

ELECTRICITY INDUSTRY PARTICIPATION CODE
MATERIAL CHANGE AUDIT REPORT



For

MERCURY NZ LIMITED

Prepared by: Steve Woods

Date audit commenced: 30 March 2021

Date audit report completed: 30 March 2021

Audit report due date: 30 March 2021

TABLE OF CONTENTS

Executive summary	4
Audit summary	5
Non-compliances	5
Recommendations	5
Issues 5	
1. Administrative	6
1.1. Exemptions from Obligations to Comply with Code (Section 11)	6
1.2. Structure of Organisation	7
1.3. Persons involved in this audit	8
1.4. Use of Agents (Clause 15.34)	8
1.5. Hardware and Software	9
1.6. Breaches or Breach Allegations	9
1.7. ICP Data	9
1.8. Authorisation Received	9
1.9. Scope of Audit	9
1.10. Summary of previous audit	9
2. Operational Infrastructure	10
2.1. Relevant information (Clause 10.6, 11.2, 15.2)	10
2.2. Provision of information (Clause 15.35)	10
2.3. Data transmission (Clause 20 Schedule 15.2)	11
2.4. Audit trails (Clause 21 Schedule 15.2)	11
2.5. Retailer responsibility for electricity conveyed - participant obligations (Clause 10.4) ..	12
2.6. Retailer responsibility for electricity conveyed - access to metering installations (Clause 10.7(2),(4),(5) and (6))	12
2.7. Physical location of metering installations (Clause 10.35(1)&(2))	13
2.8. Trader contracts to permit assignment by the Authority (Clause 11.15B)	13
2.9. Connection of an ICP (Clause 10.32)	14
2.10. Temporary Electrical Connection of an ICP (Clause 10.33(1))	15
2.11. Electrical Connection of Point of Connection (Clause 10.33A)	15
2.12. Arrangements for line function services (Clause 11.16)	16
2.13. Arrangements for metering equipment provision (Clause 10.36)	16
3. Maintaining registry information	17
4. Performing customer and embedded generator switching	17
5. Maintenance of unmetered load	17
6. Gathering raw meter data	18
6.1. Electricity conveyed & notification by embedded generators (Clause 10.13, Clause 10.24 and 15.13)	18
6.2. Responsibility for metering at GIP (Clause 10.26 (6), (7) and (8))	18
6.3. Certification of control devices (Clause 33 Schedule 10.7 and clause 2(2) Schedule 15.3) ..	19
6.4. Reporting of defective metering installations (Clause 10.43(2) and (3))	19
6.5. Collection of information by certified reconciliation participant (Clause 2 Schedule 15.2) ..	20
6.6. Derivation of meter readings (Clause 3(1), 3(2) and 5 Schedule 15.2)	21
6.7. NHH meter reading application (Clause 6 Schedule 15.2)	21
6.8. Interrogate meters once (Clause 7(1) and (2) Schedule 15.2)	22
6.9. NHH meters interrogated annually (Clause 8(1) and (2) Schedule 15.2)	23

6.10. NHH meters 90% read rate (Clause 9(1) and (2) Schedule 15.2)	23
6.11. NHH meter interrogation log (Clause 10 Schedule 15.2)	24
6.12. HHR data collection (Clause 11(1) Schedule 15.2)	25
6.13. HHR interrogation data requirement (Clause 11(2) Schedule 15.2)	25
6.14. HHR interrogation log requirements (Clause 11(3) Schedule 15.2)	26
7. Storing raw meter data	27
7.1. Trading period duration (Clause 13 Schedule 15.2)	27
7.2. Archiving and storage of raw meter data (Clause 18 Schedule 15.2)	27
7.3. Non metering information collected / archived (Clause 21(5) Schedule 15.2)	28
8. Creating and managing (including validating, estimating, storing, correcting and archiving) volume information	29
8.1. Correction of NHH meter readings (Clause 19(1) Schedule 15.2)	29
8.2. Correction of HHR metering information (Clause 19(2) Schedule 15.2)	29
8.3. Error and loss compensation arrangements (Clause 19(3) Schedule 15.2)	30
8.4. Correction of HHR and NHH raw meter data (Clause 22(1) and (2) Schedule 15.2)	30
9. Estimating and validating volume information	32
9.1. Identification of readings (Clause 3(3) Schedule 15.2)	32
9.2. Derivation of volume information (Clause 3(4) Schedule 15.2)	32
9.3. Meter data used to derive volume information (Clause 3(5) Schedule 15.2)	33
9.4. Half hour estimates (Clause 15 Schedule 15.2)	33
9.5. NHH metering information data validation (Clause 16 Schedule 15.2)	33
9.6. Electronic meter readings and estimated readings (Clause 17 Schedule 15.2)	35
10. Provision of metering information to the pricing manager in accordance with subpart 4 of Part 13 (clause 15.38(1)(f))	37
11. Provision of submission information for reconciliation	37
12. Submission computation	37
13. Submission format and timing	37
13.1. Provision of submission information to the RM (Clause 8 Schedule 15.3)	37
Conclusion	38
Participant response	39

EXECUTIVE SUMMARY

Mercury NZ Limited (Mercury), intends to change their meter reading service provider from Wells to AD Riley, specifically their Meter Reading Services (MRS) division.

Clause 16A.11 of Part 16 requires that if a participant intends to make a “material” change to any system or process then the changes must be subject to an audit prior to the change taking place. This audit was therefore performed at the request of Mercury so that it can be supplied to the Electricity Authority to satisfy the requirements of Clause 16A.11(1).

The audit was conducted in accordance with the Guideline for Reconciliation Participant Audits version 7.2, which was produced by the Electricity Authority.

I checked the relevant files in the test system for:

- Adding ICPs to be read
- Ceasing meter reading
- Receiving reading files
- Receiving no read and condition information
- Initial sequencing and data migration

The checks conducted during this audit confirm that compliance will continue to be achieved. Go-live is expected to be April 2021. Mercury has additional controls in place during the transition period to ensure risks are mitigated. The controls include:

- Checking that all ICPs successfully transfer to the new meter reading units.
- Monitoring of unbilled ICPs to ensure reading has occurred as expected.
- Special read will be sent if any ICPs are missed by the routine reading schedule.
- Photos will be taken of all meters initially, which can be used as part of validation.

The checks conducted during this audit confirm that compliance will continue to be achieved. Go-live is expected to be April 2021.

Mercury’s next audit date has not yet been set because their report has only just been submitted, but I recommend the next audit date determined by the review of the main audit report will be appropriate because the changes examined by this audit will not add additional risks.

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			Nil				
Future Risk Rating							

Future risk rating	0	1-3	4-15	16-40	41-55	55+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Recommendation
		Nil

ISSUES

Subject	Section	Description	Issue
		Nil	

1. ADMINISTRATIVE

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

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

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

Audit observation

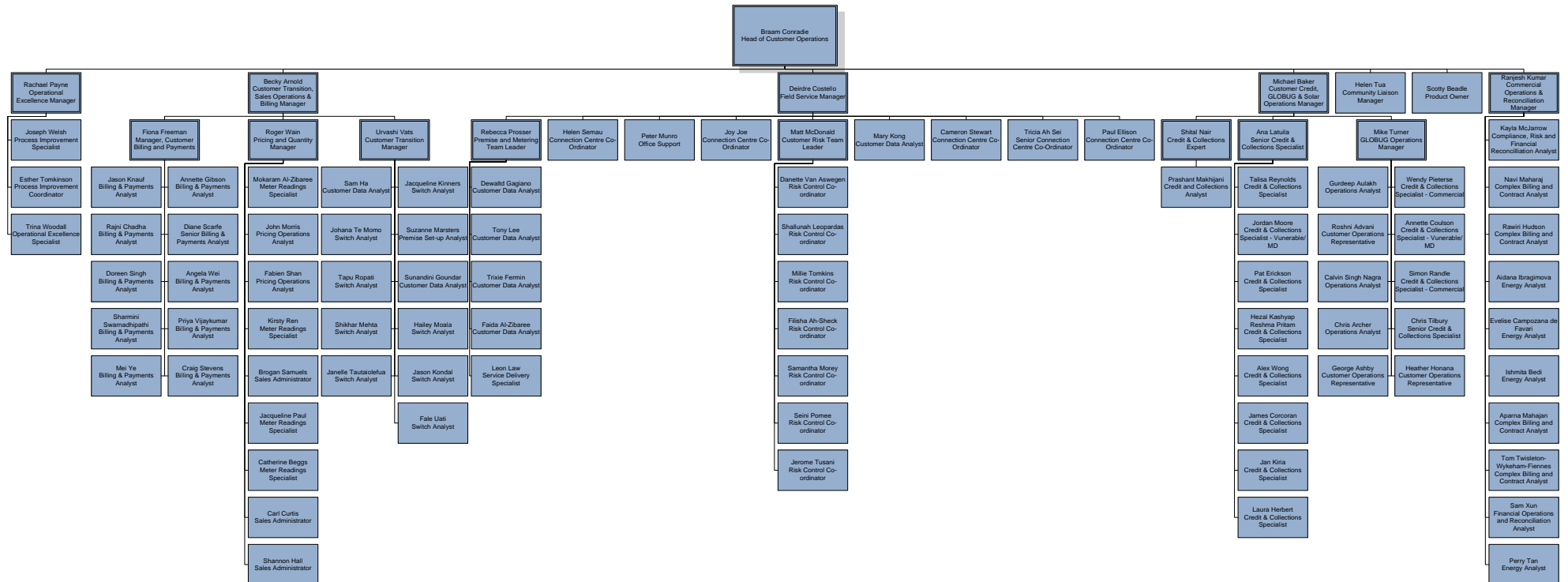
Current code exemptions were reviewed on the Electricity Authority website.

Audit commentary

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

1.2. Structure of Organisation

Mercury provided their current organisational structure:



1.3. Persons involved in this audit

Auditors:

Name	Company	Role
Steve Woods	Veritek Limited	Lead Auditor

Mercury personnel assisting in this audit were:

Name	Title
Kayla McJarrow	Compliance, Risk and Financial Reconciliation Analyst
Mokram Al-Zibaree	Meter Reading Specialist
Roger Wain	Pricing and Quality 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 contractor's fulfilment of the participant's 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 Mercury.

Audit commentary

MRS is considered an "agent" under clause 15.34 of part 15. Although MRS will manage the meter reading operation, Mercury will retain responsibility for compliance.

1.5. Hardware and Software

Hardware and software is described in MRS's latest agent audit report, including backup arrangements.

1.6. Breaches or Breach Allegations

The Electricity Authority confirmed that there have been no alleged breaches relevant to the scope of this audit for Mercury.

1.7. ICP Data

MRS will provide meter reading services for all NHH ICPs currently read by Wells.

1.8. Authorisation Received

Mercury provided a letter of authorisation to collect information from other parties.

1.9. Scope of Audit

Mercury intends to start receiving NHH manual meter reading services from MRS.

The relevant parts of the Code are as follows:

- Clause 15.38 (1) (b) – Gathering and storing NHH raw meter data;
- Clause 15.38 (1) (c) (ii) – Creating and managing NHH volume information; and
- Clause 15.38 (1) (e) – Provision of submission information for reconciliation.

The audit was conducted in accordance with the Guideline for Reconciliation Participant Audits V7.2

The audit was carried out via "Teams" on 30/03/21..

I checked SAP, and the files to and from Mercury to confirm compliance.

1.10. Summary of previous audit

Previous audit results are not relevant to this material change audit.

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 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 read validation process was examined in relation to the achievement of this requirement.

I checked the following test files to confirm accuracy and compliance:

- 1. change file from Mercury to MRS;
- 2. new file from Mercury to MRS;
- 3. DNR (do not read) file from Mercury to MRS; and
- 4. read file from MRS to Mercury with readings and notes

Audit commentary

File checks confirmed the files contained the correct information and were transferred securely. No examples of misleading or incorrect information were identified during any part of the audit.

Mercury intends to run regular reporting to ensure all ICPs are correctly allocated to a “meter reading unit” (MRU) during the one month set up phase. Reporting is also available to identify unbilled ICPs.

Audit outcome

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 a number of sections in this report.

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 checked how data will be transferred between Mercury and MRS.

Audit commentary

All data will be transmitted via Managed File Transfer (MFTP).

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 manager,*
- *provided to and received from the reconciliation manager, and*
- *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.

I reviewed file transfer logs to confirm that they were compliant.

Audit commentary

The MRS audit report confirms compliance.

Audit outcome

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, and*
- *covers any participants who may need to rely on that consent.*

Audit observation

This will not change as a result of the change of agent.

Audit commentary

This will not change as a result of the change of agent.

Audit outcome

Not applicable

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

This will not change as a result of the change of agent.

Audit commentary

This will not change as a result of the change of agent.

Audit outcome

Not applicable

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

This will not change as a result of the change of agent.

Audit commentary

This will not change as a result of the change of agent.

Audit outcome

Not applicable

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 subclause (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

This will not change as a result of the change of agent.

Audit commentary

This will not change as a result of the change of agent.

Audit outcome

Not applicable

2.9. Connection of an ICP (Clause 10.32)

Code reference

Clause 10.32

Code related audit information

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

- *accept responsibility for their obligations in Parts 10, 11 and 15 for the point of connection; and*
- *have an arrangement with an MEP to provide one or more metering installations for the point of connection.*

Audit observation

This will not change as a result of the change of agent.

Audit commentary

This will not change as a result of the change of agent.

Audit outcome

Not applicable

2.10. Temporary Electrical Connection of an ICP (Clause 10.33(1))

Code reference

Clause 10.33(1)

Code related audit information

A reconciliation participant may temporarily electrically connect a point of connection, or authorise an MEP to temporarily electrically connect a point of connection, only if:

- *they are recorded in the registry as being responsible for the ICP; and*
- *one or more certified metering installations are in place at the ICP in accordance with Part 10; and*
- *for an ICP that has not previously been electrically connected, the network owner has given written approval.*

Audit observation

This will not change as a result of the change of agent.

Audit commentary

This will not change as a result of the change of agent.

Audit outcome

Not applicable

2.11. Electrical Connection of Point of Connection (Clause 10.33A)

Code reference

Clause 10.33A(1)

Code related audit information

A reconciliation participant may electrically connect or authorise the electrical connection of a point of connection only if:

- *they are recorded in the registry as being responsible for the ICP; and*
- *one or more certified metering installations are in place at the ICP in accordance with Part 10; and*
- *for an ICP that has not previously been electrically connected, the network owner has given written approval.*

Audit observation

This will not change as a result of the change of agent.

Audit commentary

This will not change as a result of the change of agent.

Audit outcome

Not applicable

2.12. Arrangements for line function services (Clause 11.16)

Code reference

Clause 11.16

Code related audit information

Before providing the registry manager with 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 providing the registry manager with 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

This will not change as a result of the change of agent.

Audit commentary

This will not change as a result of the change of agent.

Audit outcome

Not applicable

2.13. 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

This will not change as a result of the change of agent.

Audit commentary

This will not change as a result of the change of agent.

Audit outcome

Not applicable

3. MAINTAINING REGISTRY INFORMATION

This will not change as a result of the change of agent.

Audit outcome

Not applicable

4. PERFORMING CUSTOMER AND EMBEDDED GENERATOR SWITCHING

This will not change as a result of the change of agent.

Audit outcome

Not applicable

5. MAINTENANCE OF UNMETERED LOAD

This will not change as a result of the change of agent.

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 Clause 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 electrically connected 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

This will not change as a result of the change of agent.

Audit commentary

This will not change as a result of the change of agent.

Audit outcome

Not applicable

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

This will not change as a result of the change of agent.

Audit commentary

This will not change as a result of the change of agent.

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

This will not change as a result of the change of agent.

Audit commentary

This will not change as a result of the change of agent.

Audit outcome

Not applicable

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

MRS is not responsible for compliance with this requirement but does support the compliance of Mercury by advising them of meters that may be defective. This is discussed further in **section 6.6**.

Audit commentary

MRS is not responsible for compliance with this requirement but does support the compliance of Mercury by advising them of meters that may be defective. This is discussed further in **section 6.6**.

Audit outcome

Not applicable

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 it does not exceed the maximum interrogation cycle in 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

MRS collects raw meter data from the metering installations manually.

Audit commentary

All meters are read manually, and MRS does not complete any automated interrogation.

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

I checked the files sent to and from Mercury.

Reporting of meter condition information was reviewed including reviewing information in a file to Mercury.

Audit commentary

During each meter interrogation, MRS collects raw meter data, which is provided to participants to enable compliance with clauses 3(1), 3(2) & 5 of schedule 15.2.

MRS has processes in place to identify and report on tampering, damage, broken and missing seals and unsafe situations. The details are sent in the same file as the meter readings.

Phase failure events are also identified and recorded as required by the Code.

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

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

MRS records the date and time of all meter interrogations. I checked a sample file to confirm this.

The time on each hand-held device is synchronised to the Vodafone network every 60 minutes while within range. The server time is synchronised many times per day to an internet time source.

If hand held time difference is outside five minutes it will lock until the meter reader phones the operations team to have their device resynchronised. The operations team provides a password to unlock the device.

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

MRS is not responsible for compliance with this requirement but does support the compliance of Mercury by obtaining meter readings and providing no read reasons.

Audit observation

Where a read cannot be obtained, MRS provides a no read code and additional notes if required to explain why the ICP was unread. I reviewed files and noted that Mercury will be provided sufficient detail to allow correct reporting of exceptional circumstances.

New ICP processes

When a new ICP is to be added to a meter reading round Mercury will provide MRS with a new file containing the necessary information to allow for sequencing of the ICP and for locating the meter. The information provided will include:

- Address;
- meter number; and
- meter location, including meter reading and dog notes if available.

New ICP records are “sequenced” in Meteror, then this sequence is provided back to Mercury and SAP is updated with the same sequence.

Do not read process

Mercury can provide MRS a file when they require them to stop providing readings for an ICP.

Audit outcome

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

MRS is not responsible for compliance with this requirement but does support the compliance of Mercury by obtaining meter readings and providing no read reasons.

Audit observation

Where a read cannot be obtained, MRS provides a no read code and additional notes if required to explain why the ICP was unread. I reviewed files and noted that Mercury will be provided sufficient detail to allow correct reporting of exceptional circumstances.

New ICP processes

When a new ICP is to be added to a meter reading round Mercury will provide MRS with a new file containing the necessary information to allow for sequencing of the ICP and for locating the meter. The information provided will include:

- Address;
- meter number; and
- meter location, including meter reading and dog notes if available.

New ICP records are “sequenced” in Meteror, then this sequence is provided back to Mercury and SAP is updated with the same sequence.

Do not read process

Mercury can provide MRS a file when they require them to stop providing readings for an ICP.

Audit outcome

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

A report is to be sent to the Authority 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

MRS is not responsible for compliance with this requirement but does support the compliance of Mercury by obtaining meter readings and providing no read reasons.

Audit observation

Where a read cannot be obtained, MRS provides a no read code and additional notes if required to explain why the ICP was unread. I reviewed files and noted that Mercury will be provided sufficient detail to allow correct reporting of exceptional circumstances.

New ICP processes

When a new ICP is to be added to a meter reading round Mercury will provide MRS with a new file containing the necessary information to allow for sequencing of the ICP and for locating the meter. The information provided will include:

- Address;
- meter number; and
- meter location, including meter reading and dog notes if available.

New ICP records are “sequenced” in Meteror, then this sequence is provided back to Mercury and SAP is updated with the same sequence.

Do not read process

Mercury can provide MRS a file when they require them to stop providing readings for an ICP.

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

The data interrogation log requirements were reviewed.

Audit commentary

Compliance is recorded in MRS's agent report.

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

MRS does not deal with HHR data.

Audit commentary

MRS does not deal with HHR data.

Audit outcome

Not applicable

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

MRS does not deal with HHR data.

Audit commentary

MRS does not deal with HHR data.

Audit outcome

Not applicable

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

MRS does not deal with HHR data.

Audit commentary

MRS does not deal with HHR data.

Audit outcome

Not applicable

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 $\pm 0.1\%$ (± 2 seconds).

Audit observation

MRS does not deal with HHR data.

Audit commentary

MRS does not deal with HHR data.

Audit outcome

Not applicable

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.

Audit commentary

When this data reaches SAP the level of security is also robust, and unauthorised personnel cannot access data. Metering, Billing, Energy Services and Risk Control staff have access to modify meter reading information in SAP.

Readings cannot be modified without an audit trail being created. Validation occurs in a temporary table before it becomes a permanent record and meter readings are not edited. I viewed these audit trails, and they are discussed in further detail in **section 2.4**.

No paper-based readings are received.

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

This will not change as a result of the change of agent.

Audit commentary

This will not change as a result of the change of agent.

Audit outcome

Not applicable

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

This will not change as a result of the change of agent.

Audit commentary

This will not change as a result of the change of agent.

Audit outcome

Not applicable

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

MRS does not deal with HHR data.

Audit commentary

MRS does not deal with HHR data.

Audit outcome

Not applicable

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

This will not change as a result of the change of agent.

Audit commentary

This will not change as a result of the change of agent.

Audit outcome

Not applicable

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 were discussed, which confirmed that raw meter data is not overwritten as part of the correction process.

Audit commentary

When errors are detected during validation of non-half hour meter readings, the meter reading is re-entered. Readings are not modified or replaced.

All readings entered meet the audit trail requirements, which are discussed in **section 2.4**.

Audit outcome

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

MRS does not provide estimated readings. All reads are recorded as actual or no reads.

Audit commentary

MRS does not provide estimated readings. All reads are recorded as actual or no reads. I checked files to confirm compliance.

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

MRS is not responsible for deriving volume information but provide validated actual readings which are used to derive volume information.

Audit commentary

MRS provides meter readings to Mercury, which have been subject to a localised validation at hand-held level. Participants use these reads to derive volumes. MRS does not provide estimated readings.

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 to derive volume information must not be rounded or truncated from the stored data from the metering installation.

Audit observation

MRS records whole numbers when reading meters.

I checked sample files to confirm compliance.

Audit commentary

MRS records whole numbers when reading meters.

I checked sample files to confirm compliance.

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

MRS does not deal with HHR data.

Audit commentary

MRS does not deal with HHR data.

Audit outcome

Not applicable

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 the NHH data validation process in the latest MRS audit report.

Audit commentary

Data validation for NHH metering information occurs at multiple levels.

Hand held device data validation

The hand held device performs a localised validation to ensure that the reading is within expected high-low parameters. The validation parameters are agreed between MRS and the participants and are set in Meteror.

The settings were confirmed in Meteror to be the same for all participants:

Validation	Relationship to previous consumption period
High1	1.7
High2	1.5
Low1	0.5
Low2	0.3

When a read falls outside these parameters, the hand held device produces an audible and a visual warning.

Where the meter reading is negative, zero, or outside the high1 or low1 parameters, the meter reader is prompted to check the reading and re-enter it. If the re-entered reading is negative or zero, or outside the high2 or low2 parameters, the meter reader is prompted to take a photo of the meter before being able to continue with the route.

First readings for any meter always fail validation because there is no consumption history to validate against. These readings will always be entered twice.

Meteror validation

The second level of validation is performed by the MRS operations team prior to the files being sent to participants. This validation occurs late every afternoon, after the meter readers have finished their meter reading routes. This means that all routes are validated regardless of the time they arrive. I walked through this validation process.

Where a reading has failed one of the following validations:

- outside the high2 parameter,
- outside the low2 parameter,
- zero consumption,

- negative consumption, and
- new meters

operations staff check the photo taken by the meter reader against the reading entered. Where the read is found to have been entered incorrectly, a correction is processed as discussed in **section 8.1**.

Operations staff also check:

- the number of no reads per meter reader to identify instances where meter readers may require further training or support,
- can't read code "other" to check whether the temporary notes provided are sufficient to enable the participant to identify the reason the meter could not be read, and
- other can't read codes, such as "wrong route" and "can't find meter" are reviewed to identify situations where the ICP needs to be moved to a different route, or further information is needed; if persistent issues are identified they are resolved through training.

If the operations team believe insufficient data has been provided, or that a read should be able to be obtained they arrange a special read and/or contact the meter reader. If a replacement reading is provided by the meter reader, this new read is used in the file to the participant. As described in **section 8.4**, the original read is not over written, and remains in Meteror.

At least 10% of each route is forced to have a photo. These photos are used to verify readings and check the quality of photos taken, and I walked through this validation process. Where the photos are not clear or do not show all the details required they are considered to "fail". A list of failed photos is sent to MRS operations daily and reviewed to identify if further meter reader training is required.

The MRS validation process is expected to identify any systemic issues in relation to the meter reading processes, systems, or staff within a short space of time.

Read import validation.

This will remain unchanged.

Billing validation

This will remain unchanged.

Zero consumption

This will remain unchanged.

Negative consumption

This will remain unchanged.

Consumption while inactive

This will remain unchanged.

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 zero 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

MRS does not electronically interrogate meters; compliance was not assessed.

Audit commentary

MRS does not electronically interrogate meters; compliance was not assessed.

Audit outcome

Not applicable

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

MRS is not responsible for compliance with this requirement.

Audit outcome

Not applicable

11. PROVISION OF SUBMISSION INFORMATION FOR RECONCILIATION

MRS is not responsible for compliance with this requirement.

Audit outcome

Not applicable

12. SUBMISSION COMPUTATION

MRS is not responsible for compliance with this requirement.

Audit outcome

Not applicable

13. SUBMISSION FORMAT AND TIMING

13.1. Provision of submission information to the RM (Clause 8 Schedule 15.3)

MRS is not responsible for compliance with this requirement.

Audit outcome

Not applicable

CONCLUSION

Mercury intends to change their meter reading service provider from Wells to AD Riley, specifically their Meter Reading Services (MRS) division.

Clause 16A.11 of Part 16 requires that if a participant intends to make a “material” change to any system or process then the changes must be subject to an audit prior to the change taking place. This audit was therefore performed at the request of Mercury so that it can be supplied to the Electricity Authority to satisfy the requirements of Clause 16A.11(1).

The audit was conducted in accordance with the Guideline for Reconciliation Participant Audits version 7.2, which was produced by the Electricity Authority.

I checked the relevant files in the test system for:

- Adding ICPs to be read
- Ceasing meter reading
- Receiving reading files
- Receiving no read and condition information
- Initial sequencing and data migration

The checks conducted during this audit confirm that compliance will continue to be achieved. Go-live is expected to be April 2021. Mercury has additional controls in place during the transition period to ensure risks are mitigated. The controls include:

- Checking that all ICPs successfully transfer to the new meter reading units.
- Monitoring of unbilled ICPs to ensure reading has occurred as expected.
- Special read will be sent if any ICPs are missed by the routine reading schedule.
- Photos will be taken of all meters initially, which can be used as part of validation.

Mercury’s next audit date has not yet been set because their report has only just been submitted, but I recommend the next audit date determined by the review of the main audit report will be appropriate because the changes examined by this audit will not add additional risks.

PARTICIPANT RESPONSE