# ELECTRICITY INDUSTRY PARTICIPATION CODE
# DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

# HUTT CITY COUNCIL AND CONTACT ENERGY LIMITED

Prepared by: Rebecca Elliot

Date audit commenced: 11 January 2021

Date audit report completed: 7 April 2021

Audit report due date: 8 April 2021

## TABLE OF CONTENTS

## EXECUTIVE SUMMARY

This audit of the **Hutt City Council (HCC)** DUML database and processes was conducted at the request of **Contact Energy Limited (Contact)** 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 scope of the audit encompasses the collection, security and accuracy of the data, including the preparation of submission information.

The submission of this volumes for this database switched to Contact's CTCS participant code from 1 October 2020. Simply Energy submits these volumes on behalf of Contact Energy. They in turn use EMS to create the submission file and submit this using the DST profile. I have assessed this process as part of this audit. I found a minor variance due to the Christmas lights not being submitted for the month of December.

Streetlight information is recorded in an ARC GIS database managed by HCC. New connection, fault and maintenance work is largely completed by Fulton Hogan, who update the ARC GIS database based on paperwork returned from the field to the Fulton Hogan office. HCC also use Commercial Signals for the more complicated work, and to confirm new streetlight connections match to the as-builts. Updates to the database are provided in the same way for both contractors. HCC provide a monthly report to Contact from ARC GIS. The accuracy of the field audit indicates this process is not working as expected with a high number of wattage discrepancies found. I recommend that this process is reviewed and that a 100% field audit be undertaken to bring the database accuracy to be within the required threshold.

There is a separate RAMM database which HCC are planning to get up to date and use this rather than the ARC GIS to provide submission information.

Database accuracy is described as follows:

| Result | Percentage | Comments |
|---|---|---|
| The point estimate of R | 84.1 | Wattage from survey is lower than the database wattage by 15.3% |
| $R_L$ | 74.0 | With a 95% level of confidence, it can be concluded that the error could be between -8.8% and -26% |
| $R_H$ | 91.2 | |

The variability of the sample results across the strata means that the true wattage (installed in the field) could be between 8.8% and 26% lower 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 194 kW lower than the database indicates.
- There is a 95% level of confidence that the installed capacity is between 107 kW to 316 kW lower than the database.
- In absolute terms, total annual consumption is estimated to be 827,200 kWh lower than the DUML database indicates.
- There is a 95% level of confidence that the annual consumption is between 456,800 to 1,348,000 kWh p.a. lower than the database indicates.

The current monthly report is provided as a snapshot and is non-compliant, and Contact completes revision submissions where corrections are required. Contact has not yet updated their processes to be consistent with the Authority's memo.

The future risk rating of 43 indicates that the next audit be completed in three months. The accuracy of the database has declined further during the audit period and the impact to the market is indicated as high. The council is switching traders in July 2021. Taking this into consideration I recommend that the next audit be in no more than six months' time. This should allow sufficient time for the recommended actions to be in progress and check the database accuracy.

The matters raised are detailed in the table below:

## AUDIT SUMMARY

### NON-COMPLIANCES

| Subject | Section | Clause | Non-Compliance | Controls | Audit Risk Rating | Breach Risk Rating | Remedial Action |
|---|---|---|---|---|---|---|---|
| Participant to give access | 1.11 | 16A.4 | Submission information not provided within 15 business days of being requested. | Weak | Low | 3 | Cleared |
| Deriving submission information | 2.1 | 11(1) of Schedule 15.3 | Festive lights not submitted when connected resulting in an estimated minor under submission of 939 kWh for the month of December.<br><br>The database is not confirmed as accurate with a 95% level of confidence resulting in an estimated annual over submission of 827,200 kWh as recorded in section 3.1.<br><br>LED make and model details are not recorded in the database.<br><br>Lamp wattage is recorded outside of the database.<br><br>Four items of load do not have an ICP number recorded in the database resulting in an estimated under submission of 2,870 kWh.<br><br>16 items of load with no lamp type resulting in an estimated annual under submission of 4,169 kWh.<br><br>11 items of load have inaccurate wattages recorded resulting in an estimated annual under submission of 546 kWh.<br><br>46 items of load recorded with "Property Plus" in the ICP column not reconciled resulting in an estimated under submission of 11,472 kWh per annum.<br><br>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.<br><br>Livening dates are not recorded for new connections and change dates may not reflect the date the change is made. | Weak | High | 9 | Identified |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ICP identifier and items of load | 2.2 | 11(2)(a) and (aa) of Schedule 15.3 | Four unmetered items of load do not have an ICP number assigned resulting in an estimated under submission of 2,870 kWh per annum.<br>46 items of load recorded with "Property Plus" in the ICP column not reconciled resulting in an estimated under submission of 11,472 kWh per annum. | Moderate | Medium | 4 | Investigating |
| Description and capacity of load | 2.4 | 11(2)(c) and (d) of Schedule 15.3 | LED make and model details are not recorded in the database.<br>Lamp wattage is recorded outside of the database.<br>16 items of load with no lamp description recorded. | Weak | Medium | 6 | Investigating |
| All load recorded in database | 2.5 | 11(2A) of Schedule 15.3 | One additional light found in the field. | Weak | Low | 3 | Identified |
| Database accuracy | 3.1 | 15.2 and 15.37B(b) | The database is not confirmed as accurate with a 95% level of confidence resulting in an estimated annual over submission of 827,200 kWh.<br>LED make and model details are not recorded in the database.<br>Lamp wattage is recorded outside of the database.<br>Four items of load do not have an ICP number recorded in the database resulting in an estimated under submission of 2,870 kWh.<br>46 items of load recorded with "Property Plus" in the ICP column not reconciled resulting in an estimated under submission of 11,472 kWh per annum.<br>16 items of load with no lamp type resulting in an estimated annual under submission of 4,169 kWh.<br>11 items of load have inaccurate wattages recorded resulting in an estimated annual under submission of 546 kWh.<br>Livening dates are not recorded for new connections and change dates may not reflect the date the change is made. | Weak | High | 9 | Identified |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Volume information accuracy | 3.2 | 15.2 and 15.37B(c) | Festive lights not submitted when connected resulting in an estimated minor under submission of 939 kWh for the month of December.<br><br>The database is not confirmed as accurate with a 95% level of confidence resulting in an estimated annual over submission of 827,200 kWh as recorded in section 3.1.<br><br>LED make and model details are not recorded in the database.<br><br>Lamp wattage is recorded outside of the database.<br><br>Four items of load do not have an ICP number recorded in the database resulting in an estimated under submission of 2,870 kWh.<br><br>16 items of load with no lamp type resulting in an estimated annual under submission of 4,169 kWh.<br><br>11 items of load have inaccurate wattages recorded resulting in an estimated annual under submission of 546 kWh.<br><br>46 items of load recorded with "Property Plus" in the ICP column not reconciled resulting in an estimated under submission of 11,472 kWh per annum.<br><br>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.<br><br>Livening dates are not recorded for new connections and change dates may not reflect the date the change is made. | Weak | High | 9 | Identified |
| Future Risk Rating | | | | | | 43 | |

| **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 |
|---|---|---|
| ICP Identifier | 2.2 | Liaise with HCC and "Property UrbanPlus" to create separate ICPs for these items of load. |
| Database accuracy | 3.1 | Review change management process |
| | | Undertake 100% field audit to correct historic discrepancies. |
| | | Liaise with HCC and Wellington Electricity to confirm correct owner of private lights |

## 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

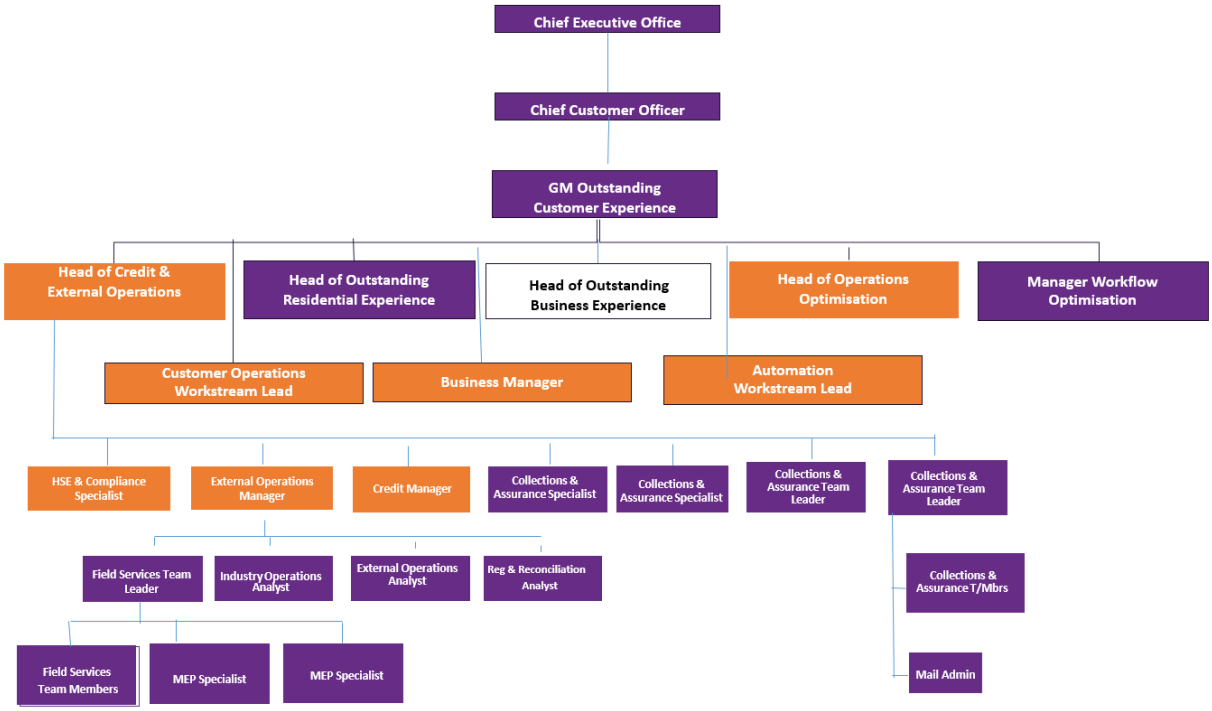
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

### Audit commentary

There are no exemptions relevant to the scope of this audit. Contact have ceased submitting this data half hourly when the ICPs transferred to the CTCS code from CTCT. The DST profile is now used to submit this data. Therefore, the previously reported exemption No. 177 is no longer relevant.

## 1.2. Structure of Organisation

Contact Energy provided a copy of their 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 |
|---|---|---|
| Damon Simmons | Traffic Asset Manager | Hutt City Council |
| Threesa Malki | Traffic Engineer | Hutt City Council |
| Nigel Parkin | Contracts Officer Contracts Division - City Infrastructure | Hutt City Council |
| Luke Cartmell-Gollan | Commercial Operations Manager | Contact Energy |

## 1.4. Hardware and Software

HCC's ARC GIS is used to record streetlight information. HCC are working to move the streetlight database source to be in RAMM. This is discussed further in the report.

Both databases are backed up as part of HCC's network back-ups, and access to both databases is secure by way of password protection.

Systems used by the trader and their agents 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 | Participant code | Profile | Number of items of load | Database wattage (watts) |
|---|---|---|---|---|---|---|
| 0001255305UNA9F | SL LH | MLG0111 | CTCS | DST | 2,653 | 238,098 |
| 0001256863UN50E | SHP17 HUTT ROAD | MLG0331 | CTCS | DST | 4,853 | 410,097 |
| 0001256864UN8C4 | SHP1 HUTT ROAD | GFD0331 | CTCS | DST | 4,949 | 459,292 |
| 0001256868UNBDA | MASTER STL ICP HCC HAY0111 | HAY0111 | CTCS | DST | 1,577 | 109,3439 |
| **Total** | | | | | **14,032** | **1,216,830** |

## 1.7. Authorisation Received

All information was provided directly by Contact or HCC.

## 1.8. Scope of Audit

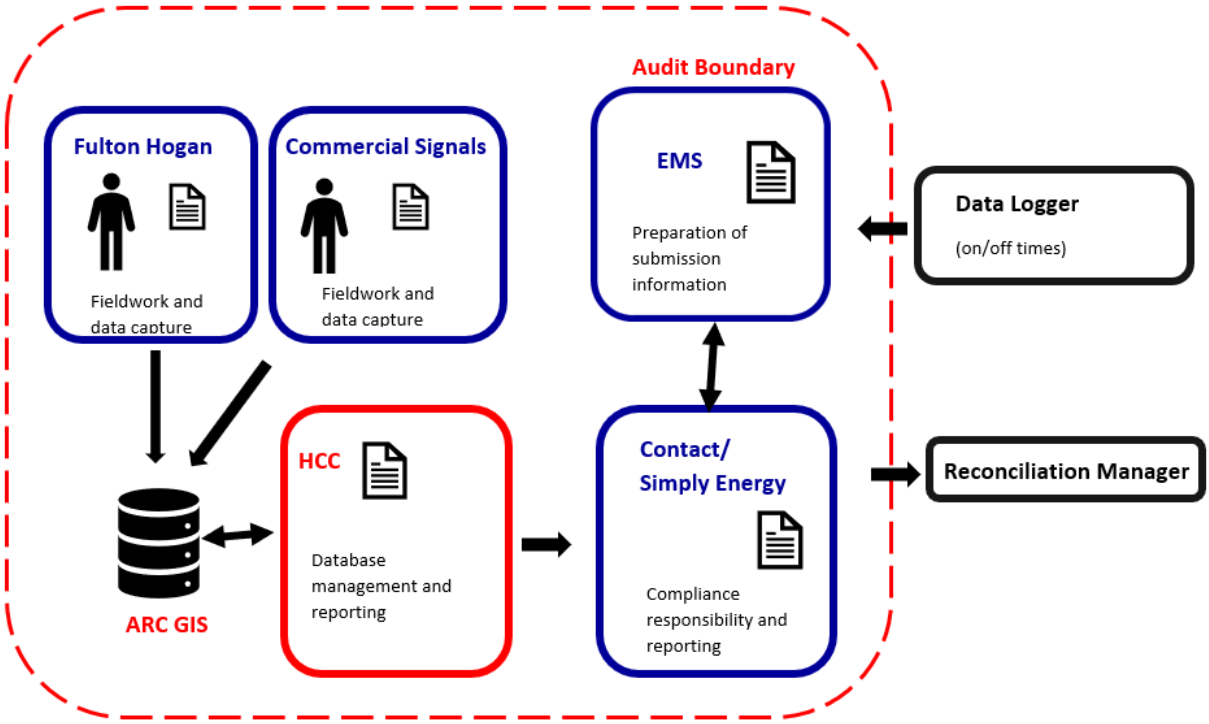
This audit of the HCC DUML database and processes was conducted at the request of Contact in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1.

Streetlight information is recorded in a GIS database managed by HCC. New connection, fault and maintenance work is largely completed by Fulton Hogan, who update the ARC GIS database based on paperwork returned from the field to the Fulton Hogan office. HCC also use Commercial Signals for the more complicated work. Updates to the database are provided in the same way for both contractors. HCC provide a monthly report to Contact from ARC GIS.

Contact have moved the reconciliation of this database to their CTCS participant code, so this is now reconciled using the DST profile and the submission information is prepared by EMS and then submitted by Simply Energy.

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 383 items of load on 19 February 2021.

## 1.9. Summary of previous audit

The previous audit of this database was undertaken by Rebecca Elliot of Veritek Limited in May 2020. The summary table below shows the statuses of the non-compliances raised in the previous audit. Further comment is made in the relevant sections of this report.

**Table of Non-compliance**

| Subject | Section | Clause | Non-compliance | Status |
|---|---|---|---|---|
| Deriving submission information | 2.1 | 11(1) of Schedule 15.3 | The database is not confirmed as accurate with a 95% level of confidence resulting in an estimated annual over submission of 420,100 kWh as recorded in **section 3.1**.<br>LED make and model details are not recorded in the database.<br>Lamp wattage is recorded outside of the database.<br>Ten items of load with no lamp type resulting in an estimated annual under submission of 4,429 kWh.<br>46 items of load have inaccurate wattages recorded resulting in an estimated annual under submission of 1,666 kWh.<br>Seven items of load do not have ICP numbers recorded in the database.<br>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.<br>Livening dates are not recorded for new connections and change dates may not reflect the date the change is made. | Still existing |
| ICP identifier and items of load | 2.2 | 11(2)(a) and (aa) of Schedule 15.3 | Seven unmetered items of load do not have an ICP number assigned. | Still existing |
| Description and capacity of load | 2.4 | 11(2)(c) and (d) of Schedule 15.3 | LED make and model details are not recorded in the database.<br>Lamp wattage is recorded outside of the database.<br>Ten items of load with no lamp description recorded. | Still existing |
| Database accuracy | 3.1 | 15.2 and 15.37B(b) | The database is not confirmed as accurate with a 95% level of confidence resulting in an estimated annual over submission of 420,100 kWh.<br>LED make and model details are not recorded in the database. | Still existing |

| Subject | Section | Clause | Non-compliance | Status |
|---|---|---|---|---|
| | | | Lamp wattage is recorded outside of the database.<br><br>Ten items of load with no lamp type resulting in an estimated annual under submission of 4,429 kWh.<br><br>46 items of load have inaccurate wattages recorded resulting in an estimated annual under submission of 1,666 kWh.<br><br>Seven items of load do not have ICP numbers recorded in the database.<br><br>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.<br><br>Livening dates are not recorded for new connections and change dates may not reflect the date the change is made. | |
| Volume information accuracy | 3.2 | 15.2 and 15.37B(c) | The database is not confirmed as accurate with a 95% level of confidence resulting in an estimated annual over submission of 420,100 kWh as recorded in **section 3.1**.<br><br>LED make and model details are not recorded in the database.<br><br>Lamp wattage is recorded outside of the database.<br><br>Ten items of load with no lamp type resulting in an estimated annual under submission of 4,429 kWh.<br><br>46 items of load have inaccurate wattages recorded resulting in an estimated annual under submission of 1,666 kWh.<br><br>Seven items of load do not have ICP numbers recorded in the database.<br><br>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.<br><br>Livening dates are not recorded for new connections and change dates may not reflect the date the change is made. | Still existing |

**Table of Recommendations**

| Subject | Section | Recommendation | Status |
|---|---|---|---|
| Database accuracy | 3.1 | Confirm and record correct wattages for Christmas lights. | Cleared |
| | | Liaise with HCC and Wellington Electricity to confirm correct owner of private lights | Still existing |
| | | Liaise with HCC and Property UrbanPlus to create separate ICPs for these items of load. | 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

Contact 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.

### Audit outcome

Compliant

## 1.11. Participants to give access (Clause 16A.4)

### Code reference

*Clause 16A.4*

### Code related audit information

*(1) A participant must give the Authority or an auditor full access to all information that may be required for the purposes of carrying out an audit.*

*(2) The participant must provide the information—*

*(a) at no charge; and*

*(b) no later than 15 business days after receiving a request for the information from the Authority or an auditor, as the case may be*

### Audit observation

Veritek requested information from Simply Energy for the purposes of assessing the streetlight database accuracy.

### Audit commentary

The information to assess the submission accuracy of the HCC database was initially requested on 11th January 2021. This was not provided until 7th April 2021. This is recorded as non-compliance

### Audit outcome

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 1.11<br>With: Clause 16A.4<br><br><br><br>From: 11-Jan-21<br>To: 07-Apr-21 | Submission information not provided within 15 business days of being requested.<br>Potential impact: Low<br>Actual impact: Low<br>Audit history: None<br>Controls: Weak<br>Breach risk rating: 3 |
| **Audit risk rating** | **Rationale for audit risk rating** |
| **Low** | The controls are rated as weak as the provision of information is slow and requires multiple requests.<br>The audit risk rating is low as the information was eventually provided. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| Submission information was provided | 7/4/2021 | Cleared |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| | | |

## 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**

Contact reconciles this DUML load using the DST profile. Simply Energy on behalf of Contact send the monthly kW values to EMS. EMS prepare the submission file using the data logger hours to determine the burn hours and the file is then sent to Contact who submit the data under the CTCS code. I reviewed the submission information for December 2020 and found a small difference that is likely to be Christmas lights being connected for the month of December but not submitted. This will have resulted in an estimated minor under submission of 939 kWh for the month of December. This would indicate that the festive light information previously provided to Contact with connection and disconnection dates is not being used by Simply Energy. This is recorded as non-compliance below.

Examination of the database found:

| Issue | Estimated volume information impact (annual kWh) |
|---|---|
| Four items of load do not have ICP numbers recorded in the database. | Under submission of 2,870 kWh |
| LED light descriptions do not contain lamp make and model so correct wattage cannot be verified. | Unknown impact |
| Lamp wattages are not held in the database as required by the code. | Unknown impact |
| 16 items of load with no lamp type. | Under submission of 4,169 kWh |
| 11 items of load have the incorrect wattages recorded. | Under submission of 546 kWh |
| 46 items of load recorded with "Property Plus" in the ICP column not reconciled. | Under submission of 11,472 kWh |

The above discrepancies are discussed in **sections 2.2, 2.4** and **3.1**.

The field audit found that the database accuracy was not confirmed as accurate with a 95% level of confidence resulting in an estimated annual over submission of 827,200 kWh. This was due to the large number incorrect wattages recorded. The field audit findings are detailed in **section 2.5** for reference.

As recorded in the last two audits, a monthly snapshot is not sufficient to calculate submission from, and the code requires that to calculate the correct monthly load the monthly wattage report 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 monthly report is provided as a snapshot and is non-compliant. Contact completes revision submissions where corrections are required and have not yet updated their processes to be consistent with the Authority's memo.

As recorded in the last two audits, the ARC database contains an "edited date", and "last serviced date" but there is not a field for "livening date" for newly connected lights. The "edited date" is automatically populated with the date the change occurred, and the "last serviced date" indicates when the work was completed. Where there is a delay in entering a change, the change date may be incorrect. HCC are working to move the data from ARC GIS to RAMM so that the RAMM database will be used for reconciliation.

**Audit outcome**

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 2.1<br>With: Clause 11(1) of Schedule 15.3<br><br>From: 01-Oct-20<br>To: 31-Dec-20 | Festive lights not submitted when connected resulting in an estimated minor under submission of 939 kWh for the month of December.<br><br>The database is not confirmed as accurate with a 95% level of confidence resulting in an estimated annual over submission of 827,200 kWh as recorded in **section 3.1**.<br><br>LED make and model details are not recorded in the database.<br><br>Lamp wattage is recorded outside of the database.<br><br>Four items of load do not have an ICP number recorded in the database resulting in an estimated under submission of 2,870 kWh.<br><br>16 items of load with no lamp type resulting in an estimated annual under submission of 4,169 kWh.<br><br>11 items of load have inaccurate wattages recorded resulting in an estimated annual under submission of 546 kWh.<br><br>46 items of load recorded with "Property Plus" in the ICP column not reconciled resulting in an estimated under submission of 11,472 kWh per annum.<br><br>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.<br><br>Livening dates are not recorded for new connections and change dates may not reflect the date the change is made.<br><br>Potential impact: High<br><br>Actual impact: High<br><br>Audit history: Twice<br><br>Controls: Weak<br><br>Breach risk rating: 9 |

<table>
<tr><th>Audit risk rating</th><th colspan="3">Rationale for audit risk rating</th></tr>
<tr><td>High</td><td colspan="3">The controls over the database are rated as weak as the data quality is poor and incomplete. This is reflected by the field audit results.<br><br>The audit risk rating is high based on kWh variances discussed in section 3.1.</td></tr>
<tr><th colspan="2">Actions taken to resolve the issue</th><th>Completion date</th><th>Remedial action status</th></tr>
<tr><td colspan="2">The Council has committed to undertake two major projects to address the majority of these non-compliances:<br><br>1. A 100% field audit;<br>2. Transitioning the streetlight records to a RAMM database with the results from the field audit (and any additional changes that occur during the field audit).<br><br>The RAMM database will ensure all information is captured in a single place and will have better controls and audit records. The Field Audit will ensure all required information about each light is captured and the database starts off with an accurate and complete dataset.<br><br>Festive Lights will be added as a new record each year within the database when connected and end dated when disconnected.<br><br>Contractors, Fulton Hogan, now have a 48 hour timeline with which to enter any changes in the field into the streetlight database.<br><br>Property UrbanPlus are being engaged to have the lights allocated to their own ICP(s).</td><td>1/11/2021</td><td rowspan="3">Identified</td></tr>
<tr><th colspan="2">Preventative actions taken to ensure no further issues will occur</th><th>Completion date</th></tr>
<tr><td colspan="2"></td><td></td></tr>
</table>

## 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

Four items of load do not have an ICP number recorded against them in the database. All of these are recorded as owned by NZTA Montrose. These are assumed to be 150W HPS lights based on them being NZTA lights. This will be resulting in an estimated under submission of 2,870 kWh per annum.

There are 46 items of load recorded with "Properties UrbanPlus" lights that belong to an associated Council organisation. Previously these were being included in the submissions but a check of the submission for December 2020 found these are not being reconciled. This is likely to have changed when ICPs transferred to CTCS. This will be resulting in an estimated under submission of 11,472 kWh per annum. This is recorded as non-compliance below. I recommend that a separate database and ICPs be created to reconcile these if the council are not going to be billed for them.

| Description | Recommendation | Audited party comment | Remedial action |
|---|---|---|---|
| ICP Identifier | Liaise with HCC and Property UrbanPlus to create separate ICPs for these items of load. | Property UrbanPlus are being engaged to have the lights allocated to their own ICP(s). | Investigating |

### Audit outcome

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 2.2<br>With: Clause 11(2)(a) and (aa) of Schedule 15.3<br><br>From: 01-Oct-20<br>To: 31-Dec-20 | Four unmetered items of load do not have an ICP number assigned resulting in an estimated under submission of 2,870 kWh per annum.<br>46 items of load recorded with "Property Plus" in the ICP column not reconciled resulting in an estimated under submission of 11,472 kWh per annum.<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 over the database are rated as moderate. Once the data is moved to RAMM I would expect the controls to move to strong.<br>The impact is assessed to be medium due to the volume of the unsubmitted kWh detailed above. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| The four unmetered lights listed against NZTA will be moved off Hutt City Councils database and onto a respective NZTA ICP's database.<br>Property UrbanPlus are being engaged to have the lights allocated to their own ICP(s). | 30/6/2021 | Investigating |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| | | |

## 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

Global Positioning System (GPS) coordinates and location IDs are recorded for all items of load and users in the office and field can view these locations on a mapping system.

The database contains the nearest property address for most items of load, but 710 items have no street address information recorded. This a good reduction from the 1,369 items of load recorded in the last audit.

### 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 light type and wattage capacity,
- wattage capacities include any ballast or gear wattage, and
- each item of load has a light type, light wattage, and gear wattage recorded.

### Audit commentary

The database contains lamp type. This is sufficient for the older light types but there is no make and model recorded for the LED lights, so it is not possible to determine if the correct wattage is being applied. As was found in the last audit, there were a high number of wattage discrepancies found in the field audit. Whilst this may only be 1-2 watts per light, the cumulative discrepancy is likely to be large. The overall database accuracy is discussed in **section 3.1**. This is recorded as non-compliance.

The lamp wattage and ballast table are held outside of the database and the wattages are appended to the monthly report via a lookup table. The code requires this to be part of the database. This is recorded as non-compliance. HCC are working to move the streetlight data to their RAMM database for reconciliation using the information from the ARC GIS database.

There are 16 items of load with no lamp type recorded. The accuracy of the recorded wattages is discussed in **section 3.1**.

### Audit outcome

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 2.4<br>With: Clause 11(2)(c) and (d) of Schedule 15.3<br><br>From: 01-Jan-20<br>To: 31-Dec-20 | LED make and model details are not recorded in the database.<br>Lamp wattage is recorded outside of the database.<br>16 items of load with no lamp description recorded.<br>Potential impact: Unknown<br>Actual impact: Medium<br>Audit history: Three times previously<br>Controls: Weak<br>Breach risk rating: 6 |
| **Audit risk rating** | **Rationale for audit risk rating** |
| **Medium** | The controls are rated as weak as the database does not record the wattage, and there are no LED lamp makes and models recorded.<br>The impact is assessed to be medium as the database does not have LED make and model recorded and the field audit indicates that the data is not accurate. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| The Council has committed to undertake two major projects to address the majority of these non-compliances:<br>1. A 100% field audit;<br>2. Transitioning the streetlight records to a RAMM database with the results from the field audit (and any additional changes that occur during the field audit).<br>The RAMM database will ensure all information is captured in a single place and will have better controls and audit records. The Field Audit will ensure all required information about each light is captured and the database starts off with an accurate and complete dataset. | 1/11/2021 | Investigating |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| | | |

## 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 383 items of load on 19 February 2021.

### Audit commentary

The field audit discrepancies are detailed in the table below:

| Street | Field count | Database count | Light count difference | Wattage recorded incorrectly | Comments |
|---|---|---|---|---|---|
| Annabell Grove | 1 | 1 | | 1 | 1x LED 22W was recorded in the database as LED 27W. |
| Biddle Crescent | 12 | 12 | | 5 | 4x 23W LED were recorded in the database as 50W HPS, and one LED 27W was recorded in the database as LED 22W. |
| Cherry Blossom Grove | 3 | 3 | | 2 | 2x 23W LED were recorded in the database as 50W HPS. |
| Chilton Grove | 5 | 5 | | 3 | 1x LED 27W was recorded as 22W LED in the database.<br>1x LED 22W was recorded as 27W LED in the database.<br>1x LED 23W was recorded as 50W HPS in the database. |
| Copeland Street | 31 | 31 | | 25 | 20x LED 23Ws were recorded in the database as 50W HPS.<br>3x LED 27Ws were recorded in the database as LED 27W.<br>1x LED 16W was recorded in the database as 50W HPS.<br>1x LED 22W was recorded in the database as 100W SON. |
| Corrondella Grove | 10 | 10 | | 2 | 2x 23W LED were recorded in the database as 50W HPS. |
| Ferretti Grove | 3 | 3 | | 2 | 2x 23W LED were recorded in the database as 50W HPS. |
| Glenbrook Grove | 2 | 2 | | 2 | 1x LED 27W was recorded as 23W LED in the database.<br>1x LED 23W was recorded as 22W LED in the database. |
| Guthrie Street | 25 | 25 | | 19 | 17x LED 23Ws were recorded in the database as 50W HPS.<br>1x LED 27W was recorded in the database as LED 22W. |

| Street | Field count | Database count | Light count difference | Wattage recorded incorrectly | Comments |
|---|---|---|---|---|---|
| Heretaunga Street | 21 | 21 | | 7 | 3x LED 23Ws were recorded in the database as 50W HPS.<br>2x LED 22Ws were recorded in the database as 50W HPS.<br>1x 50W HPS was recorded in the database as LED 22W.<br>1x 23W LED was recorded in the database as 22W LED |
| Horoeka Street | 29 | 29 | | 25 | 25x LED 23Ws were recorded in the database as 50W HPS. |
| Kapuranga Grove | 3 | 3 | | 1 | 1x LED 27W was recorded in the database as LED 22W. |
| Manor Drive | 11 | 11 | | 10 | 10x LED 23Ws were recorded in the database as 50W HPS. |
| Moores Valley Road | 26 | 4 | | 4 | 1x LED 87.5W was recorded in the database as LED 82.5W.<br>1x LED 87.5W was recorded in the database as 150W SON.<br>1x LED 93W was recorded in the database as LED 88W.<br>1x 50W HPS was recorded in the database as LED 23W. |
| Pinny Avenue | 1 | 1 | | 2 | 2x LED 27W were recorded in the database as LED 22W. |
| Queen Street | 29 | 30 | +1 | 12 | 1x extra 23W LED found in the field<br>8x LED 226W were recorded in the database as LED 225W.<br>2x 50W HPS were recorded in the database as 50W MBF.<br>1x LED 129W recorded in the database as LED 127W.<br>Pedestrian crossing lights total value 162.5W recorded in the database as 108W. |
| Rangiuru Road | 3 | 3 | | 1 | 1x LED 27W was recorded in the database as LED 22W. |
| Rintoul Grove | 7 | 7 | | 1 | 1x LED 23W was recorded in the database as 50W SON |

| Street | Field count | Database count | Light count difference | Wattage recorded incorrectly | Comments |
|---|---|---|---|---|---|
| Saulbrey Grove | 3 | 3 | | 3 | 1x LED 27W was recorded in the database as LED 23W.<br>2x LED 22Ws were recorded in the database as 50W HPS. |
| Taine Street | 19 | 18 | -1 | 10 | 1x LED 22W not found in the field.<br>7x LED 149W were recorded as LED 156W in the database.<br>1x LED 23W was recorded in the database as LED 27W.<br>1x LED 22W was recorded in the database as 70W HPS. . |
| Waikare Avenue | 14 | 14 | | 7 | 4x LED 22Ws were recorded in the database as 50W HPS.<br>1x LED 27W was recorded in the database as 50W HPS.<br>1x LED 27W was recorded in the database as LED 22W.<br>1x LED 27W was recorded in the database as 50W HPS. |
| Willoughby Street | 6 | 6 | | 5 | 2x LED 22Ws were recorded in the database as 50W HPS.<br>2x LED 23W were recorded in the database as LED 22W.<br>1x LED 23W was recorded in the database as 50W HPS. |
| Wilson Grove | 5 | 5 | | 1 | 1x 50W HPS was recorded as LED 27W in the database |
| Wood Street | 35 | 35 | | 4 | 1x LED 22W was recorded in the database as 50W SON.<br>1x LED 27W was recorded in the database as LED 23W.<br>1x LED 22W was recorded in the database as LED 23W.<br>1x LED 23W was recorded in the database as LED 223W. |
| **Grand Total** | **383** | **383** | **2 (+1-1)** | **154** | |

This clause relates to lights in the field that are not recorded in the database. The audit found one additional light in the field. Database accuracy is discussed in **section 3.1**.

### Audit outcome

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 2.5<br>With: Clause 11(2)(c) and (d) of Schedule 15.3<br><br>From: 01-Jan-20<br>To: 31-Dec-20 | One additional light found in the field.<br><br>Potential impact: Low<br>Actual impact: Low<br>Audit history: None<br>Controls: Weak<br>Breach risk rating: 3 |
| **Audit risk rating** | **Rationale for audit risk rating** |
| **Low** | The controls are rated as weak as process to track changes is not capturing all changes made in the field.<br>The impact is assessed to be low as there was only one additional lamp found of the sample checked. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| The 100% Field Audit will ensure all lights are captured and recorded | 1/11/2021 | Identified |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| | | |

## 2.6. Tracking of load changes (Clause 11(3) of Schedule 15.3)

### Code reference

*Clause 11(3) of Schedule 15.3*

### Code related audit information

*The DUML database must track additions and removals in a manner that allows the total load (in kW) to be retrospectively derived for any given day.*

### Audit observation

The process for tracking of changes in the database was examined.

### Audit commentary

The database functionality achieves compliance with the code.

The change management process and the compliance of the database reporting provided to Contact is detailed in **sections 3.1** and **3.2**.

**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 database has a complete audit trail, which was viewed during the audit.

**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**

Contact's submissions are based on a monthly extract from the database. A database extract was provided in December 2020 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 | Hutt City Council Street Lights |
| Strata | The database contains the HCC items of load for DUML ICPs in the Hutt region.<br>The processes for the management of all HCC items of load are the same, but I decided to place the items of load into five similar sized strata based on road name:<br>1. A-Go<br>2. Gr-Kn<br>3. Ku-N<br>4. O-S<br>5. T-W. |
| Area units | I created a pivot table of the roads and I used a random number generator in a spreadsheet to select a total of 39 sub-units. |
| Total items of load | 383 items of load were checked, making up approximately 2% of the database. |

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 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 | 84.1 | Wattage from survey is lower than the database wattage by 15.3% |
| $R_L$ | 74.0 | With a 95% level of confidence, it can be concluded that the error could be between -8.8% and -26% |
| $R_H$ | 91.2 | |

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 B (detailed below) is the best fit.

The conclusion from Scenario B is that the variability of the sample results across the strata means that the true wattage (installed in the field) could be between 8.8% and 26% lower 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 194 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is between 107 kW to 316 kW lower than the database.

In absolute terms, total annual consumption is estimated to be 827,200 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 456,800 to 1,348,000 kWh p.a. lower 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 |

| Scenario | Description |
|---|---|
| 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 % |

**Light description and capacity accuracy**

The database contains lamp type only which is sufficient for the older light types but not for the LED lights. This is recorded as non-compliance in **section 2.4**.

The light wattages are appended to the monthly report using a look up table based on the light description recorded. This is recorded as non-compliance in **section 2.4**.

There are 16 items of load with no lamp type recorded. Assuming a most common lamp wattage of 50W HPS in the database this is estimated to result in an annual under submission of 4,169 kWh.

Wattages for those items of load with sufficient lamp description were checked against the published standardised wattage tables produced by the Electricity Authority. The following discrepancies were identified:

| Lamp Type | Count | Total wattage | Correct total wattage | Total wattage difference | Annual kWh difference (based on 4,271 hours) |
|---|---|---|---|---|---|
| 58W FLUORO | 2 | 62 | 72 | +20 | +85 |
| 36W FLUORO | 9 | 38 | 46 | +108 | +461 |
| Total | 11 | | | +128 | +546 |

As recorded in the last audit, there are some signs are recorded in the database. These have two batteries drawing 50W which are charged when the streetlight circuit is connected, and these batteries power the signs when the streetlight circuit is switched off. The wattages for these signs are correctly recorded.

**ICP number accuracy**

As recorded in **section 2.2**, four items of load do not have ICP numbers recorded in the database. There are 46 items of load recorded with "Properties UrbanPlus" lights that belong to an associated Council organisation. Previously these were being included in the submissions but a check of the submission for December 2020 found these are not being reconciled. This is likely to have changed when ICPs transferred to CTCS. This will be resulting in an estimated under submission of 11,472 kWh per annum. This is recorded as non-compliance below. I recommend in **section 2.2**, that a separate database and ICPs be created to reconcile these if the council are not going to be billed for them.

**Change management process findings**

Streetlight information is recorded in the ARC GIS database managed by HCC. New connection, fault and maintenance work is largely completed by Fulton Hogan, who are expected to update the ARC GIS database based on paperwork returned from the field to the Fulton Hogan office. HCC also use Commercial Signals for the more complicated work. Updates to the database are provided in the same way for both contractors. HCC provide a monthly report to Contact from ARC GIS. The accuracy of the field audit indicates this process is not working as expected with a high number of wattage discrepancies found. I recommend that this process is reviewed, and a 100% field audit be undertaken to bring the database accuracy to be within the required threshold.

| Description | Recommendation | Audited party comment | Remedial action |
|---|---|---|---|
| Database accuracy | Review change management process | Contractors, Fulton Hogan, now have a 48 hour timeline with which to enter any changes in the field into the streetlight database.<br>Hutt City are also commissioning a transition to a RAMM database that will be live and populated with the results from the field audit when that is completed. This will tighten the controls and audit log on the data being entered and edited. | Identified |
| | Undertake 100% field audit to correct historic discrepancies. | A 100% field audit has been commissioned and will be completed by 1/11/2021 | Identified |

The LED upgrade project is still in progress. This is taking longer than expected due to the shipping delays caused by the COVID-19 pandemic. A CMS was planned but this hasn't been progressed due to funding restrictions.

The new connection process was reviewed and there have been no changes made to it during the audit period:

1. a plan is prepared by the developer and approved by HCC,
2. the installation is completed,
3. Commercial Signals confirms accuracy of installation,
4. HCC notifies Contact that livening is required using the as-built information that has been checked in the field,
5. the database is updated, and
6. Contact requests livening from Wellington Electricity.

This can result in some lights being included in the monthly report before they are livened. I did not come across any instances of this. It was noted that the notifications to HCC can be slow to be provided.

The current monthly report is provided as a snapshot and is non-compliant. The database contains an "edited date", and "last serviced date" but there is not a field for "livening date" for newly connected lights. The "edited date" is automatically populated with the date the change occurred, and the "last serviced date" indicates when the work was completed. Where there is a delay in entering a change, the change date may be incorrect. HCC are working to move the data from ARC GIS to RAMM so that the RAMM database is used for reconciliation and field work will be captured using RAMM contractor.

Outage patrols occur weekly in the CBD, and the faults process is relied upon to identify issues with other lights.

**Festive lights**

Festive lights are recorded in the database and reported separately with on and off dates when they are connected.

The issue of the lamp wattage recorded for the 149 Christmas lights has been resolved and I confirmed that the true lamp wattage of 3W for each light is now correctly recorded.

**Private lights**

There are 36 private lights recorded in the database, and each has a council DUML ICP number assigned.

As reported in the last audit, HCC does not bill consumers for these lights and does not expect to be billed for them, but I confirmed these are being included in the monthly wattage report to Contact and are being reconciled. They are only included in the database for completeness, and so that HCC is aware that they are private in the event that a fault is recorded. If the council does not want to pay for these then I recommend that the correct owner and associated ICP needs to be confirmed. I recommend that HCC liaise with Wellington Electricity to determine who is the light owner and correct as appropriate.

| Description | Recommendation | Audited party comment | Remedial action |
|---|---|---|---|
| Database accuracy | Liaise with HCC and Wellington Electricity to confirm correct owner of private lights | The 100% field audit will provide additional information to the Council to determine next steps. | Identified |

**Audit outcome**

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 3.1<br>With: Clause 15.2 and 15.37B(b)<br><br>From: 01-Jan-20<br>To: 31-Dec-20 | The database is not confirmed as accurate with a 95% level of confidence resulting in an estimated annual over submission of 827,200 kWh.<br>LED make and model details are not recorded in the database.<br>Lamp wattage is recorded outside of the database.<br>Four items of load do not have an ICP number recorded in the database resulting in an estimated under submission of 2,870 kWh.<br>46 items of load recorded with "Property Plus" in the ICP column not reconciled resulting in an estimated under submission of 11,472 kWh per annum.<br>16 items of load with no lamp type resulting in an estimated annual under submission of 4,169 kWh.<br>11 items of load have inaccurate wattages recorded resulting in an estimated annual under submission of 546 kWh.<br>Livening dates are not recorded for new connections and change dates may not reflect the date the change is made.<br>Potential impact: High<br>Actual impact: High<br>Audit history: Three times previously<br>Controls: Weak<br>Breach risk rating: 9 |
| **Audit risk rating** | **Rationale for audit risk rating** |
| **High** | The controls over the database are rated as weak as the data quality is poor and incomplete. This is reflected by the field audit results.<br>The audit risk rating is high based on kWh variances. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| The Council has committed to undertake two major projects to address the majority of these non-compliances:<br>1. A 100% field audit;<br>2. Transitioning the streetlight records to a RAMM database with the results from the field audit (and any additional changes that occur during the field audit).<br>The RAMM database will ensure all information is captured in a single place and will have better controls and audit records include dates for both the effective change and the date of the record changing.<br>The Field Audit will ensure all required information about each light is captured and the database starts off with an accurate and complete dataset.<br>Contractors, Fulton Hogan, now have a 48 hour timeline with which to enter any changes in the field into the streetlight database.<br>Property UrbanPlus are being engaged to have the lights allocated to their own ICP(s). | 1/11/2021<br><br>30/6/2021 | Identified |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| | | |

## 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 on hours against the submitted figure to confirm accuracy.

### Audit commentary

Contact reconciles this DUML load using the DST profile. Simply Energy on behalf of Contact send the monthly kW values to EMS. EMS prepare the submission file using the data logger hours to determine the burn hours and the file is then sent to Contact who submit the data under the CTCS code. I reviewed the submission information for December 2020 and found a small difference that is likely to be

Christmas lights being connected for the month of December but not submitted. This will have resulted in an estimated minor under submission of 939 kWh for the month of December. This would indicate that the festive light information previously provided to Contact with connection and disconnection dates is not being used by Simply Energy. This is recorded as non-compliance below.

Examination of the database found:

| Issue | Estimated volume information impact (annual kWh) |
|---|---|
| Four items of load do not have ICP numbers recorded in the database. | Under submission of 2,870 kWh |
| LED light descriptions do not contain lamp make and model so correct wattage cannot be verified | Unknown impact |
| Lamp wattages are not held in the database as required by the code. | Unknown impact |
| 16 items of load with no lamp type | Under submission of 4,169 kWh |
| 11 items of load have the incorrect wattages recorded. | Under submission of 546 kWh per annum |
| 46 items of load recorded with "Property Plus" in the ICP column not reconciled | Under submission of 11,472 kWh |

The above discrepancies are discussed in **sections 2.2, 2.4** and **3.1**.

The field audit found that the database accuracy was not confirmed as accurate with a 95% level of confidence resulting in an estimated annual over submission of 827,200 kWh. This was due to the large number incorrect wattages recorded. The field audit findings are detailed in **section 2.5** for reference.

As recorded in the last two audits, a monthly snapshot is not sufficient to calculate submission from, and the code requires that to calculate the correct monthly load the monthly wattage report 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 monthly report is provided as a snapshot and is non-compliant. Contact completes revision submissions where corrections are required and have not yet updated their processes to be consistent with the Authority's memo.

As recorded in the last two audits, the ARC database contains an "edited date", and "last serviced date" but there is not a field for "livening date" for newly connected lights. The "edited date" is automatically populated with the date the change occurred, and the "last serviced date" indicates when the work was completed. Where there is a delay in entering a change, the change date may be incorrect. HCC are working to move the data from ARC GIS to RAMM so that the RAMM database will be used for reconciliation.

**Audit outcome**

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 3.2<br>With: Clause 15.2 and 15.37B(c)<br><br>From: 01-Oct-20<br>To: 31-Dec-20 | Festive lights not submitted when connected resulting in an estimated minor under submission of 939 kWh for the month of December.<br>The database is not confirmed as accurate with a 95% level of confidence resulting in an estimated annual over submission of 827,200 kWh as recorded in **section 3.1**.<br>LED make and model details are not recorded in the database.<br>Lamp wattage is recorded outside of the database.<br>Four items of load do not have an ICP number recorded in the database resulting in an estimated under submission of 2,870 kWh.<br>16 items of load with no lamp type resulting in an estimated annual under submission of 4,169 kWh.<br>11 items of load have inaccurate wattages recorded resulting in an estimated annual under submission of 546 kWh.<br>46 items of load recorded with "Property Plus" in the ICP column not reconciled resulting in an estimated under submission of 11,472 kWh per annum.<br>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.<br>Livening dates are not recorded for new connections and change dates may not reflect the date the change is made.<br>Potential impact: High<br>Actual impact: Unknown<br>Audit history: Twice<br>Controls: Weak<br>Breach risk rating: 9 |
| **Audit risk rating** | **Rationale for audit risk rating** |
| **High** | The controls over the database are rated as weak as the data quality is poor and incomplete. This is reflected by the field audit results.<br>The audit risk rating is high based on kWh variances discussed in **section 3.1**. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| The Council has committed to undertake two major projects to address the majority of these non-compliances:<br>1. A 100% field audit;<br>2. Transitioning the streetlight records to a RAMM database with the results from the field audit (and any additional changes that occur during the field audit).<br><br>The RAMM database will ensure all information is captured in a single place and will have better controls and audit records. The Field Audit will ensure all required information about each light is captured and the database starts off with an accurate and complete dataset.<br><br>Festive Lights will be added as a new record each year within the database when connected and end dated when disconnected.<br><br>Contractors, Fulton Hogan, now have a 48 hour timeline with which to enter any changes in the field into the streetlight database.<br><br>Property UrbanPlus are being engaged to have the lights allocated to their own ICP(s). | 1/11/2021<br><br>30/6/2021 | Identified |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| | | |

## CONCLUSION

The submission of this volumes for this database switched to Contact's CTCS participant code from 1 October 2020. Simply Energy submits these volumes on behalf of Contact Energy. They in turn use EMS to create the submission file and submit this using the DST profile. I have assessed this process as part of this audit. I found a minor variance due to the Christmas lights not being submitted for the month of December.

Streetlight information is recorded in an ARC GIS database managed by HCC. New connection, fault and maintenance work is largely completed by Fulton Hogan, who update the ARC GIS database based on paperwork returned from the field to the Fulton Hogan office. HCC also use Commercial Signals for the more complicated work, and to confirm new streetlight connections match to the as-builts. Updates to the database are provided in the same way for both contractors. HCC provide a monthly report to Contact from ARC GIS. The accuracy of the field audit indicates this process is not working as expected with a high number of wattage discrepancies found. I recommend that this process is reviewed and that a 100% field audit be undertaken to bring the database accuracy to be within the required threshold.

There is a separate RAMM database which HCC are planning to get up to date and use this rather than the ARC GIS to provide submission information.

Database accuracy is described as follows:

| Result | Percentage | Comments |
|---|---|---|
| The point estimate of R | 84.1 | Wattage from survey is lower than the database wattage by 15.3% |
| $R_L$ | 74.0 | With a 95% level of confidence, it can be concluded that the error could be between -8.8% and -26% |
| $R_H$ | 91.2 | |

The variability of the sample results across the strata means that the true wattage (installed in the field) could be between 8.8% and 26% lower 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 194 kW lower than the database indicates.
- There is a 95% level of confidence that the installed capacity is between 107 kW to 316 kW lower than the database.
- In absolute terms, total annual consumption is estimated to be 827,200 kWh lower than the DUML database indicates.
- There is a 95% level of confidence that the annual consumption is between 456,800 to 1,348,000 kWh p.a. lower than the database indicates.

The current monthly report is provided as a snapshot and is non-compliant, and Contact completes revision submissions where corrections are required. Contact has not yet updated their processes to be consistent with the Authority's memo.

The future risk rating of 43 indicates that the next audit be completed in three months. The accuracy of the database has declined further during the audit period and the impact to the market is indicated as high. The council is switching traders in July 2021. Taking this into consideration I recommend that the next audit be in no more than six months' time. This should allow sufficient time for the recommended actions to be in progress and check the database accuracy.

## PARTICIPANT RESPONSE

Additional Notes to above responses:

- The field audit has been commissioned to start early May 2021. This will be undertaken by Fulton Hogan who have employed an independent contractor specifically for the work.
- The Hutt City Council streetlight team has recently been provided budget for a RAMM analyst who will be employed in the near future to manage the transition to our new RAMM database.