# ELECTRICITY INDUSTRY PARTICIPATION CODE
# DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

## HURUNUI DISTRICT COUNCIL
## AND MERIDIAN ENERGY

Prepared by: Steve Woods

Date audit commenced: 23 April 2021

Date audit report completed: 30 April 2021

Audit report due date: 28 May 2021

## TABLE OF CONTENTS

## EXECUTIVE SUMMARY

This audit of the Hurunui District Council (**HDC**) 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.

The database is remotely hosted by RAMM Software Ltd. The field work and asset data capture is conducted by Power Jointing Limited using Pocket RAMM. A monthly report from RAMM is provided to Meridian to calculate the kW value.

The field audit was undertaken of a statistical sample of 158 items of load on 29th April 2021. The main findings are as follows:

- in absolute terms, total annual consumption is estimated to be 3,000 kWh higher than the DUML database indicates.
- overall, the processes in place to manage the database are robust.

This audit found four non-compliances. The future risk rating of eight indicates that the next audit be completed in 18 months. I have considered this in conjunction with Meridian's comments and I agree with the 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 | Total annual consumption is estimated to be 3,000 kWh higher than the DUML database indicates<br><br>The data used for submission does not track changes at a daily basis and is provided as a snapshot.<br><br>Two items of load have the incorrect wattage applied in the DUML database which would result in under submission of 8.54 kWh per annum. | Moderate | Low | 2 | Identified |
| All load recorded in database | 2.5 | 11(2A) and (d) of Schedule 15.3 | Two additional lights found in the field. | Moderate | Low | 2 | Identified |
| Database accuracy | 3.1 | 15.2 and 15.37B(b) | In absolute terms, total annual consumption is estimated to be 3,000 kWh higher than the DUML database indicates.<br><br>Two items of load have the incorrect wattage applied in the DUML database which would result in under submission of 8.54 kWh per annum. | Moderate | Low | 2 | Identified |

| Subject | Section | Clause | Non-Compliance | Controls | Audit Risk Rating | Breach Risk Rating | Remedial Action |
|---|---|---|---|---|---|---|---|
| Volume information accuracy | 3.2 | 15.2 and 15.37B(c) | Total annual consumption is estimated to be 3,000 kWh higher than the DUML database indicates<br><br>The data used for submission does not track changes at a daily basis and is provided as a snapshot.<br><br>Two items of load have the incorrect wattage applied in the DUML database which would result in under submission of 8.54 kWh per annum. | Moderate | Low | 2 | Identified |
| Future Risk Rating | | | | | | 8 | |

| **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 |
|---|---|---|
| Location of items of load | 2.3 | Update road names for some items of load from Lochiel Drive and Woodbank Road to Ewen Drive, Percival Close, William Jones Place. |

## 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

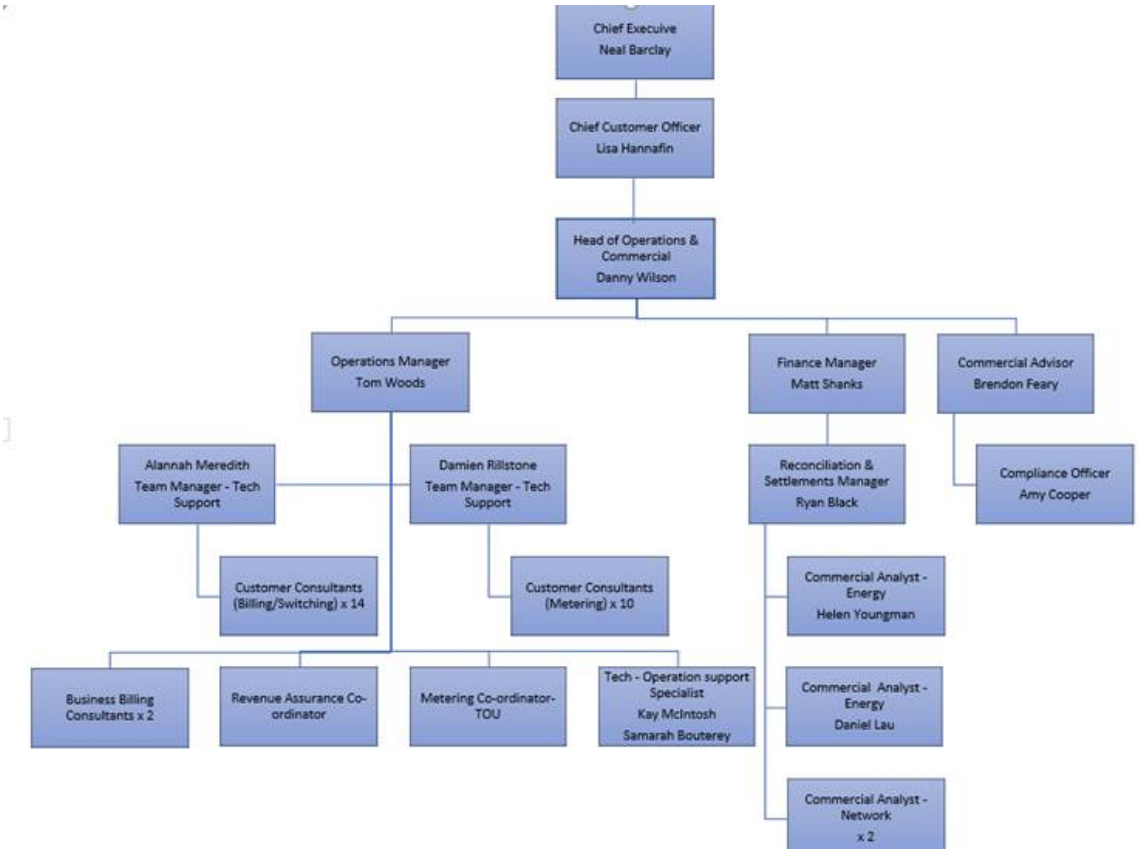
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

### Audit commentary

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

## 1.2. Structure of Organisation

Meridian provided the relevant organisational structure:



## 1.3. Persons involved in this audit

Auditors:

| Name | Title | Company |
|---|---|---|
| Steve Wood | Auditor | Veritek |
| Claire Stanley | Supporting Auditor | Veritek |

Other personnel assisting in this audit were:

| Name | Title | Company |
|---|---|---|
| Kait Murray | Technical Assistant - Roading | Hurunui District Council |
| Amy Cooper | Compliance Officer | Meridian Energy |
| Daniel Lau | Energy Data Analyst | Meridian Energy |

## 1.4. Hardware and Software

The SQL database used for the management of DUML is remotely hosted by RAMM Software Ltd. The database is commonly known as "RAMM" which stands for "Roading Asset and Maintenance Management". The specific module used for DUML is called RAMM Contractor.

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

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 | Profile | Number of items of load | Database wattage (watts) |
|---|---|---|---|---|---|
| 0000366311MP08B | HURUNUI DISTRICT COUNCIL-WRP0331 | WPR0331 | DST | 483 | 24,059 |
| 0000366312MPC4B | HURUNUI DISTRICT COUNCIL-CUL0331 | CUL0331 | DST | 467 | 29,276 |
| 0000366313MP00E | HURUNUI DISTRICT COUNCIL-WRP0661 | WPR0661 | DST | 119 | 4,131 |
| 0000700980MP704 | STREETLIGHTS ASY0111 HDC | ASY0111 | DST | 8 | 368 |
| Total | | | | 1,077 | 57,835 |

## 1.7. Authorisation Received

All information was provided directly by Meridian and HDC.

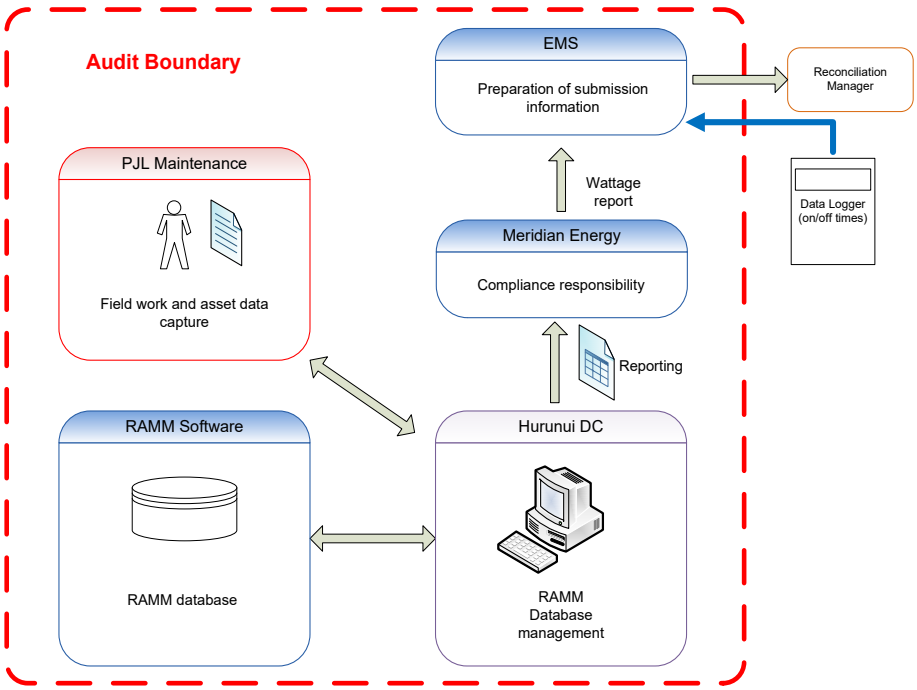
## 1.8. Scope of Audit

This audit of the Hurunui District Council (HDC) 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.

The database is remotely hosted by RAMM Software Ltd and is managed by HDC, who is Meridian's customer. Reporting is provided by HDC to Meridian on a monthly basis. The fieldwork and asset data capture are conducted by Power Jointing Limited. 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.




The field audit was undertaken of a statistical sample of 158 items of load on 29th April 2021.

## 1.9. Summary of previous audit

The previous audit was completed in August 2020 by Rebecca Elliot of Veritek Limited. This audit found five non-compliances and one recommendation was made. The current statuses of the audit findings are detailed below:

### Table of Non-Compliance

| Subject | Section | Clause | Non-compliance | Status |
|---|---|---|---|---|
| Deriving submission information | 2.1 | 11(1) of Schedule 15.3 | Monthly wattage report variance with RAMM database resulting in potential under submission of 19,705.4 kWh per annum. | Cleared |
| | | | Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1,900 kWh per annum. | Cleared |
| | | | Nine items of load with no lamp wattage assigned, resulting in an estimated under submission of 846 kWh per annum. | Cleared |
| | | | 15 items of load have the incorrect wattage applied in the DUML database which would result in an estimated under submission of 136.67 kWh per annum. | Cleared |
| | | | The data used for submission does not track changes at a daily basis and is provided as a snapshot. | Still existing |

| Subject | Section | Clause | Non-compliance | Status |
|---|---|---|---|---|
| ICP Identifier | 2.2 | 11(2) (a) & (aa) of Schedule 15.3 | One item of load with no ICP allocated. | Cleared |
| Description and capacity of load | 2.4 | 11(2)(c) and (d) of Schedule 15.3 | Nine items of load with no wattage value recorded resulting in an estimated minor under submission of 846 kWh. | Cleared |
| All load recorded in database | 2.5 | 11(2A) and (d) of Schedule 15.3 | Two additional lights found in the field. | Existing for two new lights. |
| Database accuracy | 3.1 | 15.2 and 15.37B(b) | Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1.900 kWh per annum.<br>15 items of load have the incorrect wattage applied in the DUML database which would result in under submission of 136.67 kWh per annum.<br>Nine items of load with no wattage value recorded resulting in an estimated minor under submission of 846 kWh.<br>HDC ICPs incorrectly assigned to the NZTA items of load. These are reconciled to the NZTA ICPs in a separate database so there is no impact on reconciliation. | Cleared<br>Cleared<br>Cleared<br>Cleared |
| Volume information accuracy | 3.2 | 15.2 and 15.37B(c) | Monthly wattage report variance with RAMM database resulting in potential under submission of 19,705.4 kWh per annum.<br>Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1,900 kWh per annum.<br>Nine items of load with no lamp wattage assigned, resulting in an estimated under submission of 846 kWh per annum.<br>15 items of load have the incorrect wattage applied in the DUML database which would result in an estimated under submission of 136.67 kWh per annum.<br>The data used for submission does not track changes at a daily basis and is provided as a snapshot. | Cleared<br>Cleared<br>Cleared<br>Cleared<br>Still existing |

### Table of recommendations

| Subject | Section | Recommendation | Status |
|---|---|---|---|
| Description and capacity of load. | 2.4 | Confirm ownership of the nine lights thought to be private with no wattage recorded. | Investigated and all cleared |
| Database accuracy | 3.1 | Review festive light process to ensure these are captured in the RAMM database when connected. | Cleared |

## 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.

### 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. I compared the database provided to the capacity information Meridian supplied to EMS for the month of March 2021 and I confirm the submission is accurate. The field audit found that in absolute terms, total annual consumption is estimated to be 3,000 kWh higher than the DUML database indicates.

The on and off times are derived from a data logger read by EMS and are 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 EMS' agent audit. Compliance was confirmed for both parties.

Examination of the database found:

| Lamp Type | Database Total Lamp Wattage | EA Standardised Total Wattage | Variance | Database Quantity | Estimated Annual kWh effect on consumption |
|---|---|---|---|---|---|
| 125W Mercury Vapour | 137 | 136 | +1 | 2 | 8.54 |

The incorrect capacities will be resulting in a nett estimated under submission of 8.54 kWh per annum (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool).

The field audit confirmed that the database is up to date.

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.

**Audit outcome**

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 2.1<br>With: Clause 11(1) of Schedule 15.3<br><br>From: 27-Aug-20<br>To: 22-Apr-21 | Total annual consumption is estimated to be 3,000 kWh higher than the DUML database indicates.<br>The data used for submission does not track changes at a daily basis and is provided as a snapshot.<br>Two items of load have the incorrect wattage applied in the DUML database which would result in under submission of 8.54 kWh per annum.<br>Potential impact: Low<br>Actual impact: Low<br>Audit history: Twice<br>Controls: Moderate<br>Breach risk rating: 2 |
| **Audit risk rating** | **Rationale for audit risk rating** |
| **Low** | Controls are rated as moderate as the processes overall are robust but the change is not tracked at a daily level.<br>The impact is assessed to be low as there are very few changes made to this database. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| The minor database inaccuracies identified during this audit have been provided to Hurunui DC to update the database. | 31 May 2021 | Identified |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| Overall processes for maintaining the database are reported as robust.<br>Processes are in place to account for historical database corrections that have a material impact on settlement volumes. | Ongoing | |

## 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 the correct ICP was recorded against each item of load.

### Audit commentary

An ICP is recorded for all items of load.

The accuracy of the ICPs is discussed in in **sections 2.1, 3.1** and **3.2**.

### 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 nearest street address, pole numbers and Global Positioning System (GPS) coordinates for most item of load, and users in the office and field can view these locations on a mapping system.

Although nine items of load do not have GPS co-ordinates recorded, there was still sufficient information recorded in the address field to be able to locate the lamps.

Some roads are recorded with an incorrect road address, the GPS co-ordinates are accurate for these lights. I recommend that the road names are updated in the database to ensure the lights can be easily located. The lights are recorded as Lochiel Drive and Woodbank Road, some require updating to Ewen Drive, Percival Close, William Jones Place.

| Recommendation | Description | Audited party comment | Remedial action |
|---|---|---|---|
| Regarding Clause 11(2)(b) of Schedule 15.3 | Update road names for some items of load from Lochiel Drive and Woodbank Road to Ewen Drive, Percival Close, William Jones Place. | Recommendation made to Hurunui DC | Identified |

### 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 and that all items of load were recorded.

### Audit commentary

Lamp make, lamp 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 158 lights on 28th April 2021 using the statistical sampling methodology.

### Audit commentary

The field audit discrepancies found are detailed in the table below:

| Street | Database count | Field count | Light count differences | Wattage recorded incorrectly | Comments |
|---|---|---|---|---|---|
| Montrose St | 1 | 3 | +2 | | 2x additional 100W HPS lamps found in the field |
| Ropley St | 4 | 4 | | 1 | 1 x 70W HPS not found, 1 x 33W LED found in the field |
| Tarndale Pl | 8 | 6 | -2 | | 2 x 70W HPS not found in field. |
| **Total** | **13** | **13** | **4** | **1** | |

The field audit found two more lamps in the field than were recorded in the database. This is recorded as non-compliance below.

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

### Audit outcome

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 2.5<br>With: Clause 11(2A) of Schedule 15.3<br><br>From: 27-Aug-20<br>To: 22-Apr-21 | Two additional lights found in the field.<br>Potential impact: Low<br>Actual impact: Low<br>Audit history: Three times previously<br>Controls: Moderate<br>Breach risk rating: 2 |
| **Audit risk rating** | **Rationale for audit risk rating** |
| **Low** | The controls are rated as moderate as the processes in place will ensure that the data is recorded correctly most of the time.<br>The impact is assessed to be low due to the small number of additional lights found in the field in relation to the overall count of the items of load. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| The minor database inaccuracies identified during this audit have been provided to Hurunui DC to update the database. | 31 May 2021 | Identified |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| Overall processes for maintaining the database are reported as robust. | Ongoing | |

## 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 RAMM 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 database was checked for audit trails.

### Audit commentary

HDC 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**

A database extract was provided, and I assessed the accuracy of this by using the DUML Statistical Sampling Guideline. 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.<br>The area has three distinct sub regions, split by NSP.<br>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:<br>1. HDC A-CL<br>2. HDC CO-LU<br>3. HDC LY- Z |
| 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 29 sub-units (roads). |
| Total items of load | 158 items of load were checked. |

Wattages were checked for alignment with the published standardised wattage table produced by the Electricity Authority against the database or in the case of LED lights against the LED light specification.

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

## Audit commentary

### Field Audit Findings

A field audit was conducted of a statistical sample of 158 items of load. The "database auditing tool" was used to analyse the results, which are shown in the table below.

| Result | Percentage | Comments |
|---|---|---|
| The point estimate of R | 100.1 | Wattage from survey is higher than the database wattage by 0.1% |
| $R_L$ | 95.4 | With a 95% level of confidence, it can be concluded that the error could be between -4.6% and 11.8% |
| $R_H$ | 111.8 | |

These results were categorised in accordance with the "Distributed Unmetered Load Statistical Sampling Audit Guideline", effective from 01/02/19 and the table below shows that Scenario C (detailed below) applies.

The conclusion from Scenario C is that the variability of the sample results across the strata means that the true wattage (installed in the field) could be between 4.6% lower and 11.8% higher than the wattage recorded in the DUML database. Non-compliance is recorded because the potential error is greater than 5.0%.

In absolute terms the installed capacity matches the database.

There is a 95% level of confidence that the installed capacity is between 3 kW lower to 7 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 3,000 kWh higher than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 11,300 kWh p.a. lower to 29,200 kWh p.a. higher than the database indicates.

| Scenario | Description |
|---|---|
| A - **Good accuracy, good precision** | This scenario applies if:<br>(a) $R_H$ is less than 1.05; and<br>(b) $R_L$ is greater than 0.95<br>The conclusion from this scenario is that:<br>(a) the best available estimate indicates that the database is accurate within +/- 5 %; and<br>(b) this is the best outcome. |
| B - **Poor accuracy, demonstrated with statistical significance** | This scenario applies if:<br>(a) the point estimate of R is less than 0.95 or greater than 1.05<br>(b) as a result, either $R_L$ is less than 0.95 or $R_H$ is greater than 1.05. |

| Scenario | Description |
|---|---|
| | There is evidence to support this finding. In statistical terms, the inaccuracy is statistically significant at the 95% level |
| C - **Poor precision** | This scenario applies if:<br>(a) the point estimate of R is between 0.95 and 1.05<br>(b) $R_L$ is less than 0.95 and/or $R_H$ is greater than 1.05<br>The conclusion from this scenario is that the best available estimate is not precise enough to conclude that the database is accurate within +/- 5 % |

**Lamp description and capacity accuracy**

I checked the wattage being applied in the database and found that two lamps had a discrepancy when compared to the standardised wattage table. This is detailed in the table below:

| Lamp Type | Database Total Lamp Wattage | EA Standardised Total Wattage | Variance | Database Quantity | Estimated Annual kWh effect on consumption |
|---|---|---|---|---|---|
| 125W Mercury Vapour | 137 | 136 | +1 | 2 | 8.54 |

The incorrect capacities will be resulting in a nett estimated under submission of 8.54 kWh per annum (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool).

I checked the LED lights against the LED light specification sheets and confirmed them to be correct.

**Change management process findings**

The field contractor is Power jointing Limited, and they are responsible for the Network maintenance. Power Jointing Limited are issued a Service Request for reactive work and complete a regular maintenance programme. They update RAMM directly with any changes.

As the majority of lights are now LED, outage patrols are no longer undertaken.

For all new connections, an “as built” are required to be submitted to council before connection can occur. These are added to RAMM. Mainpower advise HDC when lights are vested, all information is updated in RAMM, Power Jointing Limited will collect any additional information required and update RAMM.

**Festive Lights**

HDC confirmed with Mainpower that there are no festive lights installed.

**Audit outcome**

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 3.1<br>With: Clause 15.2 and 15.37B(b)<br><br>From: 27-Aug-20<br>To: 22-Apr-21 | In absolute terms, total annual consumption is estimated to be 3,000 kWh higher than the DUML database indicates.<br>Two items of load have the incorrect wattage applied in the DUML database which would result in under submission of 8.54 kWh per annum.<br>Potential impact: Medium<br>Actual impact: Low<br>Audit history: Once<br>Controls: Moderate<br>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.<br>The impact is assessed to be low, based on the kWh differences described above. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| The minor database inaccuracies identified during this audit have been provided to Hurunui DC to update the database. | 31 May 2021 | Identified |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| Overall processes for maintaining the database are reported as robust. | Ongoing | |

## 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. I compared the database provided to the capacity information Meridian supplied to EMS for the month of March 2021 and found it matched. The field audit found that in absolute terms, total annual consumption is estimated to be 3,000 kWh higher than the DUML database indicates.

The on and off times are derived from a data logger read by EMS and are 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 EMS' agent audit. Compliance was confirmed for both parties.

Examination of the database found:

| Lamp Type | Database Total Lamp Wattage | EA Standardised Total Wattage | Variance | Database Quantity | Estimated Annual kWh effect on consumption |
|---|---|---|---|---|---|
| 125W Mercury Vapour | 137 | 136 | +1 | 2 | 8.54 |

The incorrect capacities will be resulting in a nett estimated under submission of 8.54 kWh per annum (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool).

The field audit identified two additional lights in the field, this is discussed in **section 2.5.**

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.

### Audit outcome

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 3.2<br>With: Clause 15.2 and 15.37B(c)<br><br><br><br>From: 27-Aug-20<br>To: 22-Apr-21 | Total annual consumption is estimated to be 3,000 kWh higher than the DUML database indicates<br>The data used for submission does not track changes at a daily basis and is provided as a snapshot.<br>Two items of load have the incorrect wattage applied in the DUML database which would result in under submission of 8.54 kWh per annum.<br>Potential impact: Medium<br>Actual impact: Low<br>Audit history: Twice<br>Controls: Moderate<br>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.<br>The impact is assessed to be low, based on the kWh differences described above. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| The minor database inaccuracies identified during this audit have been provided to Hurunui DC to update the database. | 31 May 2021 | Identified |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| Overall processes for maintaining the database are reported as robust.<br>Processes are in place to account for historical database corrections that have a material impact on settlement volumes. | Ongoing | |

## CONCLUSION

The database is remotely hosted by RAMM Software Ltd. The field work and asset data capture is conducted by Power Jointing Limited using Pocket RAMM. A monthly report from RAMM is provided to Meridian to calculate the kW value.

The field audit was undertaken of a statistical sample of 158 items of load on 29th April 2021. The main findings are as follows:

- in absolute terms, total annual consumption is estimated to be 3,000 kWh higher than the DUML database indicates.
- overall, the processes in place to manage the database are robust.

This audit found four non-compliances. The future risk rating of eight indicates that the next audit be completed in 18 months. I have considered this in conjunction with Meridian's comments and I agree with the recommendation.

## PARTICIPANT RESPONSE

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