ELECTRICITY INDUSTRY PARTICIPATION CODE
RECONCILIATION PARTICIPANT AUDIT REPORT

For

Pulse Energy Alliance LP

Prepared by: Tara Gannon

Date audit commenced: 13 September 2017

Date audit report completed: 25 September 2017

Audit report due date: 01-Oct-17

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EXECUTIVE SUMMARY

This Electricity Industry Participation Code Reconciliation Participant audit was performed at the request of **Pulse Energy Alliance LP (Pulse),** to support their application for renewal of certification in accordance with clauses 5 and 7 of schedule 15.1.

The audit was conducted in accordance with the Guideline for Reconciliation Participant Audits V7.1.

In the areas of registry management and switching there has been some improvement since the 2016 audit, with an overall reduction in the number of late files processed. There have also been some improvements in reconciliation processes with the implementation of Cobra. Some issues raised in the previous audit have been cleared, including:

- missing submission information for entire NSPs in some revisions
- unnecessary creation of forward estimate for vacant ICPs
- incorrect unmetered load.

The audit found 30 non-compliance issues, one recommendation is repeated from the previous audit and one issue was identified. Pulse are aware of their compliance obligations. It appears that issues with late data and correction of errors have been impacted by resourcing issues and staff changes during the audit period.

Some of the matters raised have led to incorrect information being provided to the Reconciliation Manager, including some corrections which had not been processed.

The next audit frequency table indicates that the next audit be due in three months. Based on Pulse's final score of 56, and taking into consideration the strength of existing controls, and that actions to improve compliance have been identified and are underway in most cases (including an upgrade to Gentrack 4), I recommend that the next audit be due in 10 months. This will allow sufficient time to complete the Gentrack upgrade and process improvements, and demonstrate their effectiveness. If the audit is sooner, there may not be sufficient history to allow the improved processes to be assessed thoroughly.

The matters identified are shown in the tables below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Relevant information	2.1	10.6, 11.2 and 15.2	Discrepancies between Gentrack and the Registry.	Moderate	Low	2	Identified
Audit trails	2.4	18, 21, 22(1) and 22(2) Schedule 15.2	HHR audit trails do not contain all the required information, and are not stored with the meter data.	Moderate	Low	2	Investigating
Registry updates to active	3.2	11.7(2)	365 late registry updates to active.	Weak	Low	3	Identified
Registry updates to inactive	3.3	10 Schedule 11.1	121 late registry updates to inactive.	Moderate	Low	2	Identified
MEP nomination	3.4	11.18	The MEP was nominated later than five business days after becoming active for 44 ICPs.	Moderate	Low	2	Identified
Registry updates to active	3.5	9 Schedule 11.1	44 late updates to active.	Weak	Low	3	Investigating
Changes to unmetered load	3.7	9(1)(f) of Schedule 11.1	One ICP has incorrect unmetered load information recorded on the registry.	Moderate	Low	2	Identified

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Management of active status	3.8	17 Schedule 11.1	One new connection was recorded with an opening read date one day after the new connection date. Three new connections identified in the 2016 audit still have an incorrect active date recorded on the registry.	Strong	Low	1	Investigating
Management of inactive status	19 Schedule 11.1	3.9	Five ICPs with consumption while disconnected did not have their status updated to active.	Moderate	Low	2	Identified
Losing trader response – transfer switch	3 and 4 Schedule 11.3	4.2	Three incorrect AN response codes were applied.	Moderate	Low	2	Identified
Losing trader provides final information – transfer switch	5 Schedule 11.3	4.3	One late CS file. Two CS files contained readings for incorrect dates.	Moderate	Low	2	Investigating
Read change for transfer switch	6(1) and 6A Schedule 11.3	4.4	Ten late RR files for transfer switches.	Strong	Low	1	Investigating
Gaining trader read change	6(2) and (3) Schedule 11.3	4.5	One RR request was rejected, when it should have been accepted.	Strong	Low	1	Identified

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Losing trader provides final information – switch move	10(1) Schedule 11.3	4.8	Two incorrect AN response codes were applied.	Moderate	Low	2	Identified
Losing trader provides date – switch move	10(2) Schedule 11.3 (2)	4.9	Incorrect dates were recorded in two AN files.	Strong	Low	1	Identified
Losing trader provides final information – switch move	12 Schedule 11.3	4.10	10 late CS files for switch moves.	Strong	Low	1	Investigating
Read change for switch move	12 Schedule 11.3	4.11	13 late RR files for switch moves.	Strong	Low	1	Investigating
Switch withdrawals	17 and 18 Schedule 11.3	4.15	11 backdated NW requests. One incorrect NW code.	Strong	Low	1	Identified
Electricity conveyed	10.13 and clause 15.2	6.1	Energy is not metered and quantified according to the code where meters are bridged.	Moderate	Low	2	Identified
Readings during period of supply	7(1) and (2) Schedule 15.2	6.8	Some ICPs were not read during the period of supply.	Weak	Low	3	Investigating

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Readings within 12 months	8(1) and (2) Schedule 15.2	6.9	For three ICPs without an actual read for 12 months, exceptional circumstances could not be confirmed, and there was insufficient evidence that the best endeavours requirement was met.	Moderate	Low	2	Investigating
NHH corrections	19(1) Schedule 15.2, 15.12	8.1	A correction was processed incorrectly for one defective meter. Corrections were not processed for nine bridged meters, five ICPs with consumption while disconnected, and one ICP with incorrect unmetered load recorded.	Weak	Low	3	Investigating
AMI events	17 Schedule 15.2	9.6	AMI event information not adequately obtained and monitored. No AMI event information is received from Arc or FCLM.	Weak	Low	3	Investigating

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
ICP days	15.6	11.2	Inactive HHR ICP days, and HHR ICPs with installation type "G" (generation) are incorrectly included in the AV110 ICP days report.	Moderate	Low	2	Identified
HHR aggregates	15.8	11.4	HHR aggregates file does not contain electricity supplied information.	Strong	Low	1	Investigating
Creation of submissions	15.2, 15.4 and 15.12 of part 15	12.2	Some incorrect submission information had not been corrected.	Moderate	Low	2	Identified
Allocation of submission information	15.5	12.3	Zero lines were manually deleted from the AV080 February 2016 14 month revision.	Strong	Low	1	Identified
Permanence of meter readings	4 of Schedule 15.2	12.8	Some estimates not replaced at R14.	Moderate	Low	2	Investigating
Forward estimate	6 of Schedule 15.3	12.12	The accuracy threshold was not met for all months and revisions.	Strong	Low	1	Investigating
Meter read frequency reporting	8 & 9 of Schedule 15.2	13.1	One meter reading frequency report was submitted late.	Strong	Low	1	Identified

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Historic estimate proportions	10 of Schedule 15.3	13.4	Historic estimate thresholds were not met for some revisions.	Moderate	Low	2	Investigating
Future Risk Rating						56	

Future risk rating	0	1-3	4-14	16-40	41-55	55+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Recommendation	Description
Electricity conveyed	6.1	Clause 10.24	Review the 14 ICPs with generation recorded by the distributor which do not have injection/export registers, to determine whether injection/export registers are required.

ISSUES

Subject	Section	Recommendation	Description
Historic estimate	12.11	EA to investigate.	The code method to calculate historic estimate does not adequately account for situations where the trader does not enter disconnection or reconnection reads, resulting in an ICP with inactive status for part of a read period. In these cases, if the code method to calculate historic estimate was applied, some of the read period consumption would be apportioned to the inactive days, and not reported.

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

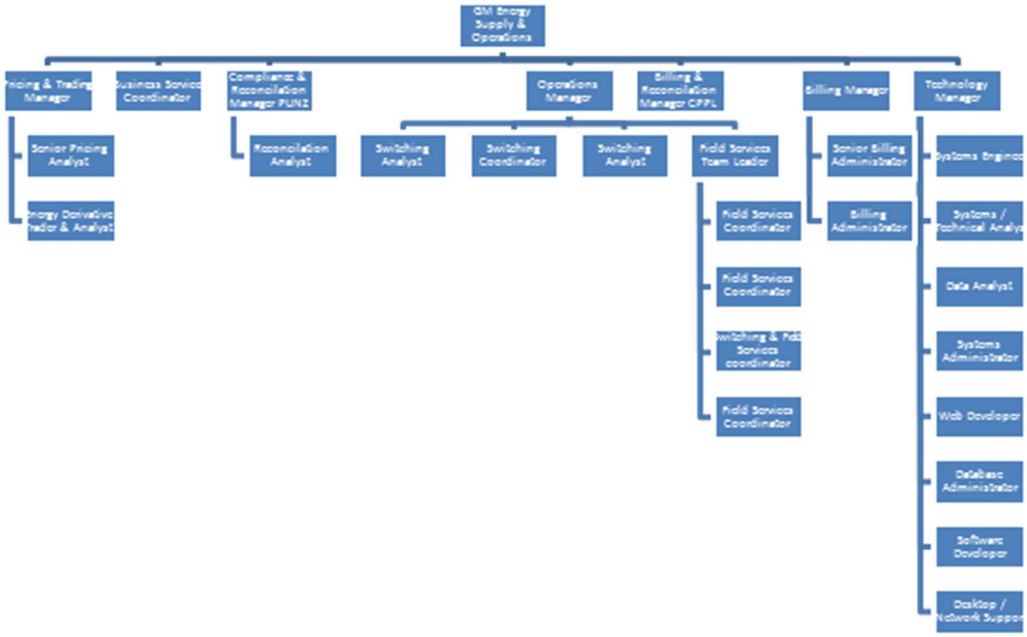
Current code exemptions were reviewed on the Electricity Authority website.

Audit commentary

There are no exemptions in place that are relevant to the scope of this audit.

1.2. Structure of Organisation

Pulse provided their current organisational structure:



1.3. Persons involved in this audit

Auditor:

Tara Gannon

Veritek Limited

Electricity Authority Approved Auditor

Pulse personnel assisting in this audit were:

Name	Title
Malcolm Souness	Reconciliation & Compliance Manager
	Field Services Team Leader
	Switching Analyst
	Reconciliation Analyst
	Billing Manager
	Team Leader Retention
	Technology Manager

1.4. Use of Agents (Clause 15.34)

Code reference

Clause 15.34

Code related audit information

A reconciliation participant who uses an agent

- *remains responsible for the contractors fulfillment of the participants Code obligations*
- *cannot assert that it is not responsible or liable for the obligation due to something the agent has or has not done.*

Audit observation

Use of agents was discussed with Pulse.

Audit commentary

Pulse uses Wells as an agent for NHH data collection, and AMS and EDMI as HHR agents. Their audit reports are attached as an appendix.

ARC Innovations, AMS, FCLM and Metrix provide NHH AMI data as MEPs and are subject to their own audit regime.

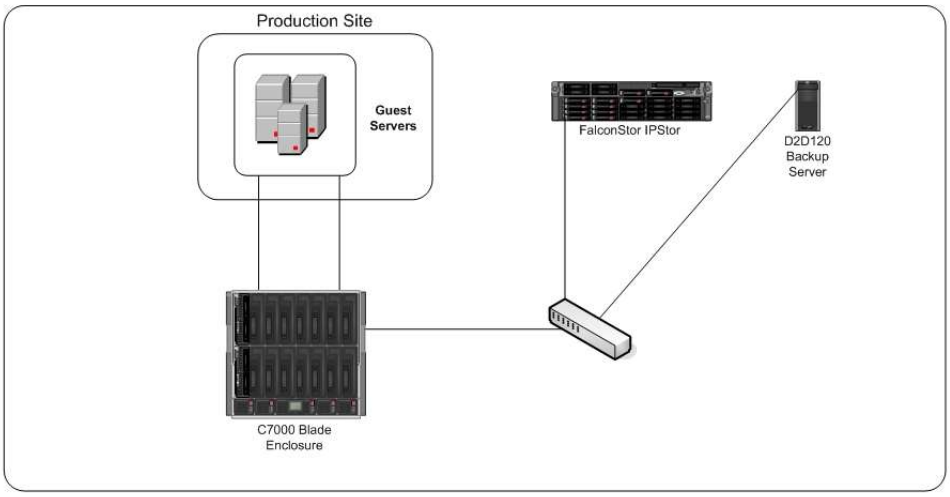
1.5. Hardware and Software

Pulse uses the Gentrack system. Their NHH Reconciliation software is Cobra, and the HHR reconciliation software is IMS.

The backup schedule/rotation consists of four daily backups (Monday to Thursday), four weekly backups (Friday), two monthly backups (last business day) and a quarterly backup (always on a new tape and never re-used). The daily backups are incremental, with all other backups being full. Validation/Integrity is performed on all backups.

The HHR system is as follows:

- the Pulse IMS database is the main data store and is a MySQL database running on a Linux operating system
- hardware details are described in the diagram below and back-up tapes are held off site.



Development Environment:
Servers: C7000 Blade Enclosure HP BL460c (2) with VMWare VI3 Standard
Storage: HP DL360 G5 Server with RHEL5 and FalconStor IPStor
Backup: HP D2D120 w/Ultrim 920 and DP Express
Network: 1 x 24 Port Gigabit Switch, 1 x 24 Port 10/100 Switch

1.6. Breaches or Breach Allegations

There was one breach allegation relating to the scope of this audit during the audit period (1611PEAL1). This related to a switch event date being prior to the date requested by the gaining retailer, and was an alleged breach of Part 11 Schedule 11.3 clause 10 (1) (b) (i). The alleged breach was closed early and no further action was taken.

1.7. ICP Data

Pulse provided a list file for each of their participant codes as at August 2017 by status:

Status	Number of ICPs (2017)	Number of ICPs (2016)	Number of ICPs (2015)	Number of ICPs (2014)
Active (2,0)	63,079	55,430	55,157	51,403
Inactive- new connection in progress (1,12)	0	1	0	3
Inactive - vacant (1,4)	379	437	378	527

Inactive - AMI remote disconnection (1,7)	70	4	0	0
Inactive - de-energised due to meter disconnected (1,8)	16	0	0	0
Inactive - at pole fuse (1,9)	0	0	0	0
Inactive - de-energised at meter box switch (1,10)	1	0	0	0
Inactive- at meter box switch (1,11)	4	0	10	11
Inactive - ready for decommissioning (1,6)	25	27	20	9
Decommissioned (3)	431	349	257	155

The active ICPs from the list file are summarised by meter category in the table below:

Metering Category	2017	2016	2015	2014
1	62,947	55,316	55,038	51,285
2	119	106	99	85
3	1	1	5	6
4	2	2	2	3
5	1	1	4	3
9	2	1	2	9
Blank	7	3	7	13
0	NA	NA	NA	NA

1.8. Authorisation Received

Pulse provided all information required directly.

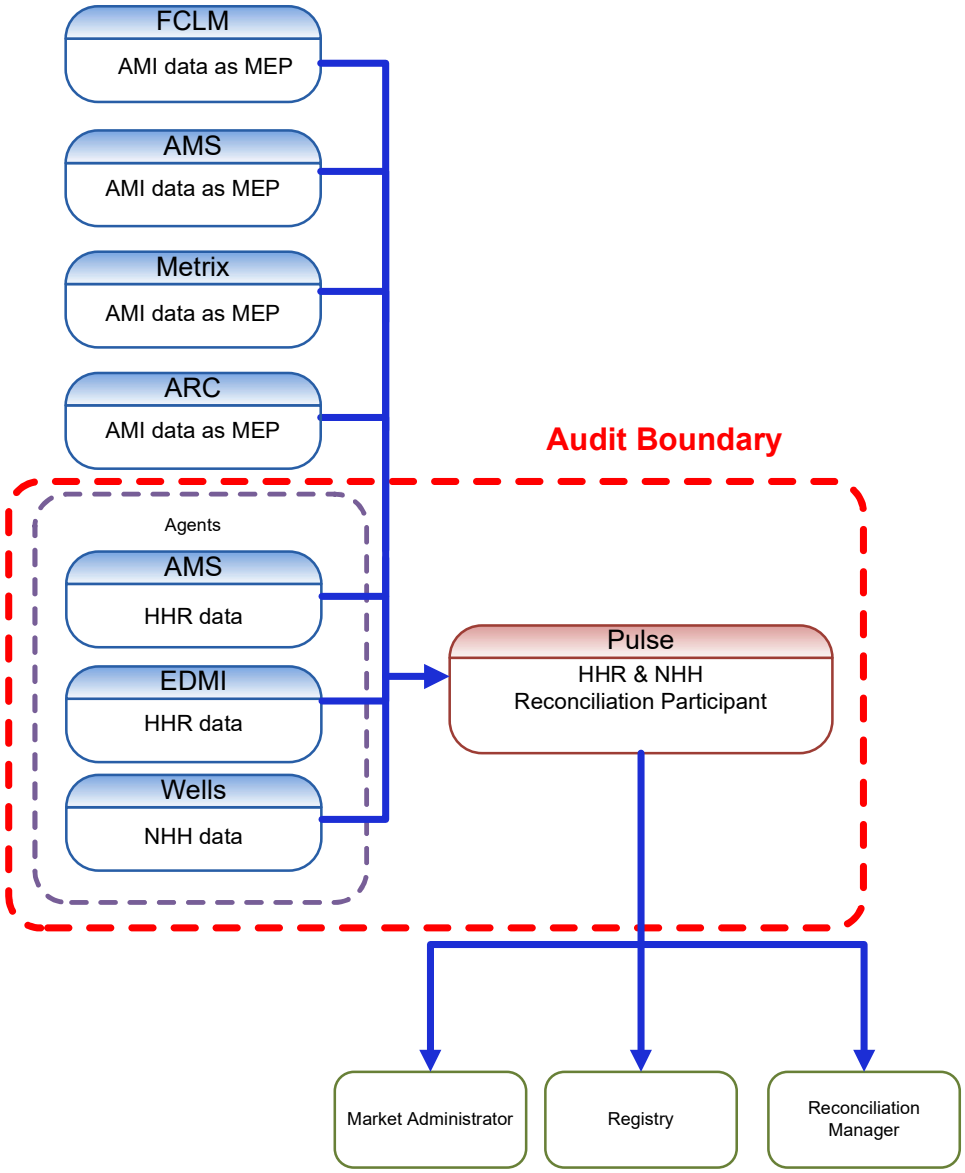
1.9. Scope of Audit

This Electricity Industry Participation Code Reconciliation Participant audit was performed at the request of Pulse, to support their application for renewal of certification in accordance with clauses 5 and 7 of schedule 15.1.

The audit was conducted in accordance with the Guideline for Reconciliation Participant Audits V7.1.

The audit was carried out at Pulse's premises in Auckland on September 13th and 14th 2017.

The scope of the audit is shown in the diagram below, with the Pulse audit boundary shown for clarity.



The table below shows the tasks under clause 15.38 of part 15 for which Pulse requires certification. This table also lists those agents who assist with these tasks. AMS and EDMI provide data for data loggers. Wells provides NHH manual meter reading data as an agent. The agents' audit reports are attached as appendices. Arc Innovations, AMS, Metrix and FCLM provide AMI data as MEPs, not as agents.

Tasks Requiring Certification Under Clause 15.38(1) of Part 15	**Agents Involved in Performance of Tasks**	**MEPs Providing AMI data**
(a) - Maintaining registry information and performing customer and embedded generator switching		

Tasks Requiring Certification Under Clause 15.38(1) of Part 15	Agents Involved in Performance of Tasks	MEPs Providing AMI data
(b) – Gathering and storing raw meter data	EDMI – HHR AMS - HHR Wells – NHH	ARC – NHH AMI AMS – NHH AMI Metrix – NHH AMI FCLM – NHH AMI
(c)(iii) - Creation and management of volume information	EDMI – HHR AMS - HHR	
(d) – Calculation of ICP days		
(da) - delivery of electricity supplied information under clause 15.7		
(db) - delivery of information from retailer and direct purchaser half hourly metered ICPs under clause 15.8		
(e) – Provision of submission information for reconciliation		

1.10. Summary of previous audit

Pulse provided a copy of their previous audit conducted in August 2016 by Steve Woods of Veritek Limited. The summary tables below show that 20 of the 23 issues raised still exist.

Further comment is made in the relevant sections of this report.

Subject	Section	Clause	Non compliance	Remedial Action
Metering certification	1.9.4	10.33(2) of part 10	ICP 1001285115UNA2B not certified within 5 business days of energisation.	Cleared. Refer to **section 2.10**.
Switching	2.1.4	5 of schedule 11.3	3 late CS files.	Still existing. Refer to **section 4.3**.
	2.1.5	Clause 6 of schedule 11.3	11 late RR files. 2 RR files from other traders rejected incorrectly.	Still existing. Refer to **section 4.4**.
	2.2.3	11 of schedule 11.3	56 CS files sent late.	Still existing. Refer to **section 4.10**.
	2.2.4	12 of schedule 11.3	16 late RR files. 1 late AC file.	Still existing. Refer to **section 4.11**.

Subject	Section	Clause	Non compliance	Remedial Action
	2.4	18 of schedule 11.3	One late AW file.	Still existing. Refer to **section 4.15**.
Registry updates	2.8.2	9 of schedule 11.1	Registry not updated within five business days for status changes.	Still existing. Refer to **section 3.5**.
Changes to registry information	2.8.3	10 of schedule 11.1	Registry not updated within five business days for status changes.	Still existing. Refer to **section 3.3**.
Recording of MEP	2.8.8	10.18 of part 10 & 11.18(4)&(5) of part 11	Late MEP nomination for five ICPs backdated greater than five business days.	Still existing. Refer to **section 3.4**.
Registry discrepancies	2.8.9	11 of schedule 11.1 & 11.2 of part 11	Discrepancies in the registry.	Still existing. Refer to **section 2.1**.
Active status	2.8.12	17 of schedule 11.1	Incorrect active date recorded for three ICPs.	Still existing, one new connection was recorded with an incorrect opening read date. Refer to **section 3.8**.
Inactive status	2.8.13	12 &19 of schedule 11.1	Status not updated on the registry for credit disconnection. Up to 82 ICPs with a potentially incorrect registry status of "1,4".	Still existing. Refer to **section 3.9**.
Unmetered load	2.10.2	9(1)(f) of schedule 11.1	One ICP with incorrect unmetered load information.	Still existing. Refer to **section 3.8**.
Shared unmetered load	2.9.3	11.14 of part 11	One ICP with no shared unmetered load recorded.	Cleared. Refer to **section 5.1**.
Metering information	4.3	5(b) & (c) of schedule 15.2	Checks for phase failure and broken or missing seals not conducted and recorded.	Cleared. Refer to **section 6.6**.
Interrogate meters once	4.4	7(1) & (2) of Schedule 15.2	Some ICPs not read during the period of supply.	Still existing. Refer to **section 6.8**.

Subject	Section	Clause	Non compliance	Remedial Action
Electronic interrogation	5.2.5	17(4)(f) & 21(5) of schedule 15.2	AMI event information not adequately obtained and monitored for ARC installations.	Still existing. Refer to **section 9.6**.
Calculation of ICP days	6.2	15.6 of part 15	ICP day's calculations incorrect for some NSPs for some months.	Still existing. Refer to **section 11.2**.
HHR Aggregates	6.4	15.8 of part 15	HHR aggregates file does not contain electricity supplied information.	Still existing. Refer to **section 11.4**.
Permanence of meter readings	7.1.2	4 of schedule 15.2	Estimated readings are not made permanent by the 14 month revision.	Still existing. Refer to **section 12.8**.
NHH submission	7.1.3	15.2 & 15.12 of part 15	Incorrect unmetered submission for two ICPs. No submission for de-energised ICPs. No submission for bridged meters. FE calculated for vacant active ICPs that should have zero consumption submitted. No submission for some NSPs.	Still existing. Refer to **section 12.2**.
Forward estimates	7.1.5	6 of schedule 15.3	FE accuracy threshold not met for some balancing areas. FE calculated for vacant active ICPs that should have zero consumption submitted.	Still existing. Refer to **section 12.12**.
HE reporting	7.2.4	10 of schedule 15.3	HE thresholds not met for some NSPs.	Still existing. Refer to **section 13.4**.

Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Remedial Action
Distributed generation	1.9.6	10.24 of part 10	Check three ICPs to confirm whether the generator has made arrangements to sell or gift the generated volumes	Still existing. Refer to **section 6.1**.

2. OPERATIONAL INFRASTRUCTURE

2.1. Relevant information (Clause 10.6, 11.2, 15.2)

Code reference

Clause 10.6, 11.2, 15.2

Code related audit information

A participant must take all practicable steps to ensure that information that the participant is required to provide to any person under Part 15 is:

- *a) complete and accurate*
- *b) not misleading or deceptive*
- *c) not likely to mislead or deceive.*

If the participant becomes aware that in providing information under this Part, the participant has not complied with that obligation, the participant must, as soon as practicable, provide such further information as is necessary to ensure that the participant does comply.

Audit observation

The process to find and correct incorrect information was examined. The registry validation process was examined in detail in relation to the achievement of this requirement. The list file was examined to identify any registry discrepancies, and confirm that all information was correct and not misleading.

Audit commentary

Gentrack is reconciled to the registry weekly, and exceptions are investigated. I walked through the discrepancy reporting process and noted that it included registry fields used for reconciliation. In some cases, not all exceptions identified are reviewed during the week due to resourcing constraints. Any exceptions not reviewed carry forward to the next week's reconciliation.

Pulse loads a registry list file with history into the data warehouse each day, which is imported into Cobra. NSP mapping table, shape file, and read information are all uploaded into Cobra overnight. There is no separate reconciliation between Cobra and Gentrack.

HHR reconciliation reports are also based on status information recorded on the registry.

The list file was analysed and I found the following:

Issue	2017 Qty	2016 Qty	2015 Qty	2014 Qty	Comments
Blank ANZSIC codes	0	0	48	28	Compliant
ANZSIC "T999" not stated	0	1	137	5	Compliant
ANZSIC "T994" don't know	0	0	159	1,407	Compliant
ANZSIC "T998 "response outside of scope"	0	0	10	-	Compliant
UML load = zero	0	-	-	-	Compliant

Issue	2017 Qty	2016 Qty	2015 Qty	2014 Qty	Comments
Incorrect UML load	2	1	2	17	Refer to **section 3.7** "Changes to Unmetered Load"
No MEP recorded or nominated and UML= "N"	0	-	-	-	Compliant
Shared unmetered load incorrect	0	1	1	-	Compliant
ICPs with Distributor unmetered load populated but retail unmetered load is blank and UML flag = N	2	-	-	-	Refer to **section 3.7** "Changes to Unmetered Load"
Incorrect profile	28	-	-	-	ICP 0001661042TGABF has profiles RPS and E11 recorded on the registry, but should have profile RPS recorded. 27 ICPs with distributed generation are recorded on the registry with profile RPS, but should be recorded with RPS PV1. Refer to **section 6.1** "electricity conveyed and notice by embedded generators".
Active date variance with Initial Energisation Date	3	3	1	2	In all cases the active date applied by Pulse matched the livening date on the paperwork. Refer to **section 3.8** "Management of "active" status".
Active ICP with no MEP	7	3	1	-	Refer to **sections 3.4** "Trader responsibility for an ICP" and **3.11** "Change of MEP". ICP 0004104717ALEC0 did not have an MEP nomination made following rejection of the initial nomination.
Active Category 9 and UML "N"	2	1	1	-	ICP 1001284384LC83A remains active, but ICP 0011619245CNE40 has since been decommissioned. Refer to **section 3.7** "Changes to Unmetered Load".

Non-compliance	Description
Audit Ref: 2.1 With: Clause 10.6, 11.2, 15.2 From: entire audit period	Discrepancies between Gentrack and the Registry. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate as they are sufficient to mitigate risk most of the time, but there is room for improvement. Processes to identify registry discrepancies appear to be adequate, but investigation and resolution of issues is not always completed in a timely manner.

Actions taken to resolve the issue	Completion date	Remedial action status
UML trader records have been updated where Pulse is the trader Solar customers with RPS profile are updated to RPS PV1 profile code at the end of each month, prior to the initial submission of PV1 generation volume to the Reconciliation Manager. A data change request for initial energization date change is being compiled for submission to the Registry Engineer to update initial energization dates where Pulse was not the trader. Where Pulse is the trader, it has updated the initial energization date. MEPs are being chased more frequently for updates. One MEP nomination was rejected due to the MEP providing the incorrect MEP identifier to Pulse.	1 Nov 2017	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

Key business functions have been identified inside the business and dedicated resource is now allocated to tighten up the feedback loop within the operations department. This is monitored by monthly reporting of: ANZSIC code gaps UML mismatches retail/network MEP presence on ICP Profile description codes Performance of Field Service compliance will continue to be monitored on a monthly basis.	1 Nov 2017	

Audit outcome

Non-compliant

2.2. Provision of information (Clause 15.35)

Code reference

Clause 15.35

Code related audit information

If an obligation exists to provide information in accordance with Part 15, a participant must deliver that information to the required person within the timeframe specified in the Code, or, in the absence of any such timeframe, within any timeframe notified by the Authority. Such information must be delivered in the format determined from time to time by the Authority.

Audit observation

Processes to provide information were reviewed and observed throughout the audit.

Audit commentary

This area is discussed in several sections in this report and compliance is confirmed.

Audit outcome

Compliant

2.3. Data transmission (Clause 20 Schedule 15.2)

Code reference

Clause 20 Schedule 15.2

Code related audit information

Transmissions and transfers of data related to metering information between reconciliation participants or their agents, for the purposes of the Code, must be carried out electronically using systems that ensure the security and integrity of the data transmitted and received.

Audit observation

I reviewed the method to receive meter reading information.

I traced a sample of 27 NHH reads from the source files to Gentrack and Cobra, and volumes for one month for five HHR ICPs from the source files to IMS and the HHR aggregates submissions.

Audit commentary

All NHH meter reading files and AMI files are transmitted via SFTP. The reads are loaded into the data warehouse and then exported to Gentrack and Cobra.

- I traced a sample of 14 reads from Wells from the source files, through to Gentrack and Cobra.
- I traced a sample of 13 AMI reads, covering AMS, Metrix and Smartco meters from the source files through to Gentrack and Cobra. Four of these AMI meters had readings provided by Wells.

EDMI HHR data is provided via SFTP, AMS HHR data is emailed in password protected zip files. I traced volumes for one month for a sample of five HHR ICPs from the source files to IMS and the HHR aggregates submissions.

All reads and volumes matched the source files.

Audit outcome

Compliant

2.4. Audit trails (Clause 21 Schedule 15.2)

Code reference

Clause 21 Schedule 15.2

Code related audit information

Each reconciliation participant must ensure that a complete audit trail exists for all data gathering, validation, and processing functions of the reconciliation participant.

The audit trail must include details of information:

- *provided to and received from the registry*
- *provided to and received from the reconciliation manager*
- *provided and received from other reconciliation participants and their agents.*

The audit trail must cover all archived data in accordance with clause 18.

The logs of communications and processing activities must form part of the audit trail, including if automated processes are in operation.

Logs must be printed and filed as hard copy or maintained as data files in a secure form, along with other archived information.

The logs must include (at a minimum) the following:

- *an activity identifier (clause 21(4)(a))*
- *the date and time of the activity (clause 21(4)(b))*
- *the operator identifier (clause 21(4)(c)).*

Audit observation

A complete audit trail was checked for all data gathering, validation and processing functions. I reviewed audit trails for a small sample of events.

Audit commentary

A complete audit trail was viewed for all data gathering, validation and processing functions.

The logs of these activities for Pulse NHH readings and all agents include the activity identifier, date and time and an operator identifier.

A manual audit trail is created by email for HHR meter reading changes. I reviewed two examples and noted that they met some of the audit trail requirements including the data corrected, reason for the correction, and the user. The same correction method is used in every case. The data missing from the audit trail could be derived by reviewing the before and after data, including the file date and time, and comparing the before and after data to determine the total volume difference. The audit trail data is recorded in emails, instead of being stored with the meter data. This is recorded as non-compliance below.

Non-compliance	Description
Audit Ref: 2.4 With: Clauses 18, 21, 22(1) and 22(2) Schedule 15.2 From: entire audit period	HHR audit trails do not contain all the required information, and are not stored with the meter data. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate because they will mitigate the risk most of the time, but there is room for errors to occur. Original data is retained and archived. Audit trail data meeting the requirements is retained or can be derived, but is not available in the prescribed format or location. Pulse currently supplies 15 HHR ICPs, and missing data and corrections are relatively rare.

Actions taken to resolve the issue	Completion date	Remedial action status
Pulse is reviewing the documentation of HHR meter read file handling for the 13 ICPs that it submits as HHR to the Reconciliation Manager.	1 Nov 2017	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Pulse will put in place a formal process to manage the version control of HHR meter read files used for compiling HHR profile submissions to the Reconciliation Manager. All changes to HHR submission files over the period January 2017 to August 2017 will be documented and stored in a spreadsheet or database.	1 Nov 2017	

Audit outcome

Non-compliant

2.5. Retailer responsibility for electricity conveyed - participant obligations (Clause 10.4)

Code reference

Clause 10.4

Code related audit information

If a participant must obtain a consumer's consent, approval, or authorisation, the participant must ensure it:

- *extends to the full term of the arrangement*
- *covers any participants who may need to rely on that consent.*

Audit observation

I reviewed Pulse's current standard residential and standard business terms and conditions.

Audit commentary

Pulse's current terms and conditions with their customers include consent to access for authorised parties for the duration of the contract.

Audit outcome

Compliant

2.6. Retailer responsibility for electricity conveyed - access to metering installations (Clause 10.7(2),(4),(5) and (6))

Code reference

Clause 10.7(2),(4),(5) and (6)

Code related audit information

The responsible reconciliation participant must, if requested, arrange access for the metering installation to the following parties:

- *the Authority*
- *an ATH*
- *an auditor*
- *an MEP*
- *a gaining metering equipment provider.*

The trader must use its best endeavours to provide access:

- *in accordance with any agreements in place*
- *in a manner and timeframe which is appropriate in the circumstances.*

If the trader has a consumer, the trader must obtain authorisation from the customer for access to the metering installation, otherwise it must arrange access to the metering installation.

The reconciliation participant must provide any necessary facilities, codes, keys or other means to enable the party to obtain access to the metering installation by the most practicable means.

Audit observation

I reviewed Pulse's current standard residential and standard business terms and conditions, and discussed compliance with these clauses.

Audit commentary

Pulse's current terms and conditions with their customers include consent to access for authorised parties for the duration of the contract. Pulse confirmed that they have been able to arrange access for other parties when requested.

There was one instance where access could not be gained for Pulse to investigate a tampered meter, which is discussed further in **section 6.5**. The ICP has been disconnected at the pole.

Audit outcome

Compliant

2.7. Physical location of metering installations (Clause 10.35(1)&(2))

Code reference

Clause 10.35(1)&(2)

Code related audit information

A reconciliation participant responsible for ensuring there is a category 1 metering installation or category 2 metering installation must ensure that the metering installation is located as physically close to a point of connection as practical in the circumstances.

A reconciliation participant responsible for ensuring there is a category 3 or higher metering installation must:

a) if practical in the circumstances, ensure that the metering installation is located at a point of connection; or
b) if it is not practical in the circumstances to locate the metering installation at the point of connection, calculate the quantity of electricity conveyed through the point of connection using a loss compensation process approved by the certifying ATH.

Audit observation

Pulse was requested to provide details of any installations with loss compensation.

Audit commentary

Pulse has calculated losses for metering at generation ICPs and the factor is programmed into the meter. These figures were calculated by the distributor and are programmed in by the certifying ATH.

Audit outcome

Compliant

2.8. Trader contracts to permit assignment by the Authority (Clause 11.15B)

Code reference

Clause 11.15B

Code related audit information

A trader must at all times ensure that the terms of each contract between a customer and a trader permit:

- *the Authority to assign the rights and obligations of the trader under the contract to another trader if the trader commits an event of default under paragraph (a) or (b) or (f) or (h) of clause 14.41 (clause 11.15B(1)(a)); and*
- *the terms of the assigned contract to be amended on such an assignment to—*

- *the standard terms that the recipient trader would normally have offered to the customer immediately before the event of default occurred (clause 11.15B(1)(b)(i)); or*
- *such other terms that are more advantageous to the customer than the standard terms, as the recipient trader and the Authority agree (clause 11.15B(1)(b)(ii); and*
- *the terms of the assigned contract to be amended on such an assignment to include a minimum term in respect of which the customer must pay an amount for cancelling the contract before the expiry of the minimum term (clause 11.15B(1)(c)); and*
- *the trader to provide information about the customer to the Authority and for the Authority to provide the information to another trader if required under Schedule 11.5 (clause 11.15B(1)(d)); and*
- *the trader to assign the rights and obligations of the trader to another trader (clause 11.15B(1)(e)).*

The terms specified in sub-clause (1) must be expressed to be for the benefit of the Authority for the purposes of the Contracts (Privacy) Act 1982, and not be able to be amended without the consent of the Authority (clause 11.15B(2)).

Audit observation

I reviewed Pulse's current standard residential and standard business terms and conditions.

Audit commentary

Pulse's current terms and conditions with their customers include assignment by the Electricity Authority in the event of retailer default.

Audit outcome

Compliant

2.9. Electrical connection of an ICP (Clause 10.32)

Code reference

Clause 10.32

Code related audit information

A reconciliation participant must only request electrical connection of a point of connection if they:

- *accept responsibility for the ICP and the obligations under Parts 10 and 11, and, under Part 15; and*
- *have an arrangement with an MEP to provide metering at the point of connection under Part 15.*

Audit observation

The new connection process was examined in detail to evaluate the strength of controls. The list file, and event detail report for the period from 1/01/2017 to 31/07/2017 were analysed to confirm process compliance and that controls are functioning as expected.

Audit commentary

NHH new connections

New connections on the Vector and Powerco networks are advised by the network, and Pulse provides approval. For the other networks, the application is received from the customer's agent such as the electrician. Pulse then contacts the network and requests the creation of an ICP.

Pulse accepts responsibility for the ICP and works with the MEP and electrician to progress the connection. Pulse is beginning to use the "new connection in progress" status, but in some cases the ICP remains at "ready" status on the registry until confirmation of the energisation is received. Pulse

then moves the ICP to "active" status and nominates the MEP. Non-compliance for late MEP nominations is recorded in **section 3.4**.

No examples were found of NHH ICPs with backdated creation dates. The list file and event detail reports were examined and found there were no backdated electrically connected ICPs.

HHR new connections

No HHR new connections have been completed during the audit period.

Audit outcome

Compliant

2.10. Metering certification (Clause 10.33(2))

Code reference

Clause 10.33(2)

Code related audit information

A reconciliation participant may energise or authorise the energisation of a connection only if the reconciliation participant has accepted responsibility for the point of connection if one or more certified metering installations are in place.

Audit observation

The new connection process was examined in detail to evaluate the strength of controls. The list file, and event detail report for the period from 1/01/2017 to 31/07/2017 were analysed to confirm process compliance and controls are functioning as expected.

Audit commentary

Analysis of the list file and event detail report found four NHH ICPs that were not certified within five business days of the initial energisation date on the registry. Certification paperwork was checked for all four ICPs; they were all certified by the time they were energised.

Audit outcome

Compliant

2.11. Arrangements for line function services (Clause 11.16)

Code reference

Clause 11.16

Code related audit information

Before notifying the registry of any information in accordance with clause 11.7(2) or clause 11.18(4), a trader must ensure that it, or its customer, has made any necessary arrangements for the provision of line function services in relation to the relevant ICP

Before notifying the registry of any information in accordance with clause 11.7(2) or clause 11.18(4), a trader must have entered into an arrangement with an MEP for each metering installation at the ICP.

Audit observation

The process to ensure an arrangement is in place before trading commences on a network was examined.

Audit commentary

Pulse demonstrated the existence of either a Use of Systems Agreement or other trading arrangement for all networks it trades on.

Audit outcome

Compliant

2.12. Arrangements for metering equipment provision (Clause 10.36)

Code reference

Clause 10.36

Code related audit information

A reconciliation participant must ensure it has an arrangement with the relevant MEP prior to accepting responsibility for an installation.

Audit observation

The process to ensure an arrangement is in place with the metering equipment provider before an ICP can be created or switched in was checked.

Audit commentary

Pulse has an arrangement in place with all MEPs that manage metering in relation to their customer base. The new connection process also contains a step that requires the nomination of an MEP.

Audit outcome

Compliant

3. MAINTAINING REGISTRY INFORMATION

3.1. Obtaining ICP identifiers (Clause 11.3)

Code reference

Clause 11.3

Code related audit information

The following participants must, before assuming responsibility for certain points of connection on a local network or embedded network, obtain an ICP identifier for the point of connection:

- *a trader who has agreed to purchase electricity from an embedded generator or sell electricity to a consumer*
- *an embedded generator who sells electricity directly to the clearing manager*
- *a direct purchaser connected to a local network or an embedded network*
- *an embedded network owner in relation to a point of connection on an embedded network that is settled by differencing*
- *a network owner in relation to a shared unmetered load point of connection to the network owner's network*
- *a network owner in relation to a point of connection between the network owner's network and an embedded network.*

ICP identifiers must be obtained for points of connection at which any of the following occur:

- *a consumer purchases electricity from a trader 11.3(3)(a)*
- *a trader purchases electricity from an embedded generator 11.3(3)(b)*
- *a direct purchaser purchases electricity from the clearing manager 11.3(3)(c)*
- *an embedded generator sells electricity directly to the clearing manager 11.3(3)(d)*
- *a network is settled by differencing 11.3(3)(e)*
- *there is a distributor status ICP on the parent network point of connection of an embedded network or at the point of connection of shared unmetered load. 11.3(3)(f)*

Audit observation

The new connections process was examined in detail to confirm compliance with the requirement to obtain ICP identifiers for points of connection to local or embedded networks.

Audit commentary

This requirement is well understood and managed by Pulse. The process is detailed in **section 2.9**.

Audit outcome

Compliant

3.2. Providing registry information (Clause 11.7(2))

Code reference

Clause 11.7(2)

Code related audit information

Each trader must provide information to the registry about each ICP at which it trades electricity in accordance with Schedule 11.1.

Audit observation

The new connection process was examined in detail. This clause links directly to **section 3.5.** The findings for the timeliness of updates for new connections is detailed there.

The list file, and event detail report for the period from 1/01/2017 to 31/07/2017 were analysed determine the overall performance for that period. I used the extreme case methodology to select a sample of the ten latest updates for review.

Audit commentary

The new connection process is detailed in **section 2.9**, and timeliness of registry updates for new connections is discussed in **section 3.5**. The process in place ensures that the trader required information is populated as required by this clause.

The timeliness of registry updates is shown on the table below.

Event		Total ICPs	ICPs Notified Within 5 Days	ICPs Notified Greater Than 5 Days	Average Notification Days	Percentage Compliant
Change to active-Reconnections	2014	44	30	14	27.5	68%
	2015	875	316	559	58.1	36%
	2016	593	426	167	11.9	72%
	2017	592	227	365	25	38%

The 10 latest updates to active on the registry were checked. I found the delays were mainly due to:

- Delays in confirming that the site was consuming electricity, where Pulse had not requested a reconnection. Reconnection was backdated to the date consumption started.
- Paperwork returned late from the field. Late paperwork is chased every two days.
- Resourcing constraints resulting in delays in processing paperwork.

Late update of the registry is recorded as non-compliance.

Non-compliance	Description
Audit Ref: 3.2 With: Clause 11.7(2) From: entire audit period	365 late registry updates to active. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Weak Breach risk rating: 3

Audit risk rating	Rationale for audit risk rating
Low	Controls are rated as weak because they do not mitigate risk most of the time. There is a minor impact on invoicing for some ICPs and on other traders if ICPs switch out with the incorrect status; therefore, the audit risk rating is low. Updates to active are processed, and flow through to the reconciliation systems so that they can be incorporated into revision submissions.

Actions taken to resolve the issue	Completion date	Remedial action status
Gentrack 4 user acceptance testing was undertaken during the July August period of 2017. Subject matter experts allocated to field service, registry and metering related activities were committed to delivery of UAT during this period. Registry update timeliness during this period was adversely affected. UAT is completed, and Gentrack 4 is scheduled to go live before the end of the current certification period. As part of the UAT process, substantial resource has been committed to documentation of all operational processes and procedures. In addition to the Gentrack 4 upgrade, resource is allocated to update the training materials and skills of all staff that use Gentrack.	Gentrack 4 Go Live Date	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Consumption on de-energised ICP review will be performed by a dedicated compliance resource in the Field Services team several times a week using the Cobra NHH reconciliation system. The time delay between meter reading that identifies consumption on an inactive ICP, and updating registry status to active will be reduced by having the monitoring function within the field services team. Outstanding jobs will be followed up every two days.	1 Nov 2017	

Audit outcome

Non-compliant

3.3. Changes to registry information (Clause 10 Schedule 11.1)

Code reference

Clause 10 Schedule 11.1

Code related audit information

If information provided by a trader to the registry about an ICP changes, the trader must notify the registry of the change no later than five business days after the change.

Audit observation

The process to manage status changes is discussed in detail in **section**s **3.8** and **3.9**. In this section, the list file, and event detail report for the period from 1/01/2017 to 31/07/2017 were analysed determine the overall performance for that period.

I used the extreme case methodology to select a sample of the ten latest updates for each of the event type updates for review, with the exclusion of new connections in progress. New connection in progress was only used for one ICP, and I confirmed that the registry was updated within five business days of energisation.

Audit commentary

The event detail report was examined to confirm the registry is notified within five business days when information referred to in clause 9 of schedule 11.1 changes. 121 ICPs were identified where the status had been changed to "de-energised" and the registry was not updated within five business days. This is reduction from the 175 ICPs not updated within five business days in the last audit.

Event		Total ICPs	ICPs notified within 5 days	ICPs notified greater than 5 days	Average notification days	Percentage compliant
Change to de-energised-vacant (1,4)	2014	17	2	15	12.7	12%
	2015	903	599	304	12.8	66%
	2016	804	650	154	6.7	81%
	2017	**265**	**200**	**65**	**5**	**75%**
Change to de-energised ready for decommissioning (1,6)	2014	0	0	0	-	-
	2015	38	13	25	91.3	34%
	2016	49	28	21	34	57%
	2017	**16**	**4**	**12**	**67**	**25%**
Change to de-energised remotely by AMI meter (1,7)	**2017**	**225**	**210**	**15**	**2**	**98%**
Change to de-energised at pole fuse (1,8)	**2017**	**31**	**5**	**26**	**30**	**16%**
Change to de-energised due to meter disconnected (1,9)	**2017**	**3**	**0**	**3**	**28**	**0%**
Change to de-energised due at meter box switch	**2017**	**2**	**2**	**0**	**2**	**100%**

(1,11)						
New connection in progress (1,12)	2016	36	28	8	5.5	86%
	2017	**1**	**1**	**0**	**2**	**100%**

Credit disconnections remain active on the registry for ten business days, and are then followed up by the credit team. If no payment is received and/or the customer is no longer at the address, the customer is finalised in Gentrack and a backdated status update to inactive vacant (1,4) is completed. Pulse expects these timeframes will decrease once they migrate to Gentrack 4.

The ten latest updates to de-energised-vacant (1,4) were reviewed and found:

- Three late updates were ICPs disconnected for arrears.
- One late update was due to a correction to the inactive status from de-energised remotely by AMI (1,7) to de-energised vacant (1,4). Both codes were valid for the ICP because it was vacant and de-energised remotely.
- One late update was due to a processing error, where the disconnection was partially processed. The status update was missed and corrected later.
- The remaining five late updates occurred primarily due to resource constraints delaying processing of disconnections.

The ten latest updates to de-energised ready for decommissioning (1,6) were reviewed and found:

- In three cases, buildings had been demolished and Pulse was not aware of the decommissioning until after it had happened.
- In the other cases, a combination of late paperwork, difficulty confirming inactive dates, and resource constraints caused the delays.

The ten latest updates to de-energised remotely by AMI meter (1,7) were reviewed and found:

- In eight cases, a temporary staff member had not processed the disconnection completely, and had missed the step to update the status. The missing status updates were later identified and processed.
- One ICP had a status correction from inactive vacant (1,4) to inactive de-energised remotely by AMI (1,7).
- In the other case, the delay appears to be due to resource constraints.

The ten latest updates to de-energised at pole fuse (1,8) were reviewed and found:

- Eight of the late updates relate to ICPs disconnected following the April 2017 Edgecumbe flood. Information provided by the network was misinterpreted, and an incorrect disconnection date was applied. The disconnection date was updated following further information from the network, causing the backdated updates.
- In the other cases, the delay appears to be due to resource constraints.

All three late updates to de-energised due to meter disconnected (1,9) were reviewed and found:

- One late update was in error, the wrong ICP was updated on the registry.
- Two late updates were ICPs disconnected for arrears.

There were no late updates to de-energised at meter box switch (1,11) or new connection in progress (1,12). I confirmed that these codes were applied validly for all ICPs they were used for.

Non-compliance	Description
Audit Ref: 3.3 With: Clause 10 Schedule 11.1 From: entire audit period	121 late registry updates to inactive. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate because they mitigate risk most of the time but there is room for improvement. There is a minor impact on invoicing for some ICPs and on other traders if ICPs switch out with the incorrect status; therefore, the audit risk rating is low. There has been a reduction in late updates since the last audit.

Actions taken to resolve the issue	Completion date	Remedial action status
De-energised, meter disconnected will be chased up every two days in the absence of completed details. De-energised disconnected at pole fuse was due to a flooding event – greater care will be taken to confirm bulk event change details in future emergency situations. De-energised ready for decommissioning sites have on occasion been referenced as unable to gain access to confirm if the site had been demolished. Until we receive notification from the reader, we are unable to confirm that a site is demolished. The credit disconnection process is revised in line with the Gentrack 4 system upgrade. The existing process has a 10 day waiting period for credit disconnections and execution of status update in registry. Where an ICP is confirmed as de-energised, the registry ICP status will be updated to reflect de-energised vacant or de-energised remotely status. This will be in place as soon as the Gentrack 4 upgrade has been completed.	Gentrack 4 Go Live Date	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

Following Gentrack 4 upgrade, credit disconnection events resulting in de-energisation will updated to reflect inactive status in registry within one day of confirmation of de-energisation. Training on execution of de-energisation process will be refreshed for the field services team as part of the Gentrack 4 upgrade. Outstanding jobs will be followed up every two days.	Gentrack 4 Go Live Date	

Audit outcome

Non-compliant

3.4. Trader responsibility for an ICP (Clause 11.18)

Code reference

Clause 11.18

Code related audit information

A trader becomes responsible for an ICP when the trader is recorded in the registry as being responsible for the ICP.

A trader ceases to be responsible for an ICP if:

- *another trader is recorded in the registry as accepting responsibility for the ICP (clause 11.18(2)(a)); or*
- *the ICP is decommissioned in accordance with clause 20 of Schedule 11.1 (clause 11.18(2)(b)).*
- *if an ICP is to be decommissioned, the trader who is responsible for the ICP must (clause 11.18(3)):*
    - *arrange for a final interrogation to take place prior to or upon meter removal (clause 11.18(3)(a)); and*
    - *advise the MEP responsible for the metering installation of the decommissioning (clause 11.18(3)(b)).*

A trader who is responsible for an ICP (excluding UML) must ensure that an MEP is recorded in the registry for that ICP (clause 11.18(4)).

A trader must not trade at an ICP (excluding UML) unless an MEP is recorded in the registry for that ICP (clause 11.18(5)).

Audit observation

Retailers Responsibility to Nominate and Record MEP in the Registry

The new connection process was discussed. The list file was examined to identify whether all active, metered, ICPs have an MEP recorded. This analysis found seven active ICPs that do not have an MEP recorded in the registry. All seven were checked.

ICP Decommissioning

The process for the decommissioning of ICPs was examined. A selection of ten decommissioned ICPs were checked using the typical case method of sampling to prove the process and confirm controls are in place.

Audit commentary

Retailers Responsibility to Nominate and Record MEP in the Registry

The new connection process is discussed in detail in **section 2.9.** Pulse nominates the MEP in the registry only once they have received the meter installation paperwork. This practice is causing some late MEP nominations, and Pulse intends to move to nominating the MEP while the status is at 1,12.

I examined the event detail report and found 44 ICPs where the MEP was nominated later than five business days. The ten latest updates, where the MEP was nominated between 21 and 76 days after the ICP was energised were examined.

- For one ICP the delay was due to a livening date dispute, Pulse believed the site was livened earlier than the network date.
- For two ICPs paperwork was received late, and the registry was updated within two business days of receipt.
- The other delays appear to be largely due to resourcing constraints.

Seven ICPs recorded as active on the registry with no unmetered flag and no MEP were examined. All had an MEP nominated, and in six cases the MEP had accepted. For ICP 0004104717ALEC0, ALPE was nominated on 26/05/2017 and rejected the nomination on 29/05/2017. Pulse has a monthly dashboard report which identifies ICPs where the MEP has been blank for over 60 days. This ICP was identified using this report just prior to the audit and is in the process of being corrected but had been missed on some previous monthly reports due to resourcing constraints. This is raised as non-compliance in **section 2.1**, and discussed further in section **3.11**.

ICPs that are vacant and either active or inactive are still maintained in Pulse's systems.

ICP Decommissioning

Clause 11.18 of part 11 requires that if an ICP is to be decommissioned, the last trader must arrange for a final interrogation to take place prior to, or upon meter removal and the trader must also advise the MEP responsible that the site is to be decommissioned.

In all cases an attempt is made to read the meter at the time of removal, and if this is not possible then the last actual meter reading from the time of de-energisation is used. Pulse notifies the MEP to request final reads from AMI metering, and notifies all MEPs where a site is to be decommissioned. A sample of ten ICPs decommissioned during the audit period were checked; in all cases the MEP was notified and a final read was obtained.

Non-compliance	Description
Audit Ref: 3.4 With: Clause 11.18 From: entire audit period	The MEP was nominated later than five business days after becoming active for 44 ICPs. Potential impact: Low Actual impact: Low Audit history: Twice previously Controls: Moderate Breach risk rating: 2

Audit risk rating	Rationale for audit risk rating
Low	Controls are rated as moderate because they mitigate risk most of the time but there is room for improvement There is a minor impact on MEPs because they can't update the registry until they are nominated. The audit risk rating is low. Arrangements were in place with MEPs, but the registry had not been updated. The ICPs remained with Pulse during the period. The process will be improved to nominate the MEP while the status is 1,12 which will increase compliance.

Actions taken to resolve the issue	Completion date	Remedial action status
New connections will be managed using status code 1-12 which allows the trader to nominate an MEP before the approved test house goes on-site.	25 Aug 2017	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Training of staff for the use of appropriate ICP Status codes in registry.	1 Nov 2017	

Audit outcome

Non-compliant

3.5. Provision of information to the registry (Clause 9 Schedule 11.1)

Code reference

Clause 9 Schedule 11.1

Code related audit information

Each trader must provide the following information to the registry for each ICP for which it is recorded in the registry as having responsibility:

- *a) the participant identifier of the trader, as approved by the Authority (clause 9(1)(a))*
- *b) the profile code for each profile at that ICP, as approved by the market administrator (clause 9(1)(b))*
- *c) the metering equipment provider for each category 1 metering or higher (clause 9(1)(c))*
- *d) the type of submission information the trader will provide to the RM for the ICP (clause 9(1)(ea)*
- *e) if a settlement type of UNM is assigned to that ICP, either:*
  - *the code ENG if the load is profiled through an engineering profile in accordance with profile class 2.1 (clause 9(1)(f)(i)); or*
  - *in all other cases, the daily average kWh of unmetered load at the ICP (clause 9(1)(f)(ii)).*
  - *the type and capacity of any unmetered load at each ICP (clause 9(1)(g))*
  - *the status of the ICP, as defined in clauses 12 to 20 (clause 9(1)(j))*
  - *except if the ICP exists for the purposes of reconciling an embedded network or the ICP has distributor status, the trader must provide the relevant business classification code applicable to the customer (clause 9(1)(k)).*

The trader must provide information specified in (a) to (j) above within 5 business days of trading (clause 9(2)).

The trader must provide information specified in 9(1)(k) no later than 20 business days of trading (clause 9(3))

Audit observation

The new connection process was examined in detail. The list file, and event detail report for the period from 1/01/2017 to 31/07/2017 were analysed determine the overall performance for that period. I used the extreme case methodology to examine the ten latest updates, with the exclusion of new connections in progress.

New connection in progress was only used for one ICP, and I confirmed that the registry was updated within five business days of energisation.

Audit commentary

The new connection process is described in detail in **section 2.9**.

The table below shows a decreased level of compliance from the last audit with 51% of status updates occurring within five business days.

Event	Year	Total ICPs	ICPs Notified Within 5 Days	ICPs Notified Greater Than 5 Days	Average Notification Days	Percentage Compliant
Change to active - New connections	2014	27	18	9	9.4	67%
	2015	16	4	12	10.7	25%
	2016	97	69	28	10.3	71%
	2017	**90**	**46**	**44**	**9.0**	**51%**

A sample of the 10 latest updates to the registry were checked and found:

- the two latest updates (58 and 76 days respectively) were due to late receipt of paperwork - both were updated on the registry within two days of receiving the paperwork
- one late update occurred because the wrong proposed trader was listed, and the ICP could not be claimed until this was corrected
- the other seven late updates occurred primarily due to resourcing constraints.

Late registry updates are recorded as non-compliance below.

Non-compliance	Description
Audit Ref: 3.5 With: Clause 9 Schedule 11.1 From: entire audit period	44 late updates to active. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Weak Breach risk rating: 3

Audit risk rating	Rationale for audit risk rating
Low	Controls are rated as weak because they only mitigate risk half of the time and they require improvement. There is a minor impact on billing and settlement because bills will be late and submission will be late. The audit risk rating is low. A relatively small number of new connections are processed, and on average these are updated on the registry within nine business days.

Actions taken to resolve the issue	Completion date	Remedial action status
Gentrack 4 user acceptance testing was undertaken during the July August period of 2017. Subject matter experts allocated to field service, registry and metering related activities were committed to delivery of UAT during this period. Registry update timeliness during this period was adversely affected. UAT is completed, and Gentrack 4 is scheduled to go live before the end of the current certification period. As part of the UAT process, substantial resource has been committed to documentation of all operational processes and procedures. In addition to the Gentrack 4 upgrade, resource is allocated to update the training materials and skills of all staff that use Gentrack.	Gentrack 4 Go Live Date	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
This is challenging due to the KPI for technical completion of the energisation to be completed being 30 days, with an additional timeframe for completion of documentation. Pulse will explore the option of following up with the ATH between 10-15 business days after request for metering.	1 Nov 2017	

Audit outcome

Non-compliant

3.6. ANZSIC codes (Clause 9 (1(k) of Schedule 11.1)

Code reference

Clause 9 (1(k) of Schedule 11.1

Code related audit information

Traders are responsible to populate the relevant ANZSIC code for all ICPs for which they are responsible.

Audit observation

The process to capture and manage ANZISC codes was examined. A Registry List was reviewed to check ANZSIC codes.

Audit commentary

The list file was analysed and found that all ICPs had a valid ANZSIC code recorded.

As part of the application process, Pulse confirms the type of property and enters the ANZSIC code with the best fit. Gentrack is configured to prevent entry of the unknown ANZSIC code.

Audit outcome

Compliant

3.7. Changes to unmetered load (Clause 9(1)(f) of Schedule 11.1)

Code reference

Clause 9(1)(f) of Schedule 11.1

Code related audit information

If a settlement type of UNM is assigned to that ICP, the trader must populate:

- *the code ENG - if the load is profiled through an engineering profile in accordance with profile class 2.1 (clause 9(1)(f)(i)); or*
- *the daily average kWh of unmetered load at the ICP - in all other cases (clause 9(1)(f)(ii)).*

Audit observation

The process to manage unmetered load was examined. The list file as at 11 August 2017 was examined to identify any ICPs where:

- Unmetered load is identified by the Distributor but none is recorded by Pulse.
- Pulse's unmetered kWh differs from the distributor's unmetered kWh by 1.0 kWh per day or more, where it was possible to calculate the distributor's unmetered kWh from the distributor's unmetered load details. 1.0 kWh per day was chosen as a sample only; this does not indicate compliance is achieved if an error is found that is less than 1.0 kWh per day.

Audit commentary

All unmetered load new connections require an application, which follow the new connections process. Pulse has not received any requests for changes to unmetered load to date.

Approximately every six months, Pulse compares the unmetered kWh values recorded in Gentrack to the distributor unmetered load details on the registry, to confirm that correct unmetered load values are recorded.

Examination of the list file found 32 active ICPs with the UNM flag checked; all had daily unmetered kWh populated. The trader unmetered kWh was compared to the distributor's unmetered kWh, where it was possible to calculate the distributor's unmetered kWh from the distributor's unmetered load details. 13 ICPs had small discrepancies, and two ICPs had a discrepancy of 1.0 kWh or more:

- Unmetered kWh for ICP 0013531104EL2A7 was been confirmed with the network. The registry and Gentrack were not updated prior to the ICP switching out on 25/08/2017.
- ICP 0000502129DE87A was confirmed to have no unmetered load connected, and the daily unmetered kWh have been removed on the registry.

Two ICPs had unmetered load indicated by the distributor, but the unmetered flag was set to no, and the daily unmetered kWh were not populated. Both ICPs were checked:

- ICP 0000538242NR98A has been correctly updated in Gentrack and on the registry.
- ICP 0006000992HBD1B has been updated in Gentrack, and was updated on the registry during the audit. The network had updated the unmetered load details on 01/12/2016 and the ICP had been supplied by Pulse since 26/11/2013.

ICP 1001284384LC83A is active, with no meters recorded on the registry, and the unmetered flag and unmetered load details are not populated. This ICP did not appear on discrepancy reports because there is no active customer. This is recorded as non-compliance in **section 2.1**. Pulse intends to contact the MEP to confirm whether metering is installed.

The 2016 audit found ICP 0000023344NTBEF had a change of load, which was recorded by the Distributor but was not identified by Pulse. This ICP now has the correct unmetered kWh recorded in Gentrack and on the registry.

In most cases, discrepancies were identified through Pulse's weekly and six monthly review processes and updated in Gentrack and on the registry. The instance where unmetered load was not corrected is recorded as non-compliance below.

Non-compliance	Description
Audit Ref: 3.7 With: Clause 9(1)(f) of Schedule 11.1 From: entire audit period	One ICP has incorrect unmetered load information recorded on the registry. Potential impact: Low Actual impact: Low Audit history: Three times previously Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate because there is room for improvement. There is a minor impact on billing and settlement; therefore, the audit risk rating is low. Some other unmetered load discrepancies had been identified and corrected through the weekly registry discrepancy process, and six monthly unmetered load details review.

Actions taken to resolve the issue	Completion date	Remedial action status
Pulse has reviewed registry contents for all ICPs with reference to UML for trader and distributor fields. Changes have been applied where ICP's are still with Pulse, and one network was consulted on the allocation of its UML coding.	30 Aug 2017	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

Pulse will undertake fortnightly unmetered load reviews. This will ensure unmetered load volumes are submitted accurately to the Reconciliation Manager. This will be performed by the dedicated compliance resource located within the Field Services team. Whenever network UML network registry data are unclear, Pulse contact the network to confirm the unmetered load description, and revise the registry UML data accordingly.	1 Nov 2017	

Audit outcome

Non-compliant

3.8. Management of "active" status (Clause 17 Schedule 11.1)

Code reference

Clause 17 Schedule 11.1

Code related audit information

The ICP status of "active" is be managed by the relevant trader and indicates that:

- *the associated electrical installations are energised (clause 17(1)(a))*
- *the trader must provide information related to the ICP in accordance with Part 15, to the reconciliation manager for the purpose of compiling reconciliation information (clause 17(1)(b)).*

Before an ICP is given the "active" status, the trader must ensure that:

- *the ICP has only one customer, embedded generator, or direct purchaser (clause 17(2)(a))*
- *the electricity consumed is quantified by a metering installation or a method of calculation approved by the Authority (clause 17(2)(b)).*

Audit observation

The new connection process was examined in detail as discussed in **section**s **2.9 & 3.5**. The list file as at August 2017 was examined to identify any ICPs still at the status "Inactive - new connection in progress" with an initial energisation date populated. The event detail report and list file report was checked for any variances between the initial energisation date and the active date, or meter certification date and active date. I checked all ICPs with a variance between the active date and the initial energisation date, or the active date and the meter certification date.

The process for the management of ICP reconnection was examined. The event detail report for the audit period was analysed and the findings in relation to the timeliness of updates to registry is recorded in **section 3.3**.

Audit commentary

Before being given an "Active" status the retailer is required to ensure that the ICP has only one customer, embedded generator, or direct purchaser; and that the electricity consumed is quantified by a metering installation(s) or other Authority approved method of calculation. Gentrack will not allow more than one customer per ICP, nor will it allow an ICP to be set up for billing without either a meter, or the daily kWh for unmetered ICPs.

Pulse's new connections process documentation was examined and the status of an ICP will only be changed to "Active" once confirmation has been received by a contractor.

The initial energisation date populated by the Distributor was compared to the date recorded by Pulse. 87 of the 90 (97%) new connection dates matched. Three new connections were found to have a different active date to the Distributor's initial energisation date. I checked these against the new connection paperwork and confirmed that Pulse had applied the correct active date in all cases.

ICP	Active Date	Initial Energisation Date	Certification Date	Comments
0000033233EA432	1/05/2017	2/05/2017	1/05/2017	Paperwork confirmed the ICP was livened on 01/05/2017.
0000505260CEDF6	13/01/2017	11/01/2017	13/01/2017	Paperwork confirmed the ICP was livened on 13/01/2017.
0000567960NRD40	18/01/2017	11/01/2017	18/01/2017	Paperwork confirmed the ICP was livened on 18/01/2017.

Authority concerns raised in 2016 audit	2017 findings
Audit ref: 2.8.12 Issue: Of 12 new connections 3 had incorrect "Active" dates. No reason given or what has been done to resolve the 3 incorrect. Query: Can you please confirm what action PUNZ has taken to correct the 3 incorrect active dates on the registry.	All new connections identified during the audit period were reviewed: • 87 had active dates consistent with the initial energisation date and meter certification date • 3 had active dates consistent with the initial energisation date but inconsistent with the meter certification date. For all three, the date applied by Pulse matched the livening date on the paperwork. I checked the three ICPs with incorrect active dates identified in the last audit; all three still show the incorrect active date on the registry. • 0001013105BU0A1 active from 21/03/16, should be active from 11/02/16. • 1099573937CNDF4 active from 14/09/15, should be active from 21/09/15. • 1099574579CN4A6 active from 27/05/16, should be active from 26/05/16. This is recorded as non-compliance below.

A sample of eleven new connections were checked against the paperwork, and I found that ten had been processed correctly. For ICP 0004733000AL28E, the opening read date was incorrectly entered as 25/02/2017, it should have been 24/02/2017. This is recorded as non-compliance below.

Non-compliance	Description
Audit Ref: 3.8 With: Clause 17 Schedule 11.1 From: 24-Feb-17 To: 24-Feb-17	One new connection was recorded with an opening read date one day after the new connection date. Three new connections identified in the 2016 audit still have an incorrect active date recorded on the registry. Potential impact: Low Actual impact: Low Audit history: Twice previously Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as strong, as they are sufficient to prevent errors most of the time. All consumption was captured and reported for reconciliation purposes, and the active date was recorded correctly. All other ICPs checked were processed correctly, the incorrect opening read date appears to be a data entry error. All new connections during the audit period that were reviewed had the correct active date recorded on the registry.

Actions taken to resolve the issue	Completion date	Remedial action status
The three ICPs with incorrect active dates have been reviewed. Where Pulse is the current trader, we have updated the date in registry. Where Pulse is no longer the trader, a registry data fix request has been requested from the registry engineer.	1 Nov 2017	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Additional training and validation will be put in place to ensure the active event date matches the MEP install and liven date.	1 Nov 2017	

Audit outcome

Non-compliant

3.9. Management of "inactive" status (Clause 19 Schedule 11.1)

Code reference

Clause 19 Schedule 11.1

Code related audit information

The ICP status of "inactive" must be managed by the relevant trader and indicates that:

- *electricity cannot flow at that ICP (clause 19(a)); or*
- *submission information related to the ICP is not required by the reconciliation manager for the purpose of compiling reconciliation information (clause 19(b)).*

Audit observation

The list file was examined and confirmed no ICPs were at "Inactive - new connection in progress" for greater than 24 months.

The process to manage ICPs at the other inactive statuses was examined. A sample of ten ICPs at each inactive status (or all ICPs if less than ten were available) were checked using the typical characteristics methodology. The findings in relation to the timeliness of updates to registry is recorded in **section 3.3**.

Audit commentary

The status of "Inactive" is only used once confirmation has been received that the ICP has been disconnected. I reviewed the reason codes for the sample of disconnections checked, and confirmed that they had been applied appropriately.

A list of 127 inactive ICPs with consumption recorded was provided. This is an increase from the 82 recorded in 2016, and a reduction from 275 in 2015. A typical sample of ten of these were reviewed. I found:

- For five ICPs the consumption was not genuine, and had been caused by an actual read being received after an estimated read which was too high or low.
- For five ICPs there was movement between actual readings following disconnection. When consumption on an inactive ICP is identified, Pulse normally changes the status to active on the registry so that the consumption and ICP days will be included in the reconciliation reports, and disconnects the ICP again if appropriate. The five ICPs had not been corrected to active status on the registry, and it appears that the process to identify and correct inactive ICPs with consumption is not currently operating as intended. This is recorded as non-compliance below, and discussed further in **section 8.1**.

Delays in updating the registry for credit disconnections are discussed in **section 3.3**.

Non-compliance	Description
Audit Ref: 3.9 With: Clause 19 Schedule 11.1 From: entire audit period	Five ICPs with consumption while disconnected did not have their status updated to active. Potential impact: Low Actual impact: Low Audit history: Twice previously Controls: Moderate Breach risk rating: 2

Audit risk rating	Rationale for audit risk rating
Low	Controls are rated as moderate as they are sufficient to mitigate risk most of the time, but there is room for improvement. ICPs with consumption are being identified, but not investigated and updated in a timely manner. 127 ICPs with consumption while disconnected were identified, but half of the sample reviewed were found not to have genuine consumption after disconnection.

Actions taken to resolve the issue	Completion date	Remedial action status
Consumption on de-energised sites is reported by a dedicated compliance resource in the Field Services department several times a week using the Cobra NHH reconciliation system. Sites that present legitimate consumption have status updated to active in registry.	25 Sep 2017	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Gentrack 4 user acceptance testing was undertaken during the July August period of 2017. Subject matter experts allocated to field service, registry and metering related activities were committed to delivery of UAT during this period. Registry update timeliness during this period was adversely affected. UAT is completed, and Gentrack 4 is scheduled to go live before the end of the current certification period. As part of the UAT process, substantial resource has been committed to documentation of all operational processes and procedures. In addition to the Gentrack 4 upgrade, resource is allocated to update the training materials and skills of all staff that use Gentrack.	1 Nov 2017	

Audit outcome

Non-compliant

3.10. ICPs at new or ready status for 24 months (Clause 15 Schedule 11.1)

Code reference

Clause 15 Schedule 11.1

Code related audit information

If an ICP has had the status of "New" or "Ready" for 24 calendar months or more, the distributor must ask the trader whether it should continue to have that status, and must decommission the ICP if the trader advises the ICP should not continue to have that status.

Audit observation

Whilst this is a Distributor's code obligation, I investigated whether any queries had been received from Distributors in relation to ICPs at the "New" or "Ready" status for more than 24 months and what process is in place to manage and respond to such requests.

Audit commentary

Any requests received from Distributors are actioned. No recent requests were available for review.

ICPs at new and ready status are not actively monitored. I did not identify any ICPs at new or ready status for more than 24 months.

Audit outcome

Compliant

3.11. Change of MEP (Clause 10.22(1)(a)(i))

Code reference

Clause 10.22(1)(a)(i)

Code related audit information

If the MEP for an ICP which is not also an NSP changes, the trader must notify the registry of the gaining MEP in accordance with Part 11.

Audit observation

The process to manage a change of MEP on an existing ICP was examined. The registry list was reviewed; seven active ICPs with no MEP exist and all were checked.

The timeliness of MEP nominations was reviewed in **section 3.4**.

Audit commentary

All active, metered ICPs with no MEP were reviewed. I found that in all cases, Pulse had nominated the MEP, and for six of those the MEP had accepted the nomination. For ICP 0004104717ALEC0, ALPE was nominated on 26/05/2017 and rejected the nomination on 29/05/2017. Pulse has a monthly dashboard report which identifies ICPs where the MEP has been blank for over 60 days, and this ICP was identified using this report just prior to the audit, and is in the process of being corrected. This ICP has been missed on some previously monthly reports due to resourcing constraints. This is raised as non-compliance in **section 2.1**.

Audit outcome

Compliant

4. PERFORMING CUSTOMER AND EMBEDDED GENERATOR SWITCHING

Switching activities are automated and the status of each "switch" is monitored through the use of the Registry "breach report".

The switching process is compliant with the requirements of Section 36M of the Fair Trading Act 1986. The switch proceeds once the agreement is signed and a switch withdrawal is sent if the customer cancels the agreement within the five business day "cooling off" period.

4.1. Inform registry of switch request for ICPs - standard switch (Clause 2 Schedule 11.3)

Code reference

Clause 2 Schedule 11.3

Code related audit information

The standard switch process applies where a trader and a customer or embedded generator enters into an arrangement in which the trader commences trading electricity with the customer or embedded generator at a non-half hour or unmetered ICP at which another trader supplies electricity, or the trader assumes responsibility for such an ICP.

If the uninvited direct sale agreement applies to an arrangement described above, the gaining trader must identify the period within which the customer or embedded generator may cancel the arrangement in accordance with section 36M of the Fair Trading Act 1986. The arrangement is deemed to come into effect on the day after the expiry of that period.

A gaining trader must advise the registry of a switch no later than 2 business days after the arrangement comes into effect and include in its advice to the registry that the switch type is TR and 1 or more profile codes associated with that ICP.

Audit observation

The switch gain process was examined to determine when Pulse deem all conditions to be met. A sample of five ICPs using the typical sampling methodology were checked to confirm that these were notified to the registry within two business days.

Audit commentary

Pulse's processes are compliant with the requirements of Section 36M of the Fair Trading Act 1986. NT files are sent as soon as all pre-conditions are met and the withdrawal process is used if the customer changes their mind. The ICPs checked and confirmed all were sent within two days of all conditions being met.

Audit outcome

Compliant

4.2. Losing trader response to switch request and event dates - standard switch (Clauses 3 and 4 Schedule 11.3)

Code reference

Clauses 3 and 4 Schedule 11.3

Code related audit information

Within three business days after receipt of notification of a switch from the registry, the losing trader must establish a proposed event date. The event date must be no more than 10 business days after the

date of receipt of such notification, and in any 12 month period, at least 50% of the event dates must be no more than five business days after the date of notification. The losing trader must then:

- *provide acknowledgement of the switch request by (clause 3(a) of Schedule 11.3):*
- *providing the proposed event date to the registry and a valid switch response code (clause 3(a)(i) and (ii) of Schedule 11.3); or*
- *providing a request for withdrawal of the switch in accordance with clause 17 (clause 3(c) of Schedule 11.3).*

When establishing an event date for clause 4, the losing trader must disregard every event date established by the losing trader for a customer who has been with the losing trader for less than two calendar months (clause 4(2) of Schedule 11.3).

Audit observation

An event detail report for the audit period was reviewed, to identify AN files issued by Pulse during the audit period. A sample of two ANs per response code were reviewed to determine whether the codes had been correctly applied.

The switch breach report was examined for the audit period.

The event detail report for the period from 1/01/2017 to 31/07/2017 was analysed to assess compliance with the setting of event dates requirement.

Audit commentary

The switching process was examined in relation to Pulse as the "losing trader" for a selection of NHH ICPs.

Event dates set by losing trader must be within 10 business days of receipt of an NT file. Over a 12 month period 50% of event dates must be within five business days. The event detail report for the period 01/07/2017 to 31/07/2017 was examined; there were no ICPs with switch dates greater than 10 business days. 100% of switches occurred within five business days.

Code	Total transfer switches	Backdated switch	Total within 10 days	Total within 5 days	% within 5 days
PUNZ	1,029	0	1,029	1,029	100%

The switch breach report contained no late AN files for transfer switches.

I reviewed a sample of two ANs for each AN response code used. I specifically checked whether the AA code was only used when none of the other codes were relevant. I found three cases where incorrect response codes were applied.

- "PD" (premises de-energised) was applied when the ICP was connected
- "AA" (acknowledge and accept) was applied for two ICPs with advanced metering installed.

This is recorded as non-compliance below:

Non-compliance	Description
Audit Ref: 4.2 With: Clauses 3 and 4 Schedule 11.3 From: 10-Apr-17 To: 07-Jun-17	Three incorrect AN response codes were applied. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate as they are sufficient to mitigate risk most of the time, but there is room for improvement. Three AN response codes were applied incorrectly. All should have had the "AD" (advanced metering) code applied, and information confirming the ICPs had AMI metering was available on the registry.

Actions taken to resolve the issue	Completion date	Remedial action status
Human error resulted in these AN response files being sent with the incorrect status. Training has been provided to the switching team to improve accuracy of manually processed switch responses.	25 Sep 2017	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Training has been provided to improve accuracy of manually processed switch responses. The Gentrack 4 system will automatically handle responses to advanced metering switch requests, reducing the need for manual intervention.	Gentrack 4 Go Live Date	

Audit outcome

Non-compliant

4.3. Losing trader must provide final information - standard switch (Clause 5 Schedule 11.3)

Code reference

Clause 5 Schedule 11.3

Code related audit information

If the losing trader provides information to the registry in accordance with clause 3(a) of Schedule 11.3 with the required information, no later than 5 business days after the event date, the losing trader must complete the switch by:

- *providing event date to the registry (clause 5(a)); and*

- *provide to the gaining trader a switch event meter reading as at the event date, for each meter or data storage device that is recorded on the registry with accumulator of C and a settlement indicator of Y (clause 5(b)); and*
- *if a switch event meter reading is not a validated reading, provide the date of the last meter reading (clause 5(c)).*

Audit observation

An event detail report for the period from 1/01/2017 to 31/07/2017 was reviewed, to identify CS files issued by Pulse. The accuracy of the content of CS files was confirmed by checking a sample of five records. The content checked included:

- correct identification of meter readings and correct date of last meter reading
- accuracy of meter readings
- accuracy of average daily consumption (this is based on the most recent read to read consumption).

The process to manage the sending of the CS file within five business days of the event date was examined. The switch breach history report for the audit period was reviewed to identify late CS files.

Audit commentary

The switch breach report recorded one late CS file on 02/03/2017. The CS was one business day late. I could not confirm the reason for the delay, it was possibly contributed to by the customer being in the credit cycle. This is recorded as a non-compliance below, and is a reduction from the three late CS files recorded in the last audit.

The accuracy of the content of CS files was confirmed by checking a sample of five transfer CS files. The sample checked found most of the details were correct including readings and read types. The average daily consumption figure was checked and I confirm this is calculating correctly. The following data inaccuracies were identified, and are recorded as non-compliance below:

- The CS file for 0000040102NT27A effective date 21/07/2017 used actual readings dated 27/06/2017 as the switch readings. An estimated or actual reading dated 20/07/2017 should have been used. The switch was later withdrawn due to a metering issue, and resent with reads for the new meter.
- The CS file for 0000006568NTD4F effective date 18/04/2017 used actual readings dated 18/04/2017. An estimated or actual reading dated 17/04/2017 should have been used. The switch was later withdrawn due to customer cancellation.

Non-compliance	Description
Audit Ref: 4.3 With: Clause 5 Schedule 11.3 For: 3 CS files	One late CS file. Two CS files contained readings for incorrect dates. Potential impact: Low Actual impact: Low Audit history: Twice previously Controls: Moderate Breach risk rating: 2

Audit risk rating	Rationale for audit risk rating
Low	Controls are rated as moderate as they are sufficient to mitigate risk most of the time, but there is room for improvement. One CS file was one business day late. Both CS files containing reads for incorrect dates were later withdrawn.

Actions taken to resolve the issue	Completion date	Remedial action status
Switching processes, documentation, and training are updated as part of the Gentrack 4 system upgrade.	Gentrack 4 go live date	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Registry breach reports are reviewed twice every business day to ensure timely delivery of CS files. This is a manual process that warrants revision in Registry – to exclude non business days from the report.	1 Sep 2017	

Audit outcome

Non-compliant

4.4. Retailers must use same reading - standard switch (Clause 6(1) and 6A Schedule 11.3)

Code reference

Clause 6(1) and 6A Schedule 11.3

Code related audit information

The losing trader and the gaining trader must both use the same switch event meter reading as determined by the following procedure:

- *if the switch event meter reading provided by the losing trader differs by less than 200 kWh from a value established by the gaining trader, the gaining trader must use the losing trader's validated meter reading or permanent estimate (clause 6(a)); or*
- *the gaining trader may dispute the switch meter reading if the validated meter reading or permanent estimate provided by the losing trader differs by 200 kWh or more. (clause 6(b)).*

If the gaining trader disputes a switch meter reading because the switch event meter reading provided by the losing trader differs by 200 kWh or more, the gaining trader must, within 4 calendar months of the actual event date, provide to the losing trader a changed switch event meter reading supported by two validated meter readings.

- *the losing trader can choose not to accept the reading, however must advise the gaining trader no later than 5 business days after receiving the switch event meter reading from the gaining trader (clause 6A(a)); or*
- *if the losing trader notifies its acceptance or does not provide any response, the losing trader must use the switch event meter reading supplied by the gaining trader (clause 6A(b)).*

Audit observation

The process for the management of read requests was examined.

The event detail report for the period from 1/01/2017 to 31/07/2017 was reviewed to identify all read change requests and acknowledgements.

A combined sample of ten read change requests from the event detail report was selected using the diverse sample methodology. The sample included both transfer and gaining trader read requests, files exchanged with different traders, and a mix of acceptances and rejections.

A sample of five read change rejections and five acceptances was selected from the event detail report using the diverse sample methodology. The sample covered both transfer and gaining trader read requests, and files exchanged with different traders.

The switch breach history report for the audit period was reviewed, and ten late read change requests were identified for transfer switches. No late acknowledgements were recorded. All late read change files were checked.

Audit commentary

There are some occasions where a switch meter read is not used even though it differs by less than 200 kWh, specifically if the gaining trader has an actual or a customer reading which is different to the losing traders reading. These situations are normally resolved by negotiation between retailers, and this approach leads to a higher level of switch read accuracy.

I reviewed a sample of ten read change requests and the corresponding acknowledgements, and found that in all cases, Pulse had the correct readings recorded in their systems.

The switch breach report recorded 10 late RR files for eight transfer switches. This is recorded as non-compliance below. I investigated the reasons for the delays and found that in most cases, the request was issued promptly once Pulse identified the issue and had obtained two actual readings. In one case, a request from billing appeared to have missed being actioned.

Authority concerns raised in 2016 audit	2017 findings
Audit Ref: 2.1.5 / 2.2.4 **Issue:** PUNZ does not consider late RR files as a breach. **Clarification:** Providing late RR files is a breach of the Code. Complying with 11.2 does not remove the requirements to comply with other parts of the Code and the timeframes for complying. Additionally there is a requirement to provide accurate information as soon as practicable. It is not clear why it would not be practicable to read the meter within the 4 month period provided.	Some late RR files were identified during the 2017 audit. Pulse tries to identify read changes required promptly. In some cases, access issues can make it difficult to obtain two actual readings within the timeframe for non AMI meters.

Non-compliance	Description
Audit Ref: 4.4 With: Clause 6(1) and 6A Schedule 11.3 For: entire audit period	Ten late RR files for transfer switches. Potential impact: Low Actual impact: None Audit history: Twice previously Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are strong because the process is sound and potentially incorrect readings are investigated as soon as possible. There is a minor impact on other traders and customers because rebilling must occur. The audit risk rating is low. Pulse generally sends RR files as soon as practicable after identifying that a change is required.

Actions taken to resolve the issue	Completion date	Remedial action status
Pulse will investigate more options for gaining meter readings for use in RR files.	1 Nov 2017	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Refresher training of Switching staff is undertaken as part of the Gentrack 4 system upgrade.	Gentrack Go Live Date	

Audit outcome

Non-compliant

4.5. Non-half hour switch event meter reading - standard switch (Clause 6(2) and (3) Schedule 11.3)

Code reference

Clause 6(2) and (3) Schedule 11.3

Code related audit information

If the losing trader trades electricity from a non-half hour meter, with a switch event meter reading that is not from an AMI certified meter flagged Y on the registry: and

- *the gaining trader will trade electricity from a meter with a half hour submission type in the registry (clause 6(2)(b);*
- *the gaining trader within five business days after receiving final information from the registry, may provide the losing trader with a switch event meter reading from that meter. The losing trader must use that switch event meter reading.*

Audit observation

The process for the management of read requests was examined. The event detail report and switch breach report were analysed.

Audit commentary

The switch breach report did not record any late files for gaining trader read changes.

This clause requires that if the gaining trader provides an AMI read within five days of the switch event date to the losing trader and if the losing trader traded it as a non-half hour site, the losing trader must use this read so long as the losing trader has not already provided an actual read from an AMI site.

For ICP 0000072599TR974, the RR was rejected although the request was sent within five business days, and Pulse had provided an estimate read in the CS. The switch was later withdrawn effective from the switch in date. It appears that the rejection was in error, and this is recorded as non-compliance below.

Non-compliance	Description
Audit Ref: 4.5 With: Clause 6(2) and (3) Schedule 11.3 From: 23-May-17 To: 23-May-17	One RR request was rejected, when it should have been accepted. Potential impact: Low Actual impact: None Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are strong because the process is sound and potentially incorrect readings are investigated as soon as possible. There is a minor impact on other traders and customers because rebilling must occur. The audit risk rating is low. The switch was later withdrawn. All other RR requests were accepted.

Actions taken to resolve the issue	Completion date	Remedial action status
This was an operator error, there are controls around this process to verify that actual reads and smart meter readings have precedence over estimates.	25 Sep 2017	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Refresher training to users – updated as part of the Gentrack 4 implementation. This should improve the accuracy of RR request responses.	25 Sep 2017	

Audit outcome

Non-compliant

4.6. Disputes - standard switch (Clause 7 Schedule 11.3)

Code reference

Clause 7 Schedule 11.3

Code related audit information

A losing trader or gaining trader may notify the other that it disputes a switch event meter reading, notified under clauses 1 to 6. Such a dispute must be resolved in accordance with clause 15.29 (with all necessary amendments).

Audit observation

I confirmed with Pulse whether any disputes have needed to be resolved in accordance with this clause.

Audit commentary

Pulse confirmed that no disputes have needed to be resolved in accordance with this clause.

Audit outcome

Compliant

4.7. Gaining trader informs registry of switch request - switch move (Clause 9 Schedule 11.3)

Code reference

Clause 9 Schedule 11.3

Code related audit information

The switch move process applies where a gaining trader has an arrangement with a customer or embedded generator to trade electricity at an ICP using non half-hour metering or an unmetered ICP, or to assume responsibility for such an ICP, and no other trader has an agreement to trade electricity at that ICP, this is referred to as a switch move and the following provisions apply:

If the "uninvited direct sale agreement" applies, the gaining trader must identify the period within which the customer or embedded generator may cancel the arrangement in accordance with section 36M of the Fair Trading Act 1986. The arrangement is deemed to come into effect on the day after the expiry of that period.

In the event of a switch move, the gaining trader must advise the registry of a switch and the proposed event date no later than two business days after the arrangement comes into effect.

In its advice to the registry the gaining trader must include:

- *a proposed event date (clause 9(2)(a)); and*
- *that the switch type is "MI" (clause 9(2)(b); and*
- *one or more profile codes of a profile at the ICP (clause 9(2)(c)).*

Audit observation

The switch gain process was examined to determine when Pulse deems all conditions to be met. A sample of five ICPs using the typical sampling methodology were checked to confirm that these were notified to the registry within two business days.

Audit commentary

NT files are sent as soon as all pre-conditions are met and the withdrawal process is used if the customer changes their mind. The ICPs checked and confirmed all were sent within two days of all conditions being met.

Audit outcome

Compliant

4.8. Losing trader provides information - switch move (Clause 10(1) Schedule 11.3)

Code reference

Clause 10(1) Schedule 11.3

Code related audit information

10(1) Within five business days after receipt of notification of the switch move from the registry, if the losing trader accepts the event date proposed by the gaining trader, the losing trader must complete the switch by providing to the registry:

- *confirmation of the switch event date; and*
- *a valid switch response code; and*
- *final information as required under clause 1; or*
- *10(1)(b) If the losing trader does not accept the event date proposed by the gaining trader, the losing trader must acknowledge the switch request. Determine an event date that is not earlier than the gaining traders proposed date and that date can be no later than 10 business days after the date of the notification. Alternatively, the losing trader may provide a request for a withdrawal of the switch in accordance with clause 17.*

Audit observation

An event detail report for the period from 01/01/2017 to 31/07/2017 was reviewed, to identify AN files issued by Pulse during the audit period. A sample of two ANs per response code were reviewed to determine whether the codes had been correctly applied.

The switch breach history report for the audit period was reviewed in relation to both late AN and CS files.

The process to manage the sending of the CS file within five business days of the event date was examined.

Audit commentary

The switching process was examined in relation to Pulse as the "losing trader" for a selection of NHH ICPs, in most instances the proposed event date is the date the customer moved into the premise, and this date is confirmed.

The switch breach report was examined and found one late AN file. The breach was not genuine, the file was sent within five business days of receiving the NT.

There was one breach allegation (1611PEAL1) relating to a switch event date being prior to the date requested by the gaining retailer. The alleged breach was closed early and no further action was taken.

I reviewed a sample of two ANs for each AN response code used. I specifically checked whether the AA code was only used when none of the other codes were relevant. I found two cases where an "AA" (acknowledge and accept) was applied for ICPs with advanced metering installed. This is recorded as non-compliance below.

Non-compliance	Description
Audit Ref: 4.8 With: Clause 10(1) Schedule 11.3 From: 22-May-17 To: 28-Jun-17	Two incorrect AN response codes were applied. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate as they are sufficient to mitigate risk most of the time, but there is room for improvement. Two AN response codes were applied incorrectly. Both should have had the "AD" (advanced metering) code applied and information on the metering was available on the registry.

Actions taken to resolve the issue	Completion date	Remedial action status
Switching training has been revised to include the August 2016 Memo "Losing trader obligations when providing switch response codes in AN file".	25 Aug 2017	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
A training refresh will be undertaken in conjunction with the Gentrack 4 upgrade training. This should reduce operator errors in scenarios where direct access to registry is required for switch responses.	Gentrack 4 Go Live Date	

Audit outcome

Non-compliant

4.9. Losing trader determines a different date - switch move (Clause 10(2) Schedule 11.3 (2))

Code reference

Clause 10(2) Schedule 11.3 (2)

Code related audit information

If the losing trader determines a different date, the losing trader must also complete the switch by providing to the registry as described in sub-clause (1)(a):

- *the event date proposed by the losing trader; and*
- *a valid switch response code; and*
- *final information as required under clause 1.*

Audit observation

The setting of event dates for move switches was examined. The event detail report for 01/01/2017 to 31/07/2017 was examined, comparing the NT requested event date with the AN event date sent by Pulse for any switches dated earlier than the NT requested date for the 253 switch moves recorded. The report was also checked for any event dates that were set greater than ten days from the NT receipt date.

Audit commentary

Analysis found six ICPs where the event date was set earlier than the gaining trader requested date. All were checked. For five of these, the AN date matched the switch date. For ICP 0001725872BU0D8 the CS event date was set one day later than the AN date. The switch was later withdrawn.

Analysis found 10 ICPs where the proposed event date was set greater than ten days in advance. All were checked. In all cases, the AN date matched the date requested by the gaining trader.

There was one breach allegation (1611PEAL1) relating to a switch event date being prior to the date requested by the gaining retailer, and was an alleged breach of Part 11 Schedule 11.3 clause 10 (1) (b) (i). The alleged breach was closed early and no further action was taken.

Non-compliance is recorded for the incorrect event dates being recorded in the AN files.

Non-compliance	Description
Audit Ref: 4.9 With: 10(2) Schedule 11.3 (2) From: 2 switch files	Incorrect dates were recorded in two AN files. Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as strong as they mitigate the risk most of the time. The requirements of the clause are understood, only two files were affected and one was later withdrawn.

Actions taken to resolve the issue	Completion date	Remedial action status
When the AN file is transmitted at 10 business days in the future, it appears in the breach report. For these files, the CS file is sent out on the correct date, with manual intervention to adjust the transfer date. Switching team has had refresher training on the importance of monitoring the switch dates in the breach report.	25 Aug 2017	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

A switching training refresh will be undertaken in conjunction with the Gentrack 4 upgrade training. This should reduce operator errors in scenarios where direct access to registry is required for switch responses.	Gentrack 4 Go Live Date	

Audit outcome

Non-compliant

4.10. Losing trader must provide final information - switch move (Clause 11 Schedule 11.3)

Code reference

Clause 11 Schedule 11.3

Code related audit information

If the losing trader has provided information to the registry in accordance with clause 10(a), within three business days after the later of the actual event date or date of receipt of the switch request, the losing trader must:

- *provide the event date (clause 11(a)); and*
- *provide the switch event meter reading as at the event date for each meter or data storage device noted on the registry (clause 11(b)); and*
- *if switch event meter reading is not a validated meter reading, provide the date of the last reading of the meter or storage device (clause (11(c)).*

Audit observation

An event detail report for 01/01/2017 to 31/07/2017 was examined was reviewed to identify CS files issued by Pulse during the audit period. The accuracy of the content of CS files was confirmed by checking a sample of five records. The content checked included:

- correct identification of meter readings and correct date of last meter reading
- accuracy of meter readings
- accuracy of average daily consumption (this is based on the most recent read to read consumption).

Audit commentary

The accuracy of the content of CS files was confirmed by checking a sample of five move in CS files. The sample checked found all details were correct including readings and read types. The average daily consumption figure was checked and I confirm this is calculating correctly.

The switch breach report recorded 34 late CS files sent late during the audit period. This is a reduction from the 84 late CS files recorded in the last audit. A sample of 20 of these were checked;10 were late and 10 were not late. The late sending of some CS files is recorded as non-compliance.

Non-compliance	Description
Audit Ref: 4.10 With: Clause 11 Schedule 11.3 From: entire audit period	10 late CS files for move in switches. 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 rated as strong because they mitigate risk most of the time. Late CS files have a minor impact on other traders. The audit risk rating is low. Some late CS files were identified on the switch breach report; some were found not to be genuine.

Actions taken to resolve the issue	Completion date	Remedial action status
Switching processes, documentation, and training are updated as part of the Gentrack 4 system upgrade.	Gentrack 4 go live date	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Registry breach reports are reviewed twice every business day to ensure timely delivery of CS files. This is a manual process that warrants revision in Registry – to exclude non business days from the report.	1 Sep 2017	

Audit outcome

Non-compliant

4.11. Gaining trader changes to switch meter reading - switch move (Clause 12 Schedule 11.3)

Code reference

Clause 12 Schedule 11.3

Code related audit information

The gaining trader may use the switch event meter reading supplied by the losing trader or may, at its own cost, obtain its own switch event meter reading. If the gaining trader elects to use this new switch event meter reading, the gaining trader must notify the losing trader of the switch event meter reading and the actual event date to which it refers as follows:

- *if the switch meter reading established by the gaining trader differs by less than 200 kWh from that provided by the losing trader, both traders must use the switch event meter reading provided by the gaining trader (clause 12(2)(a)); or*
- *if the switch event meter reading provided by the losing trader differs by 200 kWh or more from a value established by the gaining trader, the gaining trader may dispute the switch meter*

reading. In this case, the gaining trader, within 4 calendar months of the actual event date, must provide to the losing trader a changed validated meter reading or a permanent estimate supported by two validated meter readings and the losing trader must either (clause 12(2)(b) and clause 12(3)):

- *notify the gaining trader if it does not accept the switch event meter reading and the losing trader and the gaining trader must resolve the dispute in accordance with the disputes procedure in clause 15.29 (with all necessary amendments) (clause 12(3)(a)); or*
- *if the losing trader notifies its acceptance or does not provide any response, the losing trader must use the switch event meter reading supplied by the gaining trader (clause 12(3)(b)).*

12(2A) If the losing trader trades electricity from a non-half hour meter, with a switch event meter reading that is not from an AMI certified meter flagged Y on the registry,

- *the gaining trader will trade electricity from a meter with a half hour submission type in the registry (clause 12(2A)(b));*
- *the gaining trader no later than five business days after receiving final information from the registry, may provide the losing trader with a switch event meter reading from that meter. The losing trader must use that switch event meter reading (clause 12(2B)).*

Audit observation

The process for the management of read requests was examined.

An event detail report for 01/01/2017 to 31/07/2017 was analysed to identify all read change requests and acknowledgements during the audit period.

A combined sample of ten read change requests from the event detail report was selected using the diverse sample methodology. The sample included both transfer and gaining trader read requests, files exchanged with different traders, and a mix of acceptances and rejections.

A sample of five read change rejections and five acceptances was selected from the event detail report using the diverse sample methodology. The sample covered both transfer and gaining trader read requests, and files exchanged with different traders.

The switch breach history report for the audit period was reviewed, and 13 late read change requests were identified for switch moves. Seven of these were checked using a diverse characteristics sample.

Audit commentary

RR requests are generally initiated via email between the two parties and only once an agreement has been reached an RR file is sent to complete. All RR requests are evaluated and validated against the ICP information. If the request is within validation requirements these are accepted.

The switch breach report recorded 13 late RR files for 10 switch moves. This is recorded as non-compliance below. I investigated the reasons for the delays for seven ICPs and found that in all cases, the request was issued promptly once Pulse identified the issue and had obtained two actual readings.

Authority concerns raised in 2016 audit	2017 findings
Audit Ref: 2.1.5 / 2.2.4 **Issue:** PUNZ does not consider late RR files as a breach. **Clarification:** Providing late RR files is a breach of the Code. Complying with 11.2 does not remove the requirements to comply with other parts of the Code and the timeframes for	Some late RR files were identified during the 2017 audit. Pulse tries to identify read changes required promptly. In some cases, access issues can make it difficult to obtain two actual readings within the timeframe for non AMI meters.

complying. Additionally there is a requirement to provide accurate information as soon as practicable. It is not clear why it would not be practicable to read the meter within the 4 month period provided.	

Non-compliance	Description
Audit Ref: 4.11 With: Clause 12 Schedule 11.3 For: entire audit period	13 late RR files for switch moves. Potential impact: Low Actual impact: Low Audit history: Twice previously Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as strong as they are sufficient to mitigate risk most of the time. Pulse generally sends RR files as soon as practicable after identifying that a change is required.

Actions taken to resolve the issue	Completion date	Remedial action status
Actual readings were received after the initial CS file was issued to the gaining trader beyond the maximum four month timeframe. All of these have supporting email correspondence and have been agreed upon with the other traders. Pulse negotiates with other traders on the application of start read disputes.	25 Sep 2017	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
As the uptake of remotely read meters increases, exposure to unread meters is reduced over time.	Ongoing	

Audit outcome

Non-compliant

4.12. Gaining trader informs registry of switch request - gaining trader switch (Clause 14 Schedule 11.3)

Code reference

Clause 14 Schedule 11.3

Code related audit information

The gaining trader switch process applies where a trader and a customer or embedded generator enters into an arrangement in which the trader commences trading electricity with the customer or embedded generator to trade electricity through or assume responsibility for:

- *a half hour metering installation that is not a category 1 or 2 metering installation, that has an ICP with a submission type half hour on the registry and an AMI flag of "N"; or*
- *a half hour metering installation that has a submission flag of half hour and an AMI flag of "N" and is traded by the losing trader as non-half hour; or*
- *a non half hour metering installation at an ICP with the losing trader trades through a half hour metering installation with an AMI flag of "N".*

If the uninvited direct sale agreement applies to an arrangement described above, the gaining trader must identify the period within which the customer or embedded generator may cancel the arrangement in accordance with section 36M of the Fair Trading Act 1986. The arrangement is deemed to come into effect on the day after the expiry of that period.

A gaining trader must advise the registry of the switch and expected event date no later than 3 business days after the arrangement comes into effect.

14(2) The gaining trader must include in its advice to the registry:

a) a proposed event date; and
b) that the switch type is HH.

14(3) The proposed event date must be a date that is after the date on which the gaining trader advises the registry, unless clause 14(4) applies.

14(4) The proposed event date is a date before the date on which the gaining trader advised the registry, if:

14(4)(a) – the proposed event date is in the same month as the date on which the gaining trader advised the registry; or

14(4)(b) – the proposed event date is no more than 90 days before the date on which the gaining trader advises the registry and this date is agreed between the losing and gaining traders.

Audit observation

There were no gaining trader switches initiated during the audit period.

Audit outcome

Not applicable

4.13. Losing trader provision of information - gaining trader switch (Clause 15 Schedule 11.3)

Code reference

Clause 15 Schedule 11.3

Code related audit information

Within three business days after the losing trader is informed about the switch by the registry, the losing trader must:

15(a) - provide to the registry a valid switch response code as approved by the Authority; or

15(b) - provide a request for withdrawal of the switch in accordance with clause 17.

Audit observation

There were no gaining trader switches initiated during the audit period.

Audit outcome

Not applicable

4.14. Gaining trader to notify registry - gaining trader switch (Clause 16 Schedule 11.3)

Code reference

Clause 16 Schedule 11.3

Code related audit information

The gaining trader must complete the switch no later than 3 business days, after receiving the valid switch response code, by advising the registry of the event date.

If the ICP is being de-energised or if metering equipment is being removed, the gaining trader must either-

> *16(a)- give the losing trader or MEP for the ICP an opportunity to interrogate the metering installation immediately before the ICP is de-energised or the metering equipment is removed; or*
>
> *16(b)- carry out an interrogation and, no later than five business days after the metering installation is de-energised or removed, advise the losing trader of the results and metering component numbers for each data channel in the metering installation.*

Audit observation

There were no gaining trader switches initiated during the audit period.

Audit outcome

Not applicable

4.15. Withdrawal of switch requests (Clauses 17 and 18 Schedule 11.3)

Code reference

Clauses 17 and 18 Schedule 11.3

Code related audit information

A losing trader or gaining trader may request that a switch request be withdrawn at any time until the expiry of two calendar months after the event date of the switch.

If a trader requests the withdrawal of a switch, the following provisions apply:

- *for each ICP, the trader withdrawing the switch request must provide the registry with (clause 18(c)):*
  - *the participant identifier of the trader making the withdrawal request (clause 18(c)(i)); and*
  - *the withdrawal advisory code published by the Authority (clause 18(c)(ii))*
- *within 5 business days after receiving a notification from the registry of a switch, the trader receiving the withdrawal must notify the registry that the switch withdrawal request is accepted or rejected. A switch withdrawal request must not become effective until accepted by the trader who received the withdrawal (clause 18(d))*
- *on receipt of a rejection notification from the registry, in accordance with clause 18(d), a trader may re-submit the switch withdrawal request for an ICP in accordance with clause 18(c). All*

switch withdrawal requests must be resolved within 10 business days after the date of the initial switch withdrawal request (clause 18(e))

- *if the trader requests that a switch request be withdrawn, and the resolution of that switch withdrawal request results in the switch proceeding, within 2 business days after receipt of notification from the registry in accordance with clause 22(b), the losing trader must comply with clauses 3,5,10 and 11 (whichever is appropriate) and the gaining trader must comply with clause 16 (clause 18(f)).*

Audit observation

The switch withdrawal process was examined. The content of a sample of two ICPs for each withdrawal code from the event detail report were checked using the typical sampling methodology. A sample of five switch rejections were checked using the typical sample methodology.

The event detail report for 01/01/2017 to 31/07/2017 was analysed to confirm timeliness of switch withdrawal requests. This identified 11 ICPs of 1024 withdrawal requests that were backdated greater than two months from the event date. A sample of ten of these were checked using the diverse case methodology. One late NW was identified on the switch breach report, but this was not genuine and related to a late CS file.

The switch breach report was checked for any late switch withdrawal acknowledgements and found none were recorded. The event detail report was also analysed to confirm timeliness of switch withdrawal acknowledgements. All 554 withdrawal acknowledgements were provided within five business days after the request was received.

Audit commentary

The content of a sample of 11 NW files was examined. In ten cases, the NW reason matched the data in Gentrack. The NW for 0000112273UN2B1 showed "CX" (customer cancellation) but should have recorded "WP" (wrong premises).

I reviewed a sample of five NWs rejected by Pulse. I found that all were validly rejected. Where the NW was re-requested with the correct code, Pulse accepted.

I reviewed a sample of ten NWs backdated more than two months and found:

- three were sent in error, due to a new user training issue
- seven were delayed due to delays in identifying that an NW was required and determining the best course of action.

Non-compliance is recorded for the backdated NWs and incorrect withdrawal code for ICP 0000112273UN2B1.

Non-compliance	Description
Audit Ref: 4.15 With: Clauses 17 and 18 Schedule 11.3 From: entire audit period	11 backdated NW requests. One incorrect NW code. Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1

Audit risk rating	Rationale for audit risk rating
Low	Controls are rated as strong as they are sufficient to mitigate risk most of the time. A small proportion of NWs (1%) were late. Only one of the 11 NWs reviewed had an incorrect response code.

Actions taken to resolve the issue	Completion date	Remedial action status
Switching staff have resources available to determine the corrective response code for NWs. Where a human error has occurred then corrective actions are to take place with the support of another team member or management. This can also be determined by the response from the other participant upon rejection and new correction put in place.	25 Aug 2017	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Training will be refreshed along with the implementation of Gentrack 4 training.	GT4 Go Live Date	

Audit outcome

Non-compliant

4.16. Metering information (Clause 21 Schedule 11.3)

Code reference

Clause 21 Schedule 11.3

Code related audit information

For an interrogation or validated meter reading or permanent estimate carried out in accordance with Schedule 11.3:

> *21(a) - the trader who carries out the interrogation, switch event meter reading must ensure that the interrogation is as accurate as possible, or that the switch event meter reading is fair and reasonable.*
>
> *21(b) and (c) - the cost of every interrogation or switch event meter reading carried out in accordance with clauses 5(b) or 11(b) or (c) must be met by the losing trader. The costs in every other case must be met by the gaining trader.*

Audit observation

The meter reading process in relation to meter reads for switching purposes was examined. Examples to confirm this procedure have been examined as part of the sending of final information for switches and read requests made.

Audit commentary

All meter readings used in the switching process are validated meter readings or permanent estimates. This process is discussed further in **section 4.3.**

Pulse's policy regarding the management of meter reading expenses is compliant.

Audit outcome

Compliant

4.17. Switch saving protection (Clause 11.15AA to 11.15AB)

Code reference

Clause 11.15AA to 11.15AB

Code related audit information

A trader that buys electricity from the clearing manager may elect to have a switch saving protection by giving notice to the Authority in writing.

If a protected trader enters into an arrangement with a customer of another trader (the losing trader), or a trader enters into an arrangement with a customer of a protected trader, to commence trading electricity with the customer, the losing trader must not, by any means, initiate contact with the customer to attempt to persuade the customer to terminate the arrangement during the period from the receipt of the NT to the event date of the switch including by:

11.15AB(4)(a) - making a counter offer to the customer; or

11.15AB(4)(b) - offering an enticement to the customer.

Audit observation

The Electricity Registry switch save protected retailer list was examined to confirm that Pulse has been a save protected retailer since 13/01/2015.

Win-back processes were examined to determine whether they are compliant.

I checked the event detail report for all withdrawn switches from the audit period, to identify any withdrawn switches with a CX code applied prior to the switch completion date in relation to any switch save protected retailers.

Audit commentary

No win-back activity is initiated with lost customers during the switch. Contact is only made with departing customers to remind them that they must give adequate notice if they wish to terminate their contract, and discuss outstanding accounts if required. Pulse does attempt to win-back customers once the switch has completed.

The event detail report was checked and one "CX" coded switch withdrawal request was sent prior to the switch completion date. I confirmed that an incorrect switch withdrawal code had been applied; the wrong premises had been requested so "WP" should have been used. This is recorded as non-compliance in **section 4.15**.

Audit outcome

Compliant

5. MAINTENANCE OF UNMETERED LOAD

5.1. Maintaining shared unmetered load (Clause 11.14)

Code reference

Clause 11.14

Code related audit information

The trader must adhere to the process for maintaining shared unmetered load as outlined in clause 11.14:

> *11.14(2) - The distributor must notify the traders responsible for the ICPs across which the unmetered load is shared, of the ICP identifiers of the ICPs.*
>
> *11.14(3) - A trader who receives such a notification from a distributor must notify the distributor if it wishes to add or omit any ICP from the ICPs across which unmetered load is to be shared.*
>
> *11.14(4) - A distributor who receives such a notification of changes from the trader under (3) must notify the registry and each trader responsible for any of the ICPs across which the unmetered load is shared.*
>
> *11.14(5) - If a distributor becomes aware of any change to the capacity of a shared unmetered load ICP or if a shared unmetered load ICP is decommissioned, it must notify all traders affected by that change as soon as practicable after that change or decommissioning.*
>
> *11.14(6) - Each trader who receives such a notification must, as soon as practicable after receiving the notification, adjust the unmetered load information for each ICP in the list for which it is responsible to ensure that the entire shared unmetered load is shared equally across each ICP.*
>
> *11.14(7) - A trader must take responsibility for shared unmetered load assigned to an ICP for which the trader becomes responsible as a result of a switch in accordance with Part 11.*
>
> *11.14(8) - A trader must not relinquish responsibility for shared unmetered load assigned to an ICP if there would then be no ICPs left across which that load could be shared.*
>
> *11.14(9) - A trader can change the status of an ICP across which the unmetered load is shared to inactive status, as referred to in clause 19 of Schedule 11.1. In that case, the trader is not required to notify the distributor of the change. The amount of electricity attributable to that ICP becomes UFE.*

Audit observation

The registry list was reviewed and found Pulse has 16 ICPs with shared unmetered load. I reviewed the processes to identify shared unmetered load.

Audit commentary

Approximately every six months, Pulse compares the unmetered kWh values recorded in Gentrack to the distributor unmetered load details on the registry, to confirm that correct unmetered load values are recorded.

Pulse's weekly registry validation, discussed in **section 2.1** also identifies discrepancies in unmetered load details.

Pulse has 16 ICPs with shared unmetered load, and I confirmed that the unmetered load calculation was correct for all 16 ICPs. The 2016 audit found no unmetered load was recorded for one ICP 0000538242NR98A; correct unmetered kWh is now recorded on the registry.

Audit outcome

Compliant

5.2. Unmetered threshold (Clause 10.14 (2)(b))

Code reference

Clause 10.14 (2)(b)

Code related audit information

The reconciliation participant must ensure that unmetered load does not exceed 3,000 kWh per annum, or 6,000 kWh per annum if the load is predictable and of a type approved and published by the Authority.

Audit observation

Examination of the registry list file as at 11 August 2017 found 17 active ICPs have unmetered load recorded, excluding shared unmetered load. None of these ICPs have annual unmetered load that exceeds 3,000 kWh.

Audit commentary

All unmetered ICPs supplied by Pulse have annual consumption below the 3,000 kWh threshold.

Audit outcome

Compliant

5.3. Unmetered threshold exceeded (Clause 10.14 (5))

Code reference

Clause 10.14 (5)

Code related audit information

If the unmetered load limit is exceeded the retailer must:

- *within 20 business days, commence corrective measure to ensure it complies with Part 10*
- *within 20 business days of commencing the corrective measure, complete the corrective measures*
- *no later than 10 business days after it becomes aware of the limit having been exceeded, advise each participant who is or would be expected to be affected of:*
    - *the date the limit was calculated or estimated to have been exceeded*
    - *the details of the corrective measures that the MEP proposes to take or is taking to reduce the unmetered load.*

Audit observation

Examination of the registry list file as at 11 August 2017 found 17 active ICPs have unmetered load recorded, excluding shared unmetered load. None of these have a UML load that exceeds 3,000 kWh.

Audit commentary

All unmetered ICPs supplied by Pulse have consumption below the 3,000 kWh threshold.

Audit outcome

Compliant

5.4. Distributed unmetered load (Clause 11 Schedule 15.3, Clause 15.37B)

Code reference

Clause 11 Schedule 15.3, Clause 15.37B

Code related audit information

An up-to-date database must be maintained for each type of distributed unmetered load for which the retailer is responsible. The information in the database must be maintained in a manner that the resulting submission information meets the accuracy requirements of clause 15.2.

A separate audit is required for distributed unmetered load data bases.

The database must satisfy the requirements of Schedule 15.5 with regard to the methodology for deriving submission information.

Audit observation

Examination of the registry list file as at 11 August 2017 confirmed that no DUML was supplied by Pulse. Processes for DUML were discussed.

Audit commentary

Pulse does not intend to deal with any distributed unmetered load ICPs.

Audit outcome

Not applicable

6. GATHERING RAW METER DATA

6.1. Electricity conveyed & notification by embedded generators(Clause 10.13, Clause 10.24 and 15.13)

Code reference

Clause 10.13, Clause 10.24 and 15.13

Code related audit information

A participant must use the quantity of electricity measured by a metering installation as the raw meter data for the quantity of electricity conveyed through the point of connection.

This does not apply if data is estimated or gifted in the case of embedded generation under clause 15.13.

A trader must, for each energised ICP that is not also an NSP, and for which it is recorded in the registry as being responsible, ensure that:

- *there is one or more metering installations*
- *all electricity conveyed is quantified in accordance with the Code*
- *it does not use subtraction to determine submission information for the purposes of Part 15.*

An embedded generator must give notification to the reconciliation manager for an embedded generating station, if the intention is that the embedded generator will not be receiving payment from the clearing manager or any other person through the point of connection to which the notification relates.

Audit observation

A registry list was examined to confirm whether Pulse had supplied any ICPs with generation during the audit period.

Audit commentary

Analysis of the registry list found that Pulse had supplied 126 ICPs with generation entered by the distributor. Of those, 112 have injection/export registers and 14 do not have injection/export registers.

ICPs with generation recorded by the distributor are identified as part of the weekly reconciliation to the registry. If no generation details are recorded by Pulse, the customer is contacted by field services to determine whether generation is connected to the meter or directly wired to appliances.

The 2016 audit identified three ICPs with generation recorded by the distributor which required investigation; two are still supplied by Pulse - 0007158425RNFDE, and 1000532106PC7FB. Action taken to determine whether generation was present for these ICPs was reviewed, along with a sample of four other ICPs with generation recorded by the distributor and no import/export register is present on the registry:

- ICP 1000518796PC997 has a job scheduled for installation of injection/export registers.
- ICP 0000102761UN57D had injection/export registers installed on 29/08/2017 and has been updated to RPS PV1 profile.
- ICP 1000012629BPA9C does not appear on Pulse's exception report and has not been investigated. Pulse intends to review its exception reporting to ensure that it is complete and investigate this ICP.
- ICPs 0000590149TU3EA, 0007158425RNFDE and 1000532106PC7FB have been investigated with the MEP, and further work is required.

Pulse confirmed that they have notified the reconciliation manager about the ICPs where they do not expect payment from the clearing manager. The generated electricity is gifted to the market.

I found 27 ICPs where import/export registers were installed, and the profile was recorded as RPS on the registry. 17 of these had generation consumption on the August 2017 AV080 submission, and I confirmed that the generation consumption was correctly reported with profile PV1. These ICPs do not have the correct profile recorded on the registry, this is recorded as non-compliance in **section 2.1**.

I checked that the correct profile code was applied for the generation type for the other ICPs where import/export registers were installed, and found them to be correct.

Pulse provided a list of ten ICPs where remote disconnection had occurred then the meter had been bridged to reconnect. This is recorded as non-compliance below. I reviewed the ten bridged meters and noted that they had all later been unbridged. Corrections were not processed for consumption that occurred during the bridged period for nine of these ICPs. This is recorded as non-compliance in **section 8.1**.

Non-compliance	Description
Audit Ref: 6.1 With: Clause 10.13 and clause 15.2 From: entire audit period	Energy is not metered and quantified according to the code where meters are bridged. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate as they are sufficient to mitigate risk most of the time, but there is room for improvement. Bridging only occurs where a soft reconnection cannot be performed after hours and the customer urgently requires their energy supply for health and safety reasons.

Actions taken to resolve the issue	Completion date	Remedial action status
Bridged meters will continue to be investigated, with known bridged meters being re-configured with estimated volume allocated.	1 Nov 2017	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

Refresher training will be given to the field service team. Where a meter is identified as being bridged, an assessment is made to estimate the volume consumed during the bridged period. The meter register is removed as at the estimated read, and the register is reinstated using the actual reading on the register. This ensures that unmetered volume during a bridge event is passed through to the reconciliation manager via the Cobra NHH reconciliation system.	1 Nov 2017	

Recommendation	Description	Audited party comment	Remedial action
Clause 10.24	Review the 14 ICPs with generation recorded by the distributor which do not have injection/export registers, to determine whether injection/export registers are required.	Sites with generation reported by the distributor are being investigated, including contacting the customer to determine the status of generation on-site. Until this investigation is complete, all energy generated and injected from these sites in absence of EG24 meter registers will be gifted to the market. An email with the list of ICPs will be sent to the Reconciliation Manager.	Identified

Audit outcome

Non-compliant

6.2. Responsibility for metering at GIP (Clause 10.26 (6), (7) and (8))

Code reference

Clause 10.26 (6), (7) and (8)

Code related audit information

For each proposed metering installation or change to a metering installation that is a connection to the grid, the participant, must:

- *provide to the grid owner a copy of the metering installation design (before ordering the equipment)*
- *provide at least three months for the grid owner to review and comment on the design*
- *respond within three business days of receipt to any request from the grid owner for additional details or changes to the design*
- *ensure any reasonable changes from the grid owner are carried out.*

The participant responsible for the metering installation must:

- *advise the reconciliation manager of the certification expiry date not later than 10 business days after certification of the metering installation*
- *become the MEP or contract with a person to be the MEP*
- *advise the reconciliation manager of the MEP identifier no later than 20 days after entering into a contract or assuming responsibility to be the MEP.*

Audit observation

The NSP table was reviewed which confirmed that Pulse is not responsible for any GIPs.

Audit outcome

Not applicable

6.3. Certification of control devices(Clause 33 Schedule 10.7 and clause 2(2) Schedule 15.3)

Code reference

Clause 33 Schedule 10.7 and clause 2(2) Schedule 15.3

Code related audit information

The reconciliation participant must advise the metering equipment provider if a control device is used to control load or switch meter registers.

The reconciliation participant must ensure the control device is certified prior to using it for reconciliation purposes.

Audit observation

The registry list as at 11 August 2017 was reviewed to confirm that Pulse has used the RPS, HHR, PV1 and E11 profiles.

The process to confirm that control devices are certified was reviewed.

Audit commentary

ICP 0001661042TGABF has profiles RPS and E11; the meter and control device are certified. Pulse confirmed that this ICP is reported with profile RPS, and the registry is incorrect. This is recorded as non-compliance in **section 2.1**.

The RPS, HHR and PV1 profiles used by Pulse for all other ICPs do not rely on use of control devices for reconciliation purposes.

Audit outcome

Compliant

6.4. Reporting of defective metering installations (Clause 10.43(2) and (3))

Code reference

Clause 10.43(2) and (3)

Code related audit information

If a participant becomes aware of an event or circumstance that lead it to believe a metering installation could be inaccurate, defective, or not fit for purpose they must:

- *advise the MEP*
- *include in the advice all relevant details.*

Audit observation

Processes relating to defective metering were examined. Ten examples of defective meters were reviewed, to determine whether the MEP was advised and if appropriate action was taken.

Audit commentary

Defective meters are typically identified through the meter reading validation process, or from information provided by the meter read provider.

Upon identifying a possible defective meter, Pulse raises a field services job to investigate. I reviewed ten examples of potential defective meters, including stopped or faulty and bridged meters. In all cases a field services job was raised and the MEP advised.

Audit outcome

Compliant

6.5. Collection of information by certified reconciliation participant (Clause 2 Schedule 15.2)

Code reference

Clause 2 Schedule 15.2

Code related audit information

Only a certified reconciliation participant may collect raw meter data, unless only the MEP can interrogate the meter, or the MEP has an arrangement which prevents the reconciliation participant from electronically interrogating the meter:

2(2) - The reconciliation participant must collect raw meter data used to determine volume information from the services interface or the metering installation or from the MEP.

2(3) - The reconciliation participant must ensure the interrogation cycle is such that is does not exceed the maximum interrogation cycle on the registry.

2(4) - The reconciliation participant must interrogate the meter at least once every maximum interrogation cycle.

2(5) - When electronically interrogating the meter the participant must:

- *a) ensure the system is to within +/- 5 seconds of NZST or NZDST*
- *b) compare the meter time to the system time*
- *c) determine the time error of the metering installation*
- *d) if the error is less than the maximum permitted error, correct the meter's clock*
- *e) if the time error is greater than the maximum permitted error then:*
  - *i) correct the metering installation's clock*
  - *ii) compare the metering installation's time with the system time*
  - *iii) correct any affected raw meter data*
- *f) download the event log.*

2(6) – The interrogation systems must record:

- *the time*
- *the date*
- *the extent of any change made to the meter clock.*

Audit observation

The data collection process was examined.

I traced a sample of 27 NHH reads from the source files to Gentrack and Cobra, and volumes for one month for five HHR ICPs from the source files to IMS and the HHR aggregates submissions.

Audit commentary

All information used to determine volume information is collected by agents to Pulse or by MEPs. The agents' audit reports are attached as appendices.

All manual meter reading information used to determine volume information is collected by Wells, as Pulse's agent. The data is transferred securely via SFTP. Wells has been audited and their audit report is attached as an appendix. I traced a sample of 14 reads from Wells from the source files, through to Gentrack and Cobra.

Pulse is progressively moving to use AMI data for all AMI enabled sites. AMI data is received via SFTP from Arc, FCLM, Metrix and AMS as MEPs. I traced a sample of 13 AMI reads from the source files through to Gentrack and Cobra. Four of these AMI meters had readings provided by Wells.

EDMI HHR meter data provided via SFTP, and AMS HHR meter data is emailed as password protected zip files. EDMI and AMS have been audited and their audit reports are attached as appendices. I traced volumes for one month for a sample of five HHR ICPs from the source files to IMS and the HHR aggregates submissions.

Reads and volumes matched in all cases, and readings are appropriately labelled.

Audit outcome

Compliant

6.6. Derivation of meter readings (Clause 3(1), 3(2) and 5 Schedule 15.2)

Code reference

Clause 3(1), 3(2) and 5 Schedule 15.2

Code related audit information

All meter readings must in accordance with the participants certified processes and procedures and using its certified facilities be sourced directly from raw meter data and, if appropriate, be derived and calculated from financial records.

All validated meter readings must be derived from meter readings.

A meter reading provided by a consumer may be used as a validated meter reading only if another set of validated meter readings not provided by the consumer are used during the validation process.

During the manual interrogation of each NHH metering installation the reconciliation participant must:

- *a) obtain the meter register*
- *b) ensure seals are present and intact*
- *c) check for phase failure (if supported by the meter)*
- *d) check for signs of tampering and damage*
- *e) check for electrically unsafe situations*

if the relevant parts of the metering installation are visible and it is safe to do so.

Audit observation

The data collection process was examined. A sample of 14 meter reads for Wells were checked using the typical case sample methodology.

Processes for customer reads were reviewed.

Audit commentary

I traced a sample of 14 Wells NHH reads from the source files to Gentrack and Cobra. All readings checked were appropriately labelled.

Wells provides information on meter condition along with the daily reads, and monthly summary reports containing all tampering, missing seal and broken seal events.

The daily meter condition information is imported into Gentrack. Pulse reports weekly on this meter condition information to identify changed and removed meters, and safety hazards. The field services team review the report, and follow up meter change or removal paperwork as necessary. Safety hazards are followed up with the customer and/or MEP as appropriate.

Pulse acts upon any meter tampering and broken seals information sent by Wells. During Wells' audit, two examples of suspected theft for Pulse ICPs were identified. I reviewed action taken to resolve these:

- In one case, the ICP had recently switched out. Pulse asked Wells to pass the information on to the gaining retailer.
- In the other case, Pulse arranged for a technician to check the meter but they could not gain access. Another job was raised immediately but the customer refused access again. The ICP has now been disconnected at the pole.

In the previous audit non-compliance was recorded because Wells did not complete checks for phase failure or missing or broken seals. Wells' 2017 audit confirmed that these checks are now completed, and condition information is provided to Pulse. No examples of phase failure or electrically unsafe installations were found for review during the audit, but phase failure and safety hazard codes exist for these issues to be recorded against.

Authority concerns raised in 2016 audit	2017 findings
Audit Ref: 4.3 Issue: The audit identified that PUNZ has not established processes for the identification and reporting of missing or broken seals or phase failure on CT metered installations. The PUNZ response does not appear to address this issue, and describes the issue as depending on contractor compliance. Clarification: PUNZ is responsible for this function, and where it is outsourcing this function to a contractor this needs to be audited. If the contractor is not performing the function in accordance with the Code, PUNZ is in breach of the Code and should be taking remedial action to address the breach.	The 2017 Wells audit confirmed that Wells are identifying instances of missing or broken seals, and phase failure and reporting these to Pulse. I reviewed two examples of suspected tampering, and Pulse had taken action in both cases.

Pulse enters customer readings and photo readings provided by customers as customer reads; these readings are not treated as actual. If Wells receives a customer reading, a no read is recorded and the reading is entered into their notes.

Audit outcome

Compliant

6.7. NHH meter reading application (Clause 6 Schedule 15.2)

Code reference

Clause 6 Schedule 15.2

Code related audit information

For NHH switch event meter reads, for the gaining trader the reading applies from 0000 hours on the day of the relevant event date and for the losing trader at 2400 hours at the end of the day before the relevant event date.

In all other cases, All NHH readings apply from 0000hrs on the day after the last meter interrogation up to and including 2400hrs on the day of the meter interrogation.

Audit observation

The process of the application of meter readings was examined.

Audit commentary

Application of reads was reviewed as part of the historic estimate checks, discussed in **section 12.11**. All NHH readings apply from 0000hrs on the day after the last meter interrogation up to and including 2400hrs on the day of the meter interrogation except in the case of a switch event meter reading which applies to the end of the day prior to the event date for the losing trader and the start of the event date for the gaining trader as required by this clause.

I traced a sample of 27 NHH reads from the source files to Gentrack and Cobra. Pulse imports the midnight AMI midnight readings, and manual readings are applied as at 2400hrs.

Audit outcome

Compliant

6.8. Interrogate meters once (Clause 7(1) and (2) Schedule 15.2)

Code reference

Clause 7(1) and (2) Schedule 15.2

Code related audit information

Each reconciliation participant must ensure that a validated meter reading is obtained in respect of every meter register for every non half hour metered ICP for which the participant is responsible, at least once during the period of supply to the ICP by the reconciliation participant, and used to create volume information.

This may be a validated meter reading at the time the ICP is switched to, or from, the reconciliation participant.

If exceptional circumstances prevent a reconciliation participant from obtaining the validated meter reading, the reconciliation participant is not required to comply with clause 7(1).

Audit observation

The process to manage missed reads was examined.

Audit commentary

A validated meter reading must be obtained in respect of every meter register for every non half hour metered ICP for which the participant is responsible, at least once during the period of supply to the ICP by the reconciliation participant, unless exceptional circumstances prevent this from occurring. This may be a validated meter reading at the time the ICP is switched to, or from, the reconciliation participant.

The NHH meter reading frequency guidelines published by the Electricity Authority define "Exceptional circumstances" as meaning "circumstances in which access to the relevant meter is not achieved despite the reconciliation participant's best endeavours". "Best endeavours" is defined as:

"Where a reconciliation participant failed to interrogate an ICP as a result of access issues, the reconciliation participant had made a minimum of three attempts to contact the customer, by using at least two methods of communication".

Pulse's process commences after three months with no actual readings. A letter is sent to the customer, asking the customer to phone. If the ICP does not receive a read in the following three months, another letter is sent and the customer is phoned. The customer contact process is tailored dependant on the no read scenario.

Where an AMI meter is not communicating and the MEP advises Pulse to move the ICP to a manual meter reading route, Pulse does this.

No reporting on ICPs not read during the period of supply was available. Because Pulse's no read process begins after three months without actual readings, it is very likely that some ICPs supplied for shorter periods will not meet the best endeavours requirement. Non-compliance is recorded below.

Non-compliance	Description
Audit Ref: 6.8 With: Clause 7(1) and (2) Schedule 15.2 From: entire audit period	Some ICPs were not read during the period of supply. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as weak as they are unlikely to mitigate the risk. The number of ICPs unread during the period of supply could not be quantified as reporting was not available.

Actions taken to resolve the issue	Completion date	Remedial action status
We will investigate additional options for gaining access to the meters to improve meter access under three months of no meter access.	BAU	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Current response to meter access issue is to send a letter, then follow up with a telephone call to the customer after three months of no access to meter. We will investigate additional options for gaining access to the meters to improve meter access under three months of no meter access.	1 Dec 2017	

Audit outcome

Non-compliant

6.9. NHH meters interrogated annually (Clause 8(1) and (2) Schedule 15.2)

Code reference

Clause 8(1) and (2) Schedule 15.2

Code related audit information

At least once every 12 months, each reconciliation participant must obtain a validated meter reading for every meter register for non half hour metered ICPs, at which the reconciliation participant trades continuously for each 12 month period.

If exceptional circumstances prevent a reconciliation participant from obtaining the validated meter reading, the reconciliation participant is not required to comply with clause 8(1).

Audit observation

The meter reading process was examined. Monthly reports for the months of February 2017 to May 2017 were provided.

A sample of ten ICPs not read in the previous 12 months were reviewed to determine whether reasonable endeavours were used to attain reads, and if exceptional circumstances existed.

Audit commentary

The monthly meter reading reports provided were reviewed.

Month	Total NSPs where ICPs were supplied > 12 months	NSPs <100% read	ICPs unread for 12 months	Overall percentage read
February 2017	165	27	40	99.93%
March 2017	165	32	59	99.90%
April 2017	173	36	53	99.91%
May 2017	173	35	48	99.92%

As discussed in **section 6.8**, there are processes in place monitor read attainment, and attempt to resolve issues preventing read attainment.

I reviewed ten ICPs not read in the previous 12 months determine whether exceptional circumstances exist, and if Pulse had used their best endeavours to obtain readings.

- three ICPs were vacant and Pulse could not obtain access as they did not have a customer
- metering issues prevented reads for two ICPs, and action had been taken to resolve the issues in both cases
- one ICP was found to be disconnected
- for one ICP Pulse attempted to contact the customer unsuccessfully
- for three ICPs no action was taken. This is recorded as non-compliance below.

Non-compliance	Description
Audit Ref: 6.9 With: Clause 8(1) and (2) Schedule 15.2 From: entire audit period	For three ICPs without an actual read for 12 months, exceptional circumstances could not be confirmed, and there was insufficient evidence that the best endeavours requirement was met. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate as they are sufficient to mitigate risk most of the time, but there is room for improvement. Three cases were identified where exceptional circumstances could not be confirmed, and there was insufficient evidence that the best endeavours requirement was met.

Actions taken to resolve the issue	Completion date	Remedial action status
We will investigate additional options for gaining access to the meters to improve meter access under three months of no meter access.	1 Nov 2017	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Current response to meter access issue is to send a letter, then follow up with a telephone call to the customer after three months of no access to meter. We will investigate additional options for gaining access to the meters to improve meter access under three months of no meter access.	1 Nov 2017	

Audit outcome

Non-compliant

6.10. NHH meters 90% read rate (Clause 9(1) and (2) Schedule 15.2)

Code reference

Clause 9(1) and (2) Schedule 15.2

Code related audit information

In relation to each NSP, each reconciliation participant must ensure that for each NHH ICP at which the reconciliation participant trades continuously for each 4 months, for which consumption information is

required to be reported into the reconciliation process. A validated meter reading is obtained at least once every 4 months for 90% of the non half hour metered ICPs.

A report is to be sent to the market administrator providing the percentage, in relation to each NSP, for which consumption information has been collected no later than 20 business days after the end of each month.

If exceptional circumstances prevent a reconciliation participant from obtaining the validated meter reading, the reconciliation participant is not required to comply with clause 9(1).

Audit observation

The meter reading process was examined. Monthly reports for the months of February 2017 to May 2017 were provided.

A sample of ten ICPs not read in the previous four months were reviewed to determine whether reasonable endeavours were used to attain reads, and if exceptional circumstances existed.

Audit commentary

The monthly meter reading reports provided were reviewed.

Month	Total NSPs where ICPs were supplied > 4 months	NSPs <90% read	ICPs unread for 4 months	Overall percentage read
February 2017	165	1	445	99.23%
March 2017	165	1	491	99.16%
April 2017	173	1	351	99.42
May 2017	173	0	360	99.42

As discussed in **section 6.8**, there are processes in place monitor read attainment, and attempt to resolve issues preventing read attainment.

Compliance was not achieved for RFN1102 for February, March and April 2017 because one ICP was unread. A reading was obtained in May 2017. I confirmed that the site has been vacant since 2016, and exceptional circumstances existed.

Audit outcome

Compliant

6.11. NHH meter interrogation log (Clause 10 Schedule 15.2)

Code reference

Clause 10 Schedule 15.2

Code related audit information

The following information must be logged as the result of each interrogation of the NHH metering:

10(a) - the means to establish the identity of the individual meter reader

10(b) - the ICP identifier of the ICP, and the meter and register identification

10(c) - the method being used for the interrogation and the device ID of equipment being used for interrogation of the meter.

10(d) - the date and time of the meter interrogation.

Audit observation

NHH data is collected by AMS, Arc, FCLM, Metrix and Wells. The data collection processes were reviewed as part of their MEP and agent audits.

I traced a sample of 27 NHH reads from the source files to Gentrack and Cobra, including review of the content of the files provided.

Audit commentary

Compliance with this clause has been demonstrated by the agents and MEPs, and is discussed in their audit reports.

Audit outcome

Compliant

6.12. HHR data collection (Clause 11(1) Schedule 15.2)

Code reference

Clause 11(1) Schedule 15.2

Code related audit information

Raw meter data from all electronically interrogated metering installations must be obtained via the services access interface.

This may be carried out by a portable device or remotely.

Audit observation

HHR data is collected by EDMI and AMS. I traced volumes for one month for five HHR ICPs from the source files to IMS and the HHR aggregates submissions.

Audit commentary

This clause requires that data from all half hour metering must be obtained by electronic interrogation of meters or data loggers. The clause also allows manual data collection to occur. These processes were reviewed as part of the EDMI and AMS audits.

The volumes recorded in IMS and the HHR aggregates submission matched the source files.

Audit outcome

Compliant

6.13. HHR interrogation data requirement (Clause 11(2) Schedule 15.2)

Code reference

Clause 11(2) Schedule 15.2

Code related audit information

The following information is collected during each interrogation:

> *11(2)(a) - the unique identifier of the data storage device*
>
> *11(2)(b) - the time from the data storage device at the commencement of the download unless the time is within specification and the interrogation log automatically records the time of interrogation*

11(2)(c) - the metering information, which represents the quantity of electricity conveyed at the point of connection, including the date and time stamp or index marker for each half hour period. This may be limited to the metering information accumulated since the last interrogation

11(2)(d) - the event log, which may be limited to the events information accumulated since the last interrogation

11(2)(e) - an interrogation log generated by the interrogation software to record details of all interrogations.

The interrogation log must be examined by the reconciliation participant responsible for collecting the data and appropriate action must be taken if problems are apparent or an automated software function flags exceptions.

Audit observation

A walkthrough of the HHR data collection function was performed to confirm compliance.

MEPs and their agents are responsible for meeting the meter interrogation log requirements, and this is reviewed as part of their own audits.

Audit commentary

Data interrogation requirements were reviewed in AMS and EDMI's audits.

Audit outcome

Compliant

6.14. HHR interrogation log requirements (Clause 11(3) Schedule 15.2)

Code reference

Clause 11(3) Schedule 15.2

Code related audit information

The interrogation log forms part of the interrogation audit trail and, as a minimum, must contain the following information:

11(3)(a)- the date of interrogation

11(3)(b)- the time of commencement of interrogation

11(3)(c)- the operator identification (if available)

11(3)(d)- the unique identifier of the meter or data storage device

11(3)(e)- the clock errors outside the range specified in Table 1 of clause 2

11(3)(f)- the method of interrogation

11(3)(g)- the identifier of the reading device used for interrogation (if applicable).

Audit observation

A walkthrough of the HHR data collection function was performed to confirm compliance.

Agents and MEPs are responsible for meeting the meter interrogation log requirements, and this is reviewed as part of their own audits.

Audit commentary

Data interrogation log requirements were reviewed in AMS and EDMI's audits.

Audit outcome

Compliant

7. STORING RAW METER DATA

7.1. Trading period duration (Clause 13 Schedule 15.2)

Code reference

Clause 13 Schedule 15.2

Code related audit information

The trading period duration, normally 30 minutes, must be within ±0.1% (±2 seconds).

Audit observation

AMS and EDMI provide all HHR data, and are responsible for trading period duration. Trading period duration was reviewed as part of their audit.

A sample of five volumes files were checked using the typical case sample methodology to confirm trading period duration.

Audit commentary

AMS and EDMI demonstrated compliance with this clause.

Review of five HHR volumes files confirmed that trading period duration is 30 minutes.

Audit outcome

Compliant

7.2. Archiving and storage of raw meter data (Clause 18 Schedule 15.2)

Code reference

Clause 18 Schedule 15.2

Code related audit information

A reconciliation participant who is responsible for interrogating a metering installation must archive all raw meter data and any changes to the raw meter data for at least 48 months, in accordance with clause 8(6) of Schedule 10.6.

Procedures must be in place to ensure that raw meter data cannot be accessed by unauthorised personnel.

Meter readings cannot be modified without an audit trail being created.

Audit observation

Processes to archive and store raw meter data were reviewed. Raw meter data from at least 48 months prior was reviewed to ensure that it is retained.

I traced a sample of 27 NHH reads from the source files to Gentrack and Cobra, and volumes for one month for five HHR ICPs from the source files to IMS and the HHR aggregates submissions.

Audit trails were reviewed in **section 2.4**.

Audit commentary

Data is transferred securely and when this data reaches Pulse's systems, the level of security is robust and data cannot be accessed by unauthorised personnel.

All meter reading data is archived and retained for over 48 months. Meter read data from 2012 was sighted in Gentrack during the audit.

I traced a sample of 27 NHH reads from the source files to Gentrack and Cobra, and volumes for one month for five HHR ICPs from the source files to IMS and the HHR aggregates submissions. This confirmed that the reads had not been modified.

Review of audit trails confirmed that reads cannot be modified without an audit trail being created for NHH. Manual audit trail records are maintained for HHR data, this is discussed further in **section 2.4**. Access to modify readings is restricted through log on privileges.

All NHH reads are retained in the data warehouse, and all HHR reads are archived on Pulse's network.

Audit outcome

Compliant

7.3. Non metering information collected / archived (Clause 21(5) Schedule 15.2)

Code reference

Clause 21(5) Schedule 15.2

Code related audit information

All relevant non-metering information, such as external control equipment operation logs, used in the determination of profile data must be collected, and archived in accordance with clause 18.

Audit observation

Processes to record non-metering information were discussed.

Audit commentary

No non metering information is collected by Pulse.

Audit outcome

Compliant

7.4. Data Storage Device Clock Synchronisation (Clause 2(5)&(6) of Schedule 15.2)

Code reference

Clause 2(5)&(6) of Schedule 15.2

Code related audit information

When electronically interrogating the meter the participant must ensure that the clock is synchronised and correct the clock and raw data where necessary.

Audit observation

Arc, FCLM, Metrix and AMS provide AMI readings and EDMI and AMS provide HHR readings. Clock synchronisation processes for MEPs were reviewed as part of their MEP audits. MEPs and their agents are to advise Pulse of clock synchronisation discrepancies and adjustments.

I reviewed clock synchronisation event information received, and action taken as a result.

Audit commentary

Clock synchronisation processes for MEPs were reviewed as part of their MEP audits, and for agents as part of their agent audits.

AMI clock synchronisation event information is emailed to Pulse, which includes details of the ICPs affected and the time difference. These emails normally state that no action is required. I viewed

examples of these emails for AMS and Metrix, no recent examples were available for FCLM. Arc does not email clock synchronisation information.

No clock synchronisation events for HHR meters had occurred during the audit period.

Audit outcome

Compliant

8. CREATING AND MANAGING (INCLUDING VALIDATING, ESTIMATING, STORING, CORRECTING AND ARCHIVING) VOLUME INFORMATION

8.1. Correction of NHH meter readings (Clause 19(1) Schedule 15.2)

Code reference

Clause 19(1) Schedule 15.2

Code related audit information

If errors are detected during validation of non-half hour meter readings, one of the following must be undertaken:

> *19(1)(a) - confirmation of the original meter reading by carrying out another meter reading*
>
> *19(1)(b) - replacement of the original meter reading by another meter reading (even if the replacement meter reading may be at a different date)*
>
> *19(1)(c) - if the original meter reading cannot be confirmed or replaced by a meter reading from another interrogation, then an estimated reading is substituted and the estimated reading is marked as an estimate and it is subsequently replaced in accordance with clause 4(2).*

Audit observation

Processes for correction of NHH meter readings were reviewed.

Audit commentary

Where errors are detected during the validation process, Pulse may request a check meter reading for meters read by Wells, or review AMI readings for surrounding dates. If an original meter reading cannot be confirmed then an estimated reading is used, which is appropriately labelled.

I reviewed examples of corrections to determine whether they had been processed correctly, and flowed through to revision submissions.

Defective meters

Where a defective meter is identified, the meter is replaced. The revenue assurance team calculates an estimated closing read for the affected meter or meters, which is then processed by the field services team. I reviewed eight examples of stopped or defective meters to determine whether consumption had been corrected appropriately:

- In seven cases, the defective meter was closed on an estimated read provided by the revenue assurance team, which included estimated consumption during the defective period.
- In one case, the read applied did not match the calculation provided by revenue assurance. This appears to be a data entry error, and is recorded as non-compliance below.

Processes for defective meters are discussed further in **section 6.4**.

Multipliers

I reviewed two examples of multiplier corrections, and confirmed that the multiplier was corrected in Gentrack and Cobra. Revision submissions reflected the correct multiplier.

Bridged meters

The 2016 audit found that corrections had not been processed for consumption while meters were bridged. I reviewed ten examples of bridged meters:

- one had a bridged relay only, and no correction was required as all consumption was recorded by the meter

- nine were genuine bridged meters, and no correction had been processed. This is recorded as non-compliance below.

Authority concerns raised in 2016 audit	2017 findings
Audit ref: 5.2.4 Issue: PUNZ have reporting in place however the correction of consumption during the period of bridging is not made. There is a noncompliance of clause 15.2 part 15 for incomplete and inaccurate information and clause 2(1)(b) schedule 15.3 submission information not provided to RM. PUNZ have responded to the EA Compliance query providing the process post audit. It is not clear if PUNZ have or will be correcting historical inaccuracies. Query: Can you please confirm if PUNZ will be correcting historical inaccuracies from bridged metered.	There is a process in place to identify, unbridge, and estimate consumption during the bridged period. Once unbridged the ICP details are to be sent to the revenue assurance team, who estimate consumption for the bridged period based on readings taken after the meter is unbridged. The estimate is passed to the field services team for processing. It appears that this process is not operating as intended. The bridged meters reviewed were consistently identified and unbridged, but and the corrections were not processed. The issues may be partially contributed to by a lack of read history for affected ICPs; most bridges occur when an ICP is reconnected following switch in. Consumption estimates are created based on reads obtained after the meter is unbridged.

Inactive ICPs with consumption

The 2016 audit found that corrections had not been processed for consumption while meters were disconnected. I reviewed ten examples of consumption while disconnected:

- for five ICPs the consumption was not genuine, and had been caused by an actual read being received after an estimated read which was too high or low
- for five ICPs there was movement between actual readings following disconnection, but no correction was processed. This is recorded as non-compliance below.

There is a process in place to identify inactive ICPs with consumption, and reporting was provided during the audit. It is intended that any inactive ICPs with consumption will be returned to active status, and re-disconnected if necessary. It appears that the ICPs identified by this process are not consistently being followed through to correction. This is recorded as non-compliance below.

Unmetered load

ICP 0006000992HBD1B was found to have no daily unmetered kWh recorded on the registry, but Gentrack has been updated to show the correct unmetered load. I found that Cobra was not reporting unmetered kWh for this ICP, and this is recorded as non-compliance below.

The 2016 audit found two corrections for unmetered load had not been processed. ICPs 0000538242NR98A and 0000023344NTBEF both now have the correct unmetered load recorded in Gentrack and on the registry, and are correctly reported for reconciliation.

Authority concerns raised in 2016 audit	2017 findings
Audit Ref: 2.10.1 / 2.10.3 **Issue:** ICP# 0000538242NR98A is active and listed as UML and has shared UML, however does not have any UML load populated by PUNZ. **Query:** Can you please confirm the UML	ICP 0000538242NR98A now has correct shared unmetered load recorded, and is correctly reported on reconciliation submissions.

volumes reconciled by PUNZ at this ICP.	

Missing NSPs

The 2016 audit found submission did not occur for ASY0111 and SBK0661 for November 2015, or for WTK0111 for December 2015. I confirmed that consumption for these NSPs was reported by the 14 month revisions.

Non-compliance	Description
Audit Ref: 8.1 With: Clause 19(1) Schedule 15.2, 15.12 From: entire audit period	A correction was processed incorrectly for one defective meter. Corrections were not processed for nine bridged meters, five ICPs with consumption while disconnected, and one ICP with incorrect unmetered load recorded. Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as weak as they are unlikely to mitigate the risk of incorrect data. Processes are in place to identify corrections required, but they are not consistently followed through to completion. A relatively small number of corrections required were identified.

Actions taken to resolve the issue	Completion date	Remedial action status
Bridged meters will continue to be investigated, with known bridged meters being re-configured with estimated volume allocated.	1 Nov 2017	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Refresher training will be given to the field service team. Where a meter is identified as being bridged, an assessment is made to estimate the volume consumed during the bridged period. The meter register is removed as at the estimated read, and the register is reinstated using the actual reading on the register. This ensures that unmetered volume during a bridge event is passed through to the reconciliation manager via the Cobra NHH reconciliation system.	1 Nov 2017	

Audit outcome

Non-compliant

8.2. Correction of HHR metering information (Clause 19(2) Schedule 15.2)

Code reference

Clause 19(2) Schedule 15.2

Code related audit information

If errors are detected during validation of half hour metering information the correction must be as follows:

> *19(2)(a) - if a check meter or data storage device is installed at the metering installation, data from this source may be substituted*
>
> *19(2)(b) - in the absence of any check meter or data storage device, data may be substituted from another period if the total of all substituted intervals matches the total consumption recorded on the meter, if available, and the pattern of consumption is considered materially similar to the period in error.*

Audit observation

Processes for correction of HHR meter readings were reviewed. A sample of six HHR corrections were reviewed.

Audit commentary

HHR data correction is completed by Pulse. Pulse has only processed corrections for missing data.

When HHR data is provided, AMS and EDMI confirm whether there are any reads missing. Pulse creates a copy of the raw reading file and calculates an estimate based on the average consumption for the previous month. The values are entered into the copy of the raw reading file and imported into IMS.

If actual volumes are provided later, the replacement file is imported into IMS to replace the original data. I confirmed by examining six HHR data corrections that revised data flows through to the relevant submission files for HHR.

No journals are created corrections to the raw meter data files reviewed; this is recorded as non-compliance in **section 8.4**.

Audit outcome

Compliant

8.3. Error and loss compensation arrangements (Clause 19(3) Schedule 15.2)

Code reference

Clause 19(3) Schedule 15.2

Code related audit information

If error compensation and loss compensation are carried out as part of the process of determining accurate data, the compensation process must be documented and must comply with audit trail requirements.

Audit observation

Error and loss compensation arrangements were discussed.

Audit commentary

Pulse has calculated losses for metering at generation ICPs and the factor is programmed into the meter. Losses for metering at generation ICPs are calculated by the distributor, and programmed into the meter by the certifying ATH.

Audit outcome

Compliant

8.4. Correction of HHR and NHH raw meter data (Clause 22(1) and (2) Schedule 15.2)

Code reference

Clause 22(1) and (2) Schedule 15.2

Code related audit information

In correcting a meter reading in accordance with clause 19, the raw meter data must not be overwritten. If the raw meter data and the meter readings are the same, an automatic secure backup of the affected data must be made and archived by the processing or data correction application.

If data is corrected or altered, a journal must be generated and archived with the raw meter data file. The journal must contain the following:

22(2)(a) - the date of the correction or alteration

22(2)(b) - the time of the correction or alteration

22(2)(c) - the operator identifier of the reconciliation participant

22(2)(d) - the half-hour metering data or the non-half hour metering data corrected or altered, and the total difference in volume of such corrected or altered data

22(2)(e) - the technique used to arrive at the corrected data

22(2)(f) - the reason for the correction or alteration.

Audit observation

Corrections are discussed in **sections 8.1** and **8.2**, which confirmed that raw meter data is not overwritten as part of the correction process. Audit trails are discussed in **section 2.4**.

Raw meter data retention was reviewed as part of MEP and agent audits.

Audit commentary

I reviewed audit trails and supporting calculations for NHH data corrections and noted that they were compliant with the requirements of this clause for the sample of corrections checked.

Manual audit trail records are maintained for HHR data, this is discussed further in **section 2.4**. The same technique is always used to arrive at the corrected data, and corrections have only been processed for missing data.

Audit outcome

Non-compliant

9. ESTIMATING AND VALIDATING VOLUME INFORMATION

9.1. Identification of readings (Clause 3(3) Schedule 15.2)

Code reference

Clause 3(3) Schedule 15.2

Code related audit information

All estimated readings and permanent estimates must be clearly identified as an estimate at source and in any exchange of metering data or volume information between participants.

Audit observation

Provision of estimated reads to other participants during switching was reviewed in **sections 4.3**, **4.4**, **4.10** and **4.11**.

Correct identification of estimated reads, and review of the estimation process was completed in **sections 8.1**, **8.2** and **9.4**.

I reviewed the method to receive meter reading information, and traced a sample of reads from the source files to Pulse's systems as discussed in **section 6.5**.

Audit commentary

All reads checked were correctly identified. Photo and customer readings are recorded as customer readings, not actual readings.

Audit outcome

Compliant

9.2. Derivation of volume information (Clause 3(4) Schedule 15.2)

Code reference

Clause 3(4) Schedule 15.2

Code related audit information

Volume information must be directly derived, in accordance with Schedule 15.2, from:

3(4)(a) - validated meter readings

3(4)(b) - estimated readings

3(4)(c) - permanent estimates.

Audit observation

A sample of submission data was reviewed in **section 12**, to confirm that volume was based on readings as required.

Audit commentary

Review of submission data confirmed that it is based on readings as required by this clause.

Audit outcome

Compliant

9.3. Meter data used to derive volume information (Clause 3(5) Schedule 15.2)

Code reference

Clause 3(5) Schedule 15.2

Code related audit information

All meter data that is used for derive volume information must not be rounded or truncated from the stored data from the metering installation.

Audit observation

A sample of submission data was reviewed in **section 12**, to confirm that volume was based on readings as required.

I reviewed the method to receive meter reading information, and traced a sample of reads from the source files to Pulse's systems as discussed in **section 6.5**.

Audit commentary

The MEP or agent retains raw, unrounded data. Meter reading data is not rounded or truncated on import.

Audit outcome

Compliant

9.4. Half hour estimates (Clause 15 Schedule 15.2)

Code reference

Clause 15 Schedule 15.2

Code related audit information

If a reconciliation participant is unable to interrogate an electronically interrogated metering installation before the deadline for providing submission information, the submission to the reconciliation manager must be the reconciliation participant's best estimate of the quantity of electricity that was purchased or sold in each trading period during any applicable consumption period for that metering installation.

The reconciliation participant must use reasonable endeavours to ensure that estimated submission information is within the percentage specified by the Authority.

Audit observation

The HHR estimate process was examined, and a sample of six estimates were reviewed.

Audit commentary

The process for HHR estimates is the same as for HHR correction. Pulse creates a copy of the raw reading file and calculates an estimate based on the average consumption for the previous month. The values are entered into the copy of the raw reading file and imported into IMS.

I reviewed six examples of estimates and found all were later replaced by actual readings.

- four of the estimates were within 10% of the actual data
- one was within 22% (100,773 kWh)
- one was within 69% (31,618 kWh)

Pulse used reasonable endeavours to ensure that submitted information was within the percentage specified by the Authority in all cases.

Audit outcome

Compliant

9.5. NHH metering information data validation (Clause 16 Schedule 15.2)

Code reference

Clause 16 Schedule 15.2

Code related audit information

Each validity check of non-half hour meter readings and estimated readings must include the following:

> *16(2)(a) - confirmation that the meter reading or estimated reading relates to the correct ICP, meter, and register*
>
> *16(2)(b) - checks for invalid dates and times*
>
> *16(2)(c) - confirmation that the meter reading or estimated reading lies within an acceptable range compared with the expected pattern, previous pattern, or trend*
>
> *16(2)(d) - confirmation that there is no obvious corruption of the data, including unexpected 0 values.*

Audit observation

I reviewed and observed the NHH data validation process, including checking a sample of data validations.

Audit commentary

There are several steps to validation of NHH data. For non AMI reads, the handheld data input devices perform a localised validation to ensure that the reading is within expected high-low parameters. Readings outside these parameters must be re-entered and acknowledged by the data collector. A meter cannot be skipped without reading unless a reason is entered. Wells is required to identify issues which may affect metering information accuracy, such as stopped or damaged meters, and report this information to Pulse. This is discussed further in **section 6.5**.

When the files are uploaded into Gentrack there is a check for incorrect dates and file corruption.

Further validation occurs using SQL queries to validate the billing data within Gentrack and includes the following checks:

- negative consumption
- high consumption (over 300%)
- zero consumption (outbound calls are made to verify if zero is expected)
- long billing period
- not active with Pulse (billing will not occur)
- vacant consumption (the metering team looks at these).

A final validation occurs at "Dataprint" when the invoices are produced. The checks conducted are:

- high dollar amount (over $1,500)
- invoice credits of more than a set amount
- billing periods longer than 60 days.

Dataprint sends back a complete list of what is going to be billed and some random checks are conducted prior to bills being sent.

Further validation is completed in the Cobra NHH reconciliation system. If a reading is found to be invalid, it can be marked as invalidated, to prevent it being used in historic estimate calculations. The Cobra validation checks include:

- material update (more than ± 50% difference to the last period)
- negative consumption
- consumption on inactive ICPs
- conflicting readings (same date and meter register, different value)
- future dated readings
- no gain read
- no actual read for more than four months
- no actual read for more than 12 months
- zero consumption.

A master report of ICPs with zero consumption for three months or more is maintained. It is updated weekly to include any new ICPs identified; and remove ICPs where subsequent consumption has occurred. Pulse works through this report, focussing on the ICPs with the longest no consumption period first and contact the customer to determine whether consumption is expected, and arrange to replace the meter if required. I reviewed the master report on 14/09/2017 and noted that 54 ICPs had been resolved but consumption was not yet recorded (such as holiday homes and seasonal price plans), and 134 still needed investigation.

Vacant ICPs with consumption are identified and investigated by the revenue assurance team. If vacant consumption is genuine, and no customer signs up, the ICP is referred to field services for disconnection.

Disconnected ICPs with consumption are investigated by revenue assurance. It is intended that any inactive ICPs with consumption will be returned to active status, and re-disconnected if necessary. It appears that the ICPs identified by this process are not consistently being followed through to correction, and this is recorded as non-compliance in **section 8.1**.

Bridged consumption is identified, and the meters are unbridged. It appears that the ICPs identified by this process are not consistently being followed through to correction, and this is recorded as non-compliance in **section 8.1**.

Audit outcome

Compliant

9.6. Electronic meter readings and estimated readings (Clause 17 Schedule 15.2)

Code reference

Clause 17 Schedule 15.2

Code related audit information

Each validity check of electronically interrogated meter readings and estimate readings must be at a frequency that will allow a further interrogation of the data storage device before the data is overwritten within the data storage device and before this data can be used for any purpose under the Code.

Each validity check of a meter reading obtained by electronic interrogation or an estimated reading must include:

17(4)(a) - checks for missing data

17(4)(b) - checks for invalid dates and times

17(4)(c) - checks of unexpected 0 values

17(4)(d) - comparison with expected or previous flow patterns

17(4)(e) - comparisons of meter readings with data on any data storage device registers that are available

17(4)(f) - a review of meter and data storage device event list. Any event that could have affected the integrity of metering data must be investigated.

Audit observation

I reviewed the HHR data validation process, including meter event logs and validation checks. Validation of electronic readings was reviewed as part of the MEP and agent audits.

Audit commentary

Electronic meter reading information is provided by AMS, EDMI and MEPs. Meters are interrogated regularly, and there is little risk that data can be overwritten. Data is held for a longer period at the meter and can be re-interrogated later if required.

Validation of electronic data was examined as part of the agent and MEP audits. EDMI and AMS review meter event logs for HHR meters.

Event information is being received from AMS, FCLM and Metrix, but not from Arc. The events are graphed, but no specific action is taken unless a request is emailed to Pulse by the MEP or agent. This is recorded as non-compliance below.

I reviewed examples of events emailed to Pulse, including communications faults, possible generation and tampering from AMS and FCLM, and noted action had been undertaken where requested. No recent examples were available for Metrix.

Non-compliance	Description
Audit Ref: 9.6 With: Clause 17 Schedule 15.2 From: entire audit period	AMI event information not adequately obtained and monitored. No AMI event information is received from Arc. Potential impact: Low Actual impact: Low Audit history: Twice previously Controls: Weak Breach risk rating: 3
Audit risk rating	Rationale for audit risk rating
Low	Controls are rated as weak as they are insufficient to mitigate risk of non-compliance. Pulse is monitoring and actioning emailed event information.

Actions taken to resolve the issue	Completion date	Remedial action status
Pulse currently receives AMI event data from all AMI MEPs with the exemption of Arc Innovations. We have initiated discussion with our supplier.	27 Sep 2017	Investigating

Preventative actions taken to ensure no further issues will occur	Completion date	
We will continue to investigate options to extract meter event data with our supplier.	1 Dec 2017	

Audit outcome

Non-compliant

10. PROVISION OF METERING INFORMATION TO THE PRICING MANAGER IN ACCORDANCE WITH SUBPART 4 OF PART 13 (CLAUSE 15.38(1)(F))

10.1. Generators to provide HHR metering information (Clause 13.136)

Code reference

Clause 13.136

Code related audit information

The generator (and/or embedded generator) must provide to the pricing manager and the grid owner connected to the local network in which the embedded generator is located, half hour metering information in accordance with clause 13.138 in relation to generating plant that is subject to a dispatch instruction:

- *that injects electricity directly into a local network; or*
- *if the meter configuration is such that the electricity flows into a local network without first passing through a grid injection point or grid exit point metering installation.*

Audit observation

No information is provided to the pricing manager in accordance with this clause.

Audit outcome

Not applicable

10.2. Unoffered & intermittent generation provision of metering information (Clause 13.137)

Code reference

Clause 13.137

Code related audit information

Each generator must provide the pricing manager and the relevant grid owner half-hour metering information for:

- *any unoffered generation from a generating station with a point of connection to the grid 13.137(1)(a)*
- *any electricity supplied from an intermittent generating station with a point of connection to the grid. 13.137(1)(b)*

The generator must provide the pricing manager and the relevant grid owner with the half-hour metering information required under this clause in accordance with the requirements of Part 15 for the collection of that generator's volume information (clause 13.137(2)).

If such half-hour metering information is not available, the generator must provide the pricing manager and the relevant grid owner a reasonable estimate of such data (clause 13.137(3)).

Audit observation

No information is provided to the pricing manager in accordance with this clause.

Audit outcome

Not applicable

10.3. Loss adjustment of HHR metering information (Clause 13.138)

Code reference

Clause 13.138

Code related audit information

The generator must provide the information required by clauses 13.136 and 13.137,

13.138(1)(a)- adjusted for losses (if any) relative to the grid injection point or, for embedded generators the grid exit point, at which it offered the electricity

13.138(1)(b)- in the manner and form that the pricing manager stipulates

13.138(1)(c)- by 0500 hours on a trading day for each trading period of the previous trading day.

The generator must provide the half-hour metering information required under this clause in accordance with the requirements of Part 15 for the collection of the generator's volume information.

Audit observation

No information is provided to the pricing manager in accordance with this clause.

Audit outcome

Not applicable

10.4. Notification of the provision of HHR metering information (Clause 13.140)

Code reference

Clause 13.140

Code related audit information

If the generator provides half-hourly metering information to the pricing manager or a grid owner under clauses 13.136 to 13.138, or 13.138A, it must also, by 0500 hours of that day, advise the relevant grid owner.

Audit observation

No information is provided to the pricing manager or grid owner in accordance with this clause.

Audit outcome

Not applicable

11. PROVISION OF SUBMISSION INFORMATION FOR RECONCILIATION

11.1. Buying and selling notifications (Clause 15.3)

Code reference

Clause 15.3

Code related audit information

Unless an embedded generator has given a notification in respect of the point of connection under clause 15.3, a trader must notify the reconciliation manager if it is to commence or cease trading electricity at a point of connection using a profile with a profile code other than HHR, RPS, UML, EG1, or PV1 at least five business days before commencing or ceasing trader.

The notification must comply with any procedures or requirements specified by the reconciliation manager.

Audit observation

A registry list was reviewed for the audit period to confirm the profiles used. Processes to create buying and selling notifications were reviewed.

Audit commentary

Pulse only uses the HHR, RPS and PV1 profiles, so trading notifications were not required.

Audit outcome

Not applicable

11.2. Calculation of ICP days (Clause 15.6)

Code reference

Clause 15.6

Code related audit information

Each retailer and direct purchaser (excluding direct consumers) must deliver a report to the reconciliation manager detailing the number of ICP days for each NSP for each submission file of submission information in respect of:

> *15.6(1)(a) - submission information for the immediately preceding consumption period, by 1600 hours on the 4th business day of each reconciliation period*
>
> *15.6(1)(b) - revised submission information provided in accordance with clause 15.4(2), by 1600 hours on the 13th business day of each reconciliation period.*

The ICP days information must be calculated using the data contained in the retailer or direct purchaser's reconciliation system when it aggregates volume information for ICPs into submission information.

Audit observation

The process for the calculation of ICP days was examined by checking five NSPs with a small number of ICPs to confirm the AV110 ICP days calculation was correct.

I reviewed variances for 10 months of GR100 reports, and investigated any large discrepancies.

Audit commentary

The process for the calculation of ICP days was examined by checking five NSPs a small number of ICPs. The ICP days calculation was confirmed to be correct for the sample checked.

Breach information provided by the EA did not identify any late ICP days submissions.

Review of a registry list with history confirmed that there have been no upgrades from NHH to HHR, or downgrades from HHR to NHH during the audit period.

The following table shows the ICP days difference between Pulse files and the RM return file (GR100) for for 10 months. Negative percentage figures indicate that the Pulse ICP days figures are higher than those contained on the registry. The discrepancies are small.

Month	Ri	R1	R3	R7	R14
Aug 2016	-	-	-	-0.04%	-
Sep 2016	-	-	-	-	-0.35%
Nov 2016	-	-	-	-0.64%	-
Dec 2016	-	-	-0.21%	-0.64%	-
Jan 2017	-0.01%	-0.01%	-	-	-
Feb 2017	-0.16%	0.01%	-	-	-
Mar 2017	-0.47%	-0.52%	-0.55%	-	-
Apr 2017	0.03%	-	-0.23%	-	-
May 2017	-0.18%	-0.21%	-	-	-
Jun 2017	-0.21%	-0.25%	-	-	-

I reviewed a sample of 47 ICP days discrepancies and found:

- 13 differences occurred because inactive ICP days are reported for HHR ICPs.
- 23 differences related to a generating ICP with installation type "G" (generation). The ICP is included in Pulse's AV110 ICP days report, but only ICPs with installation type "B" (both) or "L" (load) are expected to be included.
- 11 differences related to switch timing.

ICP days discrepancies are recorded as non-compliance.

The 2016 audit found that where zero consumption was submitted in the AV080, no ICP days were reported. The issue occurred because trading notifications needed to be manually set up in PURS (Pulse's former reconciliation system) before ICP days could be produced. Cobra does not require these trading notifications and reports active ICP days at all NSPs. These discrepancies were re-checked during the audit and found to be resolved:

Month	NSP	Reg Days	Pulse Days	2016 Comments	2017 Comments
Mar-16	EIL0011	31	0	**Revision 3:** Zeros submitted in AV080, should have ICP days.	**Revision 14:** ICP days were reported
Mar-16	TCL0011	31	0	**Revision 3:** Zeros submitted in AV080, should have ICP days.	**Revision 14:** ICP days were reported
Nov-15	ASY0111	441	0	**Revision 7:** No ICP days or NHH vols; both should have been reported.	**Revision 14:** NHH vols and ICP days were reported
Nov-15	SBK0661	1,224	0	**Revision 7:** No ICP days or NHH vols; both should have been reported.	**Revision 14:** NHH vols and ICP days were reported
Dec-15	WTK0111	165	0	**Revision 3:** No ICP days or NHH vols; both should have been reported.	**Revision 14:** NHH vols and ICP days were reported

Non-compliance	Description
Audit Ref: 11.2 With: Clause 15.6 From: entire audit period	Inactive HHR ICP days, and HHR ICPs with installation type "G" (generation) are incorrectly included in the AV110 ICP days report. Potential impact: None Actual impact: None Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate as they are sufficient to mitigate risk most of the time, but there is room for improvement. Pulse currently supplies 15 generating ICPs. Of those, one has installation type "G", and one is inactive.

Actions taken to resolve the issue	Completion date	Remedial action status
A systemic issue exists in the Cobra reconciliation system whereby ICP Days have been calculated and reported for an ICP with "G" load type. Pulse has only one ICP with this configuration, and will manually remove it from ICP Days calculations.	19/9/2017	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

The cost of implementing change in the Cobra NHH Reconciliation system to ignore "G" type ICPs in the ICP Days report makes a software update uneconomic. A process stage to manually remove the affected ICP days from "G" type ICPs has been implemented as part of business as usual.	19/9/2017	

Audit outcome

Non-compliant

11.3. Electricity supplied information provision to the reconciliation manager (Clause 15.7)

Code reference

Clause 15.7

Code related audit information

A retailer must deliver to the reconciliation manager its total monthly quantity of electricity supplied for each NSP, aggregated by invoice month, for which it has provided submission information to the reconciliation manager, including revised submission information for that period as non-loss adjusted values in respect of:

> *15.7(a) - submission information for the immediately preceding consumption period, by 1600 hours on the 4th business day of each reconciliation period*
>
> *15.7(b) - revised submission information provided in accordance with clause 15.4(2), by 1600 hours on the 13th business day of each reconciliation period.*

Audit observation

The process for the calculation of as billed volumes was examined by checking five NSPs with a small number of ICPs to confirm the AV120 calculation was correct.

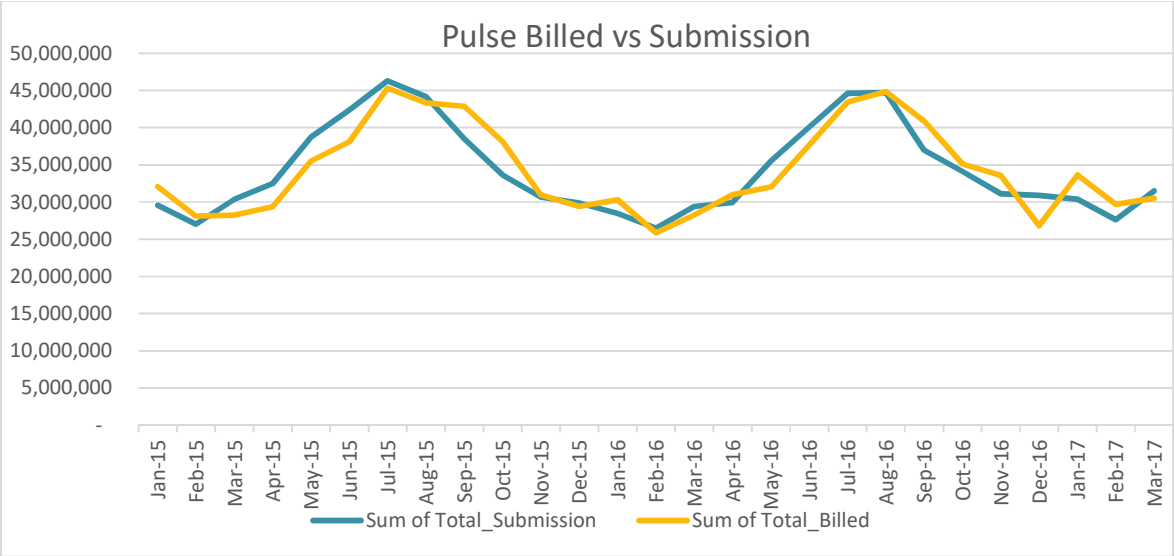
GR130 reports for January 2015 to March 2017 were reviewed to confirm whether the relationship between billed and submitted data appears reasonable.

Audit commentary

The process for the calculation of as billed volumes was examined by checking five NSPs with a small number of ICPs against invoice information. The AV120 billed consumption calculation was confirmed to be correct for the NSPs checked.

I also checked the difference between submission and electricity supplied information for a 27 month period, and the results are shown and discussed in the charts below.

The total difference is -0.24% for the two years ended March 2017 (billed lower than submission).



The fluctuation between November 2016 and January 2017 was caused by delayed invoicing for customers in December 2016, and is genuine.

Audit outcome

Compliant

11.4. HHR aggregates information provision to the reconciliation manager (Clause 15.8)

Code reference

Clause 15.8

Code related audit information

A retailer or direct purchaser (excluding direct consumers) must deliver to the reconciliation manager its total monthly quantity of electricity supplied for each half hourly metered ICP for which it has provided submission information to the reconciliation manager, including:

> *15.8(a) - submission information for the immediately preceding consumption period, by 1600 hours on the 4th business day of each reconciliation period*
>
> *15.8(b) - revised submission information provided in accordance with clause 15.4(2), by 1600 hours on the 13th business day of each reconciliation period.*

Audit observation

I confirmed that the process for the calculation and aggregation of HHR data is correct, by matching HHR aggregates information with the HHR volumes data revisions 0, 1, 3 and 7 for September, October and November 2016. I also matched the monthly volumes from the HHR aggregated submissions to the source files for five ICPs.

The GR090 ICP Missing files were examined for July 2016 to June 2017.

Audit commentary

HHR aggregates and volumes information was consistent for the submissions reviewed. The sample of volumes checked for five ICPs matched exactly to the source files.

The GR090 ICP Missing files were examined for all revisions for July 2016 to June 2017. ICP 1001138685UN253 was missing from the registry. It was disconnected ready for decommissioning on 23/03/16. No issues with missing data were identified.

HHR Aggregates files are prepared at ICP level based on submission information. Clause 15.8 states that the aggregates file should contain electricity supplied information rather than submission information and electricity supplied information is defined as shown below:

electricity supplied means, for any particular period, the information relating to the quantities of **electricity** supplied by **retailers** across **points of connection** to **consumers**, sourced directly from the **retailer's** financial records, including quantities—

(a) that are metered or unmetered; and
(b) supplied through normal **customer** supply and billing arrangements; and
(c) supplied under sponsorship arrangements; and
(d) supplied under any other arrangement

This differs from the Reconciliation Manager Functional Specification. In Section 3 of the Reconciliation Manager Functional Specification, HHR Aggregates information is described as: *"…HHR submission information that is aggregated per ICP for the whole month (not half-hourly)",* which suggests an intention that this information should be sourced from submission information not electricity supplied information, which is covered by clause 15.7.

Type of information that is submission information	Description	Source	Classification in this document
information	electricity supplied information.		supplied
Monthly half-hour ICP aggregates	This is equivalent to the HHR submission information that is aggregated per ICP for the whole month (not half-hourly).	Purchasers (excluding direct consumers)	Monthly half-hour ICP aggregates

Data from the aggregates file is used to support other reporting by the Reconciliation Manager and will be of little value if it is based on Electricity Supplied data rather than submission data. Electricity Supplied data has a one month offset and invoicing is not required to occur within any specific timeframes.

Whilst the Code clearly states this file should be derived from financial records, I recommend Pulse liaises with other participants to consider recommending a Code change which will allow for the aggregates files used in the industry to remain unchanged. Non-compliance with the code is recorded below.

Non-compliance	Description
Audit Ref: 11.4 With: Clause 15.8 From: entire audit period	HHR aggregates file does not contain electricity supplied information. Potential impact: None Actual impact: None Audit history: Once previously Controls: Strong Breach risk rating: 1

Audit risk rating	Rationale for audit risk rating		
Low	This is an error in the code, Pulse is providing submission information as expected.		
Actions taken to resolve the issue		**Completion date**	**Remedial action status**
Pulse considers this breach risk as a Code issue, and supports an update of Clause 15.8 of the Code as described above.		N/A	Investigating
Preventative actions taken to ensure no further issues will occur		**Completion date**	
Pulse prepares its HHR aggregate volume file using HHR meter data available at the time of submission. Because all but one of Pulse supplied HHR ICPs are generators, the electricity "supplied" volume is an insignificant portion of this report when compared with "electricity received".		N/A	

Audit outcome

Non-compliant

12. SUBMISSION COMPUTATION

12.1. Daylight saving adjustment (Clause 15.36)

Code reference

Clause 15.36

Code related audit information

The reconciliation participant must provide submission information to the reconciliation manager that is adjusted for NZDT using one of the techniques set out in clause 15.36(3) specified by the Authority.

Audit observation

Data processes for MEPs and agents reviewed as part of their audits.

A diverse characteristics sample of five daylight savings adjustments were reviewed, covering changes to and from daylight savings.

Audit commentary

Daylight savings processes for agents were reviewed as part of their audit, and found to be compliant.

The "trading period run on" technique is used for daylight saving adjustment. This was confirmed by checking a sample of five daylight savings adjustments, including adjustments for the start and end of daylight saving. The correct number of trading periods were recorded.

Audit outcome

Compliant

12.2. Creation of submission information (Clause 15.4)

Code reference

Clause 15.4

Code related audit information

By 1600 hours on the 4th business day of each reconciliation period, the reconciliation participant must deliver submission information to the reconciliation manager for all NSPs for which the reconciliation participant is recorded in the registry as having traded electricity during the consumption period immediately before that reconciliation period (in accordance with Schedule 15.3).

By 1600 hours on the 13th business day of each reconciliation period, the reconciliation participant must deliver submission information to the reconciliation manager for all points of connection for which the reconciliation participant is recorded in the registry as having traded electricity during any consumption period being reconciled in accordance with clauses 15.27 and 15.28, and in respect of which it has obtained revised submission information (in accordance with Schedule 15.3).

Audit observation

A list of breaches was obtained from the Electricity Authority. There were no breaches for late provision of submission information.

A sample of HHR ICPs were checked to ensure that volumes were correctly recorded in **section 11.4.**

A sample of NHH ICPs were checked to make sure they are handled correctly, including unmetered load, distributed generation, and vacant ICPs with consumption. Further information on calculation of historic estimate is recorded in **section 12.11**.

A sample of corrections were reviewed to ensure that they flowed through to revision submissions in **sections 8.1** and **8.2**.

Alleged breaches during the audit period were reviewed to determine whether any reconciliation submissions were late.

Audit commentary

Pulse is required to prepare submission information for each NSP for the relevant consumption periods in accordance with the Code, the submission information should include:

- HHR volume information
- NHH volume information (forward or historic estimates); and
- Unmetered load quantities for each ICP that has unmetered load associated with it.

I reviewed submissions for a sample of five ICPs each with:

- injection/export registers
- vacant consumption
- umetered load, including standard and shared unmetered.

All ICPs checked were reported correctly.

During the 2016 audit, non-compliance was raised because some submission information was inaccurate. These issues were followed up during the audit.

2016 Findings	2017 Findings
Unmetered load fields were incorrect for two ICPs leading to a minor inaccuracy in submissions.	Cleared. ICPs 0000538242NR98A and 0000023344NTBEF both have the correct unmetered load recorded in Gentrack and on the registry, and are correctly reported for reconciliation.
When ICPs are de-energised and vacant and consumption is recorded, this is not submitted because PURS excludes all ICPs with a de-energised status.	Still existing. Cobra also excludes consumption during de-energised periods and I found that status was not consistently being updated to active for affected ICPs. Refer to **section 8.1.**
Consumption information is not being calculated and submitted in instances where AMI meters have been bridged out.	Still existing. Refer to **section 8.1.**
If an ICP is vacant for a period and then switches out, forward estimates occur for the period from vacancy to switch out. This period should have zero consumption.	Cleared. Cobra bases reconciliation consumption on readings obtained during the period of vacancy, and the switch out reading.
Submission did not occur for ASY0111 and SBK0661 for November 2015, or for WTK0111 for December 2015. The total is approx. 40,000 kWh.	Cleared. Consumption was reported for revision 14.

No breaches had been recorded for late provision of submission information.

Submission of incorrect information is raised as non-compliance below. Non-compliance is raised in **section 8.1**, because some corrections did not flow through to reconciliation submissions.

Non-compliance	Description
Audit Ref: 12.2 With: Clause 15.2, 15.4 and 15.12 of part 15 From: entire audit period	Some incorrect submission information had not been corrected. Potential impact: Low Actual impact: Low Audit history: Three times previously Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate as they are sufficient to mitigate risk most of the time, but there is room for improvement. Some issues identified during the previous audit have been resolved, and the issues that remain have a low impact on submissions. Cobra has prevented recurrence of some data accuracy issues identified in the 2016 audit.

Actions taken to resolve the issue	Completion date	Remedial action status
Bridged meters will continue to be investigated, with known bridged meters being re-configured with estimated volume allocated. De-energised sites with consumption will be set as active as at the date of first consumption following the date of de-energisation.	1 Nov 2017	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Bridged meters and de-energised sites with consumption will be investigated and identified for correction by compliance resource within the field services team. Identification of bridged meters and de-energised meter with consumption will be added to the monthly compliance dashboard.	1 month after GT4 Go Live	

Audit outcome

Non-compliant

12.3. Allocation of submission information (Clause 15.5)

Code reference

Clause 15.5

Code related audit information

In preparing and submitting submission information, the reconciliation participant must allocate volume information for each ICP to the NSP indicated by the data held by the registry for the relevant

consumption period at the time the reconciliation participant assembles the submission information. Volume information must be derived in accordance with Schedule 15.2.

However, if, in relation to a point of connection at which the reconciliation participant trades electricity, a notification given by an embedded generator under clause 15.13 for an embedded generating station is in force, the reconciliation participant is not required to comply with the above in relation to electricity generated by the embedded generating station.

Audit observation

Processes to ensure that information used to aggregate the reconciliation reports is consistent with the registry were reviewed in **section 2.1**.

The process to ensure that AV080 submissions are accurate was discussed. The process for aggregating the AV080 was examined by checking five NSPs with a small number of ICPs.

The GR170 to AV080 files for five months were compared, to confirm zeroing occurs.

I walked through the HHR volumes and aggregates validation process, including reviewing historic validations.

Audit commentary

Pulse has validation processes to ensure that submissions are correct.

HHR and NHH volume and ICP days submissions are validated together, using queries from the Vanadium SQL database. At total level, submissions are compared to previous months and revisions. At NSP and submission type level, submissions are compared to previous month for initial allocations, and previous revisions for revision allocations. Any differences over 100,000 kWh per balancing area are investigated. Queries are escalated to the pricing and hedging teams if necessary, to help to determine whether the submissions are accurate.

The process for the calculation of NHH volumes was examined by checking five NSPs with a small number of ICPs. NHH volume calculation was confirmed to be correct.

Cobra automatically inserts zero lines where consumption has been reported in a previous revision but is not present in the current revision. GR170 and AV080 files for December 2015, January 2016, February 2016, March 2016 and April 2016 were compared. For the February 2016 revision 14, 12 NSPs were present in the AV170, but missing from the AV080. This issue occurred because zero lines were manually deleted in error. This is recorded as non-compliance below.

The HHR processes are automated to ensure that volumes are submitted for every NSP, regardless of whether any consumption has been recorded.

Non-compliance	Description
Audit Ref: 12.3 With: Clause 15.5 From: 01-Feb-16 To: 29-Feb-16	Zero lines were manually deleted from the AV080 February 2016 14 month revision. Potential impact: Low Actual impact: None Audit history: None Controls: Strong Breach risk rating: 1

Audit risk rating	Rationale for audit risk rating
Low	Controls are rated as strong as they are sufficient to mitigate risk most of the time. Cobra automatically enters zero lines where required. Previous revisions had zero lines recorded correctly, so there is no impact on reconciliation.

Actions taken to resolve the issue	Completion date	Remedial action status
This occurred using a legacy NHH submission system that has since been replaced.	1 Nov 2017	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
The new Cobra NHH Reconciliation system maintains zero lines where required.	April 2017	

Audit outcome

Non-compliant

12.4. Grid owner volumes information (Clause 15.9)

Code reference

Clause 15.9

Code related audit information

The participant (if a grid owner) must deliver to the reconciliation manager for each point of connection for all of its GXPs, the following:

- *submission information for the immediately preceding consumption period, by 1600 hours on the 4th business day of each reconciliation period (clause 15.9(a))*
- *revised submission information provided in accordance with clause 15.4(2), by 1600 hours on the 13th business day of each reconciliation period (clause 15.9(b)).*

Audit observation

A registry list was reviewed to confirm that Pulse has not supplied any GIPs.

Audit commentary

Examination of the list file found that Pulse has not supplied any GIPs. Pulse is not required to report any grid owner volume information.

Audit outcome

Not applicable

12.5. Provision of NSP submission information (Clause 15.10)

Code reference

Clause 15.10

Code related audit information

The participant (if a local or embedded network owner) must provide to the reconciliation manager for each NSP for which the participant has given a notification under clause 25(1) Schedule 11.1 (which relates to the creation, decommissioning, and transfer of NSPs) the following:

- *submission information for the immediately preceding consumption period, by 1600 hours on the 4th business day of each reconciliation period (clause 15.10(a))*
- *revised submission information provided in accordance with clause 15.4(2), by 1600 hours on the 13th business day of each reconciliation period (clause 15.10(b)).*

Audit observation

A registry list was reviewed to confirm that Pulse does not own any local or embedded networks.

Audit commentary

Pulse is not required to provide NSP submission information.

Audit outcome

Not applicable

12.6. Grid connected generation (Clause 15.11)

Code reference

Clause 15.11

Code related audit information

The participant (if a grid connected generator) must deliver to the reconciliation manager for each of its points of connection, the following:

- *submission information for the immediately preceding consumption period, by 1600 hours on the 4th business day of each reconciliation period (clause 15.11(a))*
- *revised submission information provided in accordance with clause 15.4(2), by 1600 hours on the 13th business day of each reconciliation period. (clause 15.11(b))*

Audit observation

The process to create AV130 (NSP volume information) was reviewed.

AV130 submissions were matched to the source meter data received for June, July and August 2017.

Alleged breaches during the audit period were reviewed to determine whether any reconciliation submissions were late.

Audit commentary

Pulse creates AV130 submissions for grid connected generation at ANI0331, as an agent to BOPE.
AV130 submissions were matched to the source meter data received for June, July and August 2017; all matched.

Review of alleged breaches confirmed that no reconciliation submissions were made late.

Audit outcome

Compliant

12.7. Accuracy of submission information (Clause 15.12)

Code reference

Clause 15.12

Code related audit information

If the reconciliation participant has submitted information and then subsequently obtained more accurate information, the participant must provide the most accurate information available to the reconciliation manager or participant, as the case may be, at the next available opportunity for submission (in accordance with clauses 15.20A, 15.27, and 15.28).

Audit observation

Alleged breaches during the audit period were reviewed to determine whether any reconciliation submissions were late.

Corrections were reviewed in **section 8.1** and **8.2**.

Audit commentary

Review of alleged breaches confirmed that no reconciliation submissions were made late.

Some NHH corrections were not processed and submitted at the next available opportunity. This is recorded as non-compliance in **section 8.1**.

Audit outcome

Non-compliant

12.8. Permanence of meter readings for reconciliation (Clause 4 Schedule 15.2)

Code reference

Clause 4 Schedule 15.2

Code related audit information

Only volume information created using validated meter readings, or if such values are unavailable, permanent estimates, has permanence within the reconciliation processes (unless subsequently found to be in error).

Volume information created using estimated readings must be subsequently replaced at the earliest opportunity by the reconciliation participant by volume information that has been created using validated meter readings or permanent estimates by, at the latest, the month 14 revision cycle.

A permanent estimate may be used in place of a validated meter reading, but only if, despite having used reasonable endeavours; the reconciliation participant has been unable to obtain a validated meter reading.

Audit observation

NHH volumes 14 month revisions were reviewed for December 2015 to February 2016 to identify any forward estimate still existing.

Audit commentary

Review of the 14 month revisions for December 2015 to February 2016 showed that not all estimated meter readings had been replaced with validated meter readings. Estimated meter readings are not being made permanent at the 14-month point as required by the Authority.

I examined three NSPs at ICP level where forward estimate still existed at 14 months. Forward estimate remained for the following reasons:

- ICPs genuinely had not received an actual read during the 14 months.
- Meter read validation had resulted in actual reads being invalidated, so that forward estimate was calculated.
- For some meters, one register reflects the total volume recorded on its other registers. For these meters, either the consumption for the register reflecting the total, or the consumption for the other registers should be reported. Cobra is estimating consumption for the meter registers which are not supposed to be reported based on the default values, if no actual readings are received.
- Cobra continues to forward estimate if a meter had been removed, but has not been end dated.

Permanent estimates can be entered into Cobra, but this is not done consistently where a read is not obtained within 14 months. This is recorded as non-compliance below.

The 2016 audit found some vacant ICPs where PURS had estimated up until the switch date. There were other ICPs where PURS estimated up until the end of the month for ICPs that had become vacant during the month. Cobra applies readings for the vacant period where available, and the switch out read for ICPs which have switched.

Non-compliance	Description
Audit Ref: 12.8 With: Clause 4 of Schedule 15.2 From: Dec 2015 to Feb 2016	Some estimates not replaced at R14. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate as they are sufficient to mitigate risk most of the time, but there is room for improvement. Total forward estimate across the three months reviewed was 383,881 kWh.

Actions taken to resolve the issue	Completion date	Remedial action status
Pulse is in the process of populating the historic estimate data within the Cobra NHH reconciliation system. Cobra currently submits 100-200MWh of additional forward estimate volume to the market in each revision due to legacy data quality issues in Gentrack 3.8. We expect that this will be resolved upon migration to Gentrack 4.0 as part of a data cleansing exercise.	Gentrack 4 Go Live Date	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	

The migration to Gentrack 4 is expected to improve the level of validation and quality of data available for reconciliation purposes.	Gentrack 4 Go Live Date	

Audit outcome

Non-compliant

12.9. Reconciliation participants to prepare information (Clause 2 Schedule 15.3)

Code reference

Clause 2 Schedule 15.3

Code related audit information

If a reconciliation participant prepares submission information for each NSP for the relevant consumption periods in accordance with the Code, such submission information must comprise the following:

- *half hour volume information for each ICP notified in accordance with clause 11.7(2) for which there is a category 3 or higher metering installation (clause 2(1)(a))*
- *for each ICP about which information is provided under clause 11.7(2) for which there is a category 1 or category 2 metering installation (clause 2(1)(b)):*
  - *a) half hour volume information for the ICP; or*
  - *b) non-half hour volumes information calculated under clauses 4 to 6 (as applicable).*
  - *c) unmetered load quantities for each ICP that has unmetered load associated with it derived from the quantity recorded in the registry against the relevant ICP and the number of days in the period, the distributed unmetered load database, or other sources of relevant information (clause 2(1)(c))*
- *to create non half hour submission information a reconciliation participant must only use information that is dependent on a control device if (clause 2(2)):*
  - *a) the certification of the control device is recorded on the registry; or*
  - *b) the metering installation in which the control device is location has interim certification*
- *to create submission information for a point of connection the reconciliation participant must apply to the raw meter data (clause 2(3):*
  - *a) for each ICP, the compensation factor that is recorded in the registry (clause 2(3)(a))*
  - *b) for each NSP the compensation factor that is recorded in the metering installations most recent certification report (clause 2(3)(b)).*

Audit observation

Aggregation and content of reconciliation submissions was reviewed.

Audit commentary

All active ICPs with meter category 3 or higher have a submission type of HHR.

Unmetered load is included in submissions. Non-compliance is recorded in **section 8.1** for one unmetered load correction which had not been processed.

Pulse does not supply any ICPs with profiles that require certification of the control device. One ICP is recoded on the registry with an E11 profile in error, this is discussed in **section 6.3** and recorded as non-compliance in **section 2.1**.

Loss and compensation arrangements are compliant, and are discussed in **section 8.3**.

Aggregation of the AV080 and AV110 submissions is compliant, and discussed further in **sections 13.2** and **11.2** respectively.

Audit outcome

Compliant

12.10. Historical estimates and forward estimates (Clause 3 Schedule 15.3)

Code reference

Clause 3 Schedule 15.3

Code related audit information

For each ICP that has a non-half hour metering installation, volume information derived from validated meter readings, estimated readings, or permanent estimates must be allocated to consumption periods using the following techniques to create historical estimates and forward estimates (clause 3(1)).

Each estimate that is a forward estimate or a historical estimate must clearly be identified as such (clause 3(2)).

If validated meter readings are not available for the purpose of clauses 4 and 5, permanent estimates may be used in place of validated meter readings (clause 3(3)).

Audit observation

Review of nine AV080 submissions, to confirm that historic estimates are included and identified.

Permanence of meter readings is reviewed in **section 12.8**. The methodology to create forward estimates is reviewed in **section 12.12**.

Audit commentary

I reviewed nine AV080 submissions for a diverse sample of months and revisions and confirm that forward and historic estimates are included and identified.

Audit outcome

Compliant

12.11. Historical estimate process (Clause 4 and 5 Schedule 15.3)

Code reference

Clause 4 and 5 Schedule 15.3

Code related audit information

The methodology outlined in clause 4 of Schedule 15.3 must be used when preparing historic estimates of volume information for each ICP when the relevant seasonal adjustment shape is available.

If a seasonal adjustment shape is not available, the methodology for preparing an historical estimate of volume information for each ICP must be the same as in clause 4, except that the relevant quantities kWhPx must be prorated as determined by the reconciliation participant using its own methodology or on a flat shape basis using the relevant number of days that are within the consumption period and within the period covered by kWh_{Px}.

Audit observation

To assist with determining compliance of the Historical Estimate (HE) processes, Pulse were supplied with a list of scenarios, and for some individual ICPs a manual HE calculation was conducted, and

compared to the result from the Cobra system. This check included confirming that the correct SASV (seasonal adjusted shape values) had been applied.

Audit commentary

The table below shows that all scenarios are calculating as expected and correct SASV are applied.

For scenarios B and C, where an ICP is inactive for part of a month, disconnection and reconnection reads are not entered. The SASV applied for the read period exclude the days during the read period where the ICP was inactive. The exclusion of the SASV for the inactive days ensures that all consumption is reported against active dates. Situations where part of a read period is inactive are not adequately covered in the code. The code specifies that the read period SASV should include all days in the read period, which would result in some consumption being apportioned to inactive dates and not reported. This is raised as a code issue below.

Test	Scenarios	Test expectations	Result
A1	ICPs become inactive part way through a month	Consumption is only calculated for the Active portion of the month.	Not provided
A2	ICPs become active part way through a month	Consumption is only calculated for the Active portion of the month.	Compliant
B	ICPs become active then inactive within a month.	Consumption is only calculated for the Active portion of the month.	Compliant
C	ICPs become inactive, then active, then inactive again within a month.	Consumption is only calculated for the Active portion of the month.	Compliant
D	NSP alters partway through a month.	Consumption is separated and calculated for the separate portions of where it is to be reconciled to.	Compliant
E	ICPs start on the 1st day of a month.	Consumption is calculated to include the 1st day of responsibility.	Compliant
F	ICPs end on the last day of the month.	Consumption is calculated to include the last day of responsibility.	Compliant
G	ICPs start part way through a month.	Consumption is calculated to include the 1st day of responsibility.	Compliant
H	ICPs end part way through a month.	Consumption is calculated to include the last day of responsibility.	Compliant
I	ICPs are lost and won back in a month.	Consumption is calculated for each day of responsibility.	Compliant
J	Unmetered load for a full month	Consumption is calculating correct based on daily unmetered kWh for a whole month.	Compliant
K	Unmetered load for a part month (switch out or de-energisation partway through a month)	Consumption is calculating correct based on daily unmetered kWh only for the Active part of the month.	Not provided

Test	Scenarios	Test expectations	Result
L	ICPs start on 1st and end on last day of month.	Consumption is calculated for each day of responsibility.	Compliant
M	Rollover reads	Consumption is calculated correctly in the instance of meter rollovers.	Compliant

Issue	Description	Remedial action
Clause 4 of schedule 15.3	The code method to calculate historic estimate does not adequately account for situations where the trader does not enter disconnection or reconnection reads, resulting in an ICP with inactive status for part of a read period. In these cases, if the code method to calculate historic estimate was applied, some of the read period consumption would be apportioned to the inactive days, and not reported.	EA to investigate.

Audit outcome

Compliant

12.12. Forward estimate process (Clause 6 Schedule 15.3)

Code reference

Clause 6 Schedule 15.3

Code related audit information

Forward estimates may be used only in respect of any period for which an historical estimate cannot be calculated.

The methodology used for calculating a forward estimate may be determined by the reconciliation participant, only if it ensures that the accuracy is within the percentage of error specified by the Authority.

Audit observation

The process to create forward estimates was reviewed.

Forward estimates were checked for accuracy by analysing the GR170 file for variances between revisions for nine months.

Audit commentary

Pulse's forward estimate process is based on a straight line methodology for initial allocations where no shape values are available. Historic shape files are applied where available. Where consumption history exists a forward standard estimate is conducted based on the previous read to read history. Where there is no consumption history, an average value for the meter type and period of availability is applied. These averages are refreshed annually based on actual consumption for Pulse's ICPs with the same meter type and period of availability.

The 2016 audit found that if an ICP is vacant but active on the registry, the PURS system continued to calculate a forward estimate. Cobra bases submissions on actual readings obtained during the period of vacancy, and does not unnecessarily create forward estimate for this scenario. I checked a sample of five active vacant ICPs, and confirmed that the historic estimate process for vacant sites operated as expected.

The accuracy of the initial submission, in comparison to each subsequent revision is required to be within 15% and within 100,000kWh. The table below shows the number of balancing areas where this target was not met. Pulse actively monitors these variations and investigates reasons to ensure there is no inaccuracy leading to the variations.

Quantity of balancing areas with differences over 15% (Over 100,000 units)

Month	Revision 1	Revision 3	Revision 7	Revision 14	Total
Dec 15	0	0	0	0	74
Jan 16	0	1	1	1	74
Feb 16	0	0	0	0	74
Mar 16	0	1	1	-	74
Apr 16	0	0	0	-	74
May 16	0	2	2	-	74
Sep 16	0	0	-	-	75
Oct 16	0	2	-	-	78
Nov 16	0	0	-	-	71

Total variation between revisions. (Positive means initial higher than revision)

Month	Revision 1	Revision 3	Revision 7	Revision 14
Dec 15	-0.40%	1.18%	1.09%	1.02%
Jan 16	1.02%	1.72%	1.67%	1.59%
Feb 16	1.67%	1.81%	1.68%	2.44%
Mar 16	-2.47%	-4.32%	-4.55%	-
Apr 16	0.87%	-3.34%	-3.51%	-

Month	Revision 1	Revision 3	Revision 7	Revision 14
May 16	-1.01%	-9.26%	-9.26%	-
Sep 16	1.41%	6.27%	-	-
Oct 16	-0.06%	4.98%	-	-
Nov 16	1.28%	3.61%	-	-

I reviewed five balancing areas where the variation between revisions was more than ± 15% and ± 100,000 kWh - ASHBURTEASHG (January, May and October 2016), DUNEDINDUNEG (May 2016), and CLYDE00DUNEG (October 2016). In all cases the difference seemed to be because of significant growth in customer numbers at the NSP making forward estimate difficult to predict, profile changes between revisions, or forward estimate being too high or low in the initial allocation. No errors were identified.

Non-compliance	Description
Audit Ref: 12.12 With: Clause 6 of Schedule 15.3 From: Jan 2016, Mar 2016, May 2016 and Oct 2016	The accuracy threshold was not met for all months and revisions. Potential impact: Low Actual impact: Low Audit history: Six times Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as strong as they are sufficient to mitigate risk most of the time. Initial data is replaced with revised data, and washed up. A small number of submissions had differences over the threshold.

Actions taken to resolve the issue	Completion date	Remedial action status
We consider the breach risk rating of accuracy threshold to be negligible given; a) the impact of aggressive customer growth (where initial submissions are not available until a second read is present) and b) the externality of shape change transitions affecting some NSP submission revisions.	27 Sep 2017	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	

Pulse has a pre-defined process for the production of NHH submissions to the Reconciliation Manager. Where high levels of ICP growth are experienced, the default volume applied to the initial estimate can be a substantial proportion of the total volume supplied. When these customers are first invoiced, the actual readings received can present a noticeable variance from the default volume, resulting in exposure to breach in the DUNEDINDUNEG and CLYDE00DUNEG balancing areas. Additionally, where irrigation demand changes substantially at either end of a trading month, the residual shape profile allocation of volume to that month can alter the proportion of energy allocated in subsequent submissions. This is experience in the ASHBURTEASHG balancing area.	27 Sep 2017	

Audit outcome

Non-compliant

12.13. Compulsory meter reading after profile change (Clause 7 Schedule 15.3)

Code reference

Clause 7 Schedule 15.3

Code related audit information

If the reconciliation participant changes the profile associated with a meter, it must, when determining the volume information for that meter and its respective ICP, use a validated meter reading or permanent estimate on the day on which the profile change is to take effect.

The reconciliation participant must use the volume information from that validated meter reading or permanent estimate in calculating the relevant historical estimates of each profile for that meter.

Audit observation

The event detail report from 01/01/2017-31/07/2017 was examined to identify all ICPs which had a profile change during the report period.

All five ICPs with profile changes were reviewed to confirm that there was an actual or permanent estimate reading on the day of the profile change.

Audit commentary

All profile changes related to the installation of distributed generation. I reviewed all five profile changes and confirmed that there was an actual or permanent estimate read on the day of the change.

Audit outcome

Compliant

13. SUBMISSION FORMAT AND TIMING

13.1. Market Administrator Meter Reading Reports (Clauses 8 & 9 of Schedule 15.2)

Code reference

Clauses 8 & 9 of Schedule 15.2

Code related audit information

Provision of meter read frequency reports to the Authority, no later than 20 business days after the end of the month

Audit observation

I reviewed meter reading frequency report for February 2017 to May 2017, to ensure that they met the report requirements.

I reviewed processes to ensure the reports are accurate and submitted on time, and the timeliness of submission for a sample of reports.

Audit commentary

A sample of four reports were reviewed and I confirmed that they met the report requirements.

Meter reading frequency reports are scheduled to be submitted by business day 20. I reviewed the report submissions for March 2017 to July 2017. Four of the reports were submitted by business day 20; the April 2017 report was submitted on business day 22. The late submission is recorded as non-compliance below.

Non-compliance	Description
Audit Ref: 13.1 With: Clauses 8 & 9 of Schedule 15.2 From: April 2017 and July 2017	One meter reading frequency report was submitted late. Potential impact: None Actual impact: None Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as strong as they are sufficient to mitigate risk most of the time. One report was two business days late. The other reports checked were submitted on time. The late submissions had no impact on other participants.

Actions taken to resolve the issue	Completion date	Remedial action status
Meter read frequency report was delivered several days late.	26/9/2017	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

Pulse will maintain production of the meter read frequency report to be delivered before the end of the 20th business day of each month.	26/9/2017	

Audit outcome

Non-compliant

13.2. Provision of submission information to the RM (Clause 8 Schedule 15.3)

Code reference

Clause 8 Schedule 15.3

Code related audit information

Submission information provided to the reconciliation manager must be aggregated to the following level:

- *NSP code (clause 8(a))*
- *reconciliation type (clause 8(b))*
- *profile (clause 8(c))*
- *loss category code (clause 8(d))*
- *flow direction (clause 8(e))*
- *dedicated NSP (clause 8(f))*
- *trading period for half hour metered ICPs and consumption period or day for all other ICP. (clause 8(g)).*

Audit observation

The process to ensure that AV080 submissions are accurate was discussed in **section 12.2**.

Processes to ensure that information used to aggregate the reconciliation reports is consistent with the registry were reviewed in **section 2.1**.

Zeroing in the AV080 submission is discussed in **section 12.2** and was found to be non-compliant, due to accidental deletion of zero rows for one revision.

Audit commentary

Pulse bases NHH and HHR aggregation factors on registry information. A registry list with history is imported into the data warehouse and Cobra daily. A weekly reconciliation between Gentrack and the Registry is completed, and is discussed further in **section 2.1**.

The AV080 aggregation process was examined by checking five NSPs with a small number of ICPs. The aggregation was confirmed to be correct.

The process for the calculation of ICP days was examined by checking five NSPs with a small number of ICPs. The aggregation was confirmed to be correct.

Audit outcome

Compliant

13.3. Reporting resolution (Clause 9 Schedule 15.3)

Code reference

Clause 9 Schedule 15.3

Code related audit information

When reporting submission information, the number of decimal places must be rounded to not more than two decimal places.

If the unrounded digit to the right of the second decimal place is greater than or equal to five, the second digit is rounded up, and if the digit to the right of the second decimal place is less than five, the second digit is unchanged.

Audit observation

I reviewed the rounding of data on the AV090, AV140 and AV080 reports as part of the aggregation checks.

Audit commentary

Review of nine AV080 NHH volumes reports confirmed that submission data is rounded to two decimal places.

Review of 12 AV-090 HHR volumes reports confirmed that submission data is rounded to two decimal places.

Review of 12 AV-140 HHR aggregates reports confirmed that submission data is rounded to two decimal places.

Audit outcome

Compliant

13.4. Historical estimate reporting to RM (Clause 10 Schedule 15.3)

Code reference

Clause 10 Schedule 15.3

Code related audit information

By 1600 hours on the 13th business day of each reconciliation period the reconciliation participant must report to the reconciliation manager the proportion of historical estimates per NSP contained within its non-half hour submission information.

The proportion of submission information per NSP that is comprised of historical estimates must (unless exceptional circumstances exist) be:

- *at least 80% for revised data provided at the month 3 revision (clause 10(3)(a))*
- *at least 90% for revised data provided at the month 7 revision (clause 10(3)(b))*
- *100% for revised data provided at the month 14 revision (clause 10(3)(c)).*

Audit observation

The timeliness of submissions of historic estimate was reviewed in **section 12.2**.

I reviewed nine months of AV080 reports to determine whether historic estimate requirements were met.

Audit commentary

The quantity of historical estimates is contained in the submission file, and is not a separate report. The three, seven and 14 month revision files were examined for a selection of nine months, and the table below shows that the thresholds were not met for some NSPs for some revisions.

Proportion of HE

Month	Revision 3 80% Met	Revision 7 90% Met	Revision 14 100% Met	Total
Dec 2015			47	165
Jan 2016			49	166
Feb 2016			51	154
Mar 2016		165		166
Apr 2016		166		166
May 2016		166		166
Sep 2016	166			166
Oct 2016	156			156
Nov 2016	166			167

The table below shows that the percentage HE at a summary level for all NSPs is well above the required targets for the three and seven month revisions, and below the target for the 14 month revisions.

Month	Revision 3 80% Target	Revision 7 90% Target	Revision 14 100% Target
Dec 2015	-	-	99.7%
Jan 2016	-	-	99.7%
Feb 2016	-	-	99.2%
Mar 2016	-	99.6%	-
Apr 2016	-	99.5%	-
May 2016	-	99.6%	-
Sep 2016	98.5%	-	-
Oct 2016	98.1%	-	-

Month	Revision 3 80% Target	Revision 7 90% Target	Revision 14 100% Target
Nov 2016	98.2%	-	-

Non-compliance	Description
Audit Ref: 13.4 With: Clause 10 of Schedule 15.3 From: entire audit period	Historic estimate thresholds were not met for some revisions. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate as they are sufficient to mitigate risk most of the time, but there is room for improvement. Pulse was close to the target in all cases.

Actions taken to resolve the issue	Completion date	Remedial action status
Pulse is investigating its permanent estimate process as part of the Cobra NHH reconciliation system implementation. This will be undertaken prior to 14 months of operation of Cobra. Pulse will investigate options to bring this into production before the end of 2017.	31 Dec 2017	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Pulse will investigate options to bring this into production before the end of 2017.	31 Dec 2017	

Audit outcome

Non-compliant

CONCLUSION

In the areas of registry management and switching there has been some improvement since the 2016 audit, with an overall reduction in the number of late files processed. There have also been some improvements in reconciliation processes with the implementation of Cobra. Some issues raised in the previous audit have been cleared, including:

- missing submission information for entire NSPs in some revisions
- unnecessary creation of forward estimate for vacant ICPs
- incorrect unmetered load.

The audit found 30 non-compliance issues, one recommendation is repeated from the previous audit and one issue was identified. Pulse are aware of their compliance obligations. It appears that issues with late data and correction of errors have been impacted by resourcing issues and staff changes during the audit period.

Some of the matters raised have led to incorrect information being provided to the Reconciliation Manager, including some corrections which had not been processed.

The next audit frequency table indicates that the next audit be due in three months. Based on Pulse's final score of 56, and taking into consideration the strength of existing controls, and that actions to improve compliance have been identified and are underway in most cases (including an upgrade to Gentrack 4), I recommend that the next audit be due in 10 months. This will allow sufficient time to complete the Gentrack upgrade and process improvements, and demonstrate their effectiveness. If the audit is sooner, there may not be sufficient history to allow the improved processes to be assessed thoroughly.

The matters identified are shown in the tables below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Relevant information	2.1	10.6, 11.2 and 15.2	Discrepancies between Gentrack and the Registry.	Moderate	Low	2	Identified
Audit trails	2.4	18, 21, 22(1) and 22(2) Schedule 15.2	HHR audit trails do not contain all the required information, and are not stored with the meter data.	Moderate	Low	2	Investigating
Registry updates to active	3.2	11.7(2)	365 late registry updates to active.	Weak	Low	3	Identified
Registry updates to inactive	3.3	10 Schedule 11.1	121 late registry updates to inactive.	Moderate	Low	2	Identified
MEP nomination	3.4	11.18	The MEP was nominated later than five business days after becoming active for 44 ICPs.	Moderate	Low	2	Identified
Registry updates to active	3.5	9 Schedule 11.1	44 late updates to active.	Weak	Low	3	Investigating
Changes to unmetered load	3.7	9(1)(f) of Schedule 11.1	One ICP has incorrect unmetered load information recorded on the registry.	Moderate	Low	2	Identified

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Management of active status	3.8	17 Schedule 11.1	One new connection was recorded with an opening read date one day after the new connection date. Three new connections identified in the 2016 audit still have an incorrect active date recorded on the registry.	Strong	Low	1	Investigating
Management of inactive status	19 Schedule 11.1	3.9	Five ICPs with consumption while disconnected did not have their status updated to active.	Moderate	Low	2	Identified
Losing trader response – transfer switch	3 and 4 Schedule 11.3	4.2	Three incorrect AN response codes were applied.	Moderate	Low	2	Identified
Losing trader provides final information – transfer switch	5 Schedule 11.3	4.3	One late CS file. Two CS files contained readings for incorrect dates.	Moderate	Low	2	Investigating
Read change for transfer switch	6(1) and 6A Schedule 11.3	4.4	Ten late RR files for transfer switches.	Strong	Low	1	Investigating
Gaining trader read change	6(2) and (3) Schedule 11.3	4.5	One RR request was rejected, when it should have been accepted.	Strong	Low	1	Identified

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Losing trader provides final information – switch move	10(1) Schedule 11.3	4.8	Two incorrect AN response codes were applied.	Moderate	Low	2	Identified
Losing trader provides date – switch move	10(2) Schedule 11.3 (2)	4.9	Incorrect dates were recorded in two AN files.	Strong	Low	1	Identified
Losing trader provides final information – switch move	12 Schedule 11.3	4.10	10 late CS files for switch moves.	Strong	Low	1	Investigating
Read change for switch move	12 Schedule 11.3	4.11	13 late RR files for switch moves.	Strong	Low	1	Investigating
Switch withdrawals	17 and 18 Schedule 11.3	4.15	11 backdated NW requests. One incorrect NW code.	Strong	Low	1	Identified
Electricity conveyed	10.13 and clause 15.2	6.1	Energy is not metered and quantified according to the code where meters are bridged.	Moderate	Low	2	Identified
Readings during period of supply	7(1) and (2) Schedule 15.2	6.8	Some ICPs were not read during the period of supply.	Weak	Low	3	Investigating

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Readings within 12 months	8(1) and (2) Schedule 15.2	6.9	For three ICPs without an actual read for 12 months, exceptional circumstances could not be confirmed, and there was insufficient evidence that the best endeavours requirement was met.	Moderate	Low	2	Investigating
NHH corrections	19(1) Schedule 15.2, 15.12	8.1	A correction was processed incorrectly for one defective meter. Corrections were not processed for nine bridged meters, five ICPs with consumption while disconnected, and one ICP with incorrect unmetered load recorded.	Weak	Low	3	Investigating
AMI events	17 Schedule 15.2	9.6	AMI event information not adequately obtained and monitored. No AMI event information is received from Arc or FCLM.	Weak	Low	3	Investigating

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
ICP days	15.6	11.2	Inactive HHR ICP days, and HHR ICPs with installation type "G" (generation) are incorrectly included in the AV110 ICP days report.	Moderate	Low	2	Identified
HHR aggregates	15.8	11.4	HHR aggregates file does not contain electricity supplied information.	Strong	Low	1	Investigating
Creation of submissions	15.2, 15.4 and 15.12 of part 15	12.2	Some incorrect submission information had not been corrected.	Moderate	Low	2	Identified
Allocation of submission information	15.5	12.3	Zero lines were manually deleted from the AV080 February 2016 14 month revision.	Strong	Low	1	Identified
Permanence of meter readings	4 of Schedule 15.2	12.8	Some estimates not replaced at R14.	Moderate	Low	2	Investigating
Forward estimate	6 of Schedule 15.3	12.12	The accuracy threshold was not met for all months and revisions.	Strong	Low	1	Investigating
Meter read frequency reporting	8 & 9 of Schedule 15.2	13.1	One meter reading frequency report was submitted late.	Strong	Low	1	Identified

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Historic estimate proportions	10 of Schedule 15.3	13.4	Historic estimate thresholds were not met for some revisions.	Moderate	Low	2	Investigating
Future Risk Rating						56	

Future risk rating	0	1-3	4-14	16-40	41-55	55+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Recommendation	Description
Electricity conveyed	6.1	Clause 10.24	Review the 14 ICPs with generation recorded by the distributor which do not have injection/export registers, to determine whether injection/export registers are required.

ISSUES

Subject	Section	Recommendation	Description
Historic estimate	12.11	EA to investigate.	The code method to calculate historic estimate does not adequately account for situations where the trader does not enter disconnection or reconnection reads, resulting in an ICP with inactive status for part of a read period. In these cases, if the code method to calculate historic estimate was applied, some of the read period consumption would be apportioned to the inactive days, and not reported.

PARTICIPANT RESPONSE

Pulse has reviewed this report, and their responses are recorded within the report tables. No additional comments were provided.