# ELECTRICITY INDUSTRY PARTICIPATION CODE
# DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

# WAIKATO DISTRICT COUNCIL AND MERIDIAN ENERGY

Prepared by: Steve Woods

Date audit commenced: 6 May 2020

Date audit report completed: 28 May 2020

Audit report due date: 01-Jun-20

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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 RAMM Software Ltd and the reporting from this is managed by Odyssey Energy Limited. The installation fieldwork and asset data capture is managed by Infrastructure Alliance. Infrastructure Alliance is a joint venture between Waikato DC and Downer to provide infrastructure management across all of Waikato DC assets.

4,324 of 4,860 lights have been changed to LED. The field audit found a small number of errors, mainly due to new lights not being recorded in the database. I have repeated the recommendation from the last audit that the new connection process is reviewed and improved. There were a small number of database discrepancies, which do not have a notable impact on settlement.

The audit found four non-compliance issues and one recommendation is made. The future risk rating of 14 indicates that the next audit be completed in 12 months, and I agree with this.

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 33,200 kWh higher than the DUML database indicates. | Moderate | Medium | 4 | Identified |
| All load recorded in database | 2.5 | 11(2A) of Schedule 15.3 | Nine items of load 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 33,200 kWh higher than the DUML database indicates.<br>Seven wattage/description discrepancies. | Moderate | Medium | 4 | 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) | In absolute terms, total annual consumption is estimated to be 33,200 kWh higher than the DUML database indicates | Moderate | Medium | 4 | Identified |
| Future Risk Rating | | | | | | 14 | |

| **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 | Clause | Description |
|---|---|---|---|
| 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. |

## 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

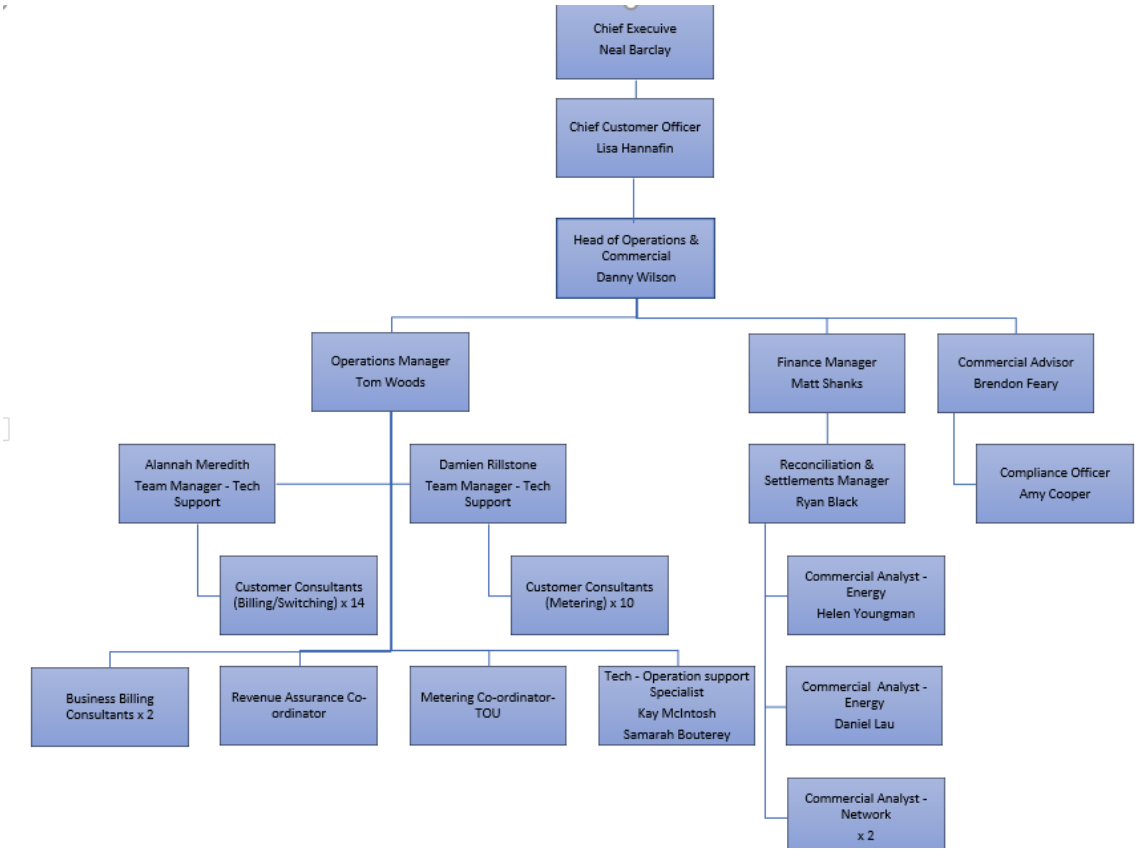
Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

### 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:

**Steve Woods**

**Veritek Limited**

**Electricity Authority Approved Auditor**

Other personnel assisting in this audit were:

| Name | Title | Company |
|---|---|---|
| Amy Cooper | Compliance Officer | 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 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 back-up is in accordance with standard industry procedures. Access to the database is secure by way of password protection.

## 1.5. Breaches or Breach Allegations

There are no breach allegations relevant to the scope of this audit.

## 1.6. ICP Data

| ICP Number | Description | NSP | Profile | Number of items of load | Database wattage |
|---|---|---|---|---|---|
| 0000011102WE267 | Waikato DC Streetlights (WEL Network) | HLY0331 | DST | 3,739 | 221,594 |
| 0007659000WAD19 | Waikato DC Streetlights (Waipa Network) | CBG0111 | DST | 88 | 7,308 |
| 1099570058CN633 | Waikato DC Streetlights (Counties Network) | BOB3301 | DST | 991 | 57,024 |
| 1099572699CN8DF | Waikato Streetlights GLN0332 (Counties Network) | GLN0332 | DST | 21 | 1,192 |
| 1099572700CN06D | Waikato Streetlights BOB1101 (Counties Network) | BOB1101 | DST | 13 | 904 |
| | | | **Total** | **5,743** | **287,131** |

## 1.7. Authorisation Received

All information was provided directly by Meridian, Infrastructure Alliance or Odyssey.

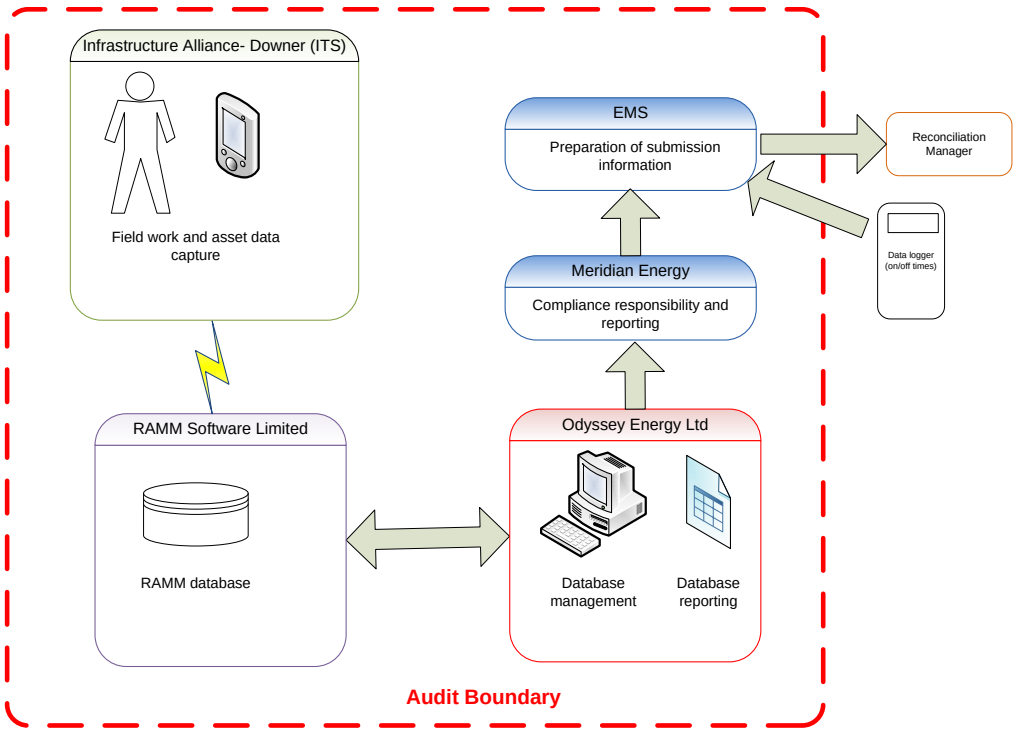
## 1.8. Scope of Audit

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 RAMM Software Ltd and is managed by Odyssey Energy Ltd (Odyssey) on behalf of Waikato DC, who is Meridian's customer. Infrastructure Alliance, who are contractors to Waikato DC, conduct the fieldwork and asset data capture.

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.




## 1.9. Summary of previous audit

Meridian provided a copy of the last audit report undertaken by Rebecca Elliot of Veritek Limited in March 2018. 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 | Analysis of the database found 13 lamps with the incorrect LED wattage recorded indicating an estimated minor under submission of 713 kWh. | Still existing |
| All load recorded in database | 2.5 | 11(2A) of Schedule 15.3 | Two items of load missing from the database. | Still existing |
| Database accuracy | 3.1 | 15.2 and 15.37B(b) | Analysis of the database found 13 lamps with the incorrect LED wattage recorded indicating an estimated minor under submission of 713 kWh. | Still existing |
| Volume information accuracy | 3.2 | 15.2 and 15.37B(c) | Analysis of the database found 13 lamps with the incorrect LED wattage recorded indicating an estimated minor under submission of 713 kWh. | Still existing |

## Table of Recommendations

| Subject | Section | Clause | Recommendation for Improvement | Status |
|---|---|---|---|---|
| Tracking of load change | 2.6 | | 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 within the required timeframe. Compliance is confirmed

## 2. DUML DATABASE REQUIREMENTS

### 2.1. Deriving submission information (Clause 11(1) of Schedule 15.3)

**Code reference**

*Clause 11(1) of Schedule 15.3*

**Code related audit information**

*The retailer must ensure the:*

- *DUML database is up to date*
- *methodology for deriving submission information complies with Schedule 15.5.*

**Audit observation**

The process for calculation of consumption was examined and the application of profiles was checked. The database was checked for accuracy.

**Audit commentary**

Meridian reconciles this DUML load using the DST profile. The on and off times are derived from a data logger read by EMS. This information is used to create a shape file. Meridian supplies EMS with the capacity information and EMS calculates the kWh figure for each ICP and includes this in the relevant AV080 file. This process was examined during EMS's audit in June 2019 and compliance was confirmed. I checked the figures for April 2020, and I confirm the kW value matches the database extract.

The methodology for deriving submission information is compliant, but there is some inaccurate data within the database used to calculate submissions. This is recorded as non-compliance and discussed in **sections 3.1** and **3.2**.

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.

As recorded in Section 3.1, In absolute terms, total annual consumption is estimated to be 33,200 kWh higher than the DUML database indicates.

**Audit outcome**

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 2.1<br>With: Clause 11(1) of Schedule 15.3<br><br>From: 01-Nov-18<br>To: 22-May-20 | In absolute terms, total annual consumption is estimated to be 33,200 kWh higher than the DUML database indicates.<br>Potential impact: Medium<br>Actual impact: Medium<br>Audit history: Once<br>Controls: Moderate<br>Breach risk rating: 4 |
| **Audit risk rating** | **Rationale for audit risk rating** |
| **Medium** | The controls are rated as moderate as the processes in place to manage change are sufficient to mitigate risk most of the time.<br>The impact is assessed to be medium, based on the kWh differences. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| Discrepancies identified have been provided to Odyssey Energy to resolve and will also be followed up with the council. | 30 June 2020 | Identified |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| Change management processes reported in section 3.1 appear generally robust.<br>Annual audits undertaken to check both quality of workmanship and accuracy of asset capture are in place to pick up issues on an ongoing basis.<br>As recommended, we will discuss the council the processes for connection of new lights so these are added to RAMM without delay. | 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

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 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 each item of load, and users in the office and field can view these locations on a mapping system.

**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 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 338 items of load on 18th May 2020.

### Audit commentary

The field audit findings are detailed in the table below:

| Street | Database count | Field count | Light count differences | Wattage recorded incorrectly | Comments |
|---|---|---|---|---|---|
| Bragato Way | 14 | 20 | +6 | 0 | 6 additional lights |
| Dominion Road | 24 | 24 | 0 | 1 | 1 x 21W LED recorded as 27W |
| Murphy Lane | 5 | 7 | +2 | 0 | 2 additional 36W LED |
| Platt Rd | 5 | 5 | 0 | 1 | 1 x 150W HPS recorded as 36W LED |
| Robertson Road | 9 | 10 | +1 | 1 | Additional 70W HPS<br>1 x 70W HPS recorded as 36W LED |
| Rosser Road | 21 | 19 | -2 | 0 | 2 lights not found |
| Roto Street | 9 | 9 | 0 | 1 | 1 x LED recorded as 70W HPS |
| **Total** | | | **7** | **4** | |

The findings from the last audit were re-checked. Most findings have been corrected except for those recorded below.

| Street | Database count | Field count | Light count differences | Wattage recorded incorrectly | Comments |
|---|---|---|---|---|---|
| FERGUSON RD | 1 | 1 | | 1 | 1x incorrect 150W HPS wattage recorded in the database - LED found in the field. |

| Street | Database count | Field count | Light count differences | Wattage recorded incorrectly | Comments |
|---|---|---|---|---|---|
| ONION RD | 1 | 1 | | 1 | 1x incorrect 150W HPS wattage recorded in the database - LED found in the field. |
| HUNTLY WEST SPORTS COMPLEX | 2 | 2 | | 2 | 2x incorrect LED wattage recorded in the database - HPS in the field. |

I found nine additional lights in the field than recorded in the database. The differences found in the field are recorded as non-compliance in **section 3.1**. The items missing from the RAMM database are recorded as non-compliance.

### Audit outcome

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 2.5<br>With: Clause 11(2A) of Schedule 15.3<br><br>From: 01-Nov-18<br>To: 22-May-20 | Nine items of load are missing from the database.<br>Potential impact: Medium<br>Actual impact: Low<br>Audit history: Twice 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 to manage change are sufficient to mitigate risk most of the time.<br>The impact is assessed to be low, based on the database accuracy as detailed in **section 3.1**. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| Discrepancies identified have been provided to Odyssey Energy to resolve and will also be followed up with the council. | 30 June 2020 | Identified |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |

| | | |
|---|---|---|
| Change management processes reported in section 3.1 appear generally robust.<br>Annual audits undertaken to check both quality of workmanship and accuracy of asset capture are in place to pick up issues on an ongoing basis<br>As recommended we will discuss the council the processes for connection of new lights so these are added to RAMM without delay. | 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 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 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**

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 five strata:<br>1. Road name A-G<br>2. Road name H-K<br>3. Road name L-N<br>4. Road name O-S<br>5. Road name T-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 60 sub-units. |
| Total items of load | 338 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 338 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 | 102.7 | Wattage from the survey is higher than the database wattage by 2.7% |
| $R_L$ | 99.6 | |

| | | |
|---|---|---|
| $R_H$ | 109.3 | With a 95% level of confidence it can be concluded that the error could be between -0.4% and +9.3% |

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 0.4% lower and 9.3% 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 is estimated to be 8.0 kW higher than the database indicates.

There is a 95% level of confidence that the installed capacity is between 1.0 kW lower and 27 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 33,200 kWh higher than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 4,600 kWh p.a. lower to 114,100 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.<br>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**

The database was checked, and I found all ballasts were applied correctly. There were some wattage discrepancies as shown in the table below. The impact on settlement is negligible.

| Light Type | Wattage recorded | Correct wattage | Difference | Quantity | Total wattage variance |
|---|---|---|---|---|---|
| 80W MV | 80 | 90 | -10 | 1 | -10 |
| 150W SON | 268 | 168 | 100 | 1 | 100 |
| 70W SON | 63 | 83 | -20 | 2 | -40 |
| 150W MH | 118 | 168 | -50 | 1 | -50 |
| 100W MH | 84 | 114 | -30 | 1 | -30 |
| LED Road Grace 92 Watts | 120 | 92 | 28 | 1 | 28 |
| | | | | **Total** | **-2 watts** |

Most of the discrepancies from the previous audit were corrected, apart from one, as shown in the table below.

| Light Type | Wattage recorded | Correct wattage | Difference | Quantity | Total wattage variance | Resolved? |
|---|---|---|---|---|---|---|
| LED floodlight 15deg 400W | 440 | 400 | 40 | 1 | 40 | Yes |
| LED RGB uplight 55W | 50 | 55 | -5 | 2 | -10 | Yes |
| LED Road Grace 36w 24 LED | 92 | 36 | 56 | 2 | 112 | Yes |
| LED Road Grace 92 Watts | 77 | 92 | -15 | 1 | -15 | Yes |
| LED Road Grace 92 Watts | 120 | 92 | 28 | 1 | 28 | No |
| LED Stela Long 34W 30 Led | 36 | 34 | 2 | 6 | 12 | Yes |
| Total | | | | | 167 | |

**NZTA lighting**

NZTA lighting is included in the database and was checked as part of the field audit.

**ICP accuracy**

Three items of load do not have an ICP identifier recorded.

**Location accuracy**

The database contains fields for the street address and also GPS coordinates.

**Change management process findings**

For new subdivisions all new street lights assets are reviewed prior to the street light circuit being connected. The assets are only added to RAMM after the subdivision has been vested. This can be sometime after the street lights have been connected. Distributors' are responsible for the electrical connection of street light circuits and they should be getting permission from a trader prior to these being electrically connected. I recommend that Meridian and WDC liaise with the three networks across which their lights are connected to put in place a process to add these lights to RAMM prior to them being electrically connected. Once vested, Infrastructure Alliance have a dedicated resource in place to assess the asset capture for new subdivisions. They inspect approximately 90% of the assets to confirm that they are correct. This information is now flowing through to the database in a timely fashion so that Odyssey

can include this in the monthly wattage report. In addition to this, Infrastructure Alliance carry out an annual audit which checks both quality of workmanship and accuracy of all asset capture. Any errors found are corrected.

| Recommendation | Description | Audited party comment | Remedial action |
|---|---|---|---|
| 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. | We will discuss this recommendation with the council. | Identified |

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 street light replacements are made on a reactive basis generated from public requests.

I was advised that there are no festive lights being connected to the street light circuits for the Waikato DC area.

**Audit outcome**

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 3.1<br>With: Clause 15.2 and 15.37B(b)<br><br>From: 01-May-18<br>To: 31-Oct-18 | In absolute terms, total annual consumption is estimated to be 33,200 kWh higher than the DUML database indicates.<br>Seven wattage/description discrepancies<br>Potential impact: Medium<br>Actual impact: Medium<br>Audit history: Twice previously<br>Controls: Moderate<br>Breach risk rating: 4 |
| **Audit risk rating** | **Rationale for audit risk rating** |
| **Medium** | The controls are rated as moderate as the processes in place to manage change are sufficient to mitigate risk most of the time.<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 |
|---|---|---|
| Discrepancies identified have been provided to Odyssey Energy to resolve and will also be followed up with the council. | 30 June 2020 | Identified |

| Preventative actions taken to ensure no further issues will occur | Completion date | |
|---|---|---|
| Change management processes reported in section 3.1 appear generally robust.<br>Annual audits undertaken to check both quality of workmanship and accuracy of asset capture are in place to pick up issues on an ongoing basis<br>As recommended we will discuss the council the processes for connection of new lights so these are added to RAMM without delay. | 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 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 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 June 2019 and compliance was confirmed. I checked the figures for April 2020, and I confirm the kW value matches the database extract.

The methodology for deriving submission information is compliant, but there is some inaccurate data within the database used to calculate submissions. This is recorded as non-compliance and discussed in **sections 3.1** and **3.2**.

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.

As recorded in Section 3.1, In absolute terms, total annual consumption is estimated to be 33,200 kWh higher than the DUML database indicates.

**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: 01-Nov-18<br>To: 22-May-20 | In absolute terms, total annual consumption is estimated to be 33,200 kWh higher than the DUML database indicates.<br>Potential impact: Medium<br>Actual impact: Medium<br>Audit history: Twice previously<br>Controls: Moderate<br>Breach risk rating: 2 |
| **Audit risk rating** | **Rationale for audit risk rating** |
| **Medium** | The controls are rated as moderate as the processes in place to manage change are sufficient to mitigate risk most of the time.<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 |
|---|---|---|
| Discrepancies identified have been provided to Odyssey Energy to resolve and will also be followed up with the council. | 30 June 2020 | Identified |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| Change management processes reported in section 3.1 appear generally robust.<br>Annual audits undertaken to check both quality of workmanship and accuracy of asset capture are in place to pick up issues on an ongoing basis<br>As recommended we will discuss the council the processes for connection of new lights so these are added to RAMM without delay. | Ongoing | |

## CONCLUSION

The database is remotely hosted by RAMM Software Ltd and the reporting from this is managed by Odyssey Energy Limited. The installation fieldwork and asset data capture is managed by Infrastructure Alliance. Infrastructure Alliance is a joint venture between Waikato DC and Downer to provide infrastructure management across all of Waikato DC assets.

4,324 of 4,860 lights have been changed to LED. The field audit found a small number of errors, mainly due to new lights not being recorded in the database. I have repeated the recommendation from the last audit that the new connection process is reviewed and improved. There were a small number of database discrepancies, which do not have a notable impact on settlement.

The audit found four non-compliance issues and one recommendation is made. The future risk rating of 14 indicates that the next audit be completed in 12 months, and I agree with this.

PARTICIPANT RESPONSE