ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

NZTA MAINPOWER AND CONTACT ENERGY

Prepared by: Steve Woods

Date audit commenced: 20 May 2019

Date audit report completed: 28 May 2019

Audit report due date: 1 June 2019

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EXECUTIVE SUMMARY

This audit of the NZTA Mainpower DUML database and processes was conducted at the request of Contact Energy (Contact) 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, which became effective on 1 June 2017.

Three non-compliances were identified, and no recommendations were raised.

The main issue found is that the submission information is not provided for the Ohoka Downs ICP, which is recorded as inactive, vacant when it should be Active. Under submission of 7,423 kWh per annum has occurred.

Some items of load still require better location information, preferably GPS coordinates.

The future risk rating of 7 indicates that the next audit be completed in 18 months. 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	Submission not occurring for ICP 0000366150MP46C leading to under submission of 7,423 kWh per annum.	Moderate	Low	2	Identified
Location of items of load	2.3	11(2)(b) of Schedule 15.3	Location information insufficient to locate at least 106 items of load.	Weak	Low	3	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	Submission not occurring for ICP 0000366150MP46C leading to under submission of 7,423 kWh per annum.	Moderate	Low	2	Investigating
					Future Risk Rating	**7**	

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	Description	Recommendation
		Nil	

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

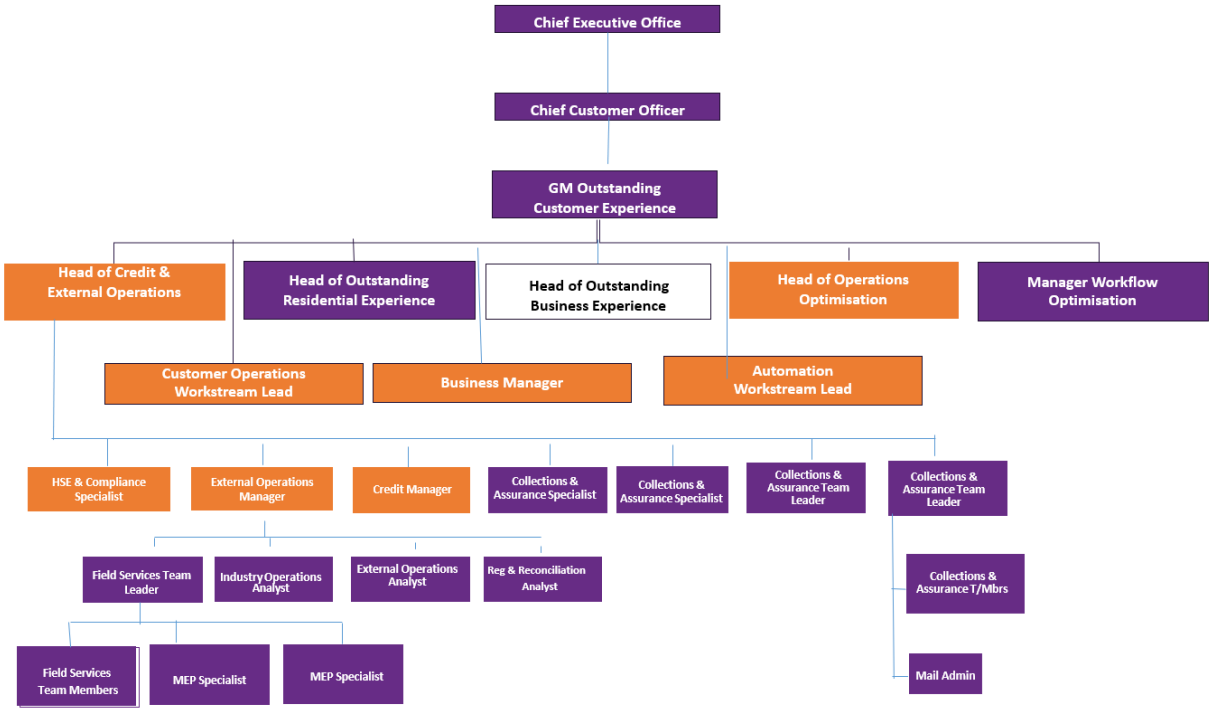
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Contact Energy provided a copy of their organisational structure.



1.3. Persons involved in this audit

Auditor:

Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Allie Jones	External Operations Analyst	Contact Energy
Sarah Barnes	Regulatory Manager	Mainpower
Neil O'Loughlin	Surveyor/ Pricing Co-ordinator	Mainpower
Joel Hung	Commercial Analyst	Mainpower

1.4. Hardware and Software

Section 1.8 shows that Mainpower maintains an Access databases for the management of the DUML information. Backup and restoration procedures are in accordance with normal industry protocols.

1.5. Breaches or Breach Allegations

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

1.6. ICP Data

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000366461MPAD4	CUL0331 STREET LIGHTS	CUL0331	RPS	54	9,727
0000366463MPA51	KKA0331 STREET LIGHTS	KKA0331	RPS	115	18,847
0000366462MP614	KAI0111 STREET LIGHTS	KAI0111	RPS	372	95,235
0000366464MP79B	SBK0331 STREET LIGHTS	SBK0331	RPS	32	6,061
0000366465MPBDE	WPR0331 STREET LIGHTS	WPR0331	RPS	91	21,099

0000366466MP71E	STREETLIGHTS WPR0661	WPR0661	RPS	61	14,512
0000366150MP46C	OHOKA DOWNS SOCIETY INC-KAI0111	KAI0111	RPS	22	1,738
Total				**747**	**167,219**

1.7. Authorisation Received

All information was provided directly by Contact and Mainpower.

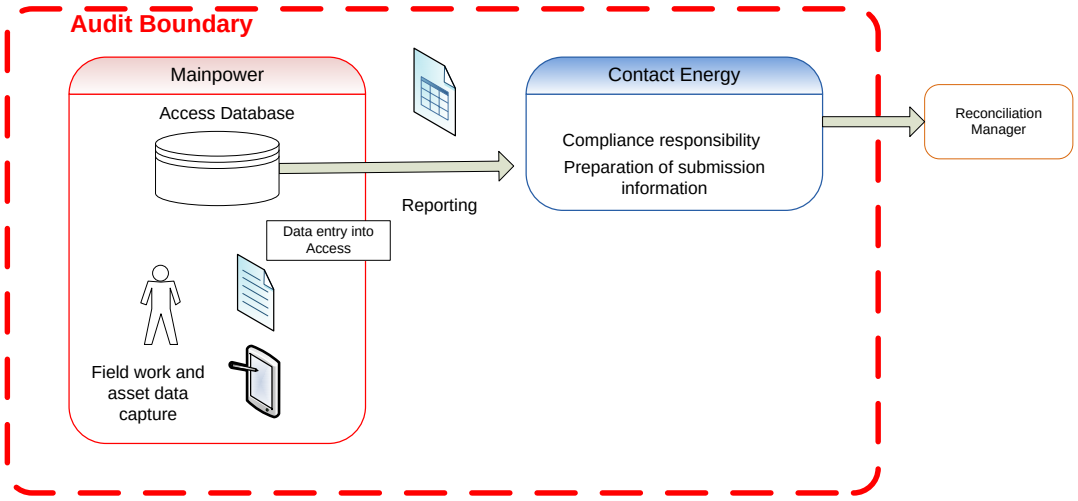
1.8. Scope of Audit

This audit of the NZTA Mainpower DUML database and processes was conducted at the request of Contact, 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, which became effective on 1 June 2017.

The items of load are located on the Mainpower network. Mainpower is engaged as the streetlighting maintenance contractor and they maintain a database, which is used by Contact to populate the daily kWh in the registry and in SAP in order to calculate submission information. Mainpower provides reporting to Contact on a monthly basis.

The diagram below shows the flow of information and the audit boundary for clarity.



The field audit was undertaken of a statistical sample of 107 items of load on 20 May 2019.

1.9. Summary of previous audit

The previous audit was conducted in April 2018 by Steve Woods of Veritek.

The tables below show the issues raised.

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	Incorrect daily kWh figures leading to over submission by 3,290 kWh The database accuracy is assessed to be 98.5% indicating an estimated over submission of 10,400 kWh per annum, on top of the 3,290 kWh mentioned above.	Cleared for these issues. One additional matter raised.
Location of items of load	2.3	11(2)(b) of Schedule 15.3	Location information insufficient to locate at least 308 items of load.	Still existing for a lower number.
Database accuracy	3.1	15.2 and 15.37B(b)	The database accuracy is assessed to be 98.5% indicating an estimated over submission of 10,400 kWh per annum.	Cleared
Volume information accuracy	3.2	15.2 and 15.37B(c)	Incorrect daily kWh figures leading to over submission by 3,290 kWh. The database accuracy is assessed to be 98.5% indicating an estimated over submission of 10,400 kWh per annum, on top of the 3,290 kWh mentioned above.	Cleared for these issues. One additional matter raised

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

Contact requested Veritek to undertake this streetlight audit.

Audit commentary

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

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.

Audit commentary

Contact reconciles this DUML load using the RPS profile. Consumption information is derived from the daily kWh figure on the registry, which is maintained based on monthly reporting from Mainpower.

I compared the daily kWh figures for all Active ICPs to those calculated from the database and they all matched.

ICP 0000366150MP46C is for Ohoka Downs streetlighting, which is a residential subdivision. This ICP is recorded as "inactive, vacant" in the registry, but Mainpower has no record of this streetlight circuit being disconnected. This ICP should probably have a separate DUML audit and audit report in future, because it's not part of NZTA, but for now I've recorded the findings in this report. The kW is 1.738, which equates to 7,423 kWh per annum. This ICP was made inactive on 22/08/17.

The database accuracy for the other ICPs is 100% based on the field audit.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 22-Aug-17 To: 28-May-19	Submission not occurring for ICP 0000366150MP46C leading to under submission of 7,423 kWh per annum. Potential impact: Medium 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 moderate, because they are sufficient to ensure that submission information is correct most of the time. The impact is assessed to be low because the under submission is less than 10,000 kWh per annum.

Actions taken to resolve the issue	Completion date	Remedial action status

Contact previously asked Mainpower to go and check this light in the evening to see if it is on or not – we will ensure that this happens and update accordingly	August 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
N/A	N/A	

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 database was checked to confirm an ICP is recorded for each item of load.

Audit commentary

An ICP is recorded for each item of 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 database was checked to confirm the location is recorded for all items of load.

Audit commentary

The database contains the street, a description of the location and GPS coordinates.

416 of 806 records don't have coordinates. In many cases, the items of load can be found from the location description, for example street numbers, distance or number of lights from a corner, etc. There are 106 records where the location description is not unique, meaning the location information is insufficient to physically identify the item of load.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.3 With: Clause 11(2)(b) of Schedule 15.3 From: 01-May-18 To: 28-May-19	Location information insufficient to locate at least 106 items of load. Potential impact: Low Actual impact: Low Audit history: Once Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as weak because there are still many lights without sufficient information to locate them. The impact is minor; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Contact will work with the customer to better the location information	TBC	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Contact will discuss with the customer about ensuring that location information is updated in the database	N/A	

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 database was checked to confirm that it contained a field for lamp type and wattage capacity and included any ballast or gear wattage.

Audit commentary

Lamp make, model, lamp wattage and ballast wattage are included in the database.

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

The field audit was undertaken of a statistical sample of 107 items of load on 20 May 2019.

Audit commentary

All items of load were accurately recorded in the database.

Audit outcome

Compliant

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 database 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 20 September 2012, the Authority sent a memo to retailers and auditors advising that tracking of load changes at a daily level was not required if the database contained an audit trail. I have interpreted this to mean that the provision of a copy of the report to Contact each month is sufficient to achieve compliance.

Outage patrols are conducted on a regular basis and this process identifies potential discrepancies.

New connections require a proposed plan to be provided and an "as built" plan once the development is complete. Once installed, the information is passed to Mainpower and processed within two days of receipt. Mainpower adds the records to their database immediately as 'proposed' and they are updated within a day of livening.

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 database was checked for audit trails.

Audit commentary

The database has a complete and compliant audit trail.

Audit outcome

Compliant

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

The DUML Statistical Sampling Guideline was used to determine the database accuracy. The table below shows the survey plan.

Plan Item	Comments
Area of interest	NZTA Mainpower
Strata	The database contains items of load for NZTA lighting on the Mainpower network The processes for the management of all NZTA lighting is the same, but I decided to create three strata, as follows: 1. Kaiapoi 2. Woodend, Amberly 3. Small town.
Area units	I created a pivot table of the roads and I used a random number generator in a spreadsheet to select a total of 19 sub-units.
Total items of load	107 items of load were checked.

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

Audit commentary

No errors were found, the database is therefore assessed to be 100% accurate.

Audit outcome

Compliant

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 all ICPs have the correct profile and submission flag; and
- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

Audit commentary

I compared the daily kWh figures for all Active ICPs to those calculated from the database and they all matched.

ICP 0000366150MP46C is for Ohoka Downs streetlighting, which is a residential subdivision. This ICP is recorded as "inactive, vacant" in the registry, but Mainpower has no record of this streetlight circuit being disconnected. This ICP should probably have a separate DUML audit and audit report in future, but for now I've recorded the findings in this report. The kW is 1.738, which equates to 7,423 kWh per annum. This ICP was made inactive on 22/08/17.

The database accuracy for the other ICPs is 100% based on the field audit.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c)) From: 22-Aug-17 To: 28-May-19	Submission not occurring for ICP 0000366150MP46C leading to under submission of 7,423 kWh per annum. Potential impact: Medium Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as moderate, because they are sufficient to ensure that submission information is correct most of the time. The impact is assessed to be low because the under submission is less than 10,000 kWh per annum.

Actions taken to resolve the issue	Completion date	Remedial action status
CTCT are investigating. There is a possibility that this moved ownership to Waimakariri Council in 2017, if that is the case then all consumption will need to be resubmitted under the correct ICP through their current retailer.	August 2019	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
N/A	N/A	

CONCLUSION

Three non-compliances were identified, and no recommendations were raised.

The main issue found is that the submission information is not provided for the Ohoka Downs ICP, which is recorded as inactive, vacant. Under submission of 7,423 kWh per annum has occurred.

Some items of load still require better location information, preferably GPS coordinates.

PARTICIPANT RESPONSE