ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

ARDMORE AIRPORT DUML AND MERCURY NZ LTD

Prepared by: Rebecca Elliot

Date audit commenced: 12 April 2019

Date audit report completed: 23 May 2019

Audit report due date: 01-Jun-19

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EXECUTIVE SUMMARY

This audit covers the Ardmore Airport DUML database and processes and was conducted at the request of Mercury NZ Limited (Mercury) in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1.

The ICP associated with the Ardmore Airport load was previously included in the audit of Mercury's small Auckland customers, but as these are all separate customers managed in excel spreadsheets this audit has been undertaken of the Ardmore Airport lights only.

The spreadsheet is maintained by Mercury and the customer is expected to advise Mercury of any changes that occur. The extra lamps found in the last audit have not been corrected during the audit period and the lights in Village Way have been upgraded to LEDs. The change management process is not working, and I recommend that Mercury review this.

I checked the lights in Village Way in the Auckland Transport DUML database extract and found they are also recorded in that database and therefore being submitted twice. I recommend that Mercury liaise with Ardmore Airport to determine which database these should be recorded in.

The database is very small, and the impact of the inaccuracies found have only a very minor effect on reconciliation. This audit found five non-compliances and makes two recommendations. The future risk rating indicates that the next audit be completed in six months. I have considered this in conjunction with Mercury's responses and I recommend that the next audit be in nine months' time.

The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Deriving submission information	2.1	11(1) of Schedule 15.3	kWh volume was truncated rather than rounded. The field audit three additional lights, and four HPS lights in Village Way that have been replaced with LED lights, resulting in a potential minor under submission of 316 kWh per annum.	Weak	Low	3	Identified
Location of each item of load	2.3	11(2A) of Schedule 15.3	Locations of Items of load do not have street number, or GPS locations to make them individually locatable.	Weak	Low	3	Identified
All load recorded in the database	2.5	11(2A) of Schedule 15.3	Three additional items of load found in the field.	Weak	Low	3	Identified
Audit trail	2.7	11.4 of Schedule 15.3	The audit trail does not include the details of the person making the change in the spreadsheet.	Weak	Low	3	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	The field audit three additional lights, and four HPS lights in Village Way that have been replaced with LED lights, resulting in a potential minor under submission of 316 kWh per annum.	Weak	Low	3	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	kWh volume was truncated rather than rounded. The field audit three additional lights, and four HPS lights in Village Way that have been replaced with LED lights, resulting in a potential minor under submission of 316 kWh per annum.	Weak	Low	3	Identified
Future Risk Rating						18	

Future risk rating	0	1-4	5-8	9-15	16-18	19+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Recommendation
Tracking of load change	2.6	Liaise with Ardmore Airport to ensure that load changes are captured in a timely manner.
Database Accuracy	3.1	Liaise with Ardmore Airport to confirm which database the lights in Village Way should be recorded as they are in both Ardmore airport and Auckland Transport's database.

ISSUES

Subject	Section	Description	Issue
		Nil	

1. ADMINISTRATIVE

1.1. Exemptions from Obligations to Comply with Code

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

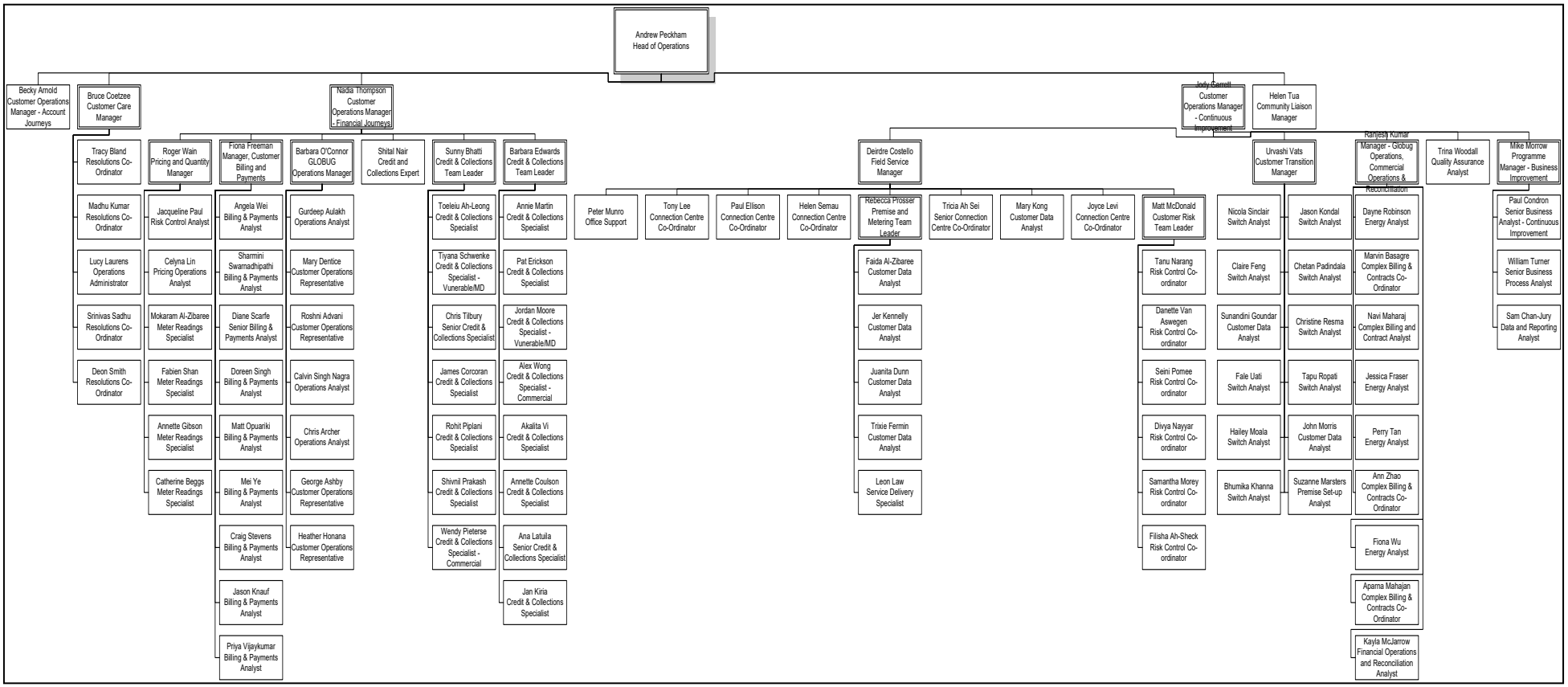
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

Mercury has no exemptions in place in relation to the ICP covered by this audit report.

1.2. Structure of Organisation

Mercury provided an organisational structure:



1.3. Persons involved in this audit

Auditor:

Rebecca Elliot

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Ranjesh Kumar	Pricing Operations and Energy Services Manager	Mercury NZ Ltd

1.4. Hardware and Software

The streetlight data for Ardmore Airport is held in an excel spreadsheet. This is backed up in accordance with standard industry procedures. Access to the spreadsheet is restricted by way of user log into the computer drive.

1.5. Breaches or Breach Allegations

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

1.6. ICP Data

ICP Number	Customer	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0904114678LC7E9	Ardmore Airport	ARDMORE AERODROME BULK UML	TAK0331	RPS	26	3,518

1.7. Authorisation Received

All information was provided directly by Mercury.

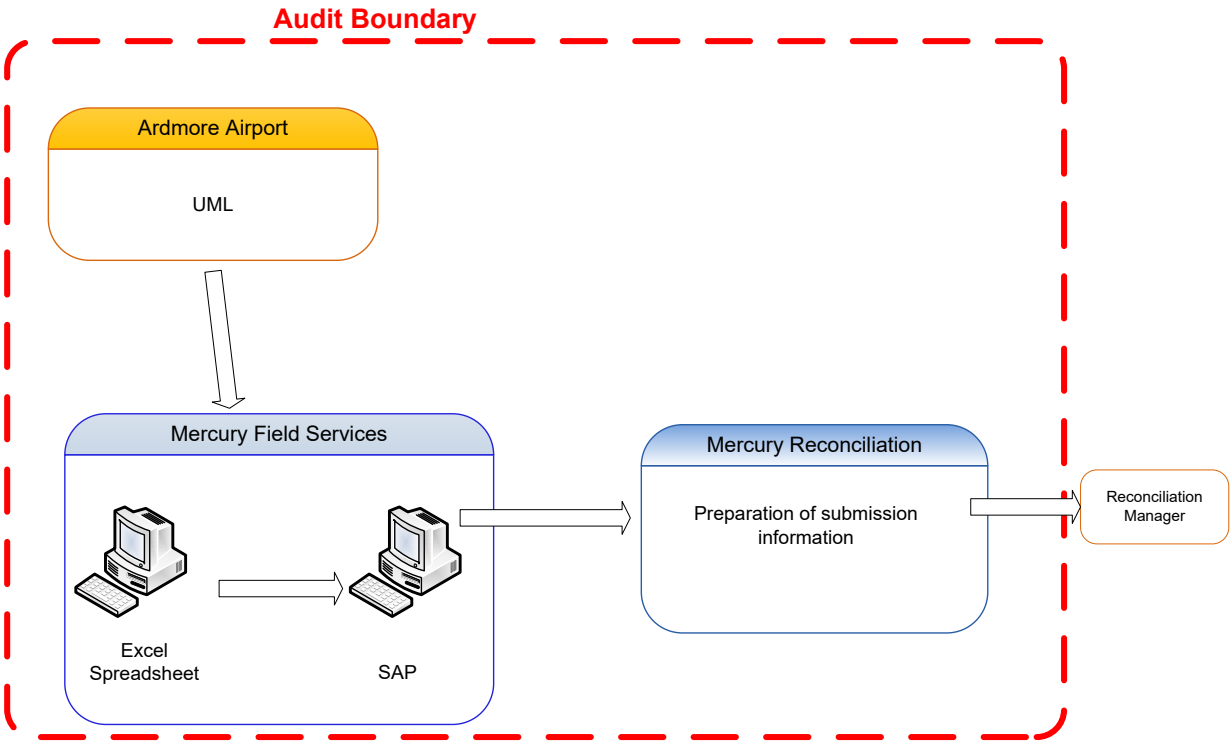
1.8. Scope of Audit

This audit covers the Ardmore Airport DUML database and processes was conducted at the request of Mercury NZ Limited (Mercury) in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1.

The ICP associated with the Ardmore Airport load was previously included in the audit of Mercury's small Auckland customers, but as these are all separate customers managed in excel spreadsheets this audit has been undertaken of the Ardmore Airport lights only.

The ICP is managed in an excel spreadsheet held by Mercury.



The 100% field audit of all 26 items of load was carried out on May 15th, 2018.

1.9. Summary of previous audit

The previous audit was completed in May 2018 by Rebecca Elliot of Veritek Limited. This audit was combined with three other small Auckland DUML customers. Seven non-compliances were identified, and no recommendations were made. The current status of the non-compliances in relation to the Ardmore Airport lights are detailed below.

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	The field audit found variances.	Still existing
All load recorded in the database	2.5	11(2A) of Schedule 15.3	Two additional items of load found in the field than recorded in the spreadsheets.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	The field audit found variances.	Still existing

Subject	Section	Clause	Non-compliance	Status
Volume information accuracy	3.2	15.2 and 15.37B(c)	The field audit found variances.	Still existing

1.10. Distributed unmetered load audits (Clause 16A.26 and 17.295F)

Code reference

Clause 16A.26 and 17.295F

Code related audit information

Retailers must ensure that DUML database audits are completed:

1. *by 1 June 2018 (for DUML that existed prior to 1 June 2017)*
2. *within three months of submission to the reconciliation manager (for new DUML)*
3. *within the timeframe specified by the Authority for DUML that has been audited since 1 June 2017.*

Audit observation

Mercury has requested Veritek to undertake this street lighting audit.

Audit commentary

This audit report confirms that the requirement to conduct an audit has been met for this database within the required timeframe.

Audit outcome

Compliant

2. DUML DATABASE REQUIREMENTS

2.1. Deriving submission information (Clause 11(1) of Schedule 15.3)

Code reference

Clause 11(1) of Schedule 15.3

Code related audit information

The retailer must ensure the:

- *DUML database is up to date*
- *methodology for deriving submission information complies with Schedule 15.5.*

Audit observation

The process for calculation of consumption was examined and the application of profiles was checked. The database was checked for accuracy.

Audit commentary

This clause requires that the distributed unmetered load database must satisfy the requirements of schedule 15.5 regarding the methodology for deriving submission information. Mercury reconciles this DUML load using the RPS profile. The daily kWh figure recorded in SAP, which is derived from the spreadsheet is used for submission. I checked the accuracy of the submission information by multiplying the daily kWh figure to the figure submitted in the AV080 for the month of April 2019. This found the kWh figure was truncated rather than rounded e.g. the figure was 1266.48 but was in the AV080 as 1266. This is recorded as non-compliance.

The field audit found some database inaccuracies, and these will be resulting in a very minor under submission of 316 kWh. This is discussed further in **section 3.1.**

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: 11(1) of Schedule 15.3 From: 01-Jun-17 To: 30-Apr-19	kWh volume was truncated rather than rounded. The field audit three additional lights, and four HPS lights in Village Way that have been replaced with LED lights, resulting in a potential minor under submission of 316 kWh per annum. 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	The controls in place are rated as weak as the database is not being maintained as expected. The impact is assessed to be low, based on the minor kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
Response: Non compliance accepted and remedial action on-going. **Action:** Mercury will update the information to ensure they are reported correctly. Will also review the volume to ensure it is not truncated.	June 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Mercury will update the information to ensure they are reported correctly. Will also review the volume to ensure it is not truncated.	On going	

2.2. ICP identifier and items of load (Clause 11(2)(a) and (aa) of Schedule 15.3)

Code reference

Clause 11(2)(a) and (aa) of Schedule 15.3

Code related audit information

The DUML database must contain:

- *each ICP identifier for which the retailer is responsible for the DUML*
- *the items of load associated with the ICP identifier.*

Audit observation

The spreadsheets were checked to confirm the correct ICP was recorded correctly for the load.

Audit commentary

The spreadsheet records the correct ICP relative to the load.

Audit outcome

Compliant

2.3. Location of each item of load (Clause 11(2)(b) of Schedule 15.3)

Code reference

Clause 11(2)(b) of Schedule 15.3

Code related audit information

The DUML database must contain the location of each DUML item.

Audit observation

The spreadsheets were checked to confirm the location is recorded for all items of load.

Audit commentary

The spreadsheets contain the street name of each item of load but not the street number or GPS co-ordinates. This is recorded as non-compliance.

Audit outcome

Compliant

Non-compliance	Description
Audit Ref: 2.3 With: 11(2)(b) of Schedule 15.3 From: 01-Jun-18 To: 30-Apr-19	Locations of Items of load do not have street number, or GPS locations to make them individually locatable. Potential impact: None Actual impact: None Audit history: None Controls: Weak Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls in place are rated as weak as the database is not being maintained as expected. The number of items of load is small therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Response: Non compliance accepted and remedial action on-going. **Action:** Mercury will liaise with Ardmore to update the information correctly.	July 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
As above and also continued close monitoring of the database	On going	

2.4. Description and capacity of load (Clause 11(2)(c) and (d) of Schedule 15.3)

Code reference

Clause 11(2)(c) and (d) of Schedule 15.3

Code related audit information

The DUML database must contain:

- *a description of load type for each item of load and any assumptions regarding the capacity*
- *the capacity of each item in watts.*

Audit observation

The spreadsheet was checked to confirm that it contained a field for lamp type and wattage capacity and included any ballast or gear wattage and that each item of load had a value recorded in these fields.

Audit commentary

Each item of load contains the lamp type, wattage and ballast in the spreadsheet.

Audit outcome

Compliant

2.5. All load recorded in database (Clause 11(2A) of Schedule 15.3)

Code reference

Clause 11(2A) of Schedule 15.3

Code related audit information

The retailer must ensure that each item of DUML for which it is responsible is recorded in this database.

Audit observation

A field audit was undertaken of all 26 items of load.

Audit commentary

The findings from the field audit were correct with the exception of those detailed below:

Street/Area	Database Count	Field Count	Field count differences	Wattage differences	Comments
Village Way	4	5	1	4	1x extra LED light found in the field. 4x incorrect wattages - recorded as 70HPS in the database but LED lights found in the field NB these lights are also recorded in the Auckland Transport Database. This is discussed in **section 3.1**.
Harvard Lane	16	18	2		Double 70W SON lights.
TOTAL	**26**	**29**	**3**	**4**	

Three extra lights were found in the field. The additional lamps reported in the last audit report have not been corrected during the audit period. The additional lights found in the field are recorded as non-compliance below.

The accuracy of the database is detailed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: 11(2A) of Schedule 15.3 From: 01-Jun-17 To: 30-Apr-19	Three additional lights found in the field. 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	The controls in place are rated as weak as the database is not being maintained as expected. The impact is assessed to be low as the impact on reconciliation is small as detailed in **section 3.1**.

Actions taken to resolve the issue	Completion date	Remedial action status
Response: Non compliance accepted and remedial action on-going. **Action:** Mercury will update the information to ensure they are reported correctly.	On going	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Our current process is the responsibility on the customer to update mercury of any changes, this process is clearly not working so we are going to move forward with the following steps. • The 'current' database will be sent to each account holder with an email detailing the auditor's findings and request information relating to lamp types, street numbers, additions fittings, etc. We will request a returned completed database within one month of the email date. If not we will raise field investigations. • Every two months we will send the 'current' database to the customer requesting it be updated with any changes which we will then reflect in SAP. • We are taking feedback onboard with regard to tracking changes and who made the change on the databases. • Our intention is to have a consistent format across all databases where possible, to avoid error and confusion.	On going	

2.6. Tracking of load changes (Clause 11(3) of Schedule 15.3)

Code reference

Clause 11(3) of Schedule 15.3

Code related audit information

The DUML database must track additions and removals in a manner that allows the total load (in kW) to be retrospectively derived for any given day.

Audit observation

The process for tracking of changes in the spreadsheets was examined.

Audit commentary

Any changes that are made during any given month take effect from the beginning of that month. The information is available which would allow for the total load in kW to be retrospectively derived for any day. On 20th September 2012, the Authority sent a memo to Retailers and auditors advising that tracking of load changes at a daily level was not required as long as the database contained an audit trail. I have interpreted this to mean that the production of a monthly "snapshot" report is sufficient to achieve compliance.

The database tracks additions and removals as required by this clause.

An annual audit is expected to be carried out by the property owner to confirm that the database is correct. The customer is expected to advise if any changes occur so that the database can be updated accordingly, and notes of the light type, wattage and ballast and the date of change are recorded. The field audit found that the additional lights found in the last audit have not been updated during the audit period and the HPS lights in Village Way have been replaced with LED lights, but these have not been updated in the database. I recommend that Mercury review the tracking of load change process to ensure all such changes are captured.

Description	Recommendation	Audited party comment	Remedial action
Tracking of load change	Liaise with Ardmore Airport to ensure that load changes are captured in a timely manner.	As stated above in ref 2.5	Identified

Audit outcome

Compliant

2.7. Audit trail (Clause 11(4) of Schedule 15.3)

Code reference

Clause 11(4) of Schedule 15.3

Code related audit information

The DUML database must incorporate an audit trail of all additions and changes that identify:

- *the before and after values for changes*
- *the date and time of the change or addition*
- *the person who made the addition or change to the database.*

Audit observation

The spreadsheets were checked for audit trails.

Audit commentary

Examination of the spreadsheet found that the changes made are detailed and dated but no record of the person who has made the change was recorded.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.7 With: 11.4 of Schedule 15.3 From: 01-Jun-18 To: 30-Apr-19	The audit trail does not include the details of the person making the change in the spreadsheet. Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak as changes made in the database do not require the persons details making the change to be recorded as it is an excel spreadsheet. The impact is assessed to be low as this has no direct impact on reconciliation.

Actions taken to resolve the issue	Completion date	Remedial action status
Response: Non compliance accepted and remedial action on-going. **Action:** Mercury will liaise with Ardmore to update the information correctly.	July 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Our current process is the responsibility on the customer to update mercury of any changes, this process is clearly not working so we are going to move forward with the following steps. • The 'current' database will be sent to each account holder with an email detailing the auditor's findings and request information relating to lamp types, street numbers, additions fittings, etc. We will request a returned completed database within one month of the email date. If not we will raise field investigations. • Every two months we will send the 'current' database to the customer requesting it be updated with any changes which we will then reflect in SAP. • We are taking feedback onboard with regard to tracking changes and who made the change on the databases. • Our intention is to have a consistent format across all databases where possible, to avoid error and confusion.	On going	

3. ACCURACY OF DUML DATABASE

3.1. Database accuracy (Clause 15.2 and 15.37B(b))

Code reference

Clause 15.2 and 15.37B(b)

Code related audit information

Audit must verify that the information recorded in the retailer's DUML database is complete and accurate.

Audit observation

A full field audit of all 26 items of load was undertaken to confirm the accuracy of the spreadsheet.

Wattages were checked for alignment with the published standardised wattage table produced by the Electricity Authority.

Audit commentary

The field audit findings are detailed in **section 2.5**. The additional lights found in the last audit have not been corrected. The lights in Village Way have been replaced with LED lights during the audit period. This has not been updated in the database. I have checked these lights in the Auckland Transport RAMM database extract and found they are also recorded against ICPs 0900343060LC471 and 1001282179LC8B1 as part of that database. It appears they have been updated to LED as part of the Auckland Transport LED roll out. I recommend that Mercury liaise with Ardmore Airport to confirm which database they should be recorded in.

Description	Recommendation	Audited party comment	Remedial action
Database Accuracy	Liaise with Ardmore Airport to confirm which database the lights in Village Way should be recorded as they are in both Ardmore airport and Auckland Transport's database.	Mercury will liaise with Ardmore Airport	Identified

The effect of the discrepancies (overs and unders) found have a balancing effect on reconciliation with only an estimated minor under submission of 316 kWh per annum. This is recorded as non-compliance below and in **sections 2.1** and **3.2**.

If the Village Way lights have been submitted twice (by being in two databases) this will have resulted in an estimated annual over submission of 1,773 kWh for the period they had 70W HPS lights and 491 kWh with the LED lights installed.

The check of wattages and ballasts confirmed compliance.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: 15.2 and 15.37B(b) From: 01-Jun-17 To: 30-Apr-19	The field audit three additional lights, and four HPS lights in Village Way that have been replaced with LED lights, resulting in a potential minor under submission of 316 kWh per annum. 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	The controls in place are rated as weak as the database is not being maintained as expected. The impact is assessed to be low, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
Response: Non compliance accepted and remedial action on-going. **Action:** Mercury will update the information to ensure they are reported correctly.	July 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Our current process is the responsibility on the customer to update mercury of any changes, this process is clearly not working so we are going to move forward with the following steps. • The 'current' database will be sent to each account holder with an email detailing the auditor's findings and request information relating to lamp types, street numbers, additions fittings, etc. We will request a returned completed database within one month of the email date. If not we will raise field investigations. • Every two months we will send the 'current' database to the customer requesting it be updated with any changes which we will then reflect in SAP. • We are taking feedback onboard with regard to tracking changes and who made the change on the databases. • Our intention is to have a consistent format across all databases where possible, to avoid error and confusion.	On going	

3.2. Volume information accuracy (Clause 15.2 and 15.37B(c))

Code reference

Clause 15.2 and 15.37B(c)

Code related audit information

The audit must verify that:

- *volume information for the DUML is being calculated accurately*
- *profiles for DUML have been correctly applied.*

Audit observation

The submission was checked for accuracy for the month the database extract was supplied. This included:

- checking the registry to confirm that the ICP has the correct profile and submission flag; and
- checking the expected kWh against the submitted figure to confirm accuracy.

Audit commentary

Mercury reconciles this DUML load using the RPS profile. The daily kWh figure recorded in SAP (which is derived from the spreadsheet) is used for submission. The registry was checked and confirmed that the ICP has the correct profile and submission flag.

I checked the accuracy of the submission information by multiplying the daily kWh figure from SAP to the figure submitted in the AV080 for the month of April 2019. This found the kWh figure was truncated rather than rounded e.g. the figure was 1266.48 but was in the AV080 as 1266. This is recorded as non-compliance.

The field audit found some database inaccuracies, and these will be resulting in a very minor under submission of 316 kWh. This is discussed further in **section 3.1.**

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: 15.2 and 15.37B(c) From: 01-Jun-17 To: 30-Apr-19	kWh volume was truncated rather than rounded. The field audit three additional lights, and four HPS lights in Village Way that have been replaced with LED lights, resulting in a potential minor under submission of 316 kWh per annum. Potential impact: Low Actual impact: Low Audit history: Twice previously Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
High	The controls in place are rated as weak as the database is not being maintained as expected. The impact is assessed to be low, based on the minor kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
Response: Non compliance accepted and remedial action on-going. **Action:** Mercury will update the information to ensure they are reported correctly. Will also review the volume to ensure it is not truncated.	July 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Mercury will update the information to ensure they are reported correctly. Will also review the volume to ensure it is not truncated.	On going	

CONCLUSION

The ICP associated with the Ardmore Airport load was previously included in the audit of Mercury's small Auckland customers, but as these are all separate customers managed in excel spreadsheets this audit has been undertaken of the Ardmore Airport lights only.

The spreadsheet is maintained by Mercury and the customer is expected to advise Mercury of any changes that occur. The extra lamps found in the last audit have not been corrected during the audit period and the lights in Village Way have been upgraded to LEDs. The change management process is not working, and I recommend that Mercury review this.

I checked the lights in Village Way in the Auckland Transport DUML database extract and found they are also recorded in that database and therefore being submitted twice. I recommend that Mercury liaise with Ardmore Airport to determine which database these should be recorded in.

The database is very small, and the impact of the inaccuracies found have only a very minor effect on reconciliation. This audit found five non-compliances and makes two recommendations. The future risk rating indicates that the next audit be completed in six months. I have considered this in conjunction with Mercury's responses and I recommend that the next audit be in nine months' time.

PARTICIPANT RESPONSE

Mercury has changed it's process as stated in the preventative action above. Furthermore, Mercury will have an extra focus on DUML to meet the code obligation. Mercury will update the information to ensure they are reported correctly however it is rather impossible to backdate as no one knows when the changes were made as it was not captured. Back dating on 'potential' under submission may cause over submission without the known facts. Mercury is reviewing the process.

We request EA to clear the previous non-compliance as it has minimal impact on the industry and a minor database/load for Ardmore Airport and monitor Mercury's DUML responsibilities going forward based on the preventative actions put in place.

We also request EA to review it's breach risk rating to be more reflective rather than the domino effects, example: 2.1 and 3.2 non-compliance above, which are same however risk rating adds up to 6 points.