

**ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT**

For

**CHRISTCHURCH CITY COUNCIL
AND MERIDIAN ENERGY
NZBN: 9429037696863**

Prepared by: Steve Woods

Date audit commenced: 3 March 2022

Date audit report completed: 21 July 2022

Audit report due date: 01-Feb-19

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EXECUTIVE SUMMARY

This audit of the **Christchurch City Council (CCC) DUML database** and processes was conducted at the request of **Meridian Energy (Meridian)** 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 DUML database contains various items of UML that were historically billed against individual ICPs. Unmetered loads are identified by the Christchurch City Council and moved into the Orion database following a verification process to confirm its location, wattage, hours of operation etc.

Meridian reconciles this DUML load using the UML profile and the daily unmetered figures for both ICPs. Meridian Energy receive a monthly wattage report from Orion. This is used to update the daily figure on the registry.

I checked the March 2022 extract provided by Orion against the submission totals on the registry populated by Meridian and found that submission matched the database.

The full field audit found that the database had 99.37% accuracy rate. The field audit confirmed that the database accuracy is within the allowable +/-5% threshold and is therefore considered compliant.

Orion's fault, maintenance, new connection, and upgrade work is completed by Orion's approved contractors. The contractors provide paperwork to Orion confirming that work is complete, and Orion uses this information to update the database.

This audit found one non-compliance and makes one recommendation. The future risk rating of two indicates that the next audit be completed in 24 months. I agree with this recommendation.

The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Distributed unmetered load audits	1.10	16A.26 and 17.295F	DUML audit conducted late.	Moderate	Low	2	Identified
Future Risk Rating						2	

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	Remedial action
Tsunami wattage reporting	3.1	Install logging equipment to confirm the battery charger load for tsunami sirens.	Identified

ISSUES

Subject	Section	Description	Issue

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

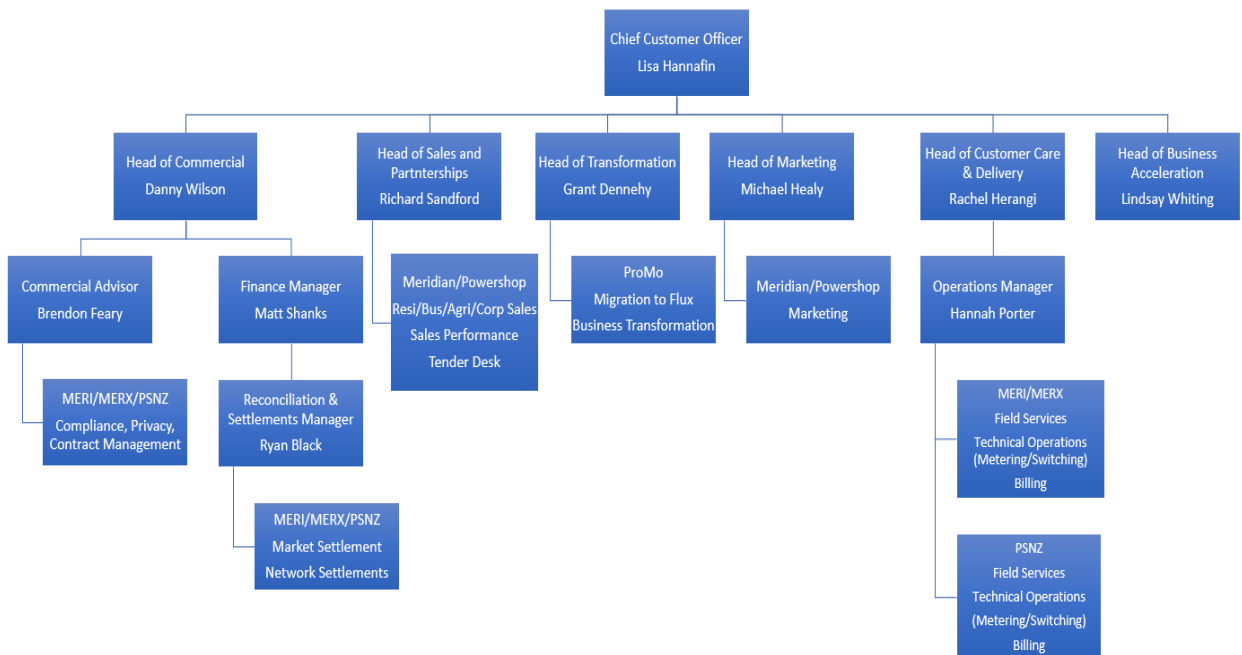
The Electricity Authority’s website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Meridian provided the relevant organisational structure:



1.3. Persons involved in this audit

Auditors:

Name	Title	Company
Steve Woods	Auditor	Veritek
Claire Stanley	Supporting Auditor	Veritek

Other personnel assisting in this audit were:

Name	Title	Company
Penny Lawrence	Operations Services	Orion
Helen Youngman	Energy Data Analyst	Meridian Energy
Steven Nichols	Energy Analyst	Christchurch City Council
Amy Cooper	Compliance Officer	Meridian Energy

1.4. Hardware and Software

Orion use a purpose-built Oracle Streetlighting/DUML database for the management of the DUML information. Backup and restoration procedures are in place, and access to the Orion network (including the database) is restricted using logins and passwords.

Systems used by the trader and their agent to calculate submissions are assessed as part of their reconciliation participant audits.

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	Number of items of load	Database wattage (watts)
0007186942RNC7D	CCC Other DUML ICP	BRY0661	102	1,508
0007186944RNDF2	CCC Other DUML ICP	ISL0661	33	758
Total				2,266

1.7. Authorisation Received

All information was provided directly by Meridian, Orion and Christchurch City Council.

1.8. Scope of Audit

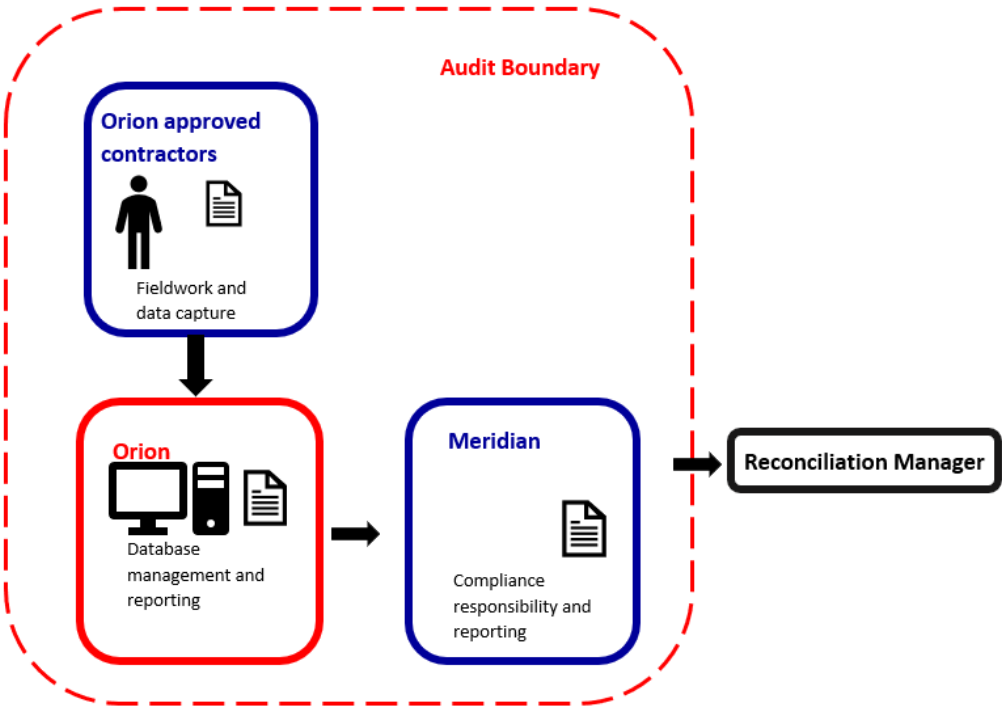
This audit of the CCC DUML database and processes was conducted at the request of Meridian in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

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

The unmetered load is managed by Orion and the data is held in their DUML database, on behalf of CCC, who is Meridian’s customer.

The scope of the audit encompasses the collection, security and accuracy of the data, including the preparation of submission information based on the database reporting. The diagrams below show the audit boundaries for clarity.

Orion’s fault, maintenance, new connection and upgrade work is completed by Orion’s approved contractors. The contractors provide paperwork to Orion confirming that work is complete, and Orion uses this information to update the database.



1.9. Summary of previous audit

This is the first audit to be completed for CCC, therefore there is no previous non-compliance.

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 3 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

Meridian have requested Veritek to undertake this streetlight audit.

Audit commentary

ICP 0007186942RNC7D was created on 1 November 2018, therefore the first audit was required by 1 February 2019. It's taken a long time to get the details checked and into the database, leading to a late audit.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 1.10 With: Clause 16A.26 and 17.295F From: 01-Feb-19 To: 07-Jun-22	DUML audit conducted late. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact on settlement and participants is minor; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
It has taken us some time to obtain the information needed to conduct this audit following staff changes at the council. The audit was conducted as soon as all the information was provided.		June 2022	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	

We now have an additional staff member overseeing DUML audits at Meridian which will assist in ensuring audits are conducted by their due dates where this is possible.	Ongoing	
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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

Meridian reconciles this DUML load using the UML profile and the daily unmetered figures for both ICPs. Meridian Energy receive a monthly wattage report from Orion. This is used to update the daily figure on the registry.

I checked the March 2022 extract provided by Orion against the submission totals on the registry populated by Meridian and found that submission matched the database.

The full field audit found that the database had 99.37% accuracy rate. The field audit confirmed that the database accuracy is within the allowable +/-5% threshold and is therefore considered compliant.

Audit outcome

Compliant

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 was recorded against each item of load.

Audit commentary

An ICP is recorded for all relevant items 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 DUMML database must contain the location of each DUMML item.

Audit observation

The database was checked to confirm the location is recorded for all items of load.

Audit commentary

The database contains the nearest street address, street number and Global Positioning System (GPS) coordinates for all items of load, and users in the office and field can view these locations on a mapping system.

Audit outcome

Compliant

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 DUMML 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 item of load type and wattage capacity.

Audit commentary

The database contains the lamp type field, this is populated with type of load, and corresponds to the wattage capacity for each type of load. The accuracy of the recorded wattages is discussed in **section 3.1**.

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 included all 135 items of load including Tsunami sirens, Irrigation and Pumps and was undertaken on 22nd April 2022 and the 12th and 25th May 2022.

Audit commentary

The field audit discrepancies are detailed in the table below.

Road	Database count	Field count	Light count difference	Wattage recorded incorrectly	Comments
Peterborough St	1	0	-1		1 x irrigation is recorded in the database but not located in the field.

The field audit found did not find any additional items of load in the field.

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

The database functionality achieves compliance with the code.

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 databases were checked for audit trails.

Audit commentary

The database has a complete audit trail of all additions and changes to the database information. The user who processed the change is stored in the back end of the database.

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

A full field audit was undertaken.

Wattages were checked for alignment with published standardised wattage specifications. Supporting information was also provided by the Christchurch City Council.

The change management process to track changes and timeliness of database updates was evaluated.

Audit commentary

The field audit included all 135 items of unmetered load recorded in the database against ICPs 0007186942RNC7D and 0007186944RNDF2. This included Tsunami sirens, Irrigation and Pumps and was undertaken on 22nd April and the 12th and 25th May 2022.

The calculations for wattages were provided by Orion and checked against the DUML database for the irrigation controllers, sewer pumps and tsunami sirens.

The tsunami sirens run on batteries and the unmetered load is for the battery chargers. The battery chargers are 100 watts, and it is assumed they will be "charging" for 10% of the time, or 15% for the larger ones. This assumption may be too high because once the batteries are charged, the load required to keep them charged will be quite small. Orion has suggested, and I agree with this suggestion, that loggers are placed at each of the two types of chargers to confirm the loads.

Recommendation	Description	Audited party comment	Remedial action
Regarding clause 15.2 and 15.37B(b)	Install logging equipment to confirm the battery charger load for tsunami sirens.	We will work with Orion and the council to implement this recommendation.	Identified

The running loads are likely to be very small because they are likely to be tested twice per year in accordance with the civil defence specifications for 10 mins. This is a total of 1/3 of an hour for testing.

If the siren is 100 watts and the run time is 10 minutes:

- the kW figure will be 4.3 for the total sirens, (0.1kW * 43),
- the kWh for each 10 minute test for all 43 sirens will be 0.717, (4.3 kW * 10 minutes, which is 4.3 * (10/60)),
- if there are two tests per year the total is 1.43 kWh per annum.

The change management process to track changes and timeliness of database updates was evaluated.

Database accuracy

The field audit found only one error, this is detailed in **section 2.5**. The full field audit found that the database had 99.37% accuracy rate.

The field audit confirmed that the database accuracy is within the allowable +/-5% threshold and is therefore considered compliant. The one error found has now been resolved.

Change management process findings

Fault, maintenance, new connection and upgrade work is completed by Orion's approved contractors. The contractors provide paperwork to Orion confirming that work is complete, and Orion uses this information to update the DUMML database and GIS. New Connections are very rare, and the last new connections were a number of years ago post-earthquake to install the sewer pumps.

Upon receipt, paperwork is checked for completeness and accuracy and any issues are followed up with the contractor. The information is sent to the GIS team so that the GIS can be updated, and then returned to the connections team to update the DUMML database from the date the change or new connection was effective. Once data entry is complete, the values loaded are checked against the paperwork provided.

All jobs are tracked using job numbers by the connections team as part of the works management process. Late paperwork from contractors, and late updates by the GIS team are followed up. A checklist is followed to ensure that all steps in the process are completed.

Orion's approved contractors have access to a web based version of the DUMML database in the field and advise Orion's connections team if they notice any discrepancies in the data recorded. Orion's operation team acts on these notifications and checks and updates the data where necessary.

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 process for calculation of consumption was examined.

Audit commentary

Meridian reconciles this DUML load using the UML profile and the daily unmetered figures for both ICPs. Meridian Energy receive a monthly wattage report from Orion. This is used to update the daily figure on the registry.

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Audit outcome

Compliant

CONCLUSION

The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1, which became effective on 1 June 2017.

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The DUML database contains various items of UML that were historically billed against individual ICPs. Unmetered loads are identified by the Christchurch City Council and moved into the Orion database following a verification process to confirm its location, wattage, hours of operation etc.

Meridian reconciles this DUML load using the UML profile and the daily unmetered figures for both ICPs. Meridian Energy receive a monthly wattage report from Orion. This is used to update the daily figure on the registry.

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This audit found one non-compliance and makes one recommendation. The future risk rating of two indicates that the next audit be completed in 24 months. I agree with this recommendation.

PARTICIPANT RESPONSE

Meridian has reviewed this report and their comments are contained within the report.