

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

For

INTELLIHUB

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EXECUTIVE SUMMARY

IntelliHUB is a Metering Equipment Provider (MEP) and is required to undergo an audit by 08 August 2019, in accordance with clause 1(1)(b) of schedule 10.5.

IntelliHUB uses customised systems already existing and used in the Australian market. The relevant systems are workflow, asset management and AMI data collection. The relevant systems interface with the registry.

This audit found seven non-compliances. Four relate to the timeliness and accuracy of registry population. Two issues relate to non-compliant Approved Test House practices. Eight Category 2 installations were recertified without low burden being addressed, which means certification is cancelled. The error and uncertainty calculations conducted by Wells appear to have an error. The formula provided by Wells was checked and the source of the error is not immediately apparent, but the result does not match the result I independently calculated. One ICP seems to have an error greater than 2.5%.

I've made one recommendation in relation to clarity of certification reports.

IntelliHUB has grown considerably since the last audit, but compliance is still generally high. Fortunately, IntelliHUB has only dealt with a small number of Category 2 installations as a pilot, so there is now time to resolve the issues found before more recertification activity occurs.

The date of the next audit is determined by the Electricity Authority and is dependent on the level of compliance during this audit. The table below provides some guidance on this matter and recommends an audit frequency of 12 months. I agree with this recommendation.

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Registry changes	3.2	2 of Schedule 11.4	10 of 13,236 registry updates late	Strong	Low	1	Identified
Design and accuracy	4.3	4(1) of Schedule 10.7	Error and uncertainty calculations incorrect in nine Wells certification reports.	Moderate	Low	2	Disputed
Registry updates	4.10	Clause 3 of Schedule 11.4	Some backdated corrections.	Strong	Low	1	Identified
Registry accuracy	6.2	Clause 1(1) of Schedule 11.4	Small number of registry discrepancies.	Strong	Low	1	Identified
Registry validation	6.3	6 of Schedule 11.4	Complete registry validation not conducted.	None	Low	5	Investigating

Certification	7.1	10.38 (a)	Certification expired for ICP 1000546015PC4AB. Certification cancelled for ICP 0000026334EAF3D due to an error greater than 2.5%. Certification cancelled for eight ICPs with low burden.	Moderate	Low	2	Identified
Max interrogation cycle	10.5	8(2)(a) of Schedule 10.6	Maximum interrogation cycle exceeded for 29 ICPs.	Moderate	Low	2	Identified
Future Risk Rating						14	
Indicative Audit Frequency						12 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	Clause	Description
Accurate records	5.1	4(1)(a) and (b) of Schedule 10.6	Require Wells to remove "default" fields from certification reports. Require Wells to correct certification method from Selected Component to Comparative in some certification reports

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.

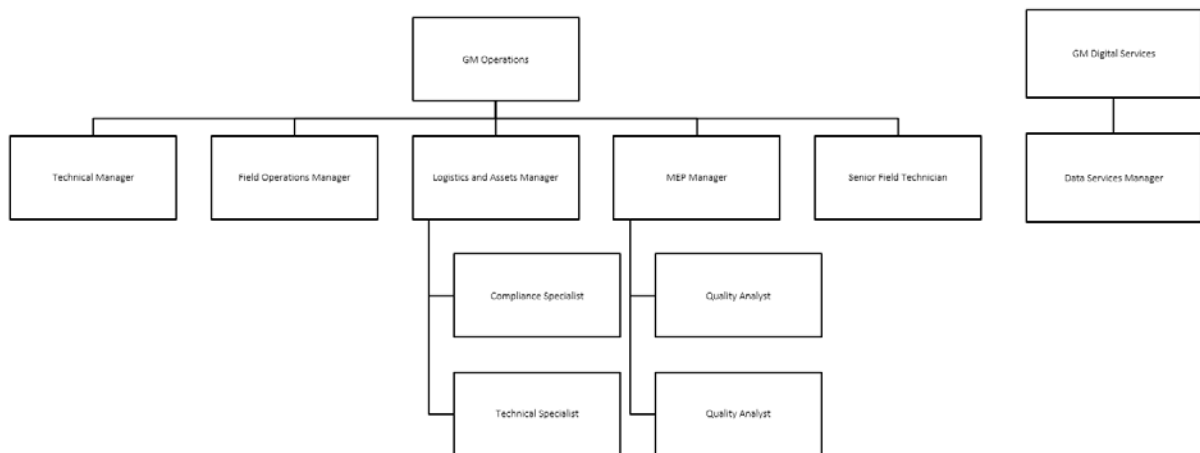
Audit commentary

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

1.2. Structure of Organisation

IntelliHUB's organisation structure 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
David Boyle	General Manager
Niu Nelson	MEP Manager
Hitesh Asarpota	Head of Operations
Paul Thornton	Technical 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

I checked whether there were any agents or contractors involved in the performance of functions within the scope of the audit.

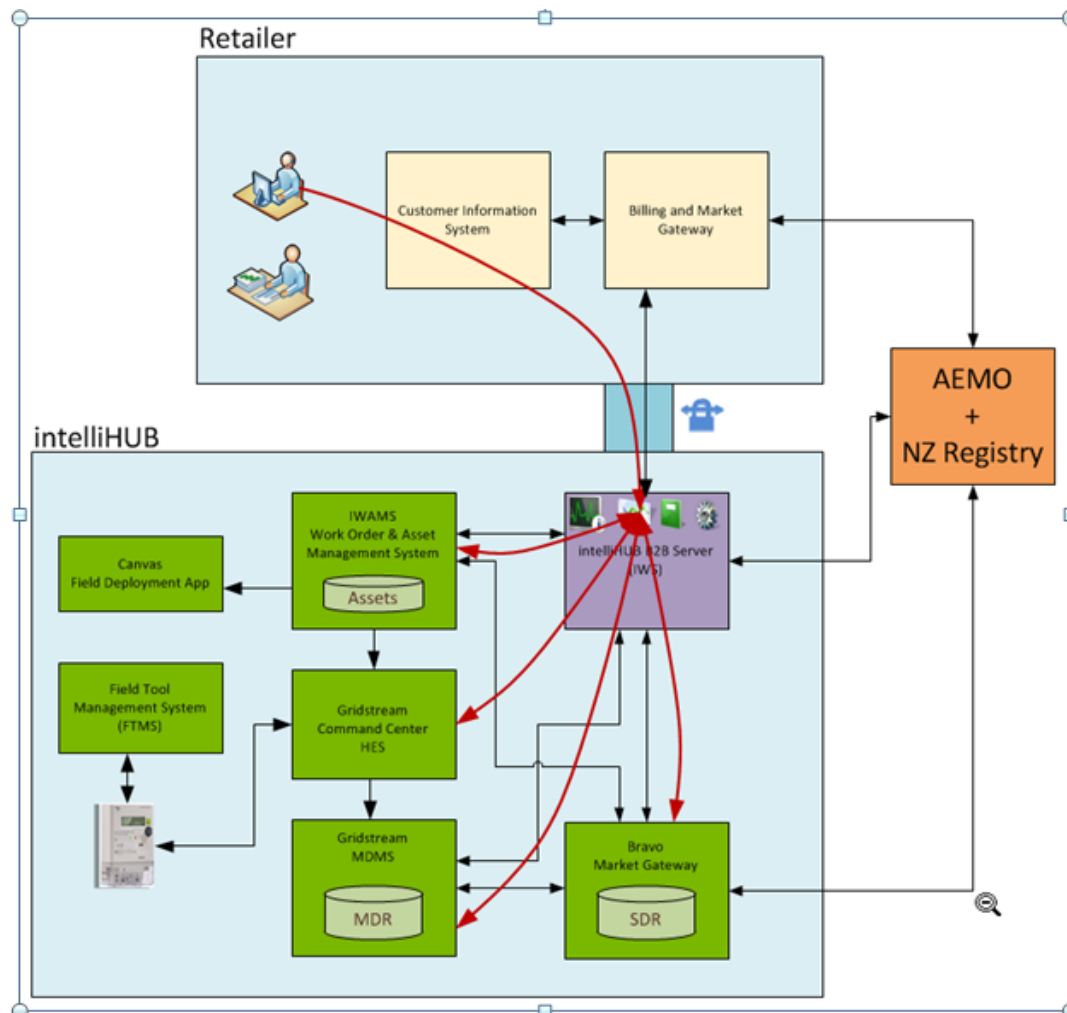
Audit commentary

IntelliHUB engages ATHs to conduct certification activities, but they don't engage them to store certification records.

1.5. Hardware and Software

I checked whether there were any systems used in the performance of functions relevant to the scope of the audit.

The relevant systems are shown in the diagram below.



IntelliHUB provided a “Data Backup and Retention” work instruction, which is reviewed annually. The document contains the following summary of backup arrangements:

On each Database VM (SQL and Oracle) backups are saved to a separate locally attached disk. Copies of the Database Backup files are then replicated to an Azure Cloud Storage account every hour. This Storage account is Geo-Replicated and has four copies.

The current Backup schedule is as follows:

- Full database monthly backup (kept for 13 months, then a yearly copy taken)
- Full database weekly backup (kept for 5 weeks)
- Incremental backup is taken on a daily basis (kept for 8 days)
- Hourly Database log backup (kept for 2 days)

To verify the validity of the backup processes a sample of VM and DB backups are to ‘test restored’ at least quarterly.

1.6. Breaches or Breach Allegations

There are no breach allegations relevant to the scope of the audit.

1.7. ICP Data

The table below shows active ICPs at 17/06/19.

Metering Category	Number of ICPs
1	14,647
2	10
3	0
4	0
5	0
9	0

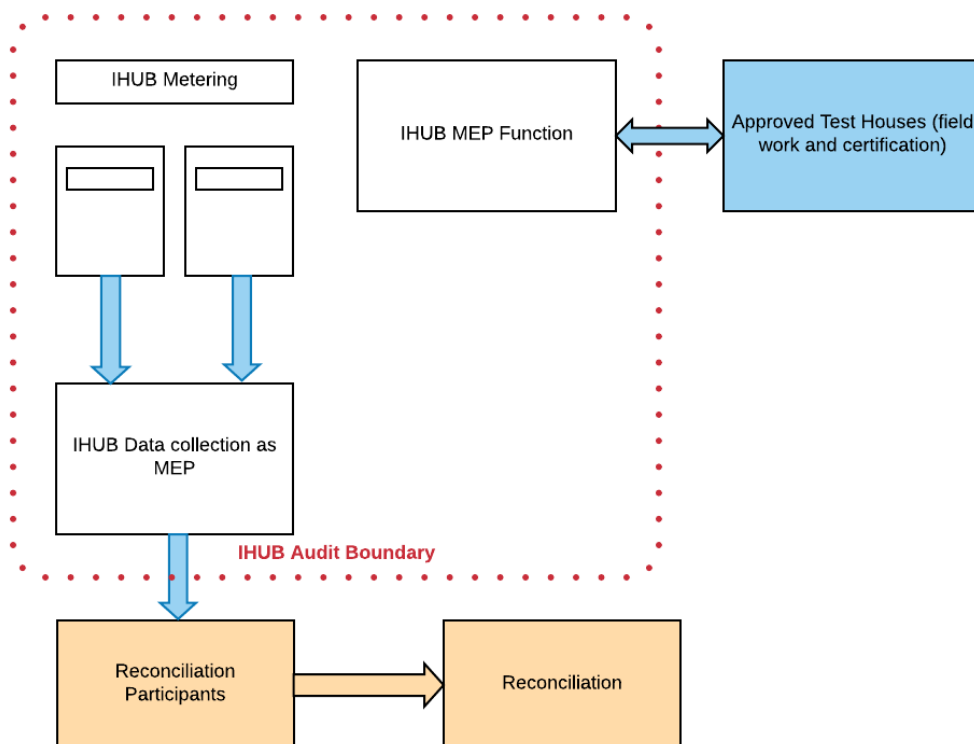
1.8. Authorisation Received

A letter of authorisation was not required.

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 diagram below shows the audit boundary.



1.10. Summary of previous audit

The previous audit was conducted by Steve Woods of Veritek in October 2018. The status of the issues raised is recorded in the tables below.

NON-COMPLIANCES

Subject	Section	Clause	Non- Compliance	Status
Distributor agreements	4.9	Clauses 10.34(2), (2A) and (3)	Agreements not in place with Distributors regarding design of metering installations.	Cleared
Registry updates	4.10	Clause 3 of Schedule 11.4	Some backdated corrections.	Still existing
MEP acceptance	6.1	Clause 1(1) of Schedule 11.4	One late acceptance.	Cleared
Registry validation	6.3	6 of Schedule 11.4	Complete registry validation not conducted.	Still existing

RECOMMENDATIONS

Subject	Section	Clause	Description	Status
Design and accuracy	4.3	4(1) of Schedule 10.7	Ensure ATHs uncertainty calculation processes are compliant and documentation is accurate before issuing Category 2 recertification work.	Partially resolved.
Accurate and complete records	5.1	4(1)(a) and (b) of Schedule 10.6, and Table 1, Schedule 11.4	Ensure ATHs improve the clarity within their Category 2 certification reports, as recommended in their ATH audit reports.	Still existing
Burden	7.5	30(1) and 31(2) of Schedule 10.7	Ensure ATHs are adding burden using good industry practice and they are not compromising compliance with any other clauses.	Still existing

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 the location of the services access interface and how this is recorded for AMI metering.

Audit commentary

The services access interface is located remotely for AMI metering and is recorded in the metering installation certification reports by the ATH. The workflow system contains a field for recording the services access interface. The location of the services access interface was recorded accurately for 20 certification reports checked during the audit.

Audit outcome

Compliant

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

Code reference

Clause 10.50(1) to (3)

Code related audit information

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

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

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

Audit observation

I checked whether any disputes had been dealt with in relation to this audit.

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

IntelliHUB uses the IHUB code for all information.

Audit commentary

IntelliHUB uses the IHUB code for all information.

Audit outcome

Compliant

2.4. Communication Equipment Compatibility (Clause 40 Schedule 10.7)

Code reference

Clause 40 Schedule 10.7

Code related audit information

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

Audit observation

I checked that the ATHs have a process 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.

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

I checked the registry and workflow validation processes and the registry metering records in the PR255 report.

Audit commentary

IntelliHUB has a suite of validation reports to ensure compulsory fields are populated and that there are no errors within the data. Registry accuracy was found to be of a high standard, and I consider compliance has been achieved with the requirement to take all practicable steps to ensure information accuracy. Some discrepancies were identified during the audit, and IntelliHUB corrected these immediately.

I checked the data collection process to ensure the revision process included all actual data. When data is missing and is subsequently obtained, it is sent to the relevant retailer, regardless of how old the data is.

Audit outcome

Compliant

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

This clause was discussed during the audit and it has been discussed at an industry level.

Audit commentary

The clause does not have any conditions and states: *“The gaining MEP must pay the losing MEP a proportion of the costs within 20 business days of assuming responsibility”*. If the industry uses this clause as it is written, there could be a risk for IntelliHUB that they could receive invoices from losing MEPs.

IntelliHUB has a written assurance from the Authority that they won't have to pay any invoices they receive if the losing MEP's components are removed.

IntelliHUB has not received any invoices from losing MEPs.

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 report for the audit period to ensure updates were within 15 business days.

Audit commentary

The table below shows that 99.92% of updates were within 15 business days. 10 late updates occurred, and these were due to late notification from ATHs, mostly due to PDAs not synchronising. This matter is now resolved, and Wells have controls in place to identify synchronisation issues.

Year	ICPs Switched	Notified to registry within 15 days	Percentage compliant	Average days
2018	1,306	1,306	100%	0
2019	13,236	13,226	99.92%	2

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.2 With: Clause 2 of Schedule 11.4 From: 01-Oct-18 To: 14-Jun-19	10 of 13,236 registry updates late. Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as strong because updates are automated, and the process mitigates risk to an acceptable level. 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
IHUB have strong controls in place and ensure the quality of data is checked and validated prior to upload to the Registry. IHUB will continue to maintain a high level of compliance for this clause.		On-going	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
On average IHUB update metering records within 2 business days and are 99.92% compliant overall. We consider this to be of high standards and will continue to work with ATH's to ensure data is returned within our required timeframes. IHUB are well aware that the target is not 15 business days and will look to propose a performance measure to consider 98% of updates are done within 2 business days.		On-going	

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

IntelliHUB confirmed metering records will be provided as required. No requests have been made.

Audit commentary

IntelliHUB confirmed metering records will be provided as required.

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

IntelliHUB intends to retain records indefinitely.

Audit commentary

IntelliHUB intends to retain records indefinitely. They have ceased to be responsible for four metering installations and they were able to demonstrate that the records were still available.

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

IntelliHUB have their own design reports, which I checked during the audit.

Audit commentary

The design reports were reviewed and confirmed as compliant.

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

IntelliHUB has used Wells and Delta ATHs and both have appropriate scopes of approval.

Audit commentary

IntelliHUB has used Wells and Delta ATHs and both have appropriate scopes of approval.

Audit outcome

Compliant

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

Code reference

Clause 4(1) of Schedule 10.7

Code related audit information

The MEP must ensure:

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

Audit observation

I checked that the design will ensure errors stipulated in Table 1 will not be exceeded.

I also checked the compliance of ATHs in relation to this clause.

Audit commentary

The design report (including configuration scheme) confirms the errors stipulated in Table 1 will not be exceeded. The data from the devices contain three decimal places.

Delta and Wells have had a history of non-compliance in relation to this clause, specifically where Category 2 comparative certification is conducted, and uncertainty calculations did not consider all relevant sources of error.

The Wells ATH certification procedure now includes consideration of temperature and the total error is more clearly recorded. The certification report records the temperature and records the “Combined Absolute Error and Uncertainty” percentage. Whilst the calculation theory appears sound, some examples do not appear to be calculating correctly. ICP 0000026334EAF3D was certified using the comparative method. I’ve recalculated the total error and uncertainty and the results are shown in the table below, along with the result from the Wells certification report.

Input description	Value	Comments
Meter register kWh	5.4	End read minus start read
Working standard kWh	5.525	From Hioki working standard over 902 seconds
Difference between the meter and working standard	0.125	Meter recording less than working standard
Percentage error (excluding uncertainty)	-2.26%	0.125/5.525 expressed as a percentage
Hioki error and uncertainty	0.2764	From the certification report. Calculated by Wells from the Hioki calibration report. Excluding temperature calculation
On-site temperature	11.1 degrees	From the certification report

Temperature coefficient from Hioki specifications	0.03/degree	
Difference in temperature between reference temperature and on-site temperature	10.9	22 minus 11.1
Uncertainty due to temperature	0.327	10.9×0.03
Total uncertainty	0.43	RSS of the Hioki error and uncertainty and the uncertainty due to temperature.
Total installation error	-2.69%	-2.26 minus 0.43. The uncertainty is expressed as a +/- and must be subtracted from the error if the error is negative. The error range is -1.83 to -2.69
Wells recorded error	2.32%	I'm not able to determine where the calculation is incorrect in the Wells certification report.

It appears the Wells calculation is not operating correctly, and it also appears the total error is greater than 2.5%. Nine Category 2 installations were certified by Wells and it appears the errors are not recorded correctly for all of them. The ICP above is the only one with an error greater than 2.5%.

The Delta ATH has recently commenced using the MSL calculator for Category 2 comparative certification. This calculator has temperature and working standard errors included in the inputs. These calculations are now compliant.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 4.3 With: Clause 4(1) of Schedule 10.7 From: 15-May-19 To: 14-Jul-19	Error and uncertainty calculations incorrect in nine Wells certification reports. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	Rationale for audit risk rating
Low	The controls are recorded as moderate because IntelliHUB did check the Wells audit report and it recorded compliance for this requirement. It appears that the calculation is not operating as it was when Wells was audited. The impact on settlement and participants is minor because only one installation had an error greater than 2.5%, therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
<p>IHUB are working with WELLS to address the issues identified in the Audit. As mentioned by the Auditor, prior to engagement with WELLS for Category 2 sites, IHUB checked audit reports to ensure compliance in this area.</p> <p>WELLS have tried to address Error and uncertainty and have been striving to meet the code requirements. WELLS have endeavoured to include all sources of error and uncertainty and their method of calculation, and calculations based on individual test apparatus (which continued to impact them in this area) however, they believed all outstanding issues have been resolved and identified in their last audit.</p>		<p>Disputed</p> <p>Post audit comment by auditor:</p> <p>Wells emailed a formula for calculation of uncertainty. It was intended that this formula would be used in Con-X. I haven't been able to identify a specific error in this formula, but the result from Con-X for the example above does not match my manual calculation.</p>
Preventative actions taken to ensure no further issues will occur	Completion date	
<p>WELLS have advised that calculations put in place on their end was based on feedback provided by the auditor in April 2019.</p> <p>IHUB will request that WELLS make contact with the Auditor to discuss findings found in this audit.</p> <p>Action status=Disputed and unable to advise a completion date to resolve issue or to take preventative action as WELLS latest audit report confirmed 'compliance' in this area.</p>		

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

IntelliHUB will not deal with higher category metering and it's unlikely they will deal with any installations with subtraction.

Audit commentary

IntelliHUB will not deal with higher category metering and it's unlikely they will deal with any installations with subtraction. None were identified.

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

IntelliHUB will not deal with higher category metering.

Audit commentary

IntelliHUB will not deal with higher category metering. None were identified during the audit.

Audit outcome

Not applicable

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 will not deal with NSP metering.

Audit commentary

IntelliHUB will not deal with 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 will not deal with Grid metering.

Audit commentary

IntelliHUB will not deal with 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

Wells and Delta both have compliant practices in relation to this clause, which results in compliance for IntelliHUB.

Audit commentary

Wells and Delta both have compliant practices in relation to this clause, which results in compliance for IntelliHUB.

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

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

Audit observation

The installation of AMI constitutes a change in design. I checked that consultation had occurred and agreement reached with relevant distributors and traders.

Certification and therefore design changes have only occurred for one trader and an agreement is in place.

IntelliHUB operates on 18 networks.

Audit commentary

Certification and therefore design changes have only occurred for one trader and an agreement is in place.

IntelliHUB operates on 18 networks and all of these networks have been liaised with regarding changes to design. There have not been any objections.

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 examined the event detail report for the audit period to determine compliance.

Audit commentary

30 of 152 corrections were made late to the registry. There were various reasons for the corrections, including changes to the period of availability and changes to settlement indicators.

The table below summarises compliance.

Event type	Year	Total	Total within 10 days	% Compliant	Average days
Changes	2019	152	122	80.26%	6
New connection	2019	0	N/A	N/A	N/A

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 4.10 With: Clause 3 of Schedule 11.4 From: 01-Oct-18 To: 14-Jun-19	Some backdated corrections. Potential impact: Low Actual impact: None Audit history: Once Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as strong because there is robust exception validation in place and corrections are made as soon as they are discovered. There was no impact on other participants or on settlement; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
IHUB has a suite of validation rules and checks to ensure compulsory fields are populated and that there are no errors within the data. IHUB will continue to work with Networks to ensure we have the correct information at hand but when the information is not readily available it is often difficult to find the relevant RCC and POA's per network. IHUB will continue to find the best RCC/POA per network but also want support from the EA to address these issues.		On-going	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Implemented a process solution to ensure compliance is met for change of settlement indicators. Networks should be more accountable for the RCC's/POA's and this information be made available on the EA website.		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

The AMI metering and data collection system is considered “metering infrastructure”. The design report and type test report were checked to confirm compliance.

Audit commentary

The type test report, design report and this audit report confirm that the system will operate in a compliant 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

It is unlikely that IntelliHUB will be required to approve and burden changes. This is normally limited to HV installations.

Audit commentary

It is unlikely that IntelliHUB will be required to approve and burden changes. This is normally limited to HV installations.

Audit outcome

Not applicable

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

Software, ROM or firmware changes are likely to occur in the future and the Landis + Gyr test laboratory is likely to provide the new versions and the instructions to implement.

Audit commentary

Software, ROM or firmware changes are likely to occur in the future and the Landis + Gyr test laboratory is likely to provide the new versions and the instructions to implement.

Audit outcome

Compliant

4.15. Temporary Energisation (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

IntelliHUB will mostly be engaged in meter replacement in the short term. New connections will be conducted at some point in the future and appropriate processes will be developed, including the management of temporary energisation.

Audit commentary

IntelliHUB will mostly be engaged in meter replacement in the short term. New connections will be conducted at some point in the future and appropriate processes will be developed, including the management of temporary energisation.

Audit outcome

Not applicable

5. METERING RECORDS

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

Code reference

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

Code related audit information

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

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

Audit observation

I checked the Delta and Wells certification records to confirm compliance.

Audit commentary

The Delta certification records are compliant.

Wells has updated their certification records recently, and clarity is better in some areas. One section in the report is still causing confusion. There is a "default" section, which includes the certification date and certification expiry date but also contains default values which some readers of the reports a finding confusing because the default values are different to the actual values. I recommend IntelliHUB requires Wells to remove this section from the report. The section in question is shown below. The yellow highlighted fields should remain, the other ones need to be removed. The certification method is incorrect for some installations. Whilst this is not listed above, I recommend IntelliHUB requires Wells to correct these records.

the job must be turned down & rebooked

SET DEFAULT ANSWERS	Completed: 23/May/2019 12:11:17 p.m.
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	23/05/2019
Cert Method	Selected Component



29 - May - 2019 07:48

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wells

Job Detail Report

Detailed information showing all the information collected including photos and images and any related tasks.



field intelligence

V1.2

ConXReport_JobDetail_PhotosAtBottom_1_1

Expiry Date 23/05/2029

----- Contract Specific Defaults -----

Category	Cat 1
Asset Owner	
Meter ATH	
Installation Type	

Clause	Recommendation	Audited party comment	Remedial action
4(1)(a) and (b) of Schedule 10.6	<p>Require Wells to remove “default” fields from certification reports.</p> <p>Require Wells to correct certification method from Selected Component to Comparative in some certification reports.</p>	<p>As a recommendation by the Auditor IHUB have addressed concerns with WELLS.</p> <p>“Remove Default fields” WELLS have confirmed that this item was also raised during their Audit and is pending the attention of their development team to see what can be done with their systems to address the issue.</p> <p>“Certification method used” WELLS have addressed the issue on their end and will ensure technicians select the correct method but also quality checked by back office before submitting onto IHUB.</p>	Identified

Audit outcome

Compliant

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

Code reference

Clause 4(2) of Schedule 10.6

Code related audit information

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

Audit observation

IntelliHUB will not need to conduct inspections for several years.

Audit commentary

IntelliHUB will not need to conduct inspections for several years.

Audit outcome

Not applicable

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

IntelliHUB intends to keep records indefinitely.

Audit commentary

IntelliHUB intends to keep records indefinitely. All records are available from the time IntelliHUB commenced operating as an MEP.

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 will supply records as required. There were no examples to examine.

Audit commentary

IntelliHUB will supply records as required. There were no 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 event detail report for the period 01/10/18 to 14/06/19 to check for any late acceptances.

Audit commentary

All responses were sent on time.

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

Registry updates are automated.

I checked all records to identify potential errors.

I checked how the AMI communicating/non-communicating field is intended to be managed.

Audit commentary

Register content codes and periods of availability are fields which can become inaccurate if they are not closely managed. IntelliHUB prepared information on valid register content codes per network so that incorrect codes can be identified immediately and prior to the registry being populated.

IntelliHUB has a suite of validations and they are also regularly running the MEP audit tool (access database built to identify discrepancies within data) to ensure data accuracy.

I found a small number of errors, as recorded in the table below.

Quantity	Issue	Comments
9	UN with a control device	The control device is unused for 3 ICPs It's possible 2 should be S20 It's possible 1 could be INEM 3 are for lighting based on streetlight on/off times. Further investigation is required to determine the correct RCC and POA.
1	Incorrect certification date	Now resolved
15	CN 11 or 13, appear to be NO 11 or 13	

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 6.2</p> <p>With: Clause 7 (1), (2) and (3) of Schedule 11.4</p> <p>From: 01-Oct-18</p> <p>To: 14-Jun-19</p>	<p>Small number of registry discrepancies.</p> <p>Potential impact: Low</p> <p>Actual impact: Low</p> <p>Audit history: None</p> <p>Controls: Strong</p> <p>Breach risk rating: 1</p>		
Audit risk rating	Rationale for audit risk rating		
Low	<p>The controls are recorded as strong because sound validations are in place. The errors found will be added to regular validation processes.</p> <p>There was no impact on other participants or on settlement; therefore, the audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>IHUB have liaised with the EA and participants on numerous occasions to try and determine the best RCC/POA to use.</p> <p>It has been recommended by the EA where a solution is not really suitable but is probably the least confusing option without the creation of a new register content code-to use.</p> <p>The EA also suggested to make an application for a new register content code that better describes the scenario, however, this will take time as consultation and approval will be required.</p> <p>IHUB have tried to determine the best, least confusing option available which may not be the best solution for every participant or Audit as identified in discrepancies above.</p>		On-going	Identified

Preventative actions taken to ensure no further issues will occur	Completion date	
As mentioned in section 4.10; Networks should be more accountable for the RCC's/POA's and this information be made available on the EA website or is it that the MEP should determine these factors based on their metering capability and customer requests as it can be frustrating when trying to find the best solution fit for all participants.	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 checked the data validation processes and results to ensure compliance.

Audit commentary

IntelliHUB has sound validation controls in place to identify data errors, but they are not conducting a complete validation against registry data as required by this clause.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 6.3 With: Clause 6 of Schedule 11.4 From: 01-Oct-18 To: 14-Jul-19	Complete registry validation not conducted. Potential impact: Low Actual impact: Low Audit history: Once Controls: None Breach risk rating: 5
Audit risk rating	Rationale for audit risk rating

Low	<p>The controls for data validation in general are strong but this specific check is not conducted as required by the Code.</p> <p>Errors were not identified by the other checks conducted, therefore the audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
IHUB have sound validation controls in place to identify data errors prior to upload to the Registry. IHUB will continue to validate exceptions by running the MEP audit tool and checking the EDA file to identify discrepancies and resolve within 5 business days.		On-going	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
IHUB are currently working on a solution to cater for this clause and accept non-compliance in this area.		2020	

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:

- the metering installation is modified otherwise than under sub clause 19(3) or 19(6)*
- 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*
- 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*
- 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*
- 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*
- 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*
- 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)*
- 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 all the points above to determine whether certification was cancelled for any installations.

Audit commentary

One issue found was that of low burden being present for eight of nine Category 2 metering installations certified by Wells during the audit period. 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.

Wells has not had confirmation from a Class A ATH that the measuring transformers will not be adversely affected by the low burden. Therefore, in accordance with the Authority's memo, these metering installations are not considered "fit for purpose". This means certification is cancelled, which is recorded as non-compliance in **section 7.1**. All eight installations have current transformers (CTs) manufactured by TWS Energy Controls (TWS). On 21/08/13, TWS supplied a letter to the industry confirming two important points. Firstly, that some CTs have compensated windings and some do not have compensated windings. The extract is below.

Compensated Winding Current Transformers

Depending on the ratio, some of the CTs have what is termed a compensated winding. The effect of the compensated winding is to slightly alter the transformation ratio of the CT in a positive direction. As an example, the actual ratio of a 150/5A CT might be 149.5/5A. The need for the compensated winding arises because the errors of the CT without it would put the CT out of class. The alternative to using a compensated winding is to add extra core material which increases the physical size and cost of the CT.

The second point is that CTs with compensated windings will over-record when under-burdened. 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.

The other issue found is that ICP 0000026334EAF3D has an error greater than 2.5%.

IntelliHUB became aware of these issues during the audit, which was conducted on 11/07/19, therefore they have until 25/07/19 to update the registry with the certification cancellation dates.

Audit outcome

Compliant

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 checked the PR255 report to ensure all ICPs had current certification and I checked **section 6.4** for ICPs with cancelled certification.

Audit commentary

ICP 1000546015PC4AB has a certification expiry date of 27/12/18.

ICP 0000026334EAF3D has an error greater than 2.5% and certification is therefore cancelled.

As recorded in **section 6.4**, eight ICPs are recorded as having cancelled certification because low burden was not addressed. The ICPs are shown in the table below.

ICP	ATH	Cert date	Burden (VA)	Error (%)
0000010401HR4E9	Wells	23/05/2019	0.29	0.42
0000014675HRC39	Wells	21/05/2019	0.33	1.21
0000026334EAF3D	Wells	21/05/2019	0.43	-2.32
0000200111CT56C	Wells	15/05/2019	0.2	2.13
0000376807TU207	Wells	24/05/2019	0.34	1.45
0000484460CE119	Wells	20/05/2019	1.02	0.44
0000969074TU9BF	Wells	22/05/2019	0.33	0.81
0003752237TG278	Wells	24/05/2019	0.39	1.74

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 7.1</p> <p>With: Clause 10.38 (a)</p> <p>From: 27-Dec-18</p> <p>To: 05-Jul-19</p>	<p>Certification expired for ICP 1000546015PC4AB.</p> <p>Certification cancelled for ICP 0000026334EAF3D due to an error greater than 2.5%.</p> <p>Certification cancelled for eight ICPs with low burden.</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
<p>ICP 1000546015PC4AB certification has been cancelled as the Relay is bridged and IHUB are working with the Trader to raise a Service Order to address the bridging of relay.</p> <p>ICP 0000026334EAF3D – IHUB have addressed with WELLS who will need to discuss calculations used with the auditor as identified in section 4.3; Clause 4(1) of Schedule 10.7.</p> <p>IHUB will work with WELLS to find a solution identified in the audit to address burden. The list of icps used for the IHUB CAT2 trial have been provided to WELLS for comment.</p>		On-going	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>Error and Uncertainty calculations addressed with WELLS per section 6.4.</p> <p>Low Burden raised with WELLS and IHUB will work closely with WELLS to address the non-compliance identified through our CAT2 trial (of 9 icps). IHUB will also work with WELLS to see if the solution of the standalone burden box would help address this non-compliance and we have also provided WELLS with a copy of the TWS letter addressed to the industry confirming two important points.</p> <p>We have also pointed out to Wells that not all TWS CT's are considered as remaining within class at low burden levels – only non-compensated models.</p>		On-going	

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 IntelliHUB's approach to compliance with this clause.

Audit commentary

IntelliHUB has commenced an audit program of ATH activities. ATHs are required to audit 3% of all installations and IntelliHUB has commenced auditing a further 2%. The audit program also includes "live" audits whilst the work is being conducted. The audit results are generally positive and confirm safety and compliance.

IntelliHUB has ensured meters have a decimal point so that load tests and register advance tests can be conducted efficiently.

IntelliHUB has only issued nine comparative certification jobs to Wells as a pilot and they are not reviewing the results. The audit report has commented on some non-compliant practices by Wells. IntelliHUB intends to raise these with Wells and they will strengthen their controls to ensure issues are found and resolved as soon as possible.

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 type test reports to confirm compliance.

Audit commentary

Type test reports confirm compliance.

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

It is unlikely that burden will change for any Category 2 metering installations. I took the opportunity to discuss the matter of low burden as part of this section.

Audit commentary

The matter of low burden was discussed. I recommended to IntelliHUB during the previous audit that they ensure ATHs consider burden when they are certifying Category 2 metering installations. Delta and Wells both have compliant processes, but I had a further recommendation which is that IntelliHUB checks the practices used to ensure they are consistent with good industry practice and that the integrity of the test facility is not compromised. It had recently come to my attention that ATHs were removing one of the test facility terminals or a test facility link to install burden resistors, which meant the test facility could be used to test current and was therefore not compliant. IntelliHUB raised this issue with Wells and it appears the practice of compromising the test facility has ceased.

Whilst Wells has a compliant process, the process was not used for eight installations where low burden was present. This discussed in **sections 6.4** and **7.1**.

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 whether there were any installations certified as a lower category.

Audit commentary

There were no examples of ICPs certified as a lower category.

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 for examples of insufficient load certification.

Audit commentary

There were no examples of insufficient load certification. It is intended that ATHs will carry sufficient load to carry out certification testing at the time of certification.

Audit outcome

Compliant

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

Code reference

Clause 14(6) of Schedule 10.7

Code related audit information

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

- *the metering installation certification is automatically revoked:*
- *the certifying ATH must advise the MEP of the cancellation within 1 business day:*
- *the MEP must follow the procedure for handling faulty metering installations (clause 10.43 - 10.48).*

Audit observation

I checked for examples of insufficient load certification.

Audit commentary

There were no examples of insufficient load certification. It is intended that ATHs will carry sufficient load to carry out certification testing at the time of certification.

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

- *advise the market administrator, by no later than 10 business days after the date of certification of the metering installation, of the details in clause 32(2)(a) of Schedule 10.7*
- *respond, within 5 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

IntelliHUB does not intend to apply alternative certification.

Audit commentary

IntelliHUB does not intend to apply alternative certification. There were no examples of this occurring.

Audit outcome

Not applicable

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

There will not be any metering installations with timeclocks relevant to this clause.

Audit commentary

There will not be any metering installations with timeclocks relevant to this clause.

Audit outcome

Not applicable

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

Code reference

Clause 35 of Schedule 10.7

Code related audit information

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

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

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

Audit observation

IntelliHUB provided process documentation which is compliant with this clause. I also checked two recent examples of bridged relays.

Audit commentary

IntelliHUB provided process documentation which is compliant with this clause.

I checked two recent examples and the notification occurred within 10 business days.

The control function in the integrated control devices can revert to a pre-programmed timetable, so if the control device does not receive a signal it continues to operate to the program. This should eliminate the need to bridge control devices for IntelliHUB devices. If the device reverts to the timetable this is recorded as an “event”.

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 3 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 whether any notification had been provided.

Audit commentary

IntelliHUB has not received notification in relation to this clause.

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

Statistical sampling will not be required for the next 14 years.

Audit commentary

Statistical sampling will not be required for the next 14 years.

Audit outcome

Not applicable

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

IntelliHUB demonstrated the automated registry loading process and the file format includes the compensation factor.

Audit commentary

IntelliHUB demonstrated the automated registry loading process and the file format includes the compensation factor.

IntelliHUB also conducts a technical review of all Category 2 certification records to ensure compensation factors are correct.

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 20 metering installations to confirm compliance.

Audit commentary

All meters were certified in accordance with this clause.

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 IntelliHUB's approach to CT certification.

Audit commentary

IntelliHUB intends to purchase pre-certified CTs from TWS for any installations where CTs need to be installed or replaced. No selected component certification has yet occurred.

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 20 metering installations to confirm compliance.

Audit commentary

All data storage devices were certified in accordance with this clause.

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

IntelliHUB is aware of this clause and monitors the ATH approval details on the website.

Audit commentary

IntelliHUB is aware of this clause and monitors the ATH approval details on the website. All relevant ATHs have current 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

This clause is not relevant to IntelliHUB.

Audit commentary

This clause is not relevant to IntelliHUB.

Audit outcome

Not applicable

8. INSPECTION OF METERING INSTALLATIONS

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

Code reference

Clause 45 of Schedule 10.7

Code related audit information

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

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

Before a sample inspection process can be carried out, the MEP must submit a documented process for selecting the sample to the Electricity Authority, at least 2 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

Inspections will not be required for many years.

Audit commentary

Inspections will not be required for many years.

Audit outcome

Not applicable

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

Inspections will not be required for many years.

Audit commentary

Inspections will not be required for many years.

Audit outcome

Not applicable

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

Code reference

Clause 44(5) of Schedule 10.7

Code related audit information

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

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

Audit observation

Inspections will not be required for many years.

Audit commentary

Inspections will not be required for many years.

Audit outcome

Not applicable

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

IntelliHUB provided process documentation which is compliant with this clause.

Audit commentary

IntelliHUB provided process documentation which is compliant with this clause. There were no examples to examine.

Audit outcome

Compliant

9. PROCESS FOR HANDLING FAULTY METERING INSTALLATIONS

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

Code reference

Clause 10.43(4) and (5)

Code related audit information

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

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

Audit observation

IntelliHUB provided process documentation which is compliant with this clause.

Audit commentary

IntelliHUB provided process documentation which is compliant with this clause. There were no examples to examine.

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 5 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

IntelliHUB provided process documentation which is compliant with this clause.

Audit commentary

IntelliHUB provided process documentation which is compliant with this clause. There were no examples to examine.

Audit outcome

Not applicable

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

IntelliHUB provided process documentation which is compliant with this clause.

Audit commentary

IntelliHUB provided process documentation which is compliant with this clause. There were no examples to examine.

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

IntelliHUB will provide data as required by this clause.

Audit commentary

IntelliHUB will provide data as required by this clause. There were no examples of data requests.

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

IntelliHUB will provide data in compliance with this clause.

Audit commentary

IntelliHUB will provide data as required by this clause. There were no examples of data requests.

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

IntelliHUB will provide access as required.

Audit commentary

IntelliHUB will provide access as required. There were no examples of requests for access to metering installations.

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

IntelliHUB will provide access as required.

Audit commentary

IntelliHUB will provide access as required. There were no examples of requests for access to metering installations.

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

I conducted a walkthrough of the data collection and provision process and system via a skype call to IntelliHUB in Australia to confirm compliance with the Code.

Audit commentary

The following findings are relevant to compliance with these clauses.

- The maximum interrogation cycle is 60 days. Interrogation occurs four times per day and the intended process is that the registry is changed to "AMI non-communicating" after 14 days if data is not successfully obtained. A relevant point to note is that "interrogation" does not occur in the traditional sense. The devices are programmed to "push" data to the head end. There were 29 ICPs without a successful interrogation within the 60-day period and 23 of these had not had a successful interrogation since installation.

- The clock synchronisation setting is 5 seconds to 10 seconds. Any clock errors between these times are adjusted automatically. Any errors outside these times are adjusted by a separate schedule. Clock errors over 10 seconds are reported to retailers. The reporting was demonstrated.
- The event log download process was demonstrated, and I confirmed the event log contains the appropriate events to achieve compliance. The event information is transferred via SFTP and is in a format agreed with retailers. A list was provided with 84 individual events and a selection of these have been deemed relevant and are reported to retailers. The relevant events can be summarised as follows:
 - tamper (initially filtered by IntelliHUB to remove false records);
 - phase failure;
 - memory failure;
 - temperature alarm;
 - reverse power (detecting unexpected generation flow);
 - load side voltage detection (to detect bridging of remotely disconnected devices);
 - clock synchronisation;
 - time synchronisation failure (because outside the threshold);
 - re-programming; and
 - manual download.
- Data will be kept for at least 48 months.
- Data is transmitted securely by SFTP and is only accessible to authorised persons with appropriate passwords.
- The interrogation log contains all relevant details as required by the Code.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 10.5 With: Clause 8(2)(a) of Schedule 10.6 From: 01-Oct-18 To: 15-Jul-19	Maximum interrogation cycle exceeded for 29 ICPs. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact on settlement and participants is minor because manual meter reading processes are in place and submission is NHH, therefore the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status

IHUB advise the Trader in all cases when a communications issues have been identified. IHUB will wait for a Service Order before attending site to rectify/resolve the communications issue. In the cases as identified through the Audit, IHUB will follow up with the Trader to see if site visits can be organized and where the comms issue cannot be rectified/resolved, IHUB will update the AMI Non Comms flag to Y.	November 2019	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
IHUB will adopt an internal process already available to cater for this clause going forward.	August 2019	

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 conducted a walkthrough of the data security processes.

Audit commentary

Data is transmitted securely by SFTP and is only accessible to authorised persons with appropriate passwords.

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 conducted a walkthrough of the data collection and provision process and system via a skype call to IntelliHUB in Australia to confirm compliance with the Code.

Audit commentary

The clock synchronisation setting is 5 seconds to 10 seconds.

Any clock errors between these times are adjusted automatically. Any errors outside these times are adjusted by a separate schedule. Clock errors over 10 seconds are reported to retailers.

Time synchronisation will not occur automatically across the boundary of a trading period. This is to ensure all time changes occur within a trading period, so data is not lost. For example, if the data storage device time is 13:01:20 and the device is “fast” by 100 seconds (a very unlikely occurrence) the time will not be changed back to 12:59:50 because if it was the kWh from 13:00:00 to 13:01:20 would be lost. Any time changes over a boundary must be made manually and normal practice is to conduct the change within the trading period.

I used the most recent month as a sample and there were no clock errors over 30 seconds.

Audit outcome

Compliant

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 conducted a walkthrough of the data collection and provision process and system via a skype call to IntelliHUB in Australia to confirm compliance with the Code.

Audit commentary

- The event log download process was demonstrated, and I confirmed the event log contains the appropriate events to achieve compliance. The event information is transferred via SFTP and is in a format agreed with retailers. The relevant events can be summarised as follows:
 - tamper (initially filtered by IntelliHUB to remove false records);
 - phase failure;
 - memory failure;
 - temperature alarm;
 - reverse power (detecting unexpected generation flow);
 - load side voltage detection (to detect bridging of remotely disconnected devices);
 - clock synchronisation;
 - time synchronisation failure (because outside the threshold);

- re-programming; and
- manual download.

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

I conducted a walkthrough of the data collection and provision process and system via a skype call to IntelliHUB in Australia to confirm compliance with the Code.

Audit commentary

Sum-check validation occurs daily and is based on midnight to midnight NZST. The "fail" setting is 1 kWh and all trading periods must be present for a pass to occur. Any failures are investigated to determine the cause. 501 examples were present from the month of June 2019. The most common cause is comms issues leading to some missing intervals. There were no system or process failures identified by the sum-check process.

Audit outcome

Compliant

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

Code reference

Clause 10.48(2),(3)

Code related audit information

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

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

Audit observation

I conducted a walkthrough of the data collection and provision process and system via a skype call to IntelliHUB in Australia to confirm compliance with the Code.

Audit commentary

Correction and estimation processes are the same and are called "substitution". A document was provided detailing the "Metering Data Validation, Substitution and Estimation" procedures, which are regulated in Australia. The same processes is used for NZ retailers. In summary the following principles apply:

- data validation includes all of the requirements of clause 17 of schedule 15.2, including:
 - checks for missing data;
 - checks for invalid dates and times;
 - checks of unexpected zero values;
 - comparison with expected or previous flow patterns;
 - comparison of meter readings with data on any data storage device registers that are available; and
 - a review of meter and data storage device event log
- estimation (substitution) processes include all of the requirements of clauses 15 and 19 of schedule 15.2.

The validation and substitution processes are considered robust and comprehensive. The requirements of Part 15 are outside the scope of this audit because they are the responsibility of Retailers, which means the contents of this section will need to be included in Retailer's next Reconciliation Participant audit report. If these services are provided to any other Reconciliation Participants, the audit for these parties will need to consider the compliance of these processes.

Any changes from NHH to HHR will be conducted at midnight to ensure the registry update and reconciliation processes are not adversely affected. There were no examples to examine.

Audit outcome

Compliant

CONCLUSION

IntelliHUB uses customised systems already existing and used in the Australian market. The relevant systems are workflow, asset management and AMI data collection. The relevant systems interface with the registry.

This audit found seven non-compliances. Four relate to the timeliness and accuracy of registry population. Two issues relate to non-compliant Approved Test House practices. Eight Category 2 installations were recertified without low burden being addressed, which means certification is cancelled. The error and uncertainty calculations conducted by Wells appear to have an error. The formula provided by Wells was checked and the source of the error is not immediately apparent, but the result does not match the result I independently calculated. One ICP seems to have an error greater than 2.5%.

I've made one recommendation in relation to clarity of certification reports.

IntelliHUB has grown considerably since the last audit, but compliance is still generally high. Fortunately, IntelliHUB has only dealt with a small number of Category 2 installations as a pilot, so there is now time to resolve the issues found before more recertification activity occurs.

PARTICIPANT RESPONSE

As per our responsibility as an industry participant to the Code, IntelliHUB will work towards correcting the non-compliances identified in this report.

As IntelliHUB continue to grow, we will not compromise the level of compliance already achieved and will continue to strive towards better compliance levels where possible.

IntelliHUB proactively work with Participants to achieve a better percentage but non-compliance will always exist where it is required that 100% of records are to be updated within a given 'time period'

Commentary can be found in the following sections;

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

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

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

IntelliHUB proposed performance measure could be utilized to help MEP's achieve an acceptable level of compliance for these areas.

Recommendations made by the auditor have been addressed and comments can be found in the following section;

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

IntelliHUB have identified through this audit that it is difficult to foresee pragmatic ways for MEPs to deliver on all its obligations in the Code; especially where compliance had been previously addressed and resolved in ATH audits; refer to comments in the following sections;

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

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

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

For section 6.4 IntelliHUB support the need for clarity in the rules to help address this clause for all Participants and eagerly wait for the EA to send out requests for nominations to participate.