ATHs, and the services access interface is recorded correctly apart from two metering installations certified by VCOM at ICPs 0000530623NRB3E and 0000524308NR3DB. In both cases the summary of certification information was missing from the report, as shown below:



Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.1 With: Clause 10.9(2) From: 16-Jan-20 To: 21-Apr-20	Services access interface not identified for two installations. Potential impact: None Actual impact: None Audit history: None Controls: Weak Breach risk rating: 3		
Audit risk rating	Rationale for audit risk rating		
Low	Whilst there were only two examples, the controls are not sufficient to identify errors in certification reports. 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

Intellihub do not agree that the scoring of 3 is correct for this section as we have been scored in other areas to address issues with ATH's and as a MEP, we determine the correct access interface and there is no impact to Participants. Regarding the 2 installations identified, Intellihub will address this issue with the ATH next week during our monthly governance meeting.	05/06/2020	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
With respect to on-going compliance to record the service access interface, Intellihub will bring this to the ATH's attention using the examples identified and to the Customer relation manager and team leader to ensure there are no further occurrences.	05/06/2020	

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

Code reference

Clause 10.50(1) to (3)

Code related audit information

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

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 7(1) of Schedule 10.6

Code related audit information

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

Audit observation

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

Audit commentary

Intellihub uses the MTRX identifier in all cases.

Audit outcome

Compliant

2.4. Communication Equipment Compatibility (Clause 40 Schedule 10.7)

Code reference

Clause 40 Schedule 10.7

Code related audit information

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

Audit observation

Intellihub is the MEP for AMI metering installations where communication equipment is present. There are also some HHR metering installations with modems. I checked that the ATHs have processes in place to check the relevant type test certificates to ensure compliance with this clause.

Audit commentary

Intellihub ensures all communication equipment is appropriately certified with the relevant telecommunications standards. This is recorded in type test certificates and other approval documents. A copy of the type test schedule was provided, which contains a list of all components used and the type test report reference. One of the EDM1 Mk 10 models needed a specific modem to be used to ensure compliance. No other issues were identified.

Audit outcome

Compliant

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

Code reference

Clause 11.2 and Clause 10.6

Code related audit information

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

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

Audit observation

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

Audit commentary

In **section 6.2**, I have recorded that there are some registry data discrepancies. Whilst there continues to be excellent progress made in resolving these, I have determined that the “as soon as practicable”

threshold has not been met in relation to the existence of discrepancies and the timeframe for resolution, because they have been in existence for several years.

In **section 10.5**, I checked whether revised information was provided for periods where data is not available and then becomes available. Intellihub sends “catch-up” data for a period of 15 days but if data is available outside this timeframe it is not provided. Clause 10 of Schedule 10.6 is not specific regarding the time period for revised data, but Clause 10.6 requires information to be “complete and accurate” and it also requires further or corrected information to be provided as soon as practicable. Therefore, I conclude that a 15-day window for revised data does not comply with Clause 10.6.

In **section 10.9**, I checked one issue in detail where there were 147 examples for 54 ICPs where some Honeywell meters have a bug leading to the midnight read being given a timestamp one day earlier than it should have. This reading with the incorrect timestamp is sent to retailers. There is a firmware level solution in testing which is expected to provide a permanent solution to this problem. This is recorded as non-compliance.

Audit outcome

Non-compliant

Non-compliance	Description
<p>Audit Ref: 2.5</p> <p>With: Clause 11.2 and Clause 10.6</p> <p>From: 01-May-19</p> <p>To: 31-Mar-19</p>	<p>All practicable steps not taken to ensure data is correct and that incorrect data is corrected as soon as practicable.</p> <p>Revised AMI data only supplied for a 15-day period.</p> <p>147 examples of incorrect timestamps for register reads.</p> <p>Potential impact: Medium</p> <p>Actual impact: Low</p> <p>Audit history: Multiple times</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>
Audit risk rating	Rationale for audit risk rating
Low	<p>I have recorded the controls as moderate in this area because there are still a small number of areas where improvement can be made.</p> <p>Very few of the registry related discrepancies have an impact on participants, customers or settlement. The only relevant ones in this regard are tariff related and there were only a small number. Revision data only being provided for 15 days has a minor impact on participants because the quantify of data outside the 15 days is low. The audit risk rating is low.</p>
Actions taken to resolve the issue	
Completion date	Remedial action status

<p>Scope of replacement outside 15 days is ~0.2% and replacement data is currently available on request. Pilot to automate push of replacement > 15 days will occur in 1-2 months. On successful pilot we will offer to all customers.</p> <p>In rare circumstances where the incorrect timestamp issue occurs, the current process is to replace the meter. Intellihub is also working on a firmware fix that will resolve the root cause.</p> <p>Commentary for 6.2 is listed in 6.2 section.</p>	20 July 2020	Identified
	1 Dec 2020	
Preventative actions taken to ensure no further issues will occur	Completion date	
As above.	N/A	

3. PROCESS FOR A CHANGE OF MEP

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

Code reference

Clause 10.22

Code related audit information

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

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 2 of Schedule 11.4

Code related audit information

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

Audit observation

I checked the event detail for the period 01/05/19 to 30/03/20 for all records where Intellihub became the MEP to evaluate the timeliness of updates.

Audit commentary

The table below shows that there were 304 late updates to the registry out of 1,036 events. 109 of the 304 late updates were due to the trader's nomination being later than five business days.

I checked 17 records in detail to determine root causes of late updates and I found the following:

- late field notification for nine examples,
- a failure of the "business to business" functionality for four examples,
- a processing issue leading to a job being closed but the registry not being updated for one example, and
- three examples are still being investigated to determine the reasons for late updates.

Event	Year	Total ICPs	ICPs Notified Within 15 Days	ICPs Notified Greater Than 15 Days	Average Notification Days	Percentage Compliant
New MEP	2017	19	9	10	49	47%
	2018	188	163	25	15	87%
	2019	2,343	2,144	199	8	92%
	2020	1,026	722	304	-	70.37%

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.2 With: Clause 2 of Schedule 11.4 From: 01-May-19 To: 30-Mar-20	304 registry updates later than 15 business days. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	Controls are in place to manage timeliness, but improvements are required to ensure notifications from the Northpower region are provided in a timelier manner. Eight of the nine late notification examples in the sample were in the Northpower region. The impact on other participants is minor; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
Regarding overall late MEP submissions, there was a large backlog of work in the Metering Service's Team which was a driver. The backlog has now been cleared which should improve the timeliness of Registry updates. Intellihub will add a measure of performance to our works order management system to ensure notifications from Northpower are identified and monitored. A field tool app has been developed, which, when rolled out to field techs, should eliminate any late field notifications. This specifically provides a field application that allows for better rate of return for paperwork and certification which will subsequently increase the time to be able to process the paperwork, certification and then to update the registry.		31/07/2020	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	

Staff training is ongoing and continuous monitoring and feedback Intellihub will continue to provide feedback to contractors to remind them of their obligations to the prompt return of paperwork.	On-going	
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3.3. Provision of Metering Records to Gaining MEP (Clause 5 of Schedule 10.6)

Code reference

Clause 5 of Schedule 10.6

Code related audit information

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

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

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

Audit observation

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

Audit commentary

No requests have occurred during the audit period. Some requests have been made to Intellihub to reverse their meter removal event in the registry, so that the gaining MEP can upload their data.

Audit outcome

Compliant

3.4. Termination of MEP Responsibility (Clause 10.23)

Code reference

Clause 10.23

Code related audit information

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

The MEP is responsible if it:

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

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

An MEP's obligations terminate only when;

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

Audit observation

I confirmed that Intellihub has ceased to be responsible for some metering installations by checking the event detail report. I then checked the records for a selection of five ICPs.

Audit commentary

Intellihub continues with their responsibilities, mainly in relation to the storage of records, which are kept indefinitely. Records for four ICPs were provided, one ICP had been interim certified; therefore, a certification report was not available, but all other records, including those in the registry, were still present.

Audit outcome

Compliant

4. INSTALLATION AND MODIFICATION OF METERING INSTALLATIONS

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

Code reference

Clause 2 of Schedule 10.7

Code related audit information

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

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

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

Audit observation

I checked the suite of design reports provided by Intellihub to relevant ATHs, and I checked that ATHs were correctly recording the design report in the certification records.

Audit commentary

The design reports include all relevant details required by the Code and ATHs had correctly recorded the design for all 100 metering installations checked. There were no new design reports produced during the audit period.

Audit outcome

Compliant

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

Code reference

Clause 9 of Schedule 10.6

Code related audit information

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

Audit observation

I confirmed which ATHs had been used during the audit period, in order to check the Authority's website for scope of approval.

Audit commentary

Intellihub uses several ATHs and they all have a current and appropriate scope of approval.

Audit outcome

Compliant

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

Code reference

Clause 4(1) of Schedule 10.7

Code related audit information

The MEP must ensure:

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

Audit observation

I checked the processes used by Intellihub to ensure compliance with the design and with the error thresholds stipulated in Table 1. I also checked the certification records for 100 metering installations.

Audit commentary

All fully calibrated and selected component processes are compliant, as confirmed by checking certification records.

For Category 2 comparative certification, Intellihub, VEMS and Wells ATHs have compliant practices for the calculation of uncertainty. Delta's practice is still not compliant, but they did not conduct any comparative certification for the Intellihub MEP during the audit period.

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

Intellihub ensures the metering installation complies with the design report and the requirements of Part 10 by requiring ATH's to confirm the installation matches the design, or by requiring updates to be provided if the installation does not match the design. The design report was correctly recorded in the certification records for the 100 installations I checked.

Audit outcome

Compliant

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

Code reference

Clause 4(2)(a) of Schedule 10.7

Code related audit information

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

Audit observation

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

Audit commentary

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

Audit outcome

Not applicable

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

Code reference

Clause 4(2)(b) of Schedule 10.7

Code related audit information

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

Audit observation

I checked the records for all 12 ICPs where the metering category was greater than Category 2.

Audit commentary

All relevant installations are HHR metered.

Audit outcome

Compliant

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

Code reference

Clause 4(3) of Schedule 10.7

Code related audit information

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

Audit observation

Intellihub is not responsible for any NSP metering.

Audit commentary

Intellihub is not responsible for any NSP metering.

Audit outcome

Not applicable

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

Code reference

Clause 10.26(10)

Code related audit information

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

Audit observation

Intellihub is not responsible for any grid metering.

Audit commentary

Intellihub is not responsible for any grid metering.

Audit outcome

Not applicable

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

Code reference

Clause 4(4) of Schedule 10.7

Code related audit information

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

Audit observation

I checked the certification records for all ATHs to confirm this point is being considered at the time of certification.

Audit commentary

The certification records for all ATHs contain a field or a statement in relation to this clause and the technician is required to confirm that installations are compliant and safe.

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

- *required functionality*
- *terms of use*
- *required interface format*
- *integration of the ripple receiver and the meter*

- *functionality for controllable load.*

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

Audit observation

I checked previous communication regarding metering designs, and I checked whether there were any new or modified designs during the audit period.

Audit commentary

Intellihub has communicated with all Distributors and Traders in relation to this requirement. I checked some examples of sent and received documentation, which confirmed compliance. There were no new or modified designs during the audit period.

Audit outcome

Compliant

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

Code reference

Clause 3 of Schedule 11.4

Code related audit information

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

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

Audit observation

I checked the event detail report for the period 01/05/19 to 30/03/20 to evaluate the timeliness of registry updates.

Audit commentary

The table below shows that registry updates were on time for 84.18% of new connections. 211 of the 696 late updates had trader nominations later than five business days. I checked 19 late updates in detail and found three were caused by late field notification, one is still being investigated to determine the cause and the remaining 15 were late because new connections are all processed by Mercury Energy (the trader for all new connections where MTRX is the MEP) and they have significant backlogs leading to processing delays for new connections.

74.79% of updates after recertification were populated within 10 business days. I checked 20 updates in detail and found the following:

- one late update was due to correction of historic information,
- two meters were replaced without the knowledge of MTRX,
- a system fault in September 2019 led to one late update,
- four late updates were due to delayed notification from the field, and
- 12 late updates were due to the process where notification initially goes to Mercury Energy, then there are delays getting the information to MTRX.

Event	Year	Total ICPs	ICPs Notified Within 10 Days	ICPs Notified Greater Than 10 Days	Average Notification Days	Percentage Compliant
New connection	2017	897	815	82	5.8	91%
	2018	1,699	1,435	264	7.7	85%
	2019	2,315	2,093	222	7.0	90%
	2020	4,400	3,704	696	Not calculated	84.18%
Update (recertification updates only from 2020 onwards)	2017	139,000	5,000	134,000	N/A	3.6%
	2018	7,336	2,052	5,284	626	28%
	2019	22,503	20,864	1,639	5.0	93%
	2020	7,001	5,236	1,765	17.66	74.79%

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 4.10 With: Clause 3 of Schedule 11.4 From: 01-May-19 To: 30-Mar-20	Some records updated on the registry later than 10 business days. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	Whilst the level of compliance has reduced, I have recorded the controls as moderate in this area because they haven't changed since the last audit and they are sufficient to ensure most updates are on time but there is considerable room for improvement. The late updates for new connections occurred after the trader had populated their records, therefore the impact on participants, customers or settlement is minor, therefore the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status

<p>The process for new connections was historically lacking automation which has had an impact on our ability to update the Registry on time. As an immediate focus we have made some structural changes to put more focus on New connections specifically the timeliness of the updates to the registry and are actively monitoring this space now.</p> <p>A field tool app has been developed, which, when rolled out to field techs, should eliminate any late field notifications. This specifically provides a field application that allows for better rate of return for paperwork and certification which will subsequently increase the time to be able to process the paperwork, certification and then to update the registry.</p> <p>A process change is being considered whereby the registry will be updated immediately upon receiving the certification from the field tech, and the ATH will review and provide the certificate as required.</p>	31/07/2020	Investigating
Preventative actions taken to ensure no further issues will occur	Completion date	
<p>Staff training is ongoing and continuous monitoring and feedback</p> <p>Intellihub will continue to provide feedback to contractors to remind them of their obligations to the prompt return of paperwork.</p>	On-going	

4.11. Metering Infrastructure (Clause 10.39(1))

Code reference

Clause 10.39(1)

Code related audit information

The MEP must ensure that for each metering installation:

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

Audit observation

Intellihub has AMI data collection systems, and these are considered “metering infrastructure”. I checked that the systems operate as intended and are compatible with all metering components interrogated, by examining the success rate of data collection along with the number of events generated.

Audit commentary

There were no obvious issues with the operation of the AMI systems. All components operate as intended in an integrated manner.

Audit outcome

Compliant

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

Code reference

Clause 10.23A

Code related audit information

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

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

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

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

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

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

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

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

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

Audit observation

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

Audit commentary

They have not approved any burden or compensation factor changes without recertification occurring. A check of certification records confirmed compliance.

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

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

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

Audit observation

Some firmware changes have occurred for Honeywell devices. I checked the correspondence from Honeywell to confirm that the changes do not affect metrology.

Audit commentary

Some firmware changes have occurred for Honeywell devices. I checked the correspondence from Honeywell to confirm that the changes do not affect metrology. I also checked the results of testing by the Intellihub Class A Approved Test House, which confirmed the changes did not affect metrology.

Audit outcome

Compliant

4.15. Temporary Energization (Clause 10.28(6))

Code reference

Clause 10.28(6)

Code related audit information

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

Audit observation

I checked examples of insufficient load certification to determine whether there were any examples of temporary energisation for the purposes of testing. None were identified.

Audit commentary

I checked examples of insufficient load certification to determine whether there were any examples of temporary energisation for the purposes of testing. None were identified.

Audit outcome

Compliant

5. METERING RECORDS

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

Code reference

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

Code related audit information

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

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

Audit observation

I checked certification records for 100 metering installations and I also checked all available inspection records to evaluate compliance with this clause.

Audit commentary

All 100 certification reports were available. I also requested 23 meter calibration reports and 14 CT calibration reports, which were provided. I found a significant number of errors in the metering installation certification reports. The table below shows a summary of the total number of errors.

ATH	Total reports checked	Total with errors	% correct
Metrix	38	9	76%
Wells	19	15	11%
Delta	6	6	0%
VCOM (VEMS ATH)	35	5	86%
Accucal	2	0	100%
Total	100	31	69%

The errors identified are shown in the table below.

Error	Metrix	Wells	Delta	VCOM
Incorrect component certification dates		2		
Comparative certification with CTs recorded as certified		4		
Incorrect maximum interrogation cycle	1	1		
Incorrect certification method		3		
Category 2 certified for more than 10 years		2		
Incorrect meter validity period		1		
Incorrect installation certification date		7		1
Test results missing				1
HHR/NHH missing				3
Maximum interrogation cycle missing	8		6	3
Services access interface missing				3
No installation certification date			6	
No meter expiry date	9		6	
Incorrect meter certifying ATH		3		

In addition to the errors recorded above, there is also a problem with identification of certification records. In particular, whether a document is a “Metering Installation Certification Report” or whether it is a job completion report or a commissioning report. The Code is specific regarding what a “Metering Installation Certification Report” must contain. The fields are listed below.

Clause	Field required
10.9(3)(b) & Clause 10 of Schedule 10.4 & Clause 8(2)(c) of Schedule 10.7	Services access interface
10.11 & 8(4) of Schedule 10.7	Metering installation category
10.35	Loss compensation details
6(4) of Schedule 10.7	Certification as a lower category details
8(2) of Schedule 10.7	Whether the installation is HHR or NHH

11(5)(a) & 13(4) of Schedule 10.7	Confirmation ATH has checked the design report
11(5)(b) of Schedule 10.7	Confirmation that components have been calibrated and certified
11(5)(c) of Schedule 10.7	Confirmation that table 3 tests have been conducted and passed
11(5)(d) of Schedule 10.7	Confirmation that wiring is correct
11(5)(e) of Schedule 10.7	Details of tests and checks to confirm the integrity of the installation
11(6) of Schedule 10.7	Details of compensation factors
12(5) of Schedule 10.7	Confirmation that components in comparative certified installations are fit for purpose
13(5) of Schedule 10.7	Confirmation that table 4 tests have been conducted and passed
14(2) of Schedule 10.7	Additional integrity checks for insufficient load certification
17(1) of Schedule 10.7	Installation certification expiry date
22(3) of Schedule 10.7	Percentage error
26(4) of Schedule 10.7	Maximum interrogation cycle
27(5) of Schedule 10.7	Meter certification expiry date
29(3) of Schedule 10.7	Measuring transformer expiry date
33(2)(b) of Schedule 10.7	Control device certification date
33(2)(d) of Schedule 10.7	Confirmation that control device is compliant and fit for purpose
37(1) of Schedule 10.7	Data storage device expiry date

I recommend Intellihub checks all certification reports from relevant ATHs to ensure they are compliant and fit for purpose. A common definition of “fit for purpose” is “good enough to do the job it was designed to do”. Certification reports are designed to record and convey information about metering installations. If they are inaccurate and/or unclear, they are not fit for purpose and should be changed. I also recommend Metering Installation Certification Reports are titled as such. The table below shows the reports available and what they are called.

ATH	Name of metering installation certification report	Comments
Wells	General job detail report	The report is also a workflow and health and safety report, which is not well structured, and it is difficult to identify information relevant to metering installation certification.
Intellihub Ltd (MTRX)	Metering installation certification report	This report only has one purpose. It is easy to read and understand.

Delta	Not titled	The report is also a workflow and health and safety report, which is not well structured, and it is difficult to identify information relevant to metering installation certification.
VEMS	Metering installation certificate	The certificate now contains test results and all relevant details. The certificate and the commissioning reports used to be two different documents. It's well laid out and easy to read and understand. There is also a document called a "Metering Report" which a workflow report and is sometimes confused as a "Metering Installation Certification Report".
Intellihub NZ Ltd (IHUB)	Metering installation certification report	This report is dependent on another report being attached to ensure completeness. The other report is called "Service Request" and contains test results. They are both easy to read but some fields are missing.
Accucal	Certificate of compliance	This report includes all component details, it is well laid out and easy to read.

The Wells reports contain a section that causes confusion with recipients. The section is called "SET DEFAULT ANSWERS" and appears to contain information in a menu for selection by technicians along with some information specific to the ICP. The Cert date and Expiry date are relevant to the ICP but the other fields seem to be "menu" fields and may be different to other fields. For the example below, it is category 2 and therefore the Meter Validity Period is 10 years not 15 years. There is another field with 10 years recorded. I recommend Intellihub requires better clarity with these reports.

SET DEFAULT ANSWERS	Completed: 29 Jun 2019 09:11	-41.2840 173.2478 (HDOP=8.83333)
Set Defaults	Yes	
----- EIPC Defaults -----		
Site ATH	WELLS	
Generation Legacy	Legacy	
Generation Advanced	Advanced	
Phase WC	1	
Phase CT	3	
Multiplier	1	
Energy Flow Direction	Exit	
Meter Validity Period	15	
SA Interface	Remote	
Cert Date	29/06/2019	
Cert Method	Selected Component	
Expiry Date	29/06/2029	

I recorded in the previous audit report that the Wells reports were the most difficult to read and they had recently improved the clarity of reports. The sample reports I was provided with don't appear to have been put into production.

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 4(1)(a) and (b) of Schedule 10.6	Check metering installation certification reports to ensure compliance.	Recently appointed Intellihub's ATH technical advisor to check all CAT2 installations and also ensure Intellihub Cat 1 certification report formats are compliant. Intellihub will also ensure Contractors and ATH's are managed better.	Identified

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 4(1)(a) and (b) of Schedule 10.6	Require metering installation certification reports to be titled as such.	More engagement with ATH's including monthly meetings where these types of issues can be discussed.	Identified

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 4(1)(a) and (b) of Schedule 10.6	Require Wells to remove "default" details from certification reports.	More engagement with ATH's including monthly meetings where these types of issues can be discussed.	Identified

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 4(1)(a) and (b) of Schedule 10.6	Improve controls to ensure certification records are complete and accurate	Recently appointed Intellihub's ATH technical advisor to check all CAT2 installations and also ensure Intellihub Cat 1 certification report formats are compliant. Intellihub will also ensure Contractors and ATH's are managed better.	Identified

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 5.1</p> <p>With: Clause 4(1)(a) and (b) of Schedule 10.6</p> <p>From: 01-May-19</p> <p>To: 24-Apr-20</p>	<p>Certification records not accurate and complete for 31% of a sample of 100</p> <p>Potential impact: Medium</p> <p>Actual impact: Low</p> <p>Audit history: None</p> <p>Controls: Weak</p> <p>Breach risk rating: 3</p>		
Audit risk rating	Rationale for audit risk rating		
Low	<p>The controls require strengthening to ensure record accuracy issues are identified as soon as possible.</p> <p>The impact is minor for most fields. Incorrect certification dates and methods can be misleading and can lead to re-work.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>Intellihub's current governance with ATH's is being reviewed with the contractor manager with a focus on managing compliance around certifications, timeliness and we expect to tighten this in coming weeks. We are also exploring the current set up of the teams to determine if the structure is correct to maintain on-going governance.</p> <p>Intellihub are also reviewing our SLA management processes with ATH's and expect to have a revised solution.</p> <p>Intellihub will pass on the relative findings to the appropriate ATH's with the Auditor's proposed feedback.</p>		31/12/2020	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>Regarding Certifications - The Intellihub field tool application will alleviate the issues we encounter in this space; this tool will still mean that data quality steps need to be strengthened to ensure accuracy on certifications going forward and we have a newly appointed ATH technical advisor who will do the engineering checks for all CAT2 installations.</p>		31/07/2020	

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

Code reference

Clause 4(2) of Schedule 10.6

Code related audit information

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 4(3) of Schedule 10.6

Code related audit information

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

Audit observation

I checked a directory of metering records from 2016 to confirm compliance.

Audit commentary

Intellihub keeps records indefinitely and the availability of the 2016 records confirms compliance.

Audit outcome

Compliant

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

Code reference

Clause 6 Schedule 10.6

Code related audit information

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

6. MAINTENANCE OF REGISTRY INFORMATION

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

Code reference

Clause 1(1) of Schedule 11.4

Code related audit information

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

Audit observation

I checked the switch breach detail report for the period 01/05/19 to 30/03/20 to confirm whether all responses were within 10 business days.

Audit commentary

All MN files were sent within 10 business days.

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

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

Audit observation

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

Audit commentary

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

Quantity of ICPs Mar 2020	Quantity of ICPs May 2019	Quantity of ICPs July 2018	Issue	Comments
6	10	52	Blank records on the registry.	All 6 have Intellihub meters removed and the new MEP has not yet populated the registry.
0	0	0	Category 1 ICPs with CTs.	Intellihub will continue to quality check data and fix at source before updating the Registry.
0	0	0	Interim certified installations over Category 1.	Intellihub will continue to quality check data and fix at source before updating the Registry.
0	0	0	Incorrect compensation factors of 2 or 14, which should have been 1.	Intellihub will continue to quality check data and fix at source before updating the Registry.
0	0	0	Category 3 NHH.	Intellihub will continue to quality check data and fix at source before updating the Registry.
124	205	9,044	Incorrect interim expiry dates. These appear to be fully certified with incorrect "I" flag.	Sample of 40 checked, 31 corrected and nine being investigated.
0	0	0	Category 1 with certification duration of more than 15 years.	Intellihub will continue to quality check data and fix at source before updating the Registry.
0	0	0	Category 1 with certification date the same as certification expiry date.	Intellihub will continue to quality check data and fix at source before updating the Registry.
0	1	1	Incorrect certification date or certification expiry date for Cat 2.	Intellihub will continue to quality check data and fix at source before updating the Registry.
3	7	4	Incorrect certification date or certification expiry date for Cat 1.	Incorrect certification values entered manually. Intellihub will ensure these are also identified and resolved by running the reconciliation tool more frequently.

0	0	0	IN24 as register content code and period of availability.	IntelliHub will continue to quality check data and fix at source before updating the Registry.
0	0	0	IN0 as register content code and period of availability.	IntelliHub will continue to quality check data and fix at source before updating the Registry.
0	0	0	CN24 as register content code and period of availability. Some of these should be CN13.	IntelliHub will continue to quality check data and fix at source before updating the Registry.
0	0	0	D24 and should be D16.	IntelliHub will continue to quality check data and fix at source before updating the Registry.
0	0	0	N24.	IntelliHub will continue to quality check data and fix at source before updating the Registry.
0	0	0	UN0.	IntelliHub will continue to quality check data and fix at source before updating the Registry.
0	0	0	UN12 or UN19.	IntelliHub will continue to quality check data and fix at source before updating the Registry.
0	0	0	Day with no night.	IntelliHub will continue to quality check data and fix at source before updating the Registry.
0	0	0	Night with no day.	IntelliHub will continue to quality check data and fix at source before updating the Registry.
0	7	0	CN only on residential.	IntelliHub identified that these sites are Inclusive and will make the corrections to the Registry.
2,823	25 22 excluding duplicates	78	UN with a control device	13 examples were checked and they're all historic issues that will be resolved as part of AMI deployment.

2 both have meter cat9 (removed)	7 2 have meter cat9 (removed)	10	Max interrogation cycle of zero days.	Intellihub have corrected the records and will add a validation rule to our reconciliation tool.
1,235	1,148	1,248	Controlled tariff with no load control device.	Some of these exceptions will be resolved alongside certification of expired sites when changing assets from legacy to AMI. The remaining sites will be addressed separately and raised with Participants to see if records can be found to identify load control devices before Intellihub request for Site Visits.
119	40	31	Export ICPs with no injection register.	Intellihub monitors the "B" field and then pro-actively asks the retailer whether they wish to have an import/export meter installed.
11	1	13	Stat sampled with a certification duration greater than 7 years	Corrections have been made where necessary.
0	0	7	Incorrect ATH recorded	Intellihub will continue to quality check data and fix at source before updating the Registry.

Intellihub has made further progress with regard to resolving discrepancies in the registry data.

The inspection process found the following issues:

Count of ICPs	Description
77	The inspector could not report on the installation certification expiry date, because the installation certification sticker was unreadable, faded, damaged or missing.
54	The installation certification expiry date in the MEP's records did not match the installation certification sticker.
26	Intellihub MEP records describe load control devices utilising an allocated asset number which does not match the actual manufacturer's serial number at the premise.
6	Intellihub records have incorrect relay serial number.
3	Control device recorded in Intellihub systems, but not found on site.
23	Load control found on site, but no serial number recorded in Intellihub systems.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 6.2 With: Clause 7 (1), (2) and (3) of Schedule 11.4 From: 01-May-19 To: 30-Mar-20	Some registry records incomplete or incorrect. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the controls as moderate in this area because there are still a small number of areas where improvement can be made. ATH accuracy is a good example. Very few of the discrepancies have an impact on participants, customers or settlement. The only relevant ones in this regard are tariff related and there were only a small number. The audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
Intellihub have good controls in place to ensure no new data discrepancies are sent to the Registry. We will continue to work with Participants for access to sites where site visits are required to help resolve some of the discrepancies identified in the table above. Intellihub will run our monthly reconciliation tool on a weekly basis to identify discrepancies and resolve within 5 business days.		30/04/2020	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Enhanced quality checks to ensure accuracy of information before it is submitted to the Registry.		On-going	

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

Code reference

Clause 6 of Schedule 11.4

Code related audit information

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

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

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

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

Audit observation

I conducted a walkthrough of the validation processes to confirm compliance. I checked all records in the event detail report to confirm whether the timeliness requirements were being met.

Audit commentary

This clause is specific and prescriptive, and it requires a complete metering record comparison to be undertaken. Intellihub is conducting a complete validation, but errors are not being corrected within five business days, as recorded in **section 4.10**.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 6.3 With: Clause 6 of Schedule 11.4 From: 01-May-19 To: 30-Mar-20	Discrepancies not resolved within 5 business days. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the controls as moderate in this area because there are still a small number of areas where improvement can be made. Certification date accuracy is a good example. Very few of the discrepancies have an impact on participants, customers or settlement. The only relevant ones in this regard are tariff related and there were only a small number. The audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
Intellihub have good controls in place to ensure no new data discrepancies are sent to the Registry. Intellihub will continue to quality check data and fix at source before updating the Registry. Intellihub will run our monthly reconciliation tool on a weekly basis to identify discrepancies and resolve within 5 business days. All tariff related issues identified in this audit have been resolved and we will address certification accuracy by running our monthly reconciliation tool more frequently.		On-going	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Per above.		On-going	

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

Code reference

Clause 20 of Schedule 10.7

Code related audit information

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

- a) the metering installation is modified otherwise than under sub clause 19(3) or 19(6)*
- b) the metering installation is classed as outside the applicable accuracy tolerances set out in Table 1 of Schedule 10.1, defective or not fit for purpose under this Part or any audit*
- c) an ATH advises the metering equipment provider responsible for the metering installation of a reference standard or working standard used to certify the metering installation not being compliant with this Part at the time it was used to certify the metering installation, or the failure of a group of meters in the statistical sampling recertification process for the metering installation, or the failure of a certification test for the metering installation*
- d) the manufacturer of a metering component in the metering installation determines that the metering component does not comply with the standards to which the metering component was tested*
- e) an inspection of the metering installation, that is required under this Part, is not carried out in accordance with the relevant clauses of this Part*
- f) if the metering installation has been determined to be a lower category under clause 6 and the maximum current conveyed through the metering installation at any time exceeds the current rating of its metering installation category as set out in Table 1 of Schedule 10.1*
- g) the metering installation is certified under clause 14 and sufficient load is available for full certification testing and has not been retested under clause 14(4)*
- h) a control device in the metering installation certification is, and remains for a period of at least 10 business days, bridged out under clause 35(1)*
- i) the metering equipment provider responsible for the metering installation is advised by an ATH under clause 48(6)(b) that a seal has been removed or broken and the accuracy and continued integrity of the metering installation has been affected.*

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

Audit observation

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

Audit commentary

I checked 18 examples of bridged meters from the current audit period, and they were all recertified correctly. Certification was cancelled as soon as Intellihub was advised of the bridging.

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

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

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

The memo also states:

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

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

Intellihub recorded during the previous audit that they do not agree with the Authority's interpretation of the Code and the related memo I have referred to. The table below shows the quantity of ICPs where certification is cancelled. During this audit, there were a further 15 examples. 14 of the 15 were certified by the Intellihub ATH and one by the Wells ATH.

Audit year	Number of installations with cancelled certification
2017	8
2018	1
2019	7
2020	15

There are two points where I believe clarification is required. Firstly, whether CTs operating at low burden are a problem or not. Clauses 11(4)(d) and 12(5)(b) of Schedule 10.7 require ATHs to *"ensure that each metering component in the metering installation is fit for purpose"*. Earlier in this report I defined "fit for purpose" as meaning *"good enough to do the job it was designed to do"*. In relation to this specific point, a CT is designed to accurately measure consumption where the in-service burden is between 25% and 100% of the rated burden. In most cases the rated burden is 5VA, so the CT is designed to accurately record consumption where the in-service burden is between 1.25VA and 5VA. If the in-service burden is 0.6VA for example, the CTs are not designed to record consumption accurately and are therefore not fit for this purpose. I have inserted some test results below to illustrate this point. The report below was supplied by TWS Energy Controls. It is not a calibration report because it doesn't include uncertainties and the 1.0VA test point is not an exact figure because the test was conducted with only the leads as the burden, but it supports the picture I want to paint, which is that many makes and models of CT become inaccurate (over recording) as the burden reduces. In the

example below the CT is very accurate at the rated burden of 5VA but it is very close to the accuracy class of 0.5% when the burden is low.

IEC CLASS TEST REPORT FORMAT
Automatic Mode

Transformer Winding Services Ltd

Current Transformer - Routine Test Certificate

Manufacturer: TWS

Date of Test: 12/04/2016

Ratio: 250 / 5

Contract. No.: SEV87

Accuracy Class: 0.5

Ref. No.: S1410/26

Burden: 5

Meter. No.:

Sl. No.	Mfg. Sl. No.	5%		20%		100%		120%		Burden @100%		Status
		RE	PE	RE	PE	RE	PE	RE	PE	VA	PF	
1	15	0.355 %	8.77 min	0.419 %	5.92 min	0.444 %	4.74 min	0.445 %	4.79 min	1.0 VA	.2344	PASS
2	15	0.354 %	8.83 min	0.418 %	5.97 min	0.444 %	4.76 min	0.446 %	4.76 min	1.25 VA	.3353	PASS
3	15	0.274 %	11.97 min	0.348 %	8.70 min	0.376 %	6.94 min	0.378 %	6.76 min	2.5 VA	.1558	PASS
4	15	0.186 %	16.00 min	0.263 %	12.09 min	0.292 %	9.50 min	0.293 %	8.96 min	3.75 VA	.8006	PASS
5	15	-0.159 %	6.37 min	-0.095 %	3.82 min	.0770 %	1.18 min	.0969 %	0.59 min	5.0 VA	.0704	PASS

RE= Ratio Error, PE= Phase Error

There is a misconception that as long as the overall metering installation is recording within 2.5% that compliance is achieved. I do not agree with this and the extract from Clause 10.41 of the Code supports my view.

- (b) 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—
- (i) determined by reference to good industry practice; and
 - (ii) that would reasonably be expected from a skilled and experienced ATH engaged in the management and operation of an approved test house; and

To further strengthen my argument, I checked the burden and accuracy of 40 Category 2 records during this audit. 24 had TWS 500/5 CTs, where TWS has confirmed accuracy at low burden, or burden resistance was added. The average burden was 0.80 and the average error was -0.060%. For the other 16, where there has not been confirmation of accuracy at low burden, the average burden was 0.70 and the average error was 0.523% over recording. Four of the 16 had errors over 1.0% fast. This is not surprising given the CT test results shown above, where the errors are approaching 0.5% at low burden. This is not a “one-off” set of data, I’ve checked hundreds of results over many years, and when CTs are under burdened, they over record by approximately 0.5%. Whilst these errors include meter errors, the meters are all newly calibrated and there is no difference in meters between the “accurate” installations and those that are not “fit for purpose”

The other issue that needs addressing is whether all CTs manufactured by TWS Energy controls are suitable to be used at low burden. The answer to this question is no. The Code includes the following statement:

An ATH must, before it certifies a measuring transformer, if the in-service burden is less than the lowest burden test point specified in a standard set out in Table 5 of Schedule 10.1,

(a) install burdening resistors to increase the in-service burden to be equal to or greater than the lowest test point specified in the standard; or

(b) confirm that—

(i) a class A ATH has confirmed by calibration 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; or

(ii) the measuring transformer's manufacturer has confirmed that the accuracy of the metering transformer will not be adversely affected by the in-service burden being less than the lowest burden test point specified in the standard.

In the scenario in question, ATHs are not “certifying” CTs, they are certifying the installation, but it is relevant to refer to this clause to discuss the principal, that a manufacturer can confirm that accuracy will not be “adversely affected” by low burden. For TWS CTs, they have clearly stated that accuracy will be affected by low burden. TWS re-issued a document at my request on 07/08/19 when I discussed this issue with them. The extract is below.

Under Burdening of CTs

For a non-compensated CT, as detailed above, as the burden on it is reduced, the errors approach zero but always remain negative. This will not ever result in the CT going out of class. However, for a compensated CT, because the errors can become positive, there is the very real chance that the CT will go out of class in the positive direction when under-burdened.

There has been other correspondence between ATHs and TWS, and at least one ATH has taken this correspondence and the test results shown above from 12/04/16 as confirmation that all TWS CTs are suitable for use at low burden. Confirmation by a manufacturer has been provided as an official document to the industry as a whole. TWS confirmed to me that this is their official stance on the matter. It's also clear that the test results support their statement.

Intellihub and other participants appear to be waiting for the Code to be changed so that it refers to “certification of metering installations” rather than “certification of CTs”, before they address low burden, but there are other clauses that require action to be taken now. There is also a lot of discussion and trialling of different burden resistors and enclosures. In the short term I strongly recommend Intellihub installs additional secondary circuit length to increase the burden of the secondary circuit, which can be implemented immediately without any testing. It should also be noted that where burden is being added, it's often only sufficient to exceed the 25% of rated burden threshold, but the best accuracy is achieved when burden is closer to the rated burden.

It's well known that most metering installations have an in-service burden of less than 1.0VA, so when CTs are specified and purchased I recommend Intellihub specifies CTs with a rated VA of 1.5 or 2.5 rather than 5.0.

Ten ICPs were certified in accordance with the insufficient load clause, but they do not appear on the low load monitoring master schedule. Clause 20(1)(g) of Schedule 10.7 states that certification is cancelled if “sufficient load is available for full certification testing”. It is unknown whether sufficient load is available, therefore certification is not cancelled, however non-compliance is recorded in Section 7.7 because monitoring was not conducted.

ICP 0309668670LCCC6 had a meter installed on 22/05/19, and a certification report was provided, which stated the installation was not certified and would be certified on 23/05/19. The certification did not occur on 23/05/19 but the registry was populated with 23/05/19 as the certification date. The registry has been updated, confirming this installation is not certified and a service order has been issued to certify.

Three Category 2, 3 or 4 inspections were due during the audit period and were conducted within the allowable time period.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 6.4 With: Clause 20 of Schedule 10.7 From: 09-Apr-15 To: 24-Apr-20	Certification not cancelled on the registry for 31 metering installations where low burden is present. Potential impact: Medium Actual impact: Medium Audit history: Multiple times Controls: Moderate Breach risk rating: 4
Audit risk rating	Rationale for audit risk rating
Medium	I have recorded the controls as moderate in this area because most processes are managed with sufficient controls to avoid cancellation of certification. The controls are weak with regard to installations with low burden. Previously I have recorded the impact as low because installations are within 2.5%, but the quantity of installations over recording is climbing and my sample is only a small proportion of the 2,500 installations certified since 2013. It's likely there are many hundreds of installations over recording by 0.5%. Assuming there were 500 installations over recording by 0.5%, this could easily result in over payment by customers of \$1.0M over a seven-year period since new part 10 came into force. I have recorded the impact as medium.
Actions taken to resolve the issue	
Completion date	Remedial action status

<p>This issue has been raised in previous audits. The issue of whether or not Current Transformers were being certified (when completing the Comparative Method Certification) and therefore whether burden must be taken into consideration, was identified as requiring clarification in the Code and was duly included in the Omnibus Code Consultation in 2018.</p> <p>ATH's were hopeful that with a Code Amendment, the requirements could be clarified, and that clear direction could be provided.</p> <p>It now appears from the latest communications and the EA's Compliance Timetable (which has been impacted by Covid-19), that the publication of the Code Amendments is some time away.</p> <p>In the intervening time, considerable investigation of the impact of over-recording has taken place. It is clear from the examples provided, that there are material improvements in terms of metering installation accuracy that can be achieved.</p> <p>To-date, Intellihub ATH has carried out testing of three values of nichrome wire resistors, which are intended to increase the secondary burden on a CT metering installation to a minimum of 25% of rated burden.</p> <p>In the audit commentary, reading of the recommendation is that burden should be increased to as much as 100% of rated burden in order to maximize the accuracy of the installation.</p> <p>In order to achieve this, Intellihub would need to carry out further testing on longer lengths of resistor wire (either Nichrome wire, or single continuous length of conductor).</p> <p>The recommendation to implement a simpler solution (install longer secondary cables) is in theory a simpler solution, but has the both advantages and some practical limitations as follows:</p> <ul style="list-style-type: none"> • Advantage: Heat output is reduced, as it is dissipated over much greater surface area. • Advantage: Intermediate terminations are not introduced. • Disadvantage: Not all switchboards contain either sufficient space, or a suitable location in which to safely store long lengths (loops) of secondary cabling. <p>At this time, with one exception, practical testing of different types of additional burden on live metering installations has not been performed. Either a working metering installation needs to be set up for testing, or an approach should be made to a Trader and approval sought to use a live installation to carry out testing.</p> <p>Documented Processes and Procedures also need to be developed.</p>	30/04/2021	Investigating
Preventative actions taken to ensure no further issues will occur	Completion date	

<p>1. Estimate and measure burden – fix if an issue. Additionally, stock CTs with lower VA ratings. These CTs may have flying leads (not terminals) with the maximum length allowable for that particular CT’s VA rating).</p> <p>2. This is a process issue – prep for it (and communicate to/from contractors if applicable)</p> <p>Intellihub will make sure that engineering checks are done for all CAT2 jobs by the recently appointed technical advisor to ensure compliance.</p> <p>10 icps identified as insufficient load will be added to the monitoring list</p>	30/04/2021	
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6.5. Registry Metering Records (Clause 11.8A)

Code reference

Clause 11.8A

Code related audit information

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

7. CERTIFICATION OF METERING INSTALLATIONS

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

Code reference

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

Code related audit information

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

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

Audit observation

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

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

Audit commentary

The registry shows 2,894 Category 1 ICPs with expired certification. This is up from 2,730 during the last audit. 751 of these ICPs show as previously interim certified. 729 ICPs were previously certified and certification expired within the audit period.

Intellihub provided a summary of ICPs where certification was unable to be physically performed. This summary is shown in the table below and affects 832 ICPs.

Reason	Quantity
Already AMI Meter	1
Meter Board Obstructed	18
Meter Incompatibility	52
No Access	431
No Power at Site	7
Refusal	119
Safety	169
Site Location	28

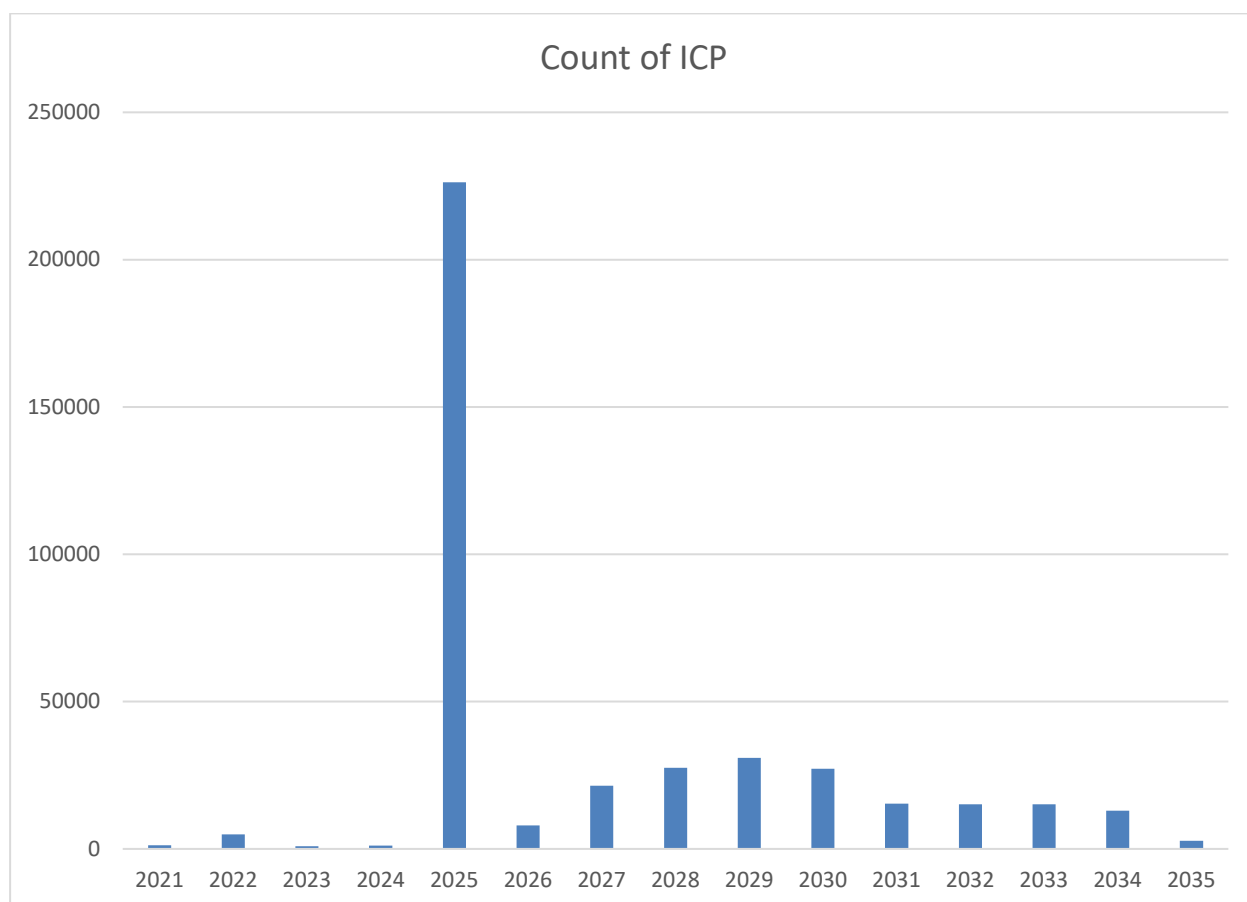
Tamper	0
Trader switch out	35
Total	832

Clause 10.7 requires reconciliation participants to provide access to metering equipment providers to enable certification to occur. Genesis advised Intellihub on 12/09/19 that they intend to use a different MEP to certify installations where certification has expired. The advice from Genesis was that “Intellihub should not proceed with these meter changes”. This non-compliance by Genesis is preventing Intellihub from certifying 442 metering installations, 101 of these are also in the list of access issues above. 363 ICPs are with Trustpower and they intend to use Intellihub NZ Ltd, not Intellihub Ltd (formerly Metrix) as the MEP for these. 53 of the 363 are also included in the list of access issues above. In summary, there are 1,473 ICPs without known access issues where Trustpower and Genesis are not the reconciliation participants. 38 of these are Category 2. Certification expired during the Covid-19 lockdown period for 13 of the 38. I have listed the remaining 25 ICPs below with Intellihub’s comments regarding expired certification.

ICP	Certification date	Expiry date	Intellihub comments
0143676032LC666	14/01/2009	14/01/2019	Challenging sites list. Referred to Retailer as unable to get access.
0451832965LC816	2/07/2009	2/07/2019	Intellihub to urgently resolve
1002065070UNFFE	6/08/2019	25/08/2019	Referred to Retailer as unable to get access.
1001161428UNOC4	12/08/2019	12/11/2019	Incorrect insufficient load certification by VEMS. Not on monitoring schedule.
1002068474LC2C1	27/09/2019	27/12/2019	Incorrect insufficient load certification by VEMS. Not on monitoring schedule.
1002060451LCFDB	3/10/2019	3/01/2020	Incorrect insufficient load certification by VEMS. Not on monitoring schedule.
0077130814WE8DC	13/01/2010	13/01/2020	Intellihub to urgently resolve
0141340037LCF64	3/02/2010	3/02/2020	Intellihub to urgently resolve
0730542757LCAC7	3/02/2010	3/02/2020	Intellihub to urgently resolve
0003133894AAC5E	12/11/2019	12/02/2020	Incorrect insufficient load certification by VEMS. Not on monitoring schedule.
1002066939UN8E3	20/11/2019	20/02/2020	Incorrect insufficient load certification by VEMS. Not on monitoring schedule.
0131078895LCADA	23/02/2010	23/02/2020	Intellihub to urgently resolve
0001259302UNCDS	3/03/2010	3/03/2020	Intellihub to urgently resolve

0000015321WEF75	4/03/2010	4/03/2020	Intellihub to urgently resolve
0000015322WE3B5	4/03/2010	4/03/2020	Intellihub to urgently resolve
0576567089LCC6B	4/03/2010	4/03/2020	Intellihub to urgently resolve
1002070309LC224	4/12/2019	4/03/2020	Incorrect insufficient load certification by VEMS. Not on monitoring schedule.
0216518816LC6D2	10/03/2010	10/03/2020	Intellihub to urgently resolve
1002057415UN32C	11/12/2019	11/03/2020	Incorrect insufficient load certification by VEMS. Not on monitoring schedule.
0888239211LC46A	18/03/2010	18/03/2020	Intellihub to urgently resolve
1002067638LC01D	17/12/2019	18/03/2020	Incorrect insufficient load certification by VEMS. Not on monitoring schedule.
1002067591LC550	18/12/2019	18/03/2020	Incorrect insufficient load certification by VEMS. Not on monitoring schedule.
1002067590LC915	18/12/2019	18/03/2020	Incorrect insufficient load certification by VEMS. Not on monitoring schedule.
0288844020LCA6D	19/03/2010	19/03/2020	Intellihub to urgently resolve
0001448665UN3CC	29/08/2019	29/11/2019	Incorrect insufficient load certification by VEMS. Not on monitoring schedule.

The graph below shows certification expiry totals out to 2035, which Intellihub will need to plan for to ensure resources are available to conduct statistical sampling or field replacement.



There is one ICP where the registry shows the certification occurred more than five days from electrical connection. There is also an ICP that was not certified several weeks after it was installed. The ICPs are shown in the table below.

ICP	Initial electrical connection date/meter install date	Active date	Certification date	Comments
1002069782LC1FA	10/09/2019	10/09/2019	10/02/2020	Metering was installed on 10/09/19 but certification did not occur until 10/02/19.
0000313323AAAF6	17/06/19		05/08/19	Metering was installed on 15/06/19 and was livened on 17/06/19 but certification did not occur until 05/08/19.

Late certification also leads to non-compliance for Traders.

I checked the records for 25 recently certified Category 2 installations and found that 14 were not recertified before the expiry of the previous certification. Nine were recertified within eight days but five were more than 35 days late.

As recorded in **section 6.4**, 31 metering installations have cancelled certification due to low burden.

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 7.1</p> <p>With: Clause 10.38 (a), clause 1 and clause 15 of Schedule 10.7</p> <p>From: 01-Jan-98</p> <p>To: 25-Apr-20</p>	<p>Certification expired, cancelled or late for 2,983 ICPs.</p> <p>Potential impact: High</p> <p>Actual impact: Medium</p> <p>Audit history: Multiple times</p> <p>Controls: Weak</p> <p>Breach risk rating: 6</p>		
Audit risk rating	Rationale for audit risk rating		
Medium	<p>I have recorded the controls as weak because they do not appear to be as effective as in previous years, particularly for Category 2 certification and the management of low load certification. Certification has been expired for a number of years for some ICPs and most of the expired installations were fully certified at one point.</p> <p>The impact on settlement is recorded as moderate because of the increased likelihood of failure or inaccuracy for metering installations with expired certification, therefore the audit risk rating is medium.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>Category 1 installations; Escalated to our customer relationship team to start working more closely with retailers and to strengthen this process so that paper trails are maintained to show correspondence between Intellihub and the retailers.</p> <p>Category 2 installations; This process will be revised to ensure that works orders are issued and proactively managed to ensure completion of certification prior to expiry.</p> <p>Our metering and field services team will work closely with our newly appointed ATH technical advisor who will help strengthen this process and ensure certification records are accurate and compliant and raise any concerns with ATH's as soon as identified.</p> <p>For installations certified with insufficient load, the required action is for these ICP's to be added to the Maximum Demand Monitoring List and for them to be monitored monthly, until such time as the minimum load specified by the certifying ATH is reached.</p> <p>6 ICPs identified as insufficient load will be added to the monitoring list</p>		30/04/2021	Investigating

Preventative actions taken to ensure no further issues will occur	Completion date	
Per above.	30/04/2021	

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

Code reference

Clause 10.38(b) and clause 9 of Schedule 10.6

Code related audit information

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

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

Audit observation

I checked the certification records for 100 metering installations to confirm compliance.

Audit commentary

I confirm the appropriate tests are conducted and the results are recorded.

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

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

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

All other installations must measure and separately record:

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

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

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

Audit observation

I checked the certification records for 100 metering installations to confirm compliance.

Audit commentary

All relevant metering is compliant with this clause.

Audit outcome

Compliant

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

Code reference

Clause 10.37(2)(b)

Code related audit information

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

Audit observation

This clause relates to Transpower as an MEP.

Audit commentary

This clause relates to Transpower as an MEP.

Audit outcome

Not applicable

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

Code reference

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

Code related audit information

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

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

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

Audit observation

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

Audit commentary

There are no examples of burden changes having occurred.

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

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

If a meter is certified in this manner:

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

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

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

Audit observation

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

Audit commentary

Intellihub has a list of Category 2 metering installations with CT ratios above 500/5. There are a small number where the protection or transformer rating is greater than 500A or is unknown. Monitoring is in place for all of these and none have a demand over the allowable threshold.

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

Audit observation

I checked the process and three examples of insufficient load certification.

Audit commentary

I checked 22 examples of low load certification conducted by VEMS and MTRX. In all cases, the appropriate checks were conducted. VEMS certified 10 of these installations for a three-month period, which has now expired, and monitoring was not conducted. Two ICPs were recertified and a further ten ICPs were certified in accordance with the insufficient load clause, but they do not appear on the low load monitoring master schedule. The ICPs are shown below. The VEMS certification reports do not state what is considered “sufficient” load; Intellihub intends to request this information from VEMS and will ask them to state the required load level in future.

ICP	Cert date	Expiry	On monitoring list?
0245481044LC236	6/07/2019	6/07/2029	No
0248359045LCBAD	12/06/2019	12/06/2029	No

0295180153LC4D6	24/06/2019	21/12/2028	No
0003133893AA194	30/10/2019	30/10/2029	No
0005440038WA91E	16/12/2019	16/12/2029	No
1002062659LC488	27/05/2019	27/05/2029	No
0000524308NR3DB	05/12/2019	05/12/2029	No
0000550992NR89E	9/10/2019	9/10/2029	No
0240520467LC8D4	25/02/2020	25/02/2030	No
0193970058LC44D	21/06/2019	10/12/2028	No

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 7.7 With: Clause 14(3) of Schedule 10.7 From: 01-May-19 To: 25-Apr-20	Monitoring not conducted for at least 20 ICPs. Potential impact: Medium Actual impact: Unknown Audit history: Once Controls: Weak Breach risk rating: 3		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as weak because they do not appear to be identifying situations where insufficient load is present and where more information is required. 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

<p>Commentary has also been added to section 6.4 above.</p> <p>10 ICP's identified as insufficient load will be added to the monitoring list. Commentary also in section 7.1.</p> <p>Intellihub will work with the certifying ATH's where full certification has not taken place as demand must be monitored.</p> <p>Where the endorsement is not clear on the certifying ATH records, Intellihub will raise with the ATH's to ensure they also meet their obligations of the code.</p> <p>Intellihub will make sure that engineering checks are done for all CAT2 jobs and where monitoring is required, ensure that these are added to our Maximum Demand reports and when the minimum threshold is identified, Intellihub will work with Retailers to get access to sites to recertify.</p>	30/09/2020	Investigating
Preventative actions taken to ensure no further issues will occur	Completion date	
Per above	30/09/2020	

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

Code reference

Clause 14(6) of Schedule 10.7

Code related audit information

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

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

Audit observation

I checked two examples to confirm compliance.

Audit commentary

In both cases, the full certification confirmed accuracy. Intellihub has a compliant process for monitoring once examples are added to the list.

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

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

Audit observation

I checked the registry records to confirm whether alternative certification had been applied.

Audit commentary

Alternative certification has not been applied to any metering installations.

Audit outcome

Compliant

7.10. Timekeeping Requirements (Clause 23 of Schedule 10.7)

Code reference

Clause 23 of Schedule 10.7

Code related audit information

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

- a) *has a time keeping error of not greater than an average of 2 seconds per day over a period of 12 months*
- b) *is monitored and corrected at least once every 12 months.*

Audit observation

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

Audit commentary

Intellihub confirmed there are no metering installations with timeclocks.

Audit outcome

Compliant

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

Code reference

Clause 35 of Schedule 10.7

Code related audit information

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

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

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

Audit observation

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

Audit commentary

Control device bridging sometimes occurs by contractors on behalf of traders and Intellihub will then be notified in order to conduct remedial action, if the contractor is not operating under an ATH. Notification is not required to any other party because the request comes from the trader. The process is compliant, and I checked five examples to confirm compliance and to confirm timeliness.

Audit outcome

Compliant

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

Code reference

Clause 34(5) of Schedule 10.7

Code related audit information

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

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

Audit observation

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

Audit commentary

Intellihub asked all relevant distributors for information on areas with signal propagation issues. Vector responded with some specific areas in the "United" region and Intellihub is ensuring control devices are not installed in these areas. The other responses indicated that no issues were present.

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

Audit observation

I checked whether statistical sampling had occurred during the audit period.

Audit commentary

Statistical sampling occurred in 2018 but no further sampling occurred during the audit period.

As mentioned during the previous audit, the Code requires that the sample selection and testing methodology of AS/NZS 1284.13 is used but does not require grouping of meters to be conducted in accordance with the standard. The standard requires the following:

8.2 Grouping of meters (Step 1)

Group meters in representative populations and treat each population separately. Meters shall be grouped according to—

- (a) manufacturer; and
- (b) design or pattern or type.

If necessary (see Step 5) or considered desirable, arrange meters in sub-populations according to a combination of any of the following—

- (i) year of installation;
- (ii) geographic factors, e.g. on the coast or in the mountains;
- (iii) load history, e.g. lightly or heavily loaded;
- (iv) connections to supply, e.g. to overhead lines or via underground cables;
- (v) any history of refurbishment;
- (vi) environmental weather conditions and installation, e.g. in a meter box or exposed; and
- (vii) any other appropriate characteristic.

But the Code states “A metering equipment provider may arrange for an ATH to recertify a group of category 1 metering installations for which the metering equipment provider is responsible using a statistical sampling process ...”, which has been interpreted by the industry as allowing any meter of any type to be included in the “group”. The downside of not requiring ATHs to use the process outlined in the standard is that the population can include many different types of meters and meters known to be inaccurate or with unknown characteristics can be included in the population where the chance of them being selected is low. **Intellihub could have included all of their uncertified meters in the population of 223,980 and it’s highly likely the population would still have passed for seven years.** Intellihub chose to follow the requirements of Clause 8.2 of AS/NZS 1284.13 and they grouped meters into populations based on manufacturer and model (design or pattern or type). The advantage of this is that where a meter type

passes statistical sampling, there is a very high probability that the sample represents the population. The disadvantage is that meters with low quantities were not sampled and a little under 3,000 ICPs will need to be visited to physically certify.

Audit outcome

Compliant

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

Code reference

Clause 24(3) of Schedule 10.7

Code related audit information

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

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

Audit observation

I checked the records for 71 Category 2 or Category 3 metering installations to confirm that compensation factors were correct.

Audit commentary

The compensation factors were correct for all 71 metering installations.

Audit outcome

Compliant

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

Code reference

Clause 26(1) of Schedule 10.7

Code related audit information

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

Audit observation

I checked the certification records for 100 metering installations to confirm compliance.

Audit commentary

Meters were certified for all 100 installations.

Audit outcome

Compliant

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

Code reference

Clause 28(1) of Schedule 10.7

Code related audit information

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

Audit observation

I checked the certification records for 71 metering installations to confirm compliance.

Audit commentary

Measuring transformers were certified where required for all 71 installations.

Audit outcome

Compliant

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

Code reference

Clause 36(1) of Schedule 10.7

Code related audit information

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

Audit observation

I checked the certification records for 100 metering installations to confirm compliance.

Audit commentary

Data storage devices were certified for all 100 installations.

Audit outcome

Compliant

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

Code reference

Clause 7 (3) Schedule 10.3

Code related audit information

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

Audit observation

I checked the ATH register to confirm compliance.

Audit commentary

All relevant ATHs have appropriate approval.

Audit outcome

Compliant

7.19. Interim Certification (Clause 18 of Schedule 10.7)

Code reference

Clause 18 of Schedule 10.7

Code related audit information

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

Audit observation

I checked the registry records (PR255) to identify any ICPs with interim certification recorded.

Audit commentary

There are 751 previously interim certified installations with expired certification.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 7.19 With: Clause 18 of Schedule 10.7 From: 01-Apr-15 To: 25-Apr-20	751 ICPs with expired interim certification. Potential impact: High Actual impact: Medium Audit history: Multiple times Controls: Moderate Breach risk rating: 4		
Audit risk rating	Rationale for audit risk rating		
Medium	I have recorded the controls as moderate in this area because certification has been expired for a number of years for these ICPs. The impact on settlement is recorded as moderate because of the increased likelihood of failure or inaccuracy for metering installations with expired certification, therefore the audit risk rating is medium.		
Actions taken to resolve the issue		Completion date	Remedial action status
Internal process review to manage these along with those certificates that have expired, intention is to formalize a process with our internal customer relationship teams in co-ordination with the retailers.		30/04/2021	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	

As above.	30/04/2021	
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8. INSPECTION OF METERING INSTALLATIONS

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

Code reference

Clause 45 of Schedule 10.7

Code related audit information

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

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

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

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

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

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

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

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

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

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

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

Audit observation

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

Audit commentary

Intellihub conducted category 1 inspections by sample in accordance with this clause. The process and reporting of results is compliant.

Audit outcome

Compliant

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

Code reference

Clause 46(1) of Schedule 10.7

Code related audit information

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

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

Audit observation

I checked the registry information to confirm which ICPs were due for inspection.

Audit commentary

Three Category 3 ICPs were due for inspection and the inspections were completed within the allowable window.

Audit outcome

Compliant

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

Code reference

Clause 44(5) of Schedule 10.7

Code related audit information

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

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

The MEP must make the above arrangements within

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

Audit observation

I checked five examples of notification of missing seals.

Audit commentary

In all cases the installation was re-sealed following confirmation that the integrity of the installation was not compromised.

Audit outcome

Compliant

9. PROCESS FOR HANDLING FAULTY METERING INSTALLATIONS

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

Code reference

Clause 10.43(4) and (5)

Code related audit information

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

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

Audit observation

I checked five examples where Intellihub had become aware of faulty metering installations.

Audit commentary

They were all Category 1 and the relevant traders were notified within 20 business days.

Audit outcome

Compliant

9.2. Testing of Faulty Metering Installations (Clause 10.44)

Code reference

Clause 10.44

Code related audit information

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

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

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

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

Audit observation

I checked 18 examples where Intellihub had become aware of faulty metering installations.

Audit commentary

In all cases the issues were resolved within the required timeframes and notification was made appropriately.

Audit outcome

Compliant

9.3. Statement of Situation (Clause10.46(2))

Code reference

Clause10.46(2)

Code related audit information

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

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

Audit observation

I checked 18 examples where Intellihub had become aware of faulty metering installations.

Audit commentary

The statements of situation were all provided within three business days.

Audit outcome

Compliant

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

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

Code reference

Clause 1 of Schedule 10.6

Code related audit information

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

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

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

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

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 2 of Schedule 10.6

Code related audit information

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 3(5) of Schedule 10.6

Code related audit information

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 8 of Schedule 10.6

Code related audit information

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

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

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

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

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

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

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

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

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

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

in a form that is accessible to authorised personnel.

Audit observation

Interrogation cycle

I conducted a walk-through of the process and I checked reporting of meters not read during the maximum interrogation cycle.

Clock synchronisation

Clock synchronisation is discussed in **section 10.7**.

Event logs

Event logs are discussed in **section 10.8**.

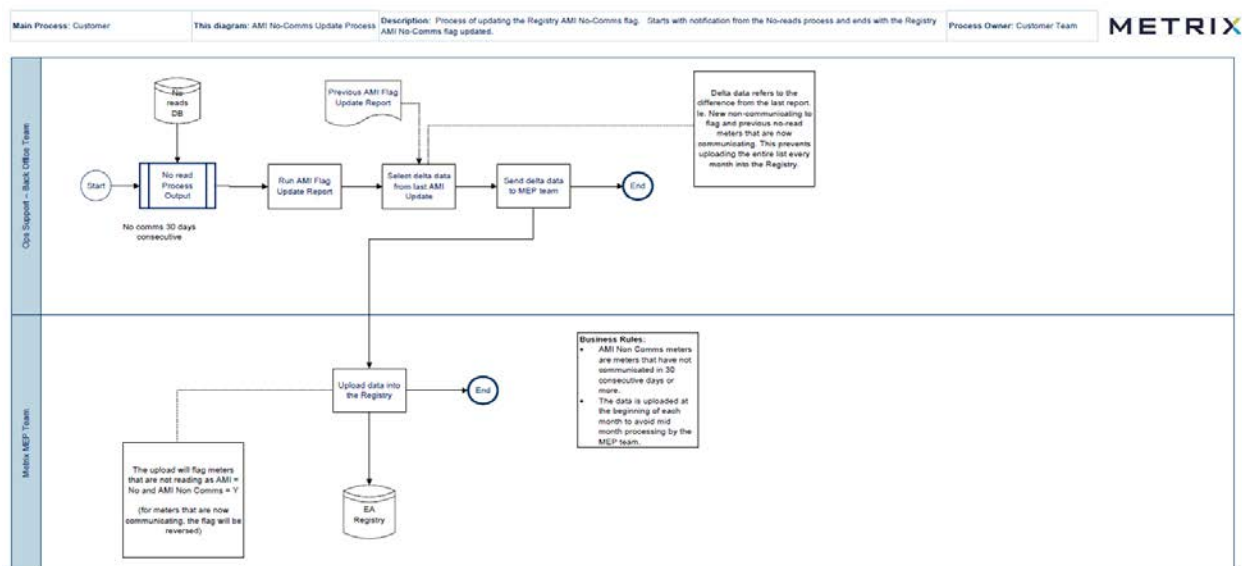
Security of raw meter data

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

Audit commentary

Intellihub provided process documentation during the previous audit (inserted below) indicating they will set the AMI Comm flag to “N” for any meter that has not read for 30 or more consecutive days. This process has been implemented and many ICPs have had the flag changed to “N”. Reporting is in place with retailers to ensure they have knowledge of non-communicating meters.

Intellihub provided a report showing one ICP (0229636004LCA25) with an AMI flag of “Y” where interrogation has not been successful.



With regard to the security of raw meter data, I checked some data from 2016 to confirm it was available. All users have login and password to access working data and only certain IT experts can access raw data. There are no business processes that allow data to be edited. Event data is archived along with consumption data. This part of the process is compliant.

Event logs and clock synchronisation processes are discussed in **sections 10.7** and **10.8**.

I checked whether revised information was provided for periods where data is not available and then becomes available. Intellihub sends “catch-up” data for a period of 15 days but if data is available outside this timeframe it is not provided. Clause 10 of Schedule 10.6 is not specific regarding the time period for revised data, but Clause 10.6 requires information to be “complete and accurate” and it also requires further or corrected information to be provided as soon as practicable. Therefore, I conclude that a 15-day window for revised data does not comply with Clause 10.6. This is recorded as non-compliance in **section 2.5**.

Intellihub does not have reporting to quantify the amount or percentage of actual data that is not provided to retailers, I recommend this reporting is developed, so show the total quantify of estimated data per retailer per month, including the total quantity of estimated data that is not replaced with actual data where actual data exists.

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 8 of Schedule 10.6.	Develop reporting to show the total quantity of estimated data per retailer per month, including the total quantity of estimated data that is not replaced with actual data where actual data exists.	Intellihub will implement this reporting recommendation as part of a related workstream late in 2020.	Identified

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 10.5 With: Clause 8 of Schedule 10.6 From: 01-Jan-20 To: 25-Apr-20	One ICP not read during the maximum interrogation cycle. Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	Strong controls are in place to change the AMI flag to "N" if data cannot be collected. There is only one example where the update did not occur. 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
Scope of replacement outside 15 days is ~0.2% and replacement data is currently available on request. Pilot to automate push of replacement > 15 days will occur in 1-2 months. On successful pilot we will offer to all customers. In rare circumstances where the incorrect timestamp issue occurs, the current process is to replace the meter. Intellihub is also working on a firmware fix that will resolve the root cause.		20 July 2020 1 Dec 2020	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
As above.		N/A	

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

Code reference

Clause 10.15(2)

Code related audit information

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

Audit observation

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

Audit commentary

With regard to the security of raw meter data, I checked some data from 2016 to confirm it was available. All users have login and password to access working data and only certain IT experts can access raw data. There are no business processes that allow data to be edited. Event data is archived along with consumption data.

Audit outcome

Compliant

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

Code reference

Clause 8(4) of Schedule 10.6

Code related audit information

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

Audit observation

I checked the clock synchronisation processes and reporting for all head ends.

Audit commentary

Intellihub has five different systems. Time synchronisation occurs as follows:

1. Multidrive. The clock setting is five seconds to 30 seconds for Category 1 and five seconds to ten seconds for Category 2. All errors in these bands are adjusted automatically and those over the maximum setting are adjusted manually. This task is conducted daily. If the manual adjustment fails due to a communications issue, then a field visit is booked to fix the issue and synchronise the clock. There is a "repeat offenders" list of installations where the clock has drifted outside the threshold every interrogation. These devices are replaced.
2. Command Centre. The clock setting is ten seconds, so any error less than ten seconds is adjusted automatically and those over ten seconds are adjusted manually. A separate "time synchronisation" report is run on a weekly basis to manage clock errors. Repeat offenders are also monitored and managed.

3. EAMS. This is an RF mesh system, which has “Gatekeepers” and “meters”. Gatekeepers are synchronised to the server on a daily basis. The Gatekeeper time sync setting is two to 25 seconds. Any large time errors over 25 seconds are managed manually. Every 15 minutes the Gatekeepers broadcast a “time sync” signal to the meters and any errors greater than four seconds are adjusted.
4. Silverspring for Counties. The clock setting is ten seconds to 20 minutes. For errors over 20 minutes a user must manually set the time. This list is run weekly and sent to Silverspring for them to adjust the clock.
5. Silverspring for Intellihub. The clock setting is ten seconds to 20 minutes. For errors over 20 minutes a user must manually set the time. This list is run weekly and sent to Silverspring for them to adjust the clock.

Intellihub advises affected reconciliation participants of time error adjustments or any potential effect on raw meter data. Intellihub monitors devices with multiple clock errors to ensure the meters are replaced.

This clause is slightly different to the clause in Part 15 for reconciliation participants. This clause requires MEPs to ensure the time is not outside the allowable thresholds, therefore non-compliance exists for those examples where time has drifted outside the allowable threshold.

I checked the most recent reports for each head end, and they contained a total of 36 examples.

Audit outcome

Non-compliant

Non-compliance	Description	
Audit Ref: 10.7 With: Clause 8(4) of Schedule 10.6 From: 01-May-19 To: 31-Mar-20	36 examples of clock errors outside the allowable thresholds in the most recent reports. Potential impact: Medium Actual impact: Low Audit history: Twice Controls: Strong Breach risk rating: 1	
Audit risk rating	Rationale for audit risk rating	
Low	I have recorded the controls as strong because clocks are synchronised during every successful interrogation. The impact is considered minor because most clock errors are small and are corrected within one half hour. The audit risk rating is low.	
Actions taken to resolve the issue		Completion date
Intellihub do not believe there are any additional practical actions we can take to ensure the time does not exceed the allowable threshold.		N/A
Preventative actions taken to ensure no further issues will occur		Completion date
		Disputed

We will look to discuss and work with the EA regards to this clause.	N/A	
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10.8. Event Logs (Clause 8(7) of Schedule 10.6)

Code reference

Clause 8(7) of Schedule 10.6

Code related audit information

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

- a) ensure an interrogation log is generated*
- b) review the event log and:*
 - i. take appropriate action*
 - ii. pass the relevant entries to the reconciliation participant.*
- c) ensure the log forms part of an audit trail which includes:*
 - i. the date and*
 - ii. time of the interrogation*
 - iii. operator (where available)*
 - iv. unique ID of the data storage device*
 - v. any clock errors outside specified limits*
 - vi. method of interrogation*
 - vii. identifier of the reading device used (if applicable).*

Audit observation

I checked the interrogation logs and event logs to ensure the items above were managed in a compliant manner.

Audit commentary

The interrogation logs contain all of the information above. I checked all head ends to confirm this.

Intellihub downloads the event log as required by this clause. All critical events are evaluated, and appropriate action is taken. Relevant events, including tampering, are sent to reconciliation participants. Intellihub provided a table listing all events, which shows "required action". The list appears to be comprehensive and complete.

I examined the process for filtering and managing events and I confirm that this is complete and robust.

Where Intellihub acts as an agent to other MEPs, those MEPs are required to investigate and manage event information, Intellihub does not conduct this activity for them.

Audit outcome

Compliant

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

Code reference

Clause 8(9) of Schedule 10.6

Code related audit information

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

Audit observation

The sum-check process was examined along with the business rules and associated reporting.

Audit commentary

Sum-check occurs when each meter is interrogated. The sum of the intervals is compared to the register read (scalar read) for the same period. Sum-check exceptions are reported on and are categorised as follows:

1. No interval data provided by the meter. If there is a scalar read but no interval data, then the sum-check cannot be performed. In these cases, no read processes commence to resolve the issue. When interval data is received the sum-check occurs automatically.
2. Interval data is present, but no scalar reading is collected. MDM will attempt to estimate the scalar reading from interval data or historic scalar readings. If a scalar reading cannot be generated due to insufficient data, then an exception is generated.
3. Scalar reading period is less than a configured percentage of the interval data period. If the scalar register reading period is less than 97% (this is configurable) of the interval data time period, an exception is generated. MDM then performs intervalisation to derive the scalar reading for the same time period as the interval data. A sum-check is performed comparing the scalar reading to the interval data. Reporting is in place for repeat offenders so these can be dealt with.
4. Interval data and scalar consumption do not match. If the interval data and scalar consumption for the same time period do not match (threshold is 1 kWh), an exception is generated. All of these exceptions are investigated.

Some scalar readings are for times other than midnight therefore the sum-check is based on an estimated midnight read. Where a sum-check failure occurs and the midnight read is estimated, further action is not taken. This was previously recorded as compliant but is now viewed as not compliant because the register reads must be compared to the sum of the intervals, which means the time periods must be the same.

I checked the most recent sum-check report for March 2020. It contained 1,587 records for 819 ICPs. Most of the issues were expected, for example missing register reads, or time discrepancies.

I checked one issue in detail where there were 147 examples for 54 ICPs where some Honeywell meters have a bug leading to the midnight read being given a timestamp one day earlier than it should have. This reading with the incorrect timestamp is sent to retailers. There is a firmware level solution in testing which is expected to provide a permanent solution to this problem. This is recorded as non-compliance in **section 2.5**.

Audit outcome

Non-compliant

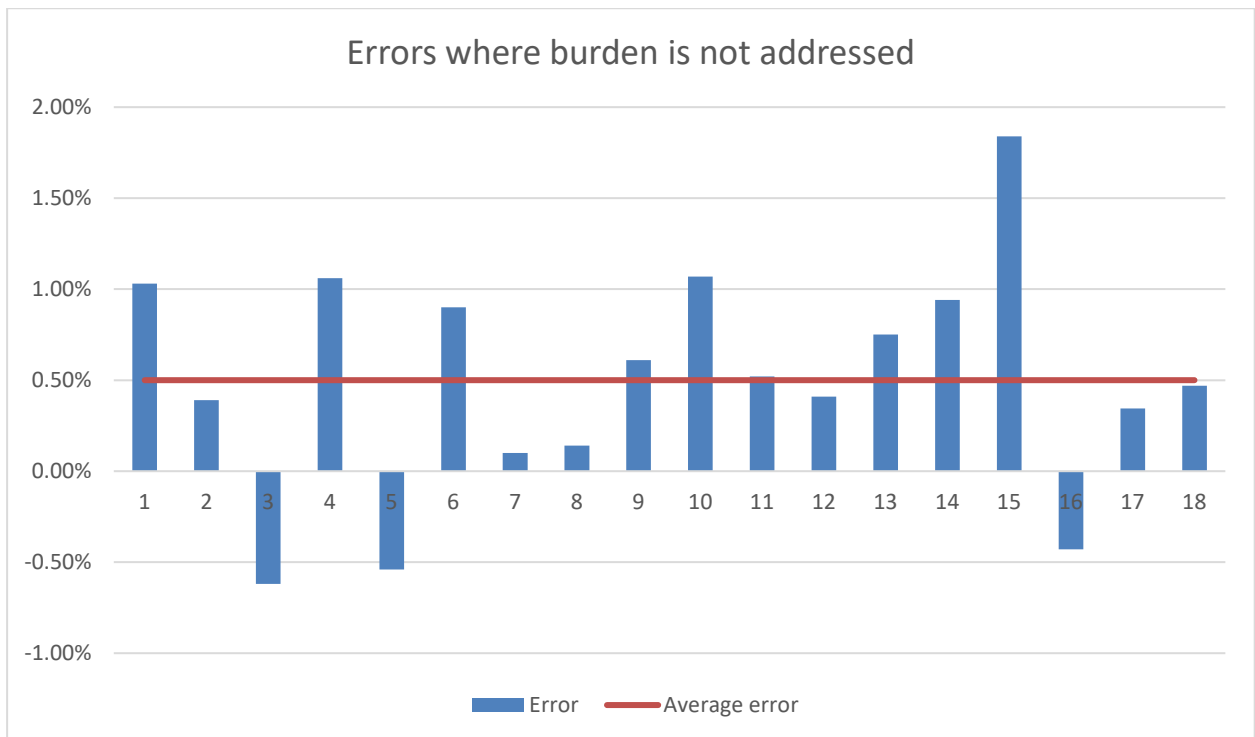
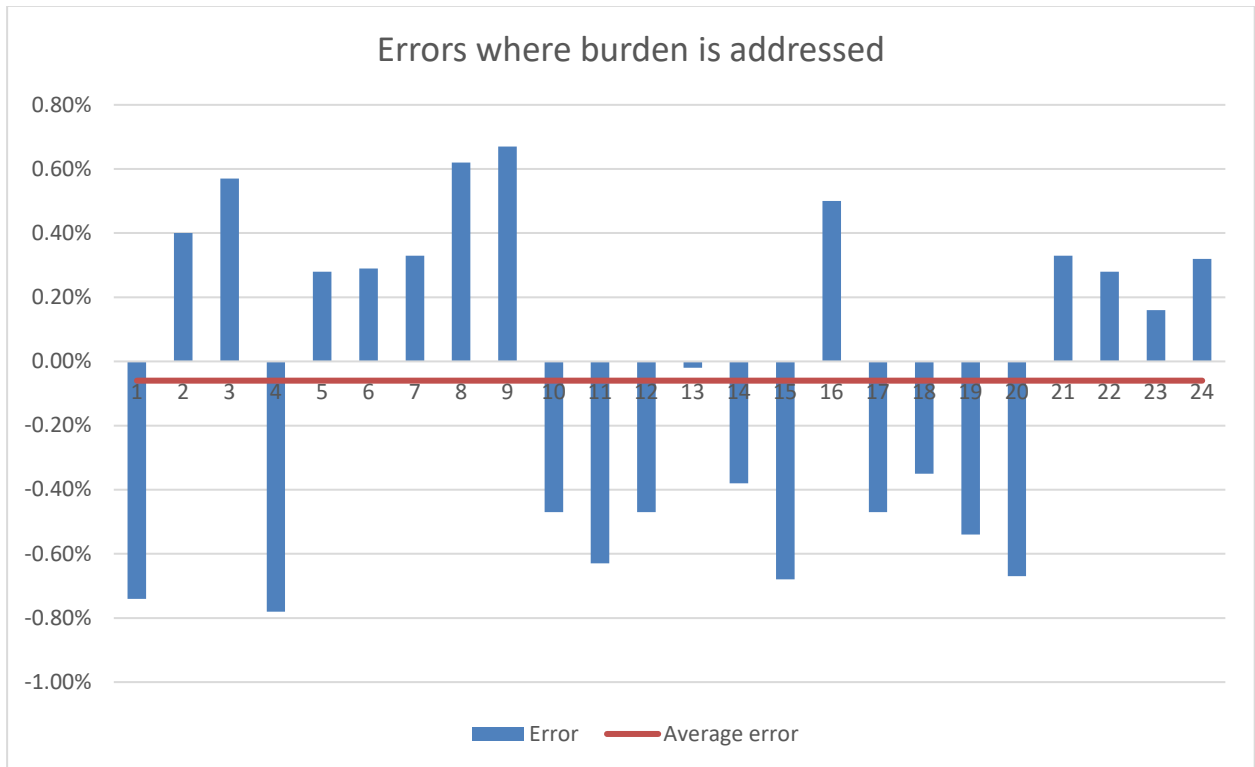
Non-compliance	Description		
<p>Audit Ref: 10.9</p> <p>With: Clause 8(9) of Schedule 10.6</p> <p>From: 01-May-19</p> <p>To: 31-Mar-20</p>	<p>Approx. 3% of sum-check validations are conducted using estimated midnight reads because the register read is for a time other than midnight.</p> <p>Potential impact: Low</p> <p>Actual impact: Low</p> <p>Audit history: None</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>		
Audit risk rating	Rationale for audit risk rating		
Low	<p>The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement.</p> <p>The impact on settlement and participants is minor; therefore, the audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
N/A		N/A	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>The type of meter in question is read on demand and cannot be programmed to read at exactly midnight. Because readings are required as at prior to end of day, reads are taken at 11.30pm. Intellihub is working on a system enhancement whereby these reads, rather than the estimated read at midnight, will be used for the sum check process. If anything this will identify some false positives for us to review. This is expected to be manageable because this type of residential sites often has very little consumption between 11.30pm and midnight. We also have the option of moving the read schedule back to 11.45pm to minimize false positive sum check failures.</p>		1 Dec 2020	

CONCLUSION

14 non-compliances were identified, which is an increase of 10 in the last audit. The main reason for the increase appears to be that controls in relation to the management of recertification, ATH field practices and certification record accuracy are not as strong as in previous audits. The quantity of metering installations with expired certification has remained similar to the previous audit, and the number of Category 2 installations with expired or late certification has increased considerably. ATHs are still not routinely addressing installations with low burden and their certification reports contained a large number of errors. I have made several recommendations to improve controls in relation to the monitoring of ATH practices and records.

With regard to the management of low burden, Clause 31(7) of Schedule 10.7 requires the addition of burden before the ATH “certifies a measuring transformer” Some participants, including Intellihub” believe they are compliant because when the comparative method is used, the ATH is not “certifying the measuring transformers” Whilst this is correct, the non-compliance does not refer to this clause, there are other relevant clauses in the Code and I believe clarification is required. Firstly, whether CTs operating at low burden are a problem or not. Clauses 11(4)(d) and 12(5)(b) of Schedule 10.7 require ATHs to *“ensure that each metering component in the metering installation is fit for purpose”* A common definition of “fit for purpose” is *“good enough to do the job it was designed to do”* In relation to this specific point, a CT is designed to accurately measure consumption where the in-service burden is between 25% and 100% of the rated burden. In most cases the rated burden is 5VA, so the CT is designed to accurately record consumption where the in-service burden is between 1.25VA and 5VA. If the in-service burden is 0.6VA for example, the CTs are not designed to record consumption accurately and are therefore not fit for this purpose.

To further strengthen my argument, I checked the burden and accuracy of 40 Category 2 records during this audit. 24 had TWS 500/5 CTs, where TWS has confirmed accuracy at low burden, or burden resistance was added. The average burden was 0.80VA and the average error was -0.060%. For the other 16, where there has not been confirmation of accuracy at low burden, the average burden was 0.70VA and the average error was 0.523% over recording. Four of the 16 had errors over 1.0% fast. This is not a “one-off” set of data, I’ve checked hundreds of results over many years, and when CTs are under burdened, they over record by approximately 0.5%. Whilst these errors include meter errors, the meters are all newly calibrated and there is no difference in meters between the “accurate” installations and those that are not “fit for purpose” The two graphs below illustrate my point.



PARTICIPANT RESPONSE

As per our responsibilities as an industry participant to the Code; Intellihub will work towards addressing and putting in preventative action where non-compliance has been identified and has not been stated as disputed.

There are 4 new non-compliances identified of which Maximum Interrogation Cycle in section 10.5 has been cleared and Services Access Interface in section 2.1 will also be cleared early next month.

For Accurate and complete records in section 5.1 we will take on feedback and recommendations provided by the auditor and work with our Contractors and ATH's to ensure compliance is met as a MEP. Intellihub will address the issues identified in this section as outlined under the Metering Installation certification report specifics to address non-compliances with our contractors and ATH's as their non-compliance activities has major impact on overall compliance for Intellihub.

There are some inconsistencies regarding auditing timeframes for all participants. Some of the issues raised in our MEP audit have not been addressed or identified in ATH audit reports as MEP's are being audited between 3-12 month's where some ATH's are not audited for up to 3 years. When a MEP investigates findings on an ATH audit report, often these are found to be 'compliant' which ultimately puts the non-compliance back on the MEP to address and raise with the ATH's concerned until it is identified in their next audit.

Sum-check validation identified in section 10.9 will be addressed by December 2020.

Time errors as identified in section 10.7 Intellihub will look to discuss and work with the EA regards to this clause.

All participants are impacted by burden and identified in section 6.4.

ATH's were hopeful that with a Code Amendment, the requirements could be clarified, and that clear direction could be provided. It now appears from the latest communications and the EA's Compliance Timetable (which has been impacted by Covid-19), that the publication of the Code Amendments is some time away.

In the intervening time, considerable investigation of the impact of over-recording has taken place. It is clear from the examples provided, that there are material improvements in terms of metering installation accuracy that can be achieved.

To-date, Intellihub ATH has carried out testing of three values of nichrome wire resistors, which are intended to increase the secondary burden on a CT metering installation to a minimum of 25% of rated burden.

In the audit commentary, reading of the recommendation is that burden should be increased to as much as 100% of rated burden in order to maximize the accuracy of the installation.

Intellihub have previously 'disputed' this section and have now changed to 'investigating'

Intellihub intend to address sections 7.1 for Certification of metering installations and 7.19 Interim Certification with urgency.

Intellihub will continue to ensure that data is fixed at source and that records are checked before the Registry is updated to further minimize impact to Participants. Intellihub will address timeliness of updates where possible and ensure paperwork is fit for purpose and sent back within agreed timeframes.

When our field tool app is fully developed and rolled out to field techs, this should eliminate any late field notifications. This specifically provides a field application that allows for better rate of return for paperwork and certification which will subsequently increase the time to be able to process the paperwork, certification and then to update the registry. This will help alleviate the non-compliances

identified in sections 2.5 Provision of accurate information, 3.2 Registry updates, 4.10 Changes to Registry Records and 5.1 Accurate and Complete Records, 6.2 Provision of Registry information and 6.3 for Error Correction.