

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

For

JACKS POINT AND MERIDIAN ENERGY

Prepared by: Rebecca Elliot

Date audit commenced: 22 March 2019

Date audit report completed: 10 May 2018

Audit report due date: 31-May-19

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EXECUTIVE SUMMARY

This audit of the Jacks Point streetlight 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 conducted in accordance with the audit guidelines for DUML audits version 1.1.

Jacks Point is a private subdivision and the streetlights are owned and managed separately to the surrounding Queenstown Lakes District Council streetlights. The database is managed by Aurora and the data is held in their GIS system.

This audit found a small number of inaccuracies, but the database overall fell within the acceptable variance range of +/-5% and therefore compliance is recorded. There is some further development in the subdivision occurring, but this is not extensive.

I repeated the recommendation from the last audit that the road names be corrected in the database.

This audit found one non-compliance and the future risk rating of two indicates that the next audit be completed in 36 months. I have considered this in conjunction with the comments provided and I agree with the recommendation.

The matter raised is detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
All load recorded in database	2.5	11(2A) of Schedule 15.3	Two additional items of load found in the field sample.	Moderate	Low	2	Identified
Future Risk Rating						2	

Future risk rating	1-3	4-6	7-8	9-17	18-26	27+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Recommendation	Remedial outcome
Location of each item of load	2.3	Correct incorrect street names.	

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

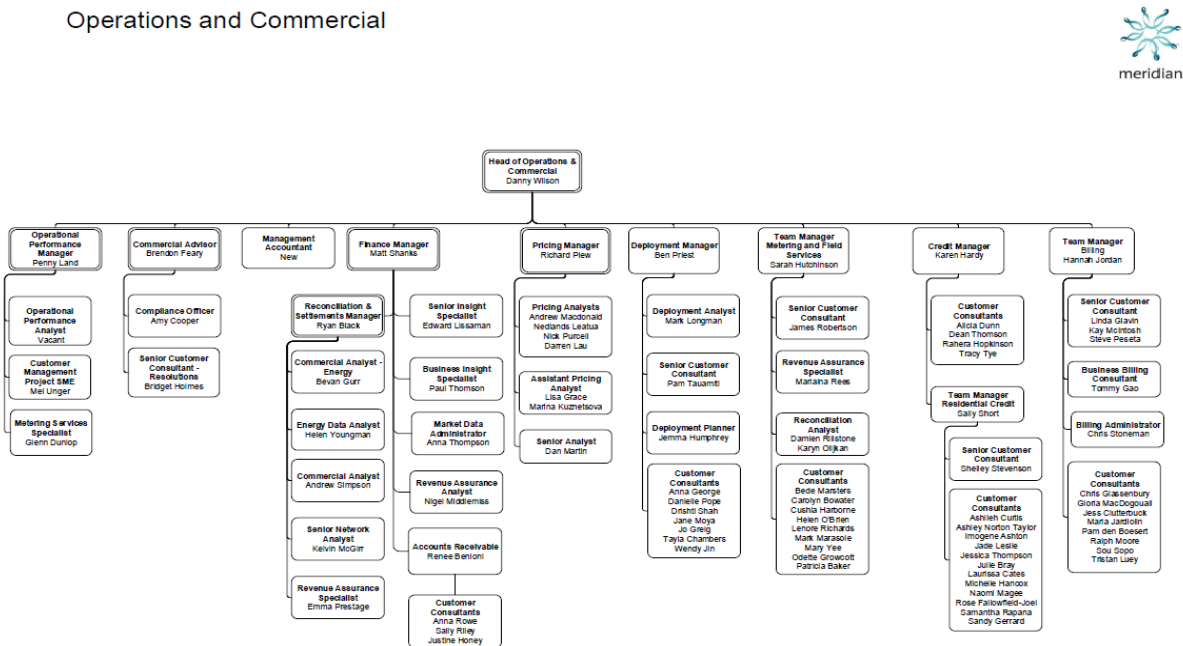
The Electricity Authority’s website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Meridian provided a copy of their organisational structure:



1.3. Persons involved in this audit

Auditor:

Rebecca Elliot

Veritek Limited

Electricity Authority Approved Auditor

Name	Title	Company
Amy Cooper	Compliance Officer	Meridian
Helen Youngman	Energy Data Analyst	Meridian
Richard Starkey	Commercial Development Manager	Aurora

1.4. Hardware and Software

The GIS database used for the management of DUML is managed by Aurora.

The database back up is in accordance with standard industry procedures. Access to the database is secure by way of password protection

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)
0000486616CEC8C	JACKS POINT STREET LIGHTING	FKN0331	345	7,420

1.7. Authorisation Received

All information was provided directly by Meridian and Aurora.

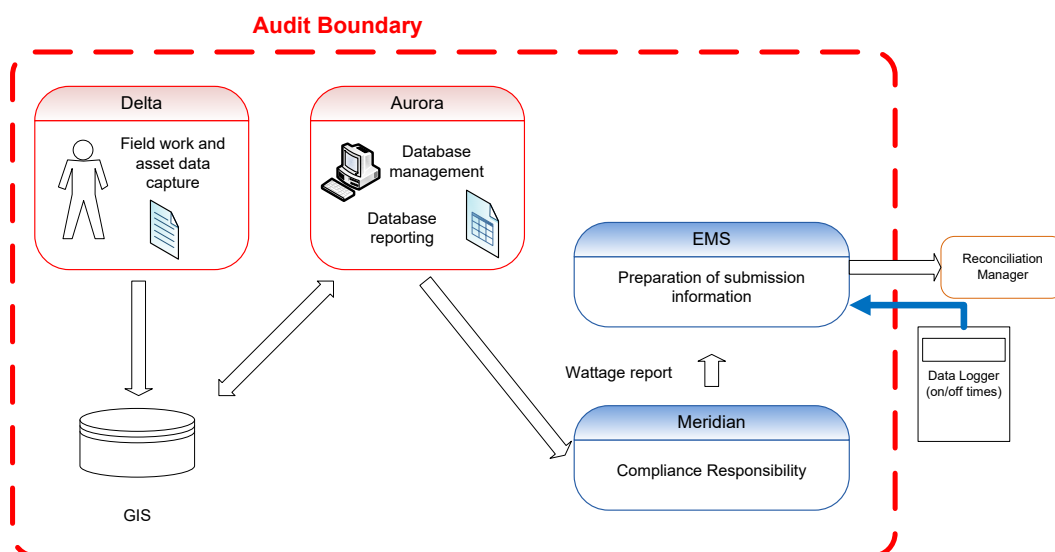
1.8. Scope of Audit

This audit of the Jacks Point streetlight 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 conducted in accordance with the audit guidelines for DUML audits version 1.1.

Jacks Point is a private subdivision and the streetlights are owned and managed separately to the surrounding Queenstown Lakes District Council streetlights. The database is managed by Aurora and the data is held in their GIS system. Delta are the field contractors.

The scope of the audit encompasses the collection, security and accuracy of the data, including the preparation of submission information based on the monthly reporting. The diagram below shows the flow of information and the audit boundary for clarity.



The audit was carried out on April 10th, 2019. The field audit was undertaken on 178 lights using the statistical sampling methodology.

1.9. Summary of previous audit

Meridian provided a copy of the previous audit report for this DUML load, conducted in March 2018 by Rebecca Elliot of Veritek Limited. Five non-compliances were found, and one recommendation was made. The current status of these are detailed below:

NON-COMPLIANCES

Subject	Section	Clause	Non compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	The database accuracy is assessed to be 94.8% indicating an estimated over submission of 1,600 kWh per annum. Incorrect ballasts recorded for 305 items of load resulting in an estimated under submission of 3,568.42 kWh.	Cleared
Description and capacity of each item of load	2.4	11(2)(c) of Schedule 15.3	One item of load with no lamp description.	Cleared
Tracking of load change	2.6	11(2A) of Schedule 15.3	Load changes not tracked in all instances.	Cleared as this clause relates to database capability only

Subject	Section	Clause	Non compliance	Status
Database accuracy	3.1	15.2 and 15.37B(b)	The database accuracy is assessed to be 94.8% indicating an estimated over submission of 1,600 kWh per annum. Incorrect ballasts recorded for 305 items of load resulting in an estimated under submission of 3,568.42 kWh.	Cleared
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database accuracy is assessed to be 94.8% indicating an estimated over submission of 1,600 kWh per annum. Incorrect ballasts recorded for 305 items of load resulting in an estimated under submission of 3,568.42 kWh.	Cleared

RECOMMENDATIONS

Subject	Section	Recommendation	Status
Location of each item of load	2.3	Correct incorrect street names.	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

Meridian has 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 and the database was checked for accuracy.

Audit commentary

Meridian reconciles this DUML load using the DST profile. The on and off times are derived from a data logger read by EMS. This information is used to create a shape file. Meridian supplies EMS with the capacity information and EMS calculates the kWh figure for each ICP and includes this in the relevant AV080 file. This process was audited during Meridian's reconciliation participant audit, and compliance was confirmed.

I checked the submission for the month of February 2019 and found that the loads matched with the database.

There were two additional items of load found in the field audit. This is recorded as non-compliance in **section 2.5**. The accuracy of the database was assessed in **section 3.1** and found to be within the acceptable variance of +/- 5% therefore I have recorded compliance.

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 is recorded for each item of load.

Audit commentary

All items of load had an ICP recorded as required by this clause.

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 Global Positioning System (GPS) for all items of load which meets the requirements of this clause. The street name is not correct in many instances and I repeat the last audit's recommendations that street names are corrected.

Description	Recommendation	Audited party comment	Remedial action
Location of each item of load	Correct incorrect street names.	We will again recommend to Aurora that these are corrected but note that there is no impact on compliance.	Investigating

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 lamp type and wattage capacity and included any ballast or gear wattage.

Audit commentary

The database contains two fields for wattage, firstly the manufacturers rated wattage and secondly the "ballast wattage". The ballast wattage is expected to be a calculated figure which accounts for any variation from the input wattage and includes losses associated with ballasts. Examination of the database found this was populated for all items of load. The accuracy of this is examined 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 was undertaken of a statistical sample of 178 items of load on April 10th, 2019.

Audit commentary

The field audit findings for the sample of lamps was accurate with the exception of the three streets detailed in the table below:

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
Double Cone Road	13	14	+1		1 x extra 18W fluorescent light found in the field
Rannoch Drive	20	19	-1		1x 18W fluorescent light missing in the field
Water Race Lane (the lights associated with this road name in the database cover more than one street)	31	28	+1 -3		1 x extra 18W fluorescent light found in the field 3 x 18W fluorescent lights missing in the field
GRAND TOTAL	178	176	6		

Two additional items of load were found in the field. This is recorded as non-compliance below. The field audit discrepancies (including photo's where possible) have been provided to Meridian.

The database accuracy is discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.5 With: Clause 11(2A) and (d) of Schedule 15.3 From: 01-Apr-18 To: 01-Apr-19	Two additional items of load found in the field sample. 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 rated as moderate as the process to update the database mitigates the risk most of the time. The impact is assessed to be low as the database is small. 50% of the database was sampled and the two additional lights found will have a very minor effect on reconciliation.		
Actions taken to resolve the issue		Completion date	Remedial action status
Details of discrepancies found during the field audit have been passed to Aurora for database correction.		31 July 2019	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	

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 production of a monthly “snapshot” report is sufficient to achieve compliance.

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

There have been no changes to the updating processes since the last audit. Aurora expect that all new lamp installations, or changes of wattage are managed via an application for service form being provided to Aurora.

Condition audits are undertaken in April and October each year by Derby Partners.

No festive lights are connected to the unmetered street light circuits in Jacks Point.

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 DUMML 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

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

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	Jacks Point private subdivision
Strata	The database contains items of load in the Jacks Point subdivision just south of Queenstown. The area has two distinct sub groups of existing and new. I decided to place the items of load into the two strata as indicated above: <ol style="list-style-type: none">1. A-McAdam2. McKellar - W
Area units	I created a pivot table of the roads in each area and I used a random number generator in a spreadsheet to select a total of 26 sub-units or 50% of the total database wattage.
Total items of load	178 items of load were checked.

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

Audit commentary

A statistical sample of 130 items of load found that the field data was 99.1% of the database data for the sample checked. This is within the required database accuracy of 5%+/- . The statistical sampling tool reported with 95% confidence the precision of the sample was 3.6% and the true load in the field will be between 97.4% to 101% of the load recorded in the database. The sample is sufficiently precise and confirms the database is accurate.

The tool indicated that there is potentially 300 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool) of over submission. The statistical sampling tool reported with 95% confidence that there is a potential estimated submission variance range of between 800kWh of over submission and 300 kWh of under submission but as the database accuracy falls within +/- 5% compliance is recorded.

Wattages for all items of load were checked against the published standardised wattage table produced by the Electricity Authority confirmed to be compliant.

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. The on and off times are derived from a data logger read by EMS. This information is used to create a shape file. Meridian supplies EMS with the capacity information and EMS calculates the kWh figure for each ICP and includes this in the relevant AV080 file. This process was audited during Meridian's reconciliation participant audit, and compliance was confirmed.

I checked the submission for the month of February 2019 and found that the loads matched with the database.

There were two additional items of load found in the field audit. This is recorded as non-compliance in **section 2.5**. The accuracy of the database was assessed in **section 3.1** and found to be within the acceptable variance of +/- 5% therefore I have recorded compliance.

Audit outcome

Compliant

CONCLUSION

Jacks Point is a private subdivision and the streetlights are owned and managed separately to the surrounding Queenstown Lakes District Council streetlights. The database is managed by Aurora and the data is held in their GIS system.

This audit found a small number of inaccuracies, but the database overall fell within the acceptable variance range of +/-5% and therefore compliance is recorded. There is some further development in the subdivision occurring, but this is not extensive.

I repeated the recommendation from the last audit that the road names be corrected in the database.

This audit found one non-compliance and the future risk rating of two indicates that the next audit be completed in 36 months. I have considered this in conjunction with the comments provided and I agree with the recommendation.

PARTICIPANT RESPONSE

Meridian have reviewed this report and provided their comments in the body of the report.