

ELECTRICITY INDUSTRY PARTICIPATION CODE  
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

WAIKATO DISTRICT COUNCIL AND  
MERIDIAN ENERGY  
NZBN: 9429037696863

Prepared by: Rebecca Elliot

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Date audit report completed: 18 November 2022

Audit report due date: 01-Dec-22

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## EXECUTIVE SUMMARY

This audit of the **Waikato District Council Unmetered Streetlights (WDC)** 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 thinkproject New Zealand Ltd and the reporting from this is managed by Odyssey Energy Limited. The installation fieldwork and asset data capture are managed by Waikato District Alliance. This is a joint venture between Waikato DC and Downer to provide infrastructure management across all of Waikato DC assets. This field audit found nine new lights that are not yet in the database. I recommend that Meridian liaise with Waikato District Infrastructure and the three networks that WDC lights cover to review the new connection process to ensure that new lights are added to the database in a timely manner. There are a lot of new developments in this council area so getting this right will greatly improve the accuracy of the database and therefore submission.

Infrastructure Alliance manages the maintenance contract and updates the database as changes are made in the field.

The field audit found that the database was not within the allowable +/-5% threshold. In absolute terms, total annual consumption is estimated to be 24,900 kWh higher than the DUML database indicates. By reviewing the new connection process, I would expect the database accuracy to improve.

The discrepancies found in the last audit have been corrected.

The audit found four non-compliance issues and three recommendations are made. The future risk rating of 14 indicates that the next audit be completed in 12 months. I have considered this in conjunction with Meridian's comments and I agree with that 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  | In absolute terms, total annual consumption is estimated to be 13,000 kWh higher than the DUML database indicates.<br><br>Submission is based on a snapshot and does not consider historic changes. | Moderate | Medium            | 4                  | Identified      |
| All load recorded in database   | 2.5     | 11(2A) of Schedule 15.3 | Nine items of load of a sample of 254 items checked in the field are missing from the database.   | Moderate | Low               | 2                  | Identified      |
| Database accuracy               | 3.1     | 15.2 and 15.37B(b)      | In absolute terms, total annual consumption is estimated to be 24,900 kWh higher than the DUML database indicates.  | Moderate | Medium            | 4                  | Identified      |
| Volume information accuracy     | 3.2     | 15.2 and 15.37B(c)      | In absolute terms, total annual consumption is estimated to be 24,900 kWh higher than the DUML database indicates.<br><br>Submission is based on a snapshot and does not consider historic changes. | Moderate | Medium            | 4                  | Identified      |
| Future Risk Rating              |         |                         |   |          |                   | 14                 |                 |

|                                   |           |           |           |           |          |          |
|-----------------------------------|-----------|-----------|-----------|-----------|----------|----------|
| <b>Future risk rating</b>         | 0         | 1-4       | 5-8       | 9-15      | 16-18    | 19+      |
| <b>Indicative audit frequency</b> | 36 months | 24 months | 18 months | 12 months | 6 months | 3 months |

## RECOMMENDATIONS

| Subject           | Section | Clause              | Description  |
|-------------------|---------|---------------------|--|
| Database accuracy | 3.1     | 15.2 and 15.37B(b)) | Recommend that Meridian discuss the capture of GPS location for new items of load with the Waikato District Alliance at the time these are added to RAMM.  |
|                   |         |                     | Recommend that Meridian review the new connection process with the Waikato District Alliance and the three distributors to put in a place a process to add new lights to RAMM at the point of electrical connection. |
|                   |         |                     | Recommend that Meridian liaise with the Waikato District Alliance to confirm if any festive lights are being used in the WDC area.   |

## 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

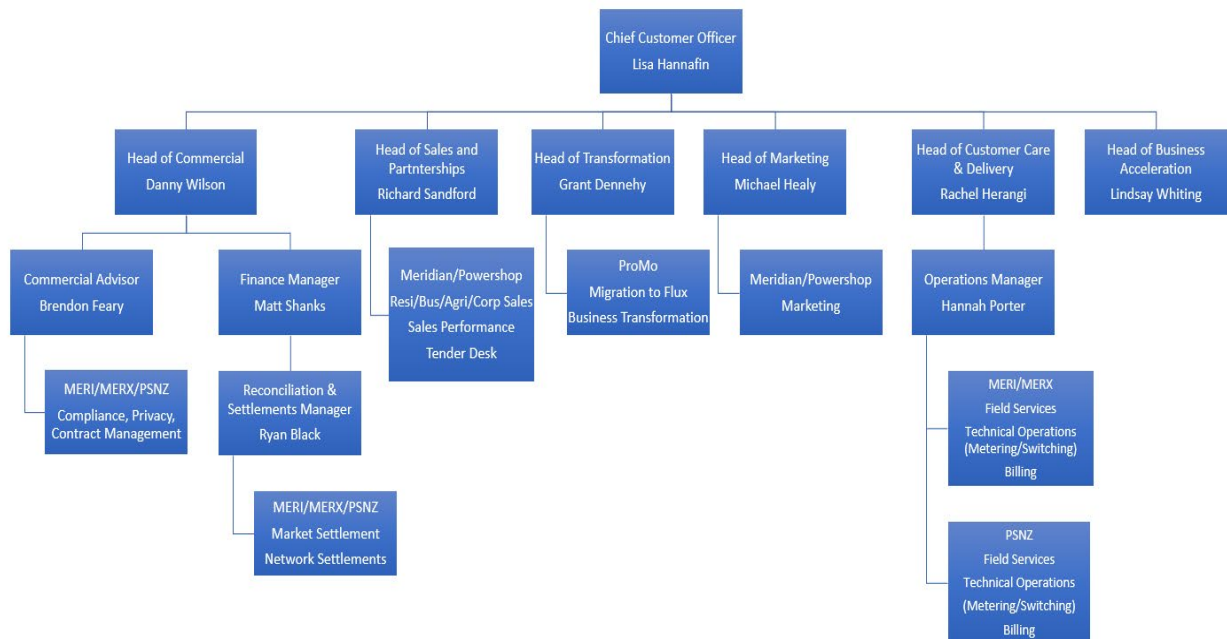
Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

#### Audit commentary

Meridian confirms that 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

Auditor:

**Rebecca Elliot**

**Veritek Limited**

**Electricity Authority Approved Auditor**

Other personnel assisting in this audit were:

| Name             | Title                          | Company            |
|------------------|--------------------------------|--------------------|
| Amy Cooper       | Compliance Officer             | Meridian Energy    |
| Melanie Matthews | Quality and Compliance Advisor | Meridian Energy    |
| Zoran Draca      | Director                       | Odyssey Energy Ltd |

### 1.4. Hardware and Software

**Section 1.8** shows that the SQL database used for the management of DUML is remotely hosted by thinkproject New Zealand 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 back-up is 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 |
|-----------------|---|---------|---------|-------------------------|------------------|
| 0000011102WE267 | Waikato DC Streetlights (WEL Network)           | HLY0331 | DST     | 4,008                   | 230,939          |
| 0007659000WAD19 | Waikato DC Streetlights (Waipa Network)         | CBG0111 | DST     | 88                      | 7,154            |
| 1099570058CN633 | Waikato DC Streetlights (Counties Network)      | BOB3301 | DST     | 1,153                   | 62,470           |
| 1099572699CN8DF | Waikato Streetlights GLN0332 (Counties Network) | GLN0332 | DST     | 21                      | 1,049            |
| 1099572700CN06D | Waikato Streetlights BOB1101 (Counties Network) | BOB1101 | DST     | 13                      | 828              |
| <b>Total</b>    |   |         |         | <b>5,283</b>            | <b>302,440</b>   |

## 1.7. Authorisation Received

All information was provided directly by Meridian and Odyssey.

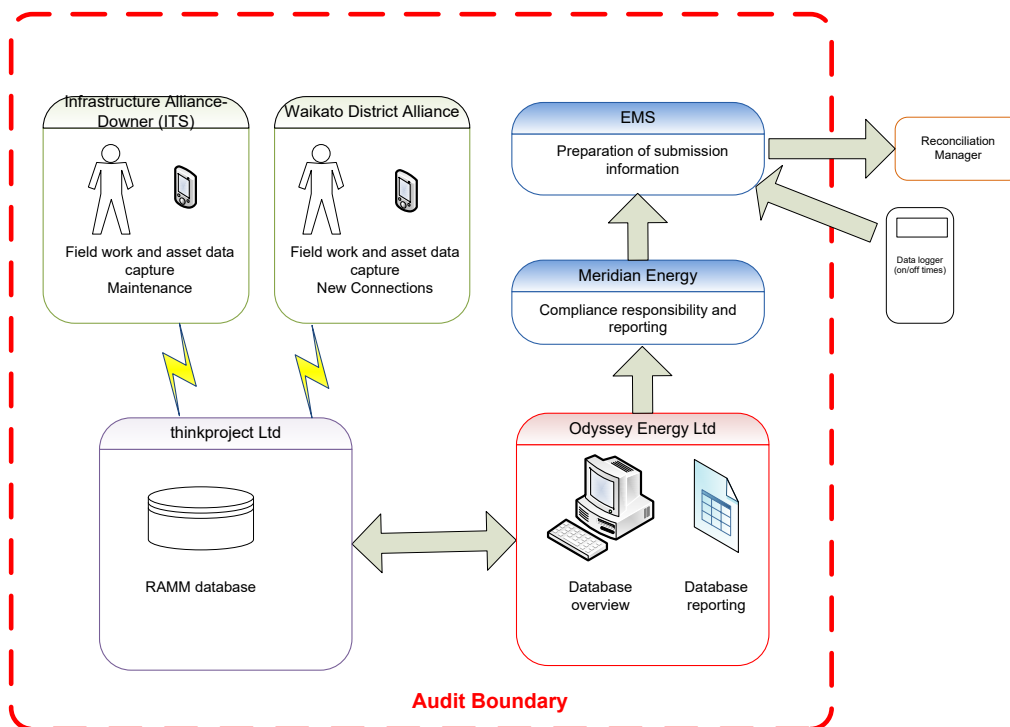
## 1.8. Scope of Audit

This audit of the **Waikato District Council Unmetered Streetlights (WDC)** 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 thinkproject New Zealand Ltd. Infrastructure Alliance is the maintenance contractor and updates RAMM with any changes. Waikato District Alliance manages new connections and updates RAMM with these. Odyssey Energy Ltd (Odyssey) reviews the database for data completeness and produce the monthly wattage report that is used to calculate submission.

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



The field audit was undertaken of a statistical sample of 254 items of load on 26<sup>th</sup> October 2022.



## 1.9. Summary of previous audit

Meridian provided a copy of the last audit report undertaken by Steve Woods of Veritek Limited in December 2021. The current status of those audit findings is detailed below:

### Table of Non-Compliance

| Subject                         | Section | Clause                  | Non-compliance  | Status         |
|---------------------------------|---------|-------------------------|---|----------------|
| Deriving submission information | 2.1     | 11(1) of Schedule 15.3  | In absolute terms, total annual consumption is estimated to be 66,700 kWh higher than the DUML database indicates.<br><br>Submission is based on a snapshot and does not consider historic changes. | Still existing |
| All load recorded in database   | 2.5     | 11(2A) of Schedule 15.3 | 18 items of load are missing from the database.   | Still existing |
| Database accuracy               | 3.1     | 15.2 and 15.37B(b)      | In absolute terms, total annual consumption is estimated to be 66,700 kWh higher than the DUML database indicates.  | Still existing |
| Volume information accuracy     | 3.2     | 15.2 and 15.37B(c)      | In absolute terms, total annual consumption is estimated to be 66,700 kWh higher than the DUML database indicates.<br><br>Submission is based on a snapshot and does not consider historic changes. | Still existing |

### Table of Recommendations

| Subject           | Section | Clause              | Recommendation for Improvement  | Status         |
|-------------------|---------|---------------------|---|----------------|
| Database accuracy | 3.1     | 15.2 and 15.37B(b)) | Recommend that Meridian and WDC liaise with the three Distributors to put in a place a process to add new lights to RAMM at the point of electrical connection. | 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 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. DUMML 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:*

- *DUMML 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 application of profiles was checked. The database was checked for accuracy.

#### Audit commentary

Meridian reconciles this DUMML 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 2022 and compliance was confirmed. I checked the figures for October 2022, and I confirm the kWh value matches the database extract. There is a data logger per network to ensure the correct on/off times are used.

As recorded in **section 3.1**, the field audit found that the database was not within the allowable +/-5% threshold. In absolute terms, total annual consumption is estimated to be 24,900 kWh higher than the DUMML database indicates.

Submission is based on a snapshot of the database at the end of the month and does not consider historic adjustments or the fact that lights can be lived before they are entered into the database.

#### Audit outcome

Non-compliant

| Non-compliance   | Description  |                 |                        |
|--|--|-----------------|------------------------|
| Audit Ref: 2.1<br>With: Clause 11(1) of Schedule 15.3<br><br>From: 16-Dec-21<br>To: 12-Oct-22  | <p>In absolute terms, total annual consumption is estimated to be 24,900 kWh higher than the DUMML database indicates.</p> <p>Submission is based on a snapshot and does not consider historic changes.</p> <p>Potential impact: High</p> <p>Actual impact: Medium</p> <p>Audit history: Multiple times</p> <p>Controls: Moderate</p> <p>Breach risk rating: 4</p> |                 |                        |
| Audit risk rating  | Rationale for audit risk rating  |                 |                        |
| <b>Medium</b>  | <p>The controls are rated as moderate overall, but the new connection process requires improvement to move this to strong.</p> <p>The impact is assessed to be medium, based on the kWh differences.</p>   |                 |                        |
| Actions taken to resolve the issue   |  | Completion date | Remedial action status |
| Meridian has advised of the inaccuracies identified and comments are in the relevant sections.   |  | 23/11/2022      | Identified             |
| Preventative actions taken to ensure no further issues will occur  |  | Completion date |                        |
| We have assessed our processes and tools to account for historic lamp installations and changes to the database at a daily level. There are checks in place comparing month to month data to identify any material changes and confirm details for these. These are accounted for in monthly submission. |  | 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 DUMML database must contain:

- each ICP identifier for which the retailer is responsible for the DUMML,
- the items of load associated with the ICP identifier.

### Audit observation

The database was checked to confirm an ICP was recorded against each item of load.

### Audit commentary

The RAMM database contains the relevant ICP identifiers for all items of load.

### **Audit outcome**

Compliant

## **2.3. Location of each item of load (Clause 11(2)(b) of Schedule 15.3)**

### **Code reference**

*Clause 11(2)(b) of Schedule 15.3*

### **Code related audit information**

*The DUMML database must contain the location of each DUMML item.*

### **Audit observation**

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

### **Audit commentary**

The database contains the nearest street address, pole numbers and Global Positioning System (GPS) coordinates for each item of load, and users in the office and field can view these locations on a mapping system. 130 items of load do not have GPS coordinates, but the road name and location allow the lights to be located.

### **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 and that each item of load had a value recorded in these fields.

### **Audit commentary**

The database contains two records for wattage, firstly the lamp wattage and secondly the gear wattage, which represents ballast losses. The gear wattage is recorded in the database which meets the requirements of this clause. The accuracy of the description and wattages recorded is discussed in **section 3.1**.

### **Audit outcome**

Compliant

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

### Code reference

Clause 11(2A) of Schedule 15.3

### Code related audit information

The retailer must ensure that each item of DUML for which it is responsible is recorded in this database.

### Audit observation

The field audit was undertaken of a statistical sample of 254 items of load on 26<sup>th</sup> October 2022.

### Audit commentary

The field audit findings are detailed in the table below.

| Discrepancy                             | Quantity |
|---|----------|
| Lights in the field not in the database | 9        |
| Lights in the database not in the field | 4        |
| Incorrect wattage                       | 21       |

| Street          | Database count | Field count | Light count differences | Wattage recorded incorrectly | Comments  |
|-----------------|----------------|-------------|-------------------------|------------------------------|---|
| BELLENDEN CRES  | 5              | 5           | -                       | 4                            | 4x incorrect wattages.  |
| CARR ST         | 5              | 5           | -                       | 1                            | 1x 101W LED recorded in the database but 110W LED found in the field.     |
| LIVERPOOL ST    | 9              | 7           | -2                      | -                            | 2x 36W LED not found in the field.  |
| MOYLE ST        | 5              | 5           | -                       | 2                            | 2x 104W LEDs recorded in the database but 2x 37W LEDs found in the field. |
| WHANGAMARINO RD | 1              | 1           | -                       | 1                            | 1x 133W LED recorded in the database but 122W LED found in the field.     |
| BONE RD         | 1              | 1           | -                       | 1                            | 1x 92W LED recorded in the database but 36W LED found in the field.       |
| HETHERINGTON RD | 8              | 8           | -                       | 4                            | 4x incorrect wattages.  |
| TANIWHARAU ST   | 4              | 5           | +1                      | -                            | 1x additional 90W MV found in the field.                                  |
| KENT ST         | 12             | 11          | -1                      | -                            | 1x 36W LED missing in the field.  |
| ORINI RD        | 25             | 25          | -                       | 1                            | 1x 36W LED recorded in the database but 150W HPS found in the field.      |

| Street              | Database count | Field count  | Light count differences | Wattage recorded incorrectly | Comments  |
|---------------------|----------------|--------------|-------------------------|------------------------------|---|
| BEDFORD RD          | 4              | 4            | -                       | 4                            | 4x 92W recorded in the database but 4x 76W LED found in the field.  |
| GATEWAY DR          | 16             | 24           | +8                      | 1                            | 8x additional 152W LEDs found in the field.<br>1x 152W LED recorded in the database but 92W LED found in the field. |
| HILLVIEW ST         | 3              | 3            | -                       | 1                            | 1x 36W LED recorded in the database but 70W HPS found in the field.   |
| SEABREEZE WAY       | 5              | 4            | -1                      |                              | 1x 70W HPS plotted to Aroaro Lane not found in the field.   |
| WAITETUNA VALLEY RD | 2              | 2            | -                       | 1                            | 1x 70W HPS recorded in the database but 36W LED found in the field.   |
| <b>Grand Total</b>  | <b>5,143</b>   | <b>5,148</b> | <b>13 (+9-4)</b>        | <b>21</b>                    |   |

I checked the discrepancies from the last audit and found all that required correction have been updated.

This audit found nine additional lights in the field than recorded in the database. The accuracy of the database is recorded in **section 3.1**. The items missing from the RAMM database are recorded as non-compliance in this section.

#### Audit outcome

Non-compliant

| Non-compliance  | Description   |                                     |                        |
|---|---|-------------------------------------|------------------------|
| Audit Ref: 2.5<br>With: Clause 11(2A) of Schedule 15.3<br><br>From: 16-Dec-21<br>To: 12-Oct-22  | <p>Nine items of load of a sample of 254 items checked in the field are missing from the database.</p> <p>Potential impact: Medium</p> <p>Actual impact: Low</p> <p>Audit history: Multiple times previously</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p> |                                     |                        |
| Audit risk rating   | Rationale for audit risk rating   |                                     |                        |
| <b>Low</b>  | <p>The controls are rated as moderate overall, but the new connection process requires improvement to move this to strong.</p> <p>The impact is assessed to be low, based on the quantity of additional lights.</p>   |                                     |                        |
| Actions taken to resolve the issue  |   | Completion date                     | Remedial action status |
| <p>We have advised the Waikato District Alliance and Odyssey of the extra lights. They have advised that they are not yet the responsibility of the council. We will investigate and confirm who is responsible for them.</p> <p>We have advised Odyssey of the inaccuracies for the 4 missing lights and the 21 incorrect wattages in the database</p> |   | <p>Ongoing</p> <p>23/11/2022</p>    | Identified             |
| Preventative actions taken to ensure no further issues will occur   |   | Completion date                     |                        |
| <p>Odyssey will be correcting the database for the 4 missing lights and the 21 incorrect wattages over the next 2 weeks.</p> <p>Meridian will follow up with Odyssey to ensure the corrections are completed.</p>   |   | <p>23/12/2022</p> <p>23/12/2022</p> |                        |

## 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 ability of the database to track changes was assessed and the process for tracking of changes in the database was examined.



**Audit commentary**

The database functionality achieves compliance with the code.

**Audit outcome**

Compliant

**2.7. Audit trail (Clause 11(4) of Schedule 15.3)****Code reference**

*Clause 11(4) of Schedule 15.3*

**Code related audit information**

*The 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**

The RAMM database has 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    | The rural Waikato District from north of Hamilton to Pokeno  |
| Strata              | The database contains items of load in Waikato District Council area.<br>The council area covers three different networks of Counties Network, Waipa and WEL network.<br>The population was divided into four strata: <ol style="list-style-type: none"> <li>1. North-East,</li> <li>2. North-West,</li> <li>3. South-East, and</li> <li>4. South-West.</li> </ol> |
| 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 47 sub-units.  |
| Total items of load | 254 items of load were checked.  |

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

##### Audit commentary

##### Database accuracy based on the field audit

A field audit was conducted of a statistical sample of 254 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 | 101.9      | Wattage from the survey is higher than the database wattage by 1.9%                                  |
| R <sub>L</sub>          | 93.7       | With a 95% level of confidence, it can be concluded that the error could be between -6.3% and +11.3% |
| R <sub>H</sub>          | 111.3      |  |

These results were categorised in accordance with the “Distributed Unmetered Load Statistical Sampling Audit Guideline”, effective from 1 February 2019 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 6.3% lower and 11.3% higher than the wattage recorded in the DUMML database. Non-compliance is recorded because the potential error is greater than 5.0%.

In absolute terms the installed capacity is estimated to be 6.0 kW higher than the database indicates.

There is a 95% level of confidence that the installed capacity is between 19.0 kW lower and 34 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 24,900 kWh higher than the DUMML database indicates.

There is a 95% level of confidence that the annual consumption is between 81,400 kWh p.a. lower to 145,200 kWh p.a. higher than the database indicates.

| Scenario   | Description  |
|--|--|
| <b>A - Good accuracy, good precision</b>                             | 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>B - Poor accuracy, demonstrated with statistical significance</b> | 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.<br>There is evidence to support this finding. In statistical terms, the inaccuracy is statistically significant at the 95% level |
| <b>C - Poor precision</b>  | 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

The database was checked, and I found all light descriptions and wattage recorded correctly. I found a small number of light descriptions that would benefit from having the lamp wattage recorded in the light description. These have been passed to Odyssey to review and update.

### NZTA lighting

NZTA lighting is excluded from the database and is managed in a separate database.

### ICP accuracy

All items of load have an ICP identifier recorded.

### Location accuracy

The database contains fields for the street address, and also contains GPS coordinates. 130 items of load do not have GPS coordinates, but the road name and location allow the lights to be located. This is an increase from the 52 items of load recorded in the last audit. I recommend that this be discussed with Waikato District Alliance to ensure that GPS co-ordinates are captured at the time of the assets being added to the database.

| Recommendation    | Description   | Audited party comment   | Remedial action |
|-------------------|---|---|-----------------|
| Database accuracy | Recommend that Meridian discuss the capture of GPS location for new items of load with the Waikato District Alliance at the time these are added to RAMM. | The Waikato District Alliance advises, the GPS information does not get loaded when new development streetlights are loaded because the RAMM data supplied is loaded by road chainage (distance in meters from the start of the road) rather than Northing and Eastings. After the road is completed, the centerline is added, and the Northing and eastings are updated using the location chainage of the streetlights. After Google maps has updated its map, we can then confirm the correct location of the streetlights and the correct northing and eastings | Identified      |

### Change management process findings

Field maintenance is carried out by Infrastructure Alliance and updated directly into RAMM.

The Waikato District Alliance manages the process for new subdivisions. This field audit found nine new lights that are not yet in the database, and I note there is a high level of new connection activity in this area. I recommend that Meridian liaise with Waikato District Alliance and the three networks that WDC lights cover to review the new connection process to ensure that new lights are being added in a timely manner.

| Recommendation    | Description  | Audited party comment  | Remedial action |
|-------------------|--|--|-----------------|
| Database accuracy | Recommend that Meridian review the new connection process with the Waikato District Alliance and the three distributors to put in a place a process to add new lights to RAMM at the point of electrical connection. | The Waikato District Alliance advises that Waikato District Council Land Development Engineers as the Alliance only does maintenance on existing lights.<br><br>The Waikato District Alliance confirm they are not responsible for new developments. Meridian will continue further investigation on who is responsible from the time of livening. | Investigating   |

The monthly wattage report is produced by Odyssey Energy Limited. As part of the monthly report production, they check the wattage, gear wattage and ICP allocation for any anomalies and these are resolved before the wattage report is sent to Meridian Energy.

There are no outage patrol processes in place as LED lights have a low failure rate. Any streetlight replacements are made on a reactive basis generated from public requests.

No festive lights have been advised to Odyssey to be included in the monthly wattage reports, but I recommend that Meridian check with Waikato District Alliance to confirm if any festive lights are being used in the WDC area.

| Recommendation    | Description  | Audited party comment  | Remedial action |
|-------------------|--|--|-----------------|
| Database accuracy | Recommend that Meridian liaise with the Waikato District Alliance to confirm if any festive lights are being used in the WDC area. | The Waikato District Alliance advised that they are not responsible for the festive lights and are therefore not on the database.<br><br>The festive lights are considered community lights. Meridian will investigate further with the council on who is responsible for them and how they are settled. | Investigating   |

The discrepancies from the previous audit have been corrected.

### Audit outcome

Non-compliant

| Non-compliance   | Description  |                 |                        |
|--|--|-----------------|------------------------|
| Audit Ref: 3.1<br>With: Clause 15.2 and 15.37B(b)<br><br>From: 16-Dec-21<br>To: 12-Oct-22      | In absolute terms, total annual consumption is estimated to be 24,900 kWh higher than the DUML database indicates.<br><br>Potential impact: High<br><br>Actual impact: Medium<br><br>Audit history: Multiple times previously<br><br>Controls: Moderate<br><br>Breach risk rating: 4 |                 |                        |
| Audit risk rating  | Rationale for audit risk rating  |                 |                        |
| <b>Medium</b>  | The controls are rated as moderate as the processes in place to manage change are sufficient to mitigate risk most of the time.<br><br>The impact is assessed to be medium, based on the kWh value above.  |                 |                        |
| Actions taken to resolve the issue   |  | Completion date | Remedial action status |
| Meridian has advised of the inaccuracies identified and comments are in the relevant sections. |  | 23/11/2022      | Identified             |
| Preventative actions taken to ensure no further issues will occur                              |  | Completion date |                        |
| No comments provided   |  |                 |                        |

### 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 the ICP has 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 examined during EMS's audit in 2022 and compliance was confirmed. I checked the figures for October 2022, and I confirm the kW value matches the database extract. There is a data logger per network to ensure the correct on/off times are used.

As recorded in **section 3.1**, the field audit found that the database was not within the allowable +/-5% threshold. In absolute terms, total annual consumption is estimated to be 24,900 kWh higher than the DUML database indicates.

Submission is based on a snapshot of the database at the end of the month and does not consider historic adjustments or the fact that lights can be livened before they are entered into the database.

### **Audit outcome**

Non-compliant

| Non-compliance   | Description  |                 |                        |
|--|--|-----------------|------------------------|
| Audit Ref: 3.2<br>With: Clause 15.2 and 15.37B(c)<br><br>From: 16-Dec-21<br>To: 12-Oct-22  | In absolute terms, total annual consumption is estimated to be 24,900 kWh higher than the DUML database indicates.<br>Submission is based on a snapshot and does not consider historic changes.<br>Potential impact: High<br>Actual impact: Medium<br>Audit history: Multiple times<br>Controls: Moderate<br>Breach risk rating: 4 |                 |                        |
| Audit risk rating  | Rationale for audit risk rating  |                 |                        |
| <b>Medium</b>  | The controls are rated as moderate overall, but the new connection process requires improvement to move this to strong.<br>The impact is assessed to be medium, based on the kWh differences.  |                 |                        |
| Actions taken to resolve the issue   |  | Completion date | Remedial action status |
| Meridian has advised of the inaccuracies identified and comments are in the relevant sections.   |  | 23/11/2022      | Identified             |
| Preventative actions taken to ensure no further issues will occur  |  | Completion date |                        |
| We have assessed our processes and tools to account for historic lamp installations and changes to the database at a daily level. There are checks in place comparing month to month data to identify any material changes and confirm details for these. These are accounted for in monthly submission. |  | Ongoing         |                        |



## CONCLUSION

The database is remotely hosted by thinkproject New Zealand Ltd and the reporting from this is managed by Odyssey Energy Limited. The installation fieldwork and asset data capture are managed by Waikato District Alliance. This is a joint venture between Waikato DC and Downer to provide infrastructure management across all of Waikato DC assets. This field audit found nine new lights that are not yet in the database. I recommend that Meridian liaise with Waikato District Infrastructure and the three networks that WDC lights cover to review the new connection process to ensure that new lights are added to the database in a timely manner. There are a lot of new developments in this council area so getting this right will greatly improve the accuracy of the database and therefore submission.

Infrastructure Alliance manages the maintenance contract and updates the database as changes are made in the field.

The field audit found that the database was not within the allowable +/-5% threshold. In absolute terms, total annual consumption is estimated to be 24,900 kWh higher than the DUML database indicates. By reviewing the new connection process, I would expect the database accuracy to improve.

The discrepancies found in the last audit have been corrected.

The audit found four non-compliance issues and three recommendations are made. The future risk rating of 14 indicates that the next audit be completed in 12 months. I have considered this in conjunction with Meridian's comments and I agree with that recommendation.

## PARTICIPANT RESPONSE

Meridian have reviewed this report and their comments are detailed in the body of the report. No further comments were provided.