VERITEK

Electricity Industry Participation Code Audit Report

For

Meridian Energy Limited

Hurunui District Council
Distributed Unmetered Load

Prepared by Steve Woods – Veritek Ltd

Date of Audit: 09/10/17

Date Audit Report Complete: 25/05/18

Executive Summary

This audit of the Hurunui District Council (KDC) 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, which became effective on 1 June 2017.

Hurunui DC is located on the Mainpower network. Mainpower is engaged as the streetlighting maintenance contractor and they also maintain a database, which is used by Meridian Energy to calculate submission information. Mainpower provides reporting to Meridian Energy on a monthly basis.

No changes have occurred to systems and processes during the audit period and they remain generally robust and secure.

The audit process included a field audit of 230 items of load, which found some differences, resulting in the survey wattage being 2.70% lower than the database wattage. This results in over submission of approximately 10,900 kWh per annum. There are some with incomplete address information.

The future risk rating of six indicates that the next audit be completed in 24 months and I agree with this recommendation. The matters raised are detailed below:

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Location	2.3	11(2)(b) of Schedule 15.3	12 lamps with incomplete address information	Moderate	Low	2	Cleared
Recording of all load	2.5	11(2A) of Schedule 15.3	Not all load is correctly recorded in the database	Moderate	Low	2	Identified
Database accuracy	3.1	Clause 15.2 & 15.37(b)	Accuracy ratio is 97.30% indicating over submission of 10,900 kWh per annum	Moderate	Low	2	Identified
					Future Risk Rating	6	
					Indicative Audit Frequency	24 months	

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

Table of Recommendations

Subject	Section	Recommendation	Description
	Nil		

Persons Involved in This Audit:

Auditor:

Steve Woods
Veritek Limited
Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Sarah Barnes	Regulatory Manager	Mainpower
Neil O'Loughlin	Surveyor/ Pricing Co-ordinator	Mainpower
Joel Hung	Commercial Analyst	Mainpower

Contents

1. Administrative

1.1 List of ICPs

The following ICP is relevant to the scope of this audit:

ICP	Description	NSP	No. of items of load
0000366311MP08B	HURUNUI DISTRICT COUNCIL-WRP0331	WPR0331	466
0000366312MPC4B	HURUNUI DISTRICT COUNCIL-CUL0331	CUL0331	458
0000366313MP00E	HURUNUI DISTRICT COUNCIL-WRP0661	WPR0661	114
		TOTAL items of load	1,038

1.2 Exemptions from Obligations to Comply With Code (Section 11 of Electricity Industry Act 2010)

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.

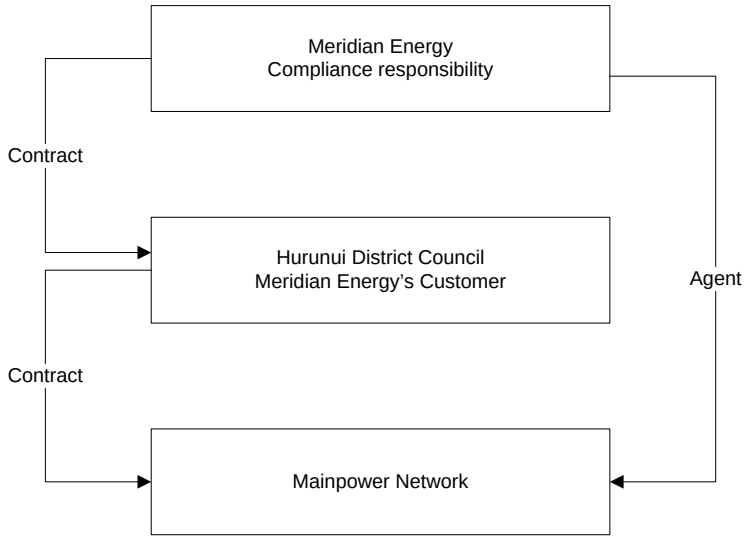
Meridian confirms there are no exemptions in place relevant to the scope of this audit:

1.3 Supplier List

Mainpower is considered an agent under this clause, and Meridian Energy clearly understands that the use of agents does not release them from their compliance obligations.

A contractual relationship exists between Meridian Energy and Hurunui DC as part of the sales contract, however there is no direct contractual relationship between Meridian Energy and Mainpower for the provision of services in relation to DUML. This is not seen as an issue, if the processes for updating the database are robust and have appropriate validation controls in place.

The diagram below shows the relationships from a compliance and contractual perspective.



1.4 Hardware and Software

Section 1.9 shows that Mainpower maintains an Access database for the management of 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 Distributed Unmetered Load Audits (Clauses 16A.26 & 17.295F)

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. Compliance is confirmed.

1.7 Separate Distributed Unmetered Load Audit (Clause 16A.8(4))

Retailers must ensure that DUML audits are reported in a separate audit report.
Audit Observation

Meridian has requested Veritek to undertake this streetlight audit.

Audit Commentary

The audit report for this DUML database is separate from other audit reports. Compliance is confirmed.

1.8 Summary of Previous Audit

Meridian provided a copy of the report of the previous audit conducted in September 2016 by Rebecca Elliot of Veritek Limited. One non-compliance was found, and one recommendation was made. The current status of these matters is detailed below:

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
Location information	2.3	11(2)(a) of schedule 15.3	Some location descriptions are still lot numbers and some street identifiers are incorrect.	Still existing
Database accuracy	2.3	11(3) of schedule 15.3	Some database inaccuracies found in new subdivisions and one incorrect wattage.	Still existing (wattages all correct)

Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Remedial Action
Database Contents	11(2) of schedule 15.3	11(2) of schedule 15.3	Investigate using RAMM as the database used for submission.	Not repeated in this report

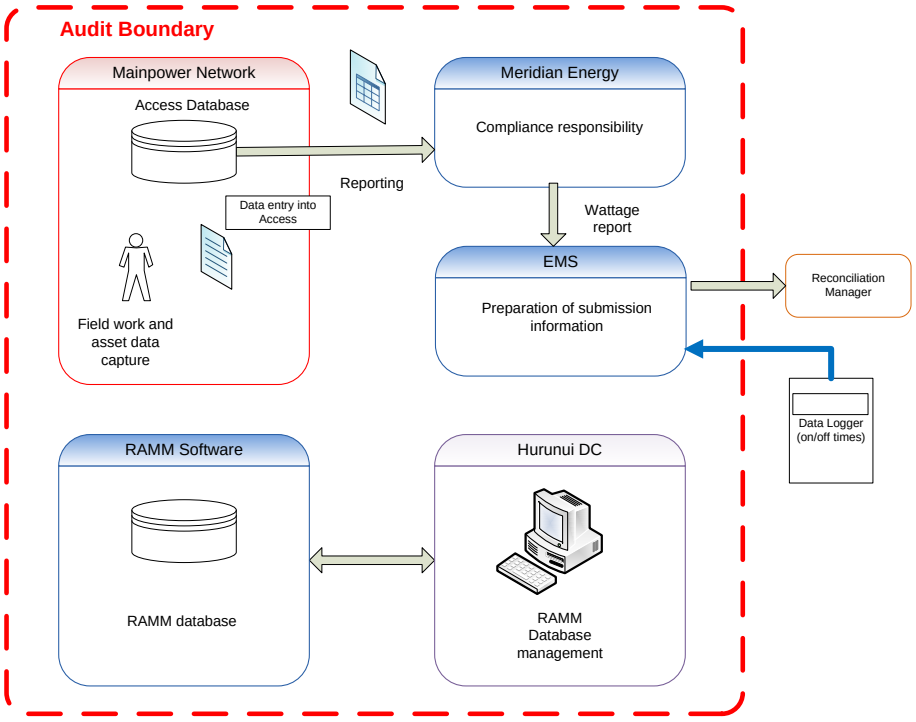
1.9 Scope of Audit

This audit of the Hurunui District Council (Hurunui DC) 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, which became effective on 1 June 2017.

Hurunui DC is located on the Mainpower network. Mainpower is engaged as the streetlighting maintenance contractor and they also maintain a database, which is used by Meridian Energy to calculate submission information. Mainpower provides reporting to Meridian Energy on a monthly basis.

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 at Mainpower's premises on 09/10/17. A field audit was conducted of 230 individual items of load randomly selected within each ICP group.

1.10 Data Transmission (Clause 20 of Schedule 15.2)

A password protected report is sent to Meridian Energy monthly. Compliance is confirmed.

2. DUML database requirements

2.1 Deriving Submission Information (Clause 11(1) of Schedule 15.3)

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 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 examined during EMS's audit in January 2017 and I confirm compliance. I also checked the figures for August and September 2017 and I confirm the submission matches the database.

Database accuracy is discussed in **section 3.1**.

2.2 ICP Identifier (Clause 11(2)(a) of Schedule 15.3)

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 the correct ICP was recorded against each item of load.

Audit Commentary
Mainpower's database contains a customer number that is linked to the relevant ICP in the customer table in Access. Compliance is confirmed.

2.3 Location of Each Item of Load (Clause 11(2)(b) of Schedule 15.3)

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 access database contains a unique identifier, which is expected to be the pole number attached to the pole. There is also a field for the nearest street address. As reported last year, this information was found to be correct for older existing lamps, but for a small number of new records (8 in total) the address field still had the lot number and not the street address. There were four records without a street recorded and one of these did not have GPS coordinates.

Non-compliance	Description
Audit Ref: 2.3 With: Clause 11(2)(b) of Schedule 15.3 From: 01-Oct-16 To: 30-Sep-17	12 lamps with incomplete address information Potential impact: Low Actual impact: Low Audit history: Twice Controls: Moderate Breach risk rating: 2
Audit risk rating	Rationale for audit risk rating

Low	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. The incorrect street addresses will only have a minor impact, therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Database address information has been updated for the 12 lamps identified	Complete	Cleared
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Existing controls are considered sufficient to mitigate the risk most of the time. The address information does not impact settlement volumes.	Ongoing	

2.4 Description of Load Type (Clause 11(2)(c) & (d) of Schedule 15.3)

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

Audit Commentary

The database contains a field for lamp type and this is populated appropriately. The database contains two fields for wattage, firstly the manufacturers rated wattage and secondly the gear wattage. The "total wattage" reported to Meridian is calculated as the total rated wattage plus the gear wattage.

Lamp and gear wattages were checked against the Authority's standardised streetlight wattages table. There were no differences in lamp wattages and no missing gear wattages.

The field audit found all wattages were correct.

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

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 230 lights using the statistical sampling methodology.

Audit Commentary

The field audit findings are detailed in the table below and show some discrepancies.

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
NSP WPR0661					
CAVERHILL RD	3	3	-	-	
HALL ST	5	5	-	-	
LEVIN ST	3	3	-	-	
REEVES ST	4	4	-	-	
SEDDON ST	5	5	-	-	
NSP WPR0331					
AMBERLEY BEACH ROAD	21	21	-	-	
CARTERS ROAD	39	38	-1	-	1 lamp not found
COURAGES RD	1	1	-	-	
DENBY PL	6	6	-	-	
DENHAM TCE	8	8	-	-	
NELSON ST	2	2	-	-	
POUND ST	6	5	-1	-	3 lamps not found, 2 additional lamps found
SMARTS DR	3	3	-	-	
WYLIE PLACE	3	3	-	-	
NSP CUL0331					
ACHRAY ST	2	2	-	-	
AMURI AVE	49	49	-	-	
AMURI RD	5	5	-	-	
CONICAL HILL RD	22	20	-2	-	2 lamps not found
DORSET ST	4	4	-	-	
HAWKSWOOD ST	3	3	-	-	
HIGHFIELD ST	5	5	-	-	
LYNDON ST	19	19	-	-	
TEKOA STREET	2	2	-	-	
WOODBANK RD	10	10	-	-	
Total	230	224	-4	-	

Three of the lamps recorded on Pound Street could not be found, but following the audit, two additional lamps were identified by Mainpower. They are ground mounted lamps shining up into trees in an island in the middle of Pound Street.

The lights not found are shown in the picture below, along with the location of the two ground mounted lights.

The lights not found are identifiers: 5900, 5911 and 5912.

Compliance is not achieved.

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 01-Oct-16 To: 30-Sep-17	Not all load is correctly recorded in the database Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. The incorrect database content will result in over reporting of submission information by 10,900 kWh per annum, which is minor; therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
The database has been updated where required. Mainpower's review found that 3 of the 6 lights not found in the field audit did exist.	Complete	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	Additional information is provided above clarifying the field audit findings
Existing controls are considered sufficient to mitigate the risk most of the time	Ongoing	

2.6 Tracking of Load Changes (Clause 11(3) of Schedule 15.3)

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.

As changes occur the contractor provides a hard copy form to Mainpower, and this information is then entered into the database.

Monthly “outage patrols” are conducted by Mainpower and the process is used to identify any incorrect wattage and location issues that may exist.

For new subdivisions, the technician provides a form per light and these are signed at the time of data entry to confirm database population.

There are no unmetered festive lights connected in the Hurunui District.

As recorded in Section 2.5, there are some errors caused by updates not being populated in the database, which is recorded as non-compliance in that section.

2.7 Audit Trail (Clause 11(4) of Schedule 15.3)

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

KDC demonstrated a complete audit trail of all additions and changes to the database information. Compliance is confirmed.

3. Accuracy of DUML database

3.1 Database Accuracy (Clause 15.2 & 15.37(b))

The 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	Hurunui DC region
Strata	The database contains items of load in Hurunui, excluding NZTA. The area has three distinct sub regions, split by NSP The processes for the management of Hurunui DC items of load are the same, but I decided to place the items of load into three strata, as follows: 1. NSP WPR0661 2. NSP WPR0331 3. NSP CUL0331
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 24 subunits (roads)
Total items of load	230 items of load were checked.

Audit Commentary

The DUML database auditing tool provided a result indicating the field data was 97.30% of the database data. This will result in estimated over submission by 10,900 kWh per annum.

Non-compliance	Description
Audit Ref: 3.1 With: 15.2 & 15.37(b) From: 01-Oct-16 To: 30-Sep-17	Accuracy ratio is 97.30% indicating over submission of 10,900 kWh per annum Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. Accuracy ratio is 97.30% indicating over submission of 10,900 kWh per annum, which is considered minor therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
The database has been updated where required. Mainpower's review found that 3 of the 6 lights not found in the field audit did exist.	Complete	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	Additional information is provided in Section 2.5 clarifying the field audit findings
Existing controls are considered sufficient to mitigate the risk most of the time	Ongoing	

3.2 Volume Information Accuracy (Clause 15.2 & 15.37(b))

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
- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

Audit Commentary

Meridian uses the DST profile.

For August and September 2017, I compared the total submission to the reconciliation manager for each ICP to a manual calculation based on the database information provided, and burn hours. The manual calculation matched the data submitted, and compliance is confirmed.

4. Conclusions

No changes have occurred to systems and processes during the audit period and they remain generally robust and secure.

The audit process included a field audit of 230 items of load, which found some differences, resulting in the survey wattage being 2.70% lower than the database wattage. This results in over submission of approximately 10,900 kWh per annum. There are some with incomplete address information.

5. Meridian Comments