ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

WATERLOO PARK AND MERIDIAN ENERGY LIMITED

Prepared by: Rebecca Elliot

Date audit commenced: 3 May 2020

Date audit report completed: 28 May 2020

Audit report due date: 1 June 2020

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EXECUTIVE SUMMARY

This audit of the Waterloo Park DUML database and processes was conducted at the request of Meridian Energy Limited (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 largely conducted in accordance with the audit guidelines for DUML audits version 1.1. A field audit was not undertaken due to the restrictions imposed by the Covid-19 lockdown; therefore, the following checks were conducted:

- new connection records including "as built" plans were checked for 11 new streetlights installed during the audit period, and
- results of the 2018 field audit were checked to ensure the database was updated.

The lights covered by this audit are located in Waterloo Park, which is an industrial park in Islington, Christchurch. The database is managed by Orion. The streetlight data is held in Orion's GIS and an SQL database which interfaces with the GIS.

This audit found two non-compliances and makes no recommendations. The non-compliances both relate to the data used for submission being provided as a monthly snapshot rather than being tracked daily. As there have been no changes to the database since 2018, there has been minimal impact on submission.

Based on the next audit frequency table the next audit of this database should be completed in 24 months and 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
Deriving submission information	2.1	11(1) of Schedule 15.3	The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Moderate	Low	2	Investigating
Volume information accuracy	3.2	15.2 and 15.37B(c)	The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Moderate	Low	2	Investigating
Future Risk Rating						4	

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
		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

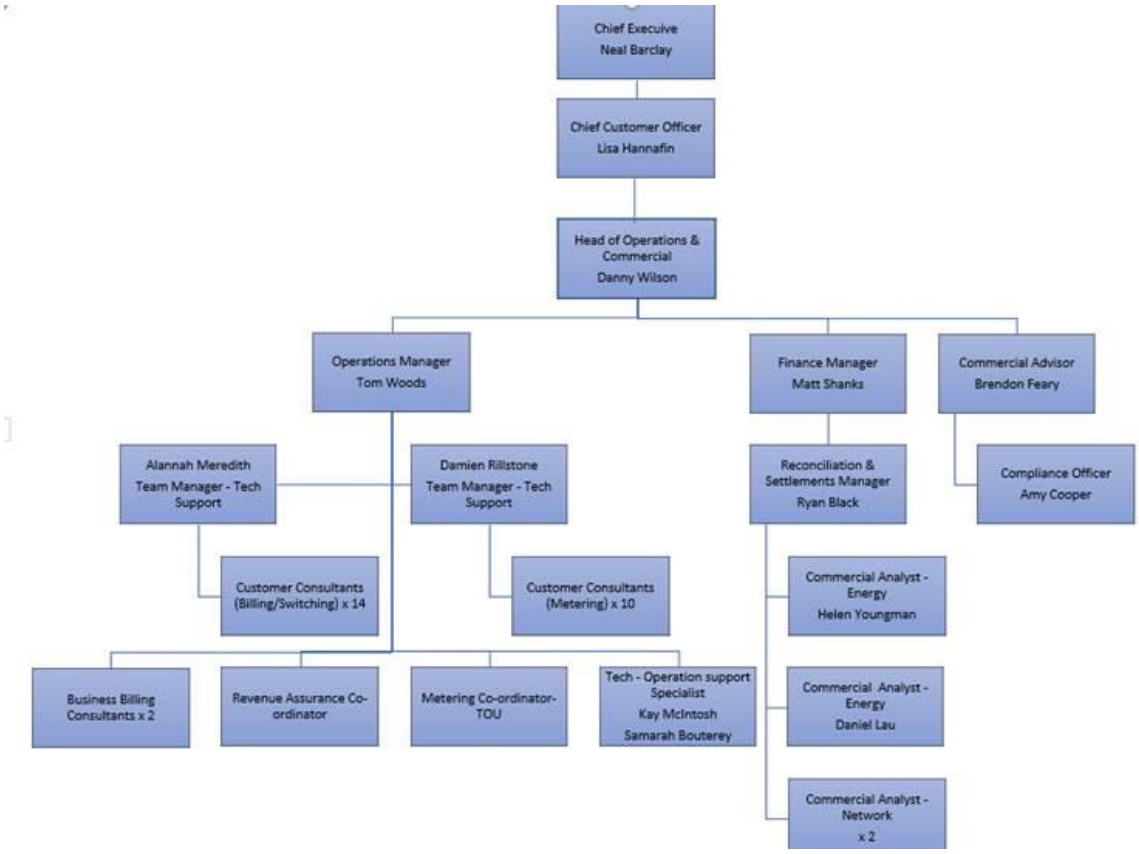
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Meridian provided a copy of their organisational structure.



1.3. Persons involved in this audit

Auditors:

Rebecca Elliot

Veritek Limited

Electricity Authority Approved Auditors

Supporting Auditor:

Brett Piskulic

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Amy Cooper	Compliance Officer	Meridian Energy
Helen Youngman	Energy Data Analyst	Meridian Energy
Penny Lawrence	Operations Services	Orion

1.4. Hardware and Software

Orion use a purpose-built Oracle system for the management of the DUML information. Backup and restoration procedures are in accordance with normal industry protocols.

EMS and Meridian systems used in the process are discussed in their agent and 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	Profile	Number of items of load	Database wattage (watts)
0007174608RN59A	Ref Orion Waterloo Business Park Street Lighting ICP	ISL0331	DST	70	3,308

1.7. Authorisation Received

All information was provided directly by Meridian and Orion.

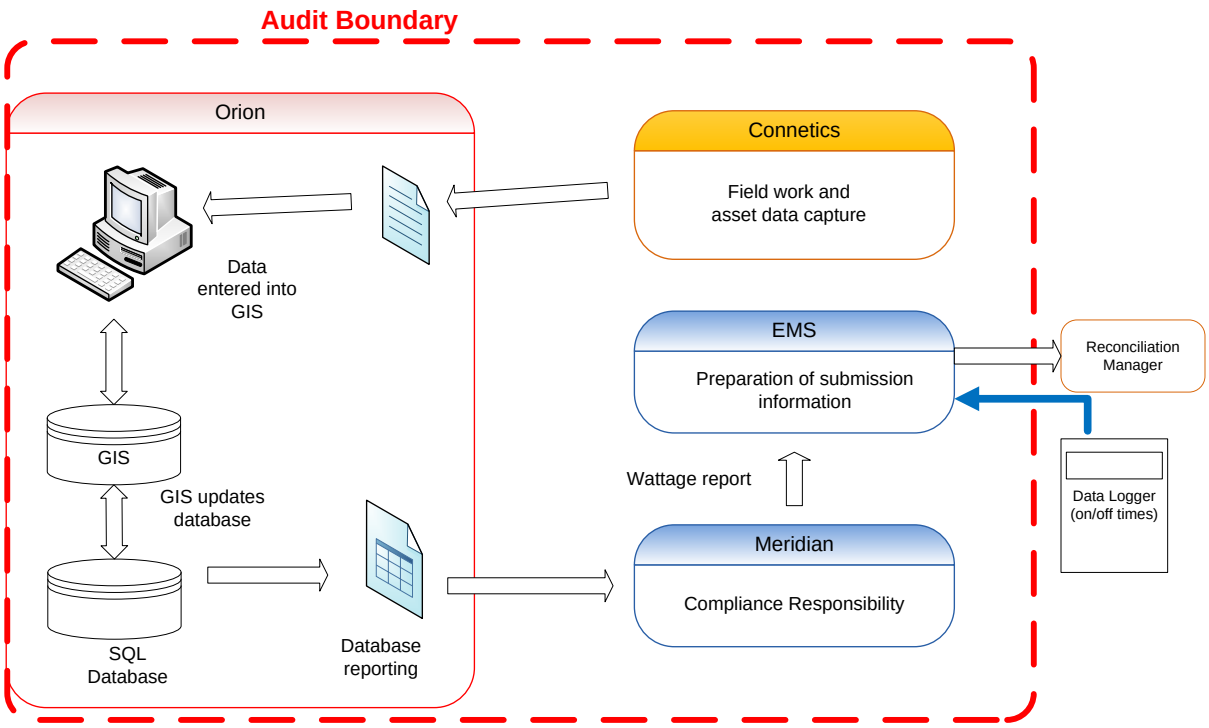
1.8. Scope of Audit

The lights covered by this audit are located in Waterloo Park, which is a recent industrial park in Islington, Christchurch. The database is managed by Orion. The streetlight data is held in Orion's GIS and an SQL database, which interfaces with the GIS. Orion provide a monthly report from the database to Meridian.

The audit was largely conducted in accordance with the audit guidelines for DUML audits version 1.1. A field audit was not undertaken due to the restrictions imposed by the Covid-19 lockdown; therefore, the following checks were conducted:

- new connection records including "as built" plans were checked for 11 new streetlights installed during the audit period, and
- results of the 2018 field audit were checked to ensure the database was updated.

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 diagram below shows the audit boundary for clarity.



1.9. Summary of previous audit

The previous audit was completed in April 2018 by Rebecca Elliot of Veritek Limited. Three non-compliances were identified, and no recommendations were made. The current status of the non-compliances is detailed below.

Table of Non-Compliance

Subject	Section	Clause	Non-Compliance	Status
Deriving submissions	2.1	11(1) of Schedule 15.3	A difference in the kW figures between the database and the figure recorded by Meridian of 0.274kW resulting in an estimated over submission of 1,170kWh per annum. Database accuracy of 92.9% indicating over submission of 854 kWh per annum. A combined estimated annual over submission of 2,024kWh.	Cleared
Database accuracy	3.1	15.2 & 15.37(b)	Accuracy ratio is 92.9% indicating over submission of 854 kWh per annum.	Cleared
Volume information accuracy	3.2	15.2 & 15.37(c)	A difference in the kW figures between the database and the figure recorded by Meridian of 0.274kW resulting in an estimated over submission of 1,170kWh per annum. Database accuracy of 92.9% indicating over submission of 854 kWh per annum. A combined estimated annual over submission of 2,024kWh.	Cleared

Table of Recommendations

Subject	Section	Recommendation for Improvement	Status
		Nil	

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

Meridian have 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.

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.

Audit commentary

Meridian reconciles this DUML load using the DST profile. The registry shows the DST profile for the Waterloo Park DUML ICP.

Submissions are based on the database information, with on and off times derived from data logger information.

I checked the March 2020 extract provided by Orion against the submission totals supplied by Meridian and found that submission matched the database.

On 18 June 2019, the Electricity Authority issued a memo confirming that the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed, and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current data used is a snapshot and this practice is non-compliant. As there have been no changes to the database since 2018, there has been no impact on submission.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 18-Jun-19 To: 11-May-20	The data used for submission does not track changes at a daily basis and is provided as a snapshot. 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 there are minimal changes made in the database. 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
We are considering how we can redesign our processes to incorporate the calculation of volumes at a daily level rather than a monthly snapshot.	Ongoing	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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

The database contains the relevant ICP identifiers.

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 streetlight data is held in Orion's GIS and an SQL database. GIS records the geographical location of each item of load. The database contains the street name and number of each item of load.

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 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

The assigned lamp ID for each item of load references to a wattage table that contains a total wattage. All of these lights are LED so there is no gear wattage to be added and all items of load had a light type and lamp wattage recorded.

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 2018 field audit was undertaken of the entire database of 53 items of load on 23rd April 2018.

Audit commentary

No additional items of load were identified during the 2018 audit.

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 Orion database functionality achieves compliance with the code. The change management process and the compliance of the database reporting provided to Meridian is detailed in **sections 3.1 and 3.2**.

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

Orion demonstrated a complete audit trail of all additions and changes to the database information.

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

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

The findings of the field audit undertaken during the last audit were reviewed to determine if the database had been updated.

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

Audit commentary

Lamp description and capacity accuracy

The Orion database was found to have no inaccuracies when compared to the published standardised wattage table.

Previous field audit findings

I checked if the database had been updated to reflect the findings of the field audit undertaken during the last audit. There were five lamps recorded in the database as 98W LEDs which were found to be 58W in the field audit. The database has been updated with the correct lamp type and wattage for all five lamps.

Change management process findings

The processes were reviewed for new lamp connections and the tracking of load changes due to faults and maintenance.

Outage patrols are regularly conducted by Connetics. They notify Orion of any differences found. Orion then updates the GIS and database accordingly.

New streetlights require a proposed design to be provided which is then approved by the Orion contract manager. On completion of the work the contractor is required to supply the following documents:
As-Built - Showing full design including pole and lamp specs,
LVA – (Low voltage alteration sheet) Outlining Cable size, circuits, cable tests and date of testing etc,
Test Certs - Lamp ID, Location, Tested, Livened (this date is used in the DB), GPS Co-ords,
COC - Certificate of Compliance,
ROI - record of inspection,
Completion Cert from Contractor notifying Orion of completed works, and
An Orion Completion Cert issued once all the above is complete.

Once all the above has been received, the As-built/LVA are input into GIS and the streetlight database.

Since the previous audit 17 new streetlights have been added to the database. I checked the new connection documentation for a sample of 11 new streetlights installed in 2018 and

confirmed that the database information matched the "as built" plans and streetlight test documentation.

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

Meridian reconciles this DUML load using the DST profile, submissions are based on the database information, with on and off times derived from data logger information.

I checked the submissions for March 2020, and I confirmed that the calculation method and total was correct.

On 18 June 2019, the Electricity Authority issued a memo confirming that the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed; and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current data used is a snapshot and this practice is non-compliant. As there have been no changes to the database since 2018, there has been no impact on submission.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 18-Jun-19 To: 11-May-20	The data used for submission does not track changes at a daily basis and is provided as a snapshot. 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 there are minimal changes made in the database. 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
We are considering how we can redesign our processes to incorporate the calculation of volumes at a daily level rather than a monthly snapshot.	Ongoing	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	

CONCLUSION

The audit was largely conducted in accordance with the audit guidelines for DUML audits version 1.1. A field audit was not undertaken due to the restrictions imposed by the Covid-19 lockdown; therefore, the following checks were conducted:

- new connection records including "as built" plans were checked for 11 new streetlights installed during the audit period, and
- results of the 2018 field audit were checked to ensure the database was updated.

The lights covered by this audit are located in Waterloo Park, which is a recent industrial park in Islington, Christchurch. The database is managed by Orion. The streetlight data is held in Orion's GIS and an SQL database, which interfaces with the GIS.

This audit found two non-compliances and makes no recommendations. The non-compliances both relate to the data used for submission being provided as a monthly snapshot rather than being tracked daily. As there have been no changes to the database since 2018, there has been minimal impact on submission.

Based on the next audit frequency table the next audit of this database should be completed in 24 months and I agree with this recommendation.

PARTICIPANT RESPONSE

Meridian has read the Authority's memo dated 18 June 2019 that clarifies the intent of the previously issued memo (Sept 2012) regarding the tracking of changes in the DUML database and how this should be considered when calculating monthly load.

This clarification has resulted in our current processes now being recorded as non-compliant where for the preceding 7 years they had been considered and recorded as compliant.

We are now considering how we may be able to redesign our processes to comply with this new information which has impacts for both the process for calculating settlement information and our billing information.

At this stage we are uncertain as to when a practical solution for this may be implemented but do understand the impact to settlement as a result of using a monthly snapshot is considered minor.