

ELECTRICITY INDUSTRY PARTICIPATION CODE  
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

WAKA KOTAHI BOP WEST (WESTLINK)  
AND MANAWA LIMITED  
NZBN: 9429042181958

Prepared by: Rebecca Elliot

Date audit commenced: 7 February 2023

Date audit report completed: 31 March 2023

Audit report due date: 09-Apr-23

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## EXECUTIVE SUMMARY

This audit of the Waka Kotahi lights in the BOP West area (**Waka Kotahi BOP West**) DUML database and processes was conducted at the request of Manawa Limited (**Manawa**), 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 maintained by Westlink on behalf of Waka Kotahi and is remotely hosted by RAMM Software Ltd. The asset data capture and database population are conducted by Westlink. The maintenance field work is carried out by Horizon.

New project work is managed by Waka Kotahi. All new unmetered assets are expected to be loaded to the Waka Kotahi RAMM database. The first stage of this is for the W2O project which is upgrading the intersections and flag lights between Athenree and Omokoroa, north of Tauranga. A large number of new streetlights are being installed for the new roundabouts. I have confirmed these are metered supplies so are not part of this or any other DUML audit. The loading of the new unmetered assets is expected to be against new ICP 1000611677PC678 which is traded by Meridian Energy. This has been made active from 3/02/2023 but the new flag light assets have been livened prior to this (the earliest being 07/03/22) so either the new ICP will need to be backdated to be active from 7/03/22 or the assets are left in the Westlink database (noting that the wattages need to be corrected in some instances) and then removed from the from 2/02/23. I have recommended that Manawa work with Meridian, Waka Kotahi and Westlink to get this corrected and ensure that new assets are reconciled from the livened date and are not recorded in both databases.

In time it is expected that all Waka Kotahi assets will be managed in the Waka Kotahi RAMM database and so the existing ICPs will need to be decommissioned. This is part of a larger Waka Kotahi project to move the management of all Waka Kotahi unmetered assets into their RAMM database across New Zealand.

A number of other issues were identified in this audit:

- The monthly wattage report is being manipulated outside of RAMM to calculate the correct wattage values. The code requires that the database is up to date. These errors have been passed to Westlink to correct.
- 42 lights are recorded as “inactive” in the monthly wattage report but are likely to be active in the field. This will be resulting in a potential estimated under submission of 28,248 kWh per annum. Westlink are reviewing the monthly wattage report to correct this.
- The field audit found that the database is not within the allowable accuracy threshold of +/-5% resulting in an estimated over submission of 3,500 kWh p.a.

The audit found four non-compliances and makes one recommendation. The future risk rating of 20 indicates that the next audit be completed in three months. I have considered this and Manawa’s comments and recommend that the next audit be in nine months to allow sufficient time for the issues identified to be resolved.

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	<p>The database is not confirmed as accurate with a 95% level of confidence. There is a 95% level of confidence that the annual consumption is estimated to be 3,500 kWh p.a. lower than the database indicates.</p> <p>42 lights likely to be incorrectly flagged as "inactive" resulting in an estimated under submission of 28,248 kWh p.a.</p> <p>Database snapshot used to calculate submission.</p>	Weak	Medium	6	Investigating
Description and capacity of load	2.4	11(2)(c) & (d) of Schedule 15.3	65 items of load with no gear wattage recorded.	Moderate	Low	2	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	<p>The database is not confirmed as accurate with a 95% level of confidence. There is a 95% level of confidence that the annual consumption is estimated to be 3,500 kWh p.a. lower than the database indicates.</p> <p>65 items of load with no gear wattage recorded.</p> <p>18 items of load with the incorrect gear wattage applied.</p>	Weak	Medium	6	Investigating

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)	<p>The database is not confirmed as accurate with a 95% level of confidence. There is a 95% level of confidence that the annual consumption is estimated to be 3,500 kWh p.a. lower than the database indicates.</p> <p>42 lights likely to be incorrectly flagged as "inactive" resulting in an estimated under submission of 28,248 kWh p.a.</p> <p>Database snapshot used to calculate submission.</p>	Weak	Medium	6	Investigating
<b>Future Risk Rating</b>						<b>20</b>	

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

## RECOMMENDATIONS

Subject	Section	Recommendation
Deriving submission information	2.1	Manawa work with Meridian, Waka Kotahi and Westlink to ensure that all assets are recorded in a streetlight database from the date 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

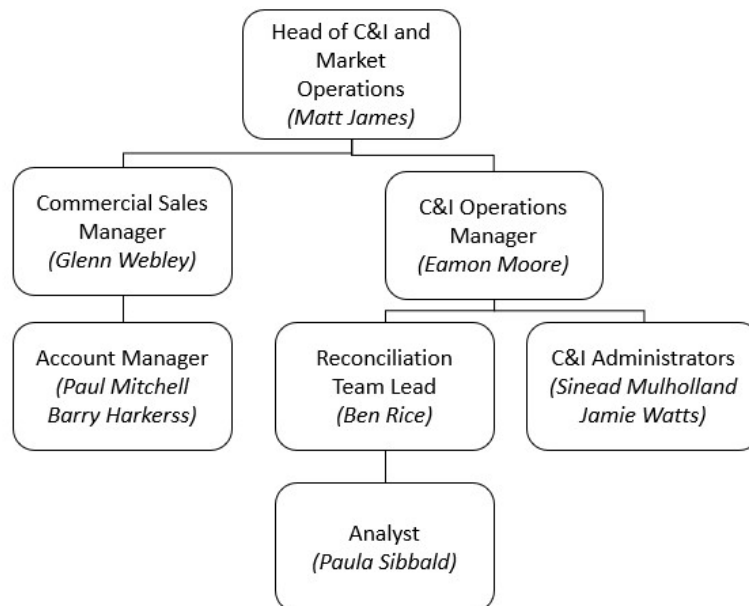
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

#### Audit commentary

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

### 1.2. Structure of Organisation

Manawa 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
Phillip Barnes	Network and Maintenance Manager	Westlink BOP
Jill Brightwell	Asset Information Manager	Westlink BOP
Jamie Watts	C&I Operations Specialist	Manawa Limited
Lisa Edge	Business Analyst	Manawa Limited
Sinead Mulholland	C&I Operations Specialist	Manawa Limited

### 1.4. Hardware and Software

The SQL database used for the management of DUML is remotely hosted by RAMM Software Ltd. The database is commonly known as “RAMM” which stands for “Roading Asset and Maintenance Management”.

Westlink confirmed that the database back-up is in accordance with standard industry procedures. Access to the database is secure by way of password protection.

Systems used by the trader 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	Profile	Number of items of load	Database wattage (watts)
1000525040PC154	Western Bay NZTA - TGA0111	STL	14	2,826
1000525041PCD11	Western Bay NZTA - TGA0331	STL	208	36,140
1000525042PC1D1	Western Bay NZTA - TMI0331	STL	40	8,418
TOTAL			<b>264</b>	<b>47,654</b>

### 1.7. Authorisation Received

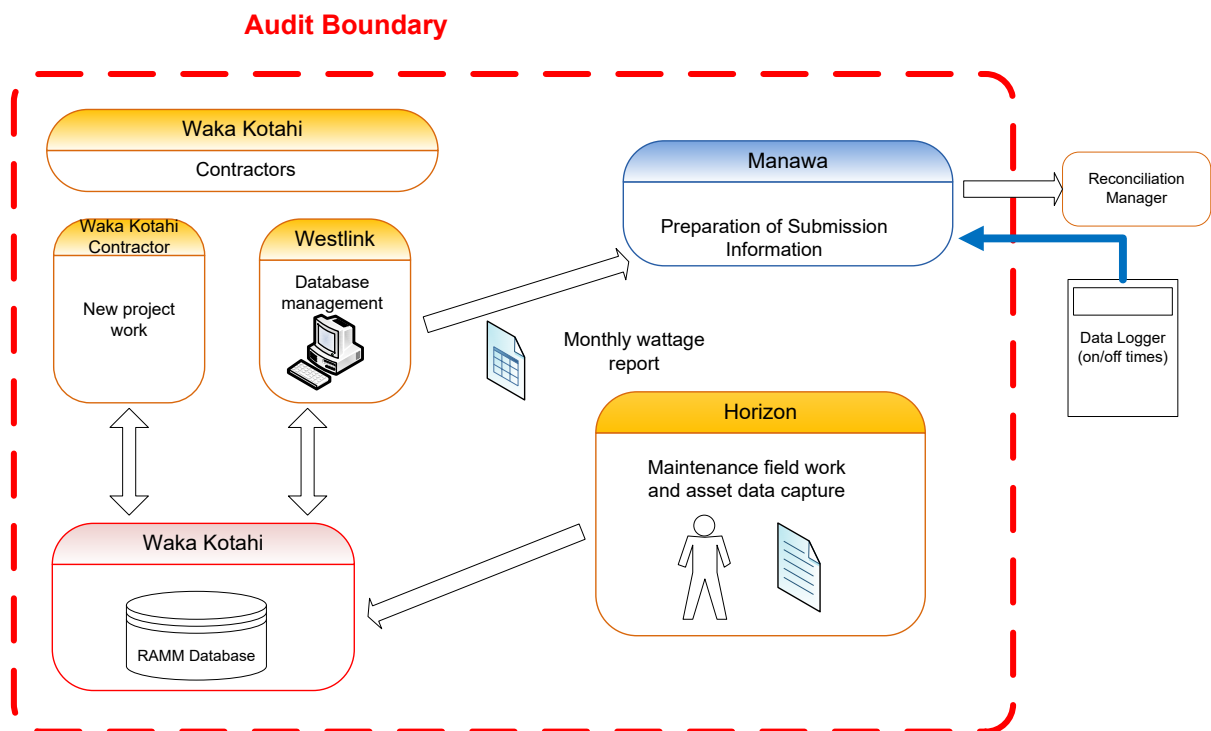
All information was provided directly by Manawa, Westlink and WSP limited.

### 1.8. Scope of Audit

This audit of the Waka Kotahi lights in the BOP West area (**Waka Kotahi BOP West**) DUML database and processes was conducted at the request of Manawa Limited (**Manawa**), in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

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

The database is remotely hosted by thinkproject NZ Ltd. The maintenance field work is carried out by Horizon and the database management for this is conducted by Westlink. New project work is managed by Waka Kotahi capital projects team. The assigned contractor is expected to load new asset information directly to RAMM. A copy of this is passed to Westlink for reference. 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 119 items of load on 14<sup>th</sup> March 2023.



## 1.9. Summary of previous audit

The previous audit was conducted in February 2021 by Steve Woods of Veritek Limited. The status of the findings from that audit are detailed in the tables below.

### Table of Non-compliance

Subject	Section	Clause	Non-Compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	The database data was 0.77% higher than the field data for Veritek's 100% field audit. This will result in over submission of 1,332 kWh per annum.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	The database data was 0.77% higher than the field data for Veritek's 100% field audit. This will result in over submission of 1,332 kWh per annum.	Still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database data was 0.77% higher than the field data for Veritek's 100% field audit. This will result in over submission of 1,332 kWh per annum.	Still existing

### Table of Recommendations

Subject	Section	Recommendation	Status
Tracking of load change	2.6	Review process to update new lights in RAMM to ensure database accuracy.	Not adopted and has been repeated.

## 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

Manawa have requested Veritek to undertake this streetlight audit.

### Audit commentary

This audit report confirms that the requirement to conduct an audit has been met for this database.

### Audit outcome

Compliant

## 2. DUMML DATABASE REQUIREMENTS

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

#### Code reference

*Clause 11(1) of Schedule 15.3*

#### Code related audit information

*The retailer must ensure the:*

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

#### Audit observation

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

#### Audit commentary

Manawa reconciles this DUMML load using the STL profile. Manawa receive monthly wattage reports. Submissions are based on the monthly wattage report, with on and off times derived from data logger information.

I recalculated the submissions for February 2023 using the data logger and database information. I confirmed that the values matched. The monthly wattage report was compared to the database extract and identified that the wattage values are being calculated outside of the database as they are not all accurate in the RAMM database. The code requires that the database contain up to date data so this is recorded as non-compliance. I have passed the wattage errors to Westlink to correct.

The monthly wattage report contains a flag indicating if assets are active or not. The field audit found 13 of the 15 “inactive” lights are still present in the field and are likely to be active. Westlink have checked where this flag is being driven from and identified that the inactive flag is activated when a replace date is entered in the light, gear or lamp fields. This will be incorrectly excluding active lights. Westlink are reviewing this to ensure that all active lights are included in the monthly wattage report. There are 42 lights in total flagged as inactive that are being excluded from submission. This will be resulting in an estimated under submission of 28,248 kWh per annum.

New project work is managed by Waka Kotahi. All new unmetered assets are expected to be loaded to the Waka Kotahi RAMM database. The first stage of this is for the W2O project which is upgrading the intersections and flag lights between Athenree and Omokoroa, north of Tauranga. A large number of new streetlights are being installed for the new roundabouts. I have confirmed these are metered supplies so are not part of this or any other DUMML audit. The loading of the new unmetered assets is expected to be against new ICP 1000611677PC678 which is traded by Meridian Energy. This has been made active from 3/02/2023 but the new flag light assets have been livened prior to this (the earliest being 07/03/22) so either the new ICP will need to be backdated to be active from 7/03/22 or the assets are left in the Westlink database (noting that the wattages need to be corrected in some instances) and then removed from 2/02/23. I recommend that Manawa work with Meridian, Waka Kotahi and Westlink to get this corrected and ensure that new assets are reconciled from the livened date and are not recorded in both databases.

Description	Recommendation	Audited party comment	Remedial action
Management of new unmetered streetlights	Manawa work with Meridian, Waka Kotahi and Westlink to ensure that all assets are recorded in a streetlight database from the date of electrical connection.	<p>Manawa Energy will work with our customer Waka Kotahi to understand who the intended retailer of the newly installed highway lights is intended to be, and in which database and under which ICP they are supposed to be reconciled. We note the comment from the auditor that in time – all Waka Kotahi load is to be managed in the Waka Kotahi database – potentially leading to the decommissioning of the Manawa Energy/ West Link ICP</p> <p>In the meantime, if it is determined that Manawa is the retailer, then we will correct wattages and reconciled volumes as required.</p>	Investigating

In time it is expected that all Waka Kotahi assets will be managed in the Waka Kotahi RAMM database and so the existing ICPs will need to be decommissioned. This is part of a larger Waka Kotahi project to move the management of all Waka Kotahi unmetered assets into their RAMM database across New Zealand.

As recorded in **section 3.1**, the database is not within the allowable accuracy threshold of +/-5% resulting in an estimated over submission of 3,500 kWh p.a.

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed, and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current monthly report is provided as a snapshot. When a wattage is changed in the database due to a physical change or a correction, only the record present at the time the report is run is recorded in the extract, not the historical information showing dates of changes.

#### Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 2.1 Clause 11(1) of Schedule 15.3</p> <p>From: 22-Mar-21 To: 08-Feb-23</p>	<p>The database is not confirmed as accurate with a 95% level of confidence. There is a 95% level of confidence that the annual consumption is estimated to be 3,500 kWh p.a. lower than the database indicates.</p> <p>42 lights likely to be incorrectly flagged as “inactive” resulting in an estimated under submission of 28,248 kWh p.a.</p> <p>Database snapshot used to calculate submission.</p> <p>Potential impact: Medium Actual impact: Medium Audit history: Multiple times Controls: Weak Breach risk rating: 6</p>		
Audit risk rating	Rationale for audit risk rating		
<p><b>Medium</b></p>	<p>The controls are recorded as weak as there is no process to ensure that new items of load are added to the database at the point they are electrically connected.</p> <p>The impact on settlement and participants is medium; therefore, the audit risk rating is medium.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>We need to determine if the 42 lights flagged as inactive are actually inactive, the audit has only revealed that this is “likely”. Once the status of these lights is determined we will correct the database and submission values.</p>		<p>31 May 2023</p>	<p>Investigating</p>
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>Clarify the situation that was occurring at Westlink when changes were processed in the database, that is causing the inactive status flag to be set on the existing light asset.</p> <p>Establish a business process whereby Administrators at Manawa Energy, responsible for processing DUMML load changes each month, will conduct reasonableness checks on the light changes being notified. These will include checks to ensure reasonable evidence is provided to support where lights are recorded as inactive.</p>		<p>31 July 2023</p>	

## 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

All items of load have the ICP recorded.

### 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 databases were checked to confirm the location is recorded for all items of load.

### Audit commentary

The database contains fields for the street address, the displacement from the end of the road and GPS coordinates.

### 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 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 the manufacturers rated wattage and the ballast wattage. The extract provided has fields for lamp and gear make and model. Analysis of this found 65 lamps that had no gear wattage recorded. This is added correctly in the monthly report via a look up table, but the code requires this information to be complete and correct in the database. This is recorded as non-compliance.

### Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.4 Clause 11(2)(c) & (d) of Schedule 15.3  From: 22-Mar-21 To: 08-Feb-23	65 items of load with no gear wattage recorded.  Potential impact: None Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	The controls are recorded as moderate because the correct values are added but this is occurring outside of the database.  The audit risk rating is low as submission is correct, but this is derived outside of the database.		
Actions taken to resolve the issue		Completion date	Remedial action status
We will remind Westlink – as maintainers of the database, that this information is required to be stored in the database itself, and not looked up outside the database.  There is low impact as the correct data is making its way into the market submission		31 May 23	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Westlink will need to include the additional data in their database. We will work with them to have this included, but given it is not affecting accuracy and is of a technical breach nature – we suspect getting this prioritised with Westlink might take some time.		31 Aug 23	

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 119 items of load (50% of the database).

**Audit commentary**

The field audit findings are shown in the table below.

Road Name	Database Count	Field Count	Count differences	Wattage differences	Comments
002-0116 E SH2 / TETLEY RD / REA RD INT	2	0	-2		2 x HPS lights removed and replaced with 23 x <u>metered</u> 175W LED lights.
002-0100/01.32	14	17	+6 -3	4	3x HPS lights not found in the field. 6x additional LED lights found in the field. 4 x incorrect wattages recorded.
002-0130/01.51 A	15	15	-	2	1x 102W LED found in the field but recorded in the database as 206W LED. 1x 99W LED found in the field but recorded in the database as 206W LED.
002-0130/13.91-I	17	15	-2	-	2x 146W LED not found in the field.
<b>GRAND TOTAL</b>	<b>119</b>	<b>142</b>	<b>13 (+6) (-7)</b>	<b>6</b>	

The field audit found six additional unmetered flag lights. This is due to the current W2O project that is being undertaken. This project is being managed by the capital works team in Waka Kotahi and are expected to be recorded against new unmetered ICP 1000611677PC678 which is traded by Meridian Energy. However the new ICP has been made active from 3/02/23 but some of these lights have been electrically connected from 7/03/22. I recommend that Manawa work with Meridian, Westlink and Waka Kotahi to determine if the new ICP is to be backdated to the electrical connection date or the new assets are added to the Westlink managed RAMM database from electrical connection date and then removed from 3/02/23. This is discussed further in **section 3.1**. I have not recorded non-compliance below as Waka Kotahi did not want the new assets added to the existing Westlink managed database.

**Audit outcome**

Compliant

## 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 DUMML 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 tracks additions and removals as required by this clause. The “light install date” is used to identify the data lights are installed and the date lights are changed.

### Audit outcome

Compliant

## 2.7. Audit trail (Clause 11(4) of Schedule 15.3)

### Code reference

*Clause 11(4) of Schedule 15.3*

### Code related audit information

*The DUMML database must incorporate an audit trail of all additions and changes that identify:*

- *the before and after values for changes*
- *the date and time of the change or addition*
- *the person who made the addition or change to the database.*

### Audit observation

The database was checked for audit trails.

### Audit commentary

The database has a complete audit trail.

### Audit outcome

Compliant



### 3. ACCURACY OF DUML DATABASE

#### 3.1. Database accuracy (Clause 15.2 and 15.37B(b))

##### Code reference

Clause 15.2 and 15.37B(b)

##### Code related audit information

Audit must verify that the information recorded in the retailer's DUML database is complete and accurate.

##### Audit observation

A RAMM database extract was provided in February 2023, 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	Waka Kotahi BOP West area
Strata	The database contains the items of load for the Waka Kotahi BOP West area. The processes for the management of these items of load are the same, but I decided to place the items of load into four strata of a similar size:  ICP 1000525041PCD11: 1. Block 1 2. Block 2 3. Block 3  ICP 1000525042PC1D1 and 1000525040PC154: 4. Block 4
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 nine sub-units.
Total items of load	119 items of load were checked.

Wattages for all items of load were checked against the published standardised wattage tables produced by the Electricity Authority, and the manufacturer's specifications or in the case of LED lights against the LED light specification.

##### Audit commentary

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

A field audit was conducted of a statistical sample of 119 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	98.3	Wattage from survey is 98.3% higher than the database to one decimal place
R <sub>L</sub>	94.6	With a 95% level of confidence, it can be concluded that the error is between -5.4% or up to +2.4%
R <sub>H</sub>	102.4	

These results were categorised in accordance with the “Distributed Unmetered Load Statistical Sampling Audit Guideline”, effective from 1 February 2019 and the table below shows that Scenario C (detailed below) applies. The conclusion from Scenario C is that the variability of the sample results across the strata means that the true wattage (installed in the field) could be between 5.4% lower and 2.4% 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 1.0 kW higher than the database indicates.
- There is a 95% level of confidence that the installed capacity is between 3 kW lower to 1 kW higher than the database.
- In absolute terms, total annual consumption is estimated to be 3,500 kWh lower than the DUML database indicates.
- There is a 95% level of confidence that the annual consumption is between 10,900 kWh p.a. lower to 4,900 kWh p.a. higher than the database indicates.

Scenario	Description
<b>A - Good accuracy, good precision</b>	<p>This scenario applies if:</p> <p>(a) <math>R_H</math> is less than 1.05; and</p> <p>(b) <math>R_L</math> is greater than 0.95</p> <p>The conclusion from this scenario is that:</p> <p>(a) the best available estimate indicates that the database is accurate within +/- 5 %; and</p> <p>(b) this is the best outcome.</p>
<b>B - Poor accuracy, demonstrated with statistical significance</b>	<p>This scenario applies if:</p> <p>(a) the point estimate of R is less than 0.95 or greater than 1.05</p> <p>(b) as a result, either <math>R_L</math> is less than 0.95 or <math>R_H</math> is greater than 1.05.</p> <p>There is evidence to support this finding. In statistical terms, the inaccuracy is statistically significant at the 95% level</p>
<b>C - Poor precision</b>	<p>This scenario applies if:</p> <p>(a) the point estimate of R is between 0.95 and 1.05</p> <p>(b) <math>R_L</math> is less than 0.95 and/or <math>R_H</math> is greater than 1.05</p> <p>The conclusion from this scenario is that the best available estimate is not precise enough to conclude that the database is accurate within +/- 5 %</p>

#### Wattage and ballast accuracy findings

The database was checked against the published standardised wattage table and found:

- as detailed in **section 2.4**, 65 lamps had no gear wattage recorded, and
- 18 items of load with the incorrect ballast applied.

This is added correctly in the monthly wattage report via a look up table, but the code requires this information to be complete and accurate in the database. This is recorded as non-compliance.

### **Change management process finding**

Horizon carries out the field maintenance for Westlink on behalf of Waka Kotahi and they update RAMM directly. Westlink have robust controls in their contract with Horizon and this ensures that field maintenance is captured in a timely and accurate manner.

The current monthly report includes an audit trail of lights removed, changed and added. Manawa uses this information to ensure the current and earlier months have accurate submission.

In the last audit, Westlink was recorded as receiving and being responsible for the loading of new streetlight assets. This process has changed during the audit period and Westlink only manage the maintenance of the existing assets. Waka Kotahi's project work's team manage new project work and they are adding any new assets to their RAMM database against the new ICP 1000611677PC678 which is traded by Meridian Energy and not Westlink's RAMM database and the existing Manawa ICP.

As detailed in **section 2.1**, this has been made active from 3/02/2023 but the new flag light assets have been livened prior to this (the earliest being 07/03/22). Copies of the new assets have been passed to Westlink and some have been added. So either the new ICP will need to be backdated to be active from 7/03/22 or the assets are left in the Westlink RAMM database (noting that the wattages need to be corrected in some instances) and then removed from the from 2/02/23. I have recommended in **section 2.1**, that Manawa work with Meridian, Waka Kotahi and Westlink to ensure that new assets are reconciled from the livened date and are not recorded in both databases.

In time it is expected that all Waka Kotahi assets will be managed in the Waka Kotahi RAMM database and so the existing ICPs will need to be decommissioned. This is part of a larger Waka Kotahi project to move the management of all Waka Kotahi unmetered assets into their RAMM database across New Zealand.

There are no festive lights connected to the unmetered streetlight circuits and there are no private lights known of.

### **Audit outcome**

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b)</p> <p>From: 22-Mar-21 To: 08-Feb-23</p>	<p>The database is not confirmed as accurate with a 95% level of confidence. There is a 95% level of confidence that the annual consumption is estimated to be 3,500 kWh p.a. lower than the database indicates.</p> <p>65 items of load with no gear wattage recorded.</p> <p>18 items of load with the incorrect gear wattage applied.</p> <p>Potential impact: Medium</p> <p>Actual impact: Medium</p> <p>Audit history: Multiple times</p> <p>Controls: Weak</p> <p>Breach risk rating: 6</p>		
Audit risk rating	Rationale for audit risk rating		
<b>Medium</b>	<p>The controls are recorded as weak as there is no process to ensure that new items of load are added to the database at the point they are electrically connected.</p> <p>The audit risk rating is medium as the missing lights will be resulting in under submission and an increase in losses which are then shared by all traders.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>The changes in who is responsible for recording and loading new lights into the database has been the main reason a stable and well managed process in now introducing risk and inaccuracy.</p> <p>We will work with Waka Kotahi to understand where the new lights are expected to sit, and from which date they were livened. If these lights are expected to sit in the Westlink database against the Manawa Energy ICP – we will correct data and reconciliation volumes accordingly.</p>		31 May 23	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>We will work with Waka Kotahi to understand where the new lights are expected to sit for future lights added in the area. If these lights are expected to sit in the Westlink database against the Manawa Energy ICP – we will work with them to reestablish the process that has historically been in place and will check for new additions in lights as part of the monthly updates we receive.</p>		31 Aug 23	

### 3.2. Volume information accuracy (Clause 15.2 and 15.37B(c))

#### Code reference

Clause 15.2 and 15.37B(c)

#### Code related audit information

The audit must verify that:

- volume information for the DUML is being calculated accurately
- profiles for DUML have been correctly applied.

#### Audit observation

The submission was checked for accuracy for the month the database extract was supplied. This included:

- checking the registry to confirm that the ICP has the correct profile and submission flag, and
- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

#### Audit commentary

Manawa reconciles this DUML load using the STL profile. Manawa receive monthly wattage reports. Submissions are based on the monthly wattage report, with on and off times derived from data logger information.

I recalculated the submissions for February 2023 using the data logger and database information. I confirmed that the values matched. The monthly wattage report was compared to the database extract and identified that the wattage values are being calculated outside of the database as they are not all accurate in the RAMM database. The code requires that the database contain up to date data so this is recorded as non-compliance. I have passed the wattage errors to Westlink to correct.

The monthly wattage report contains a flag indicating if assets are active or not. The field audit found 13 of the 15 “inactive” lights are still present in the field and are likely to be active. Westlink have checked where this flag is being driven from and identified that the inactive flag is activated when a replace date is entered in the light, gear or lamp fields. This will be incorrectly excluding active lights. Westlink are reviewing this to ensure that all active lights are included in the monthly wattage report. There are 42 lights in total flagged as inactive that are being excluded from submission. This will be resulting in an estimated under submission of 28,248 kWh per annum.

New project work is managed by Waka Kotahi. All new unmetered assets are expected to be loaded to the Waka Kotahi RAMM database. The first stage of this is for the W2O project which is upgrading the intersections and flag lights between Athenree and Omokoroa, north of Tauranga. A large number of new streetlights are being installed for the new roundabouts. I have confirmed these are metered supplies so are not part of this or any other DUML audit. The loading of the new unmetered assets is expected to be against new ICP 1000611677PC678 which is traded by Meridian Energy. This has been made active from 3/02/2023 but the new flag light assets have been livened prior to this (the earliest being 07/03/22) so either the new ICP will need to be backdated to be active from 7/03/22 or the assets are left in the Westlink (noting that the wattages need to be corrected in some instances) and then removed from the from 2/02/23. I have recommended in **section 2.1**, that Manawa work with Meridian, Waka Kotahi and Westlink to get this corrected and ensure that new assets are reconciled from the livened date and are not recorded in both databases.

In time it is expected that all Waka Kotahi assets will be managed in the Waka Kotahi RAMM database and so the existing ICPs will need to be decommissioned. This is part of a larger Waka Kotahi project to move the management of all Waka Kotahi unmetered assets into their RAMM database across New Zealand.

As recorded in **section 3.1**, the database is not within the allowable accuracy threshold of +/-5% resulting in an estimated over submission of 3,500 kWh p.a.

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed, and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current monthly report is provided as a snapshot. When a wattage is changed in the database due to a physical change or a correction, only the record present at the time the report is run is recorded in the extract, not the historical information showing dates of changes.

#### **Audit outcome**

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 3.2 Clause 15.2 and 15.37B(c)</p> <p>From: 22-Mar-21 To: 08-Feb-23</p>	<p>The database is not confirmed as accurate with a 95% level of confidence. There is a 95% level of confidence that the annual consumption is estimated to be 3,500 kWh p.a. lower than the database indicates.</p> <p>42 lights likely to be incorrectly flagged as “inactive” resulting in an estimated under submission of 28,248 kWh p.a.</p> <p>Database snapshot used to calculate submission.</p> <p>Potential impact: Medium Actual impact: Medium Audit history: Multiple times Controls: Weak Breach risk rating: 6</p>		
Audit risk rating	Rationale for audit risk rating		
<p><b>Medium</b></p>	<p>The controls are recorded as weak as there is no process to ensure that new items of load are added to the database at the point they are electrically connected.</p> <p>The impact on settlement and participants is medium; therefore, the audit risk rating is medium.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>In addition to the work already noted in this audit – to work with Waka Kotahi to clarify which retailer and which ICP new light assets are expected to be added to and reconciled under - we also need to determine if the 42 lights flagged as inactive are actually inactive, the audit has only revealed that this is “likely”. Once the status of these lights is determined we will correct the database and submission values.</p>		<p>31 May 23</p>	<p>Investigating</p>
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>Clarify the situation that was occurring at Westlink when changes were processed in the database, that is causing the inactive status flag to be set on the existing light asset.</p> <p>Establish a business process whereby Administrators at Manawa Energy, responsible for processing DUMML load changes each month, will conduct reasonableness checks on the light changes being notified. These will include checks to ensure reasonable evidence is provided to support where lights are recorded as inactive.</p> <p>Work with Waka Kotahi to understand which retailer, which ICP and which database new light assets are supposed to be recorded under in this region, and ensure our processes capture these changes and lead to accurate submission calculations.</p> <p>We note the audit finding that the long term intent is for Waka Kotahi assets to be maintained in a new database, under a new ICP – maintained by Waka Kotahi with Meridian as retailer.</p>		<p>31 August 23</p>	

## CONCLUSION

The database maintained by Westlink on behalf of Waka Kotahi and is remotely hosted by RAMM Software Ltd. The asset data capture and database population are conducted by Westlink. The maintenance field work is carried out by Horizon.

New project work is managed by Waka Kotahi. All new unmetered assets are expected to be loaded to the Waka Kotahi RAMM database. The first stage of this is for the W2O project which is upgrading the intersections and flag lights between Athenree and Omokoroa, north of Tauranga. A large number of new streetlights are being installed for the new roundabouts. I have confirmed these are metered supplies so are not part of this or any other DUMML audit. The loading of the new unmetered assets is expected to be against new ICP 1000611677PC678 which is traded by Meridian Energy. This has been made active from 3/02/2023 but the new flag light assets have been livened prior to this (the earliest being 07/03/22) so either the new ICP will need to be backdated to be active from 7/03/22 or the assets are left in the Westlink database (noting that the wattages need to be corrected in some instances) and then removed from the from 2/02/23. I have recommended that Manawa work with Meridian, Waka Kotahi and Westlink to get this corrected and ensure that new assets are reconciled from the livened date and are not recorded in both databases.

In time it is expected that all Waka Kotahi assets will be managed in the Waka Kotahi RAMM database and so the existing ICPs will need to be decommissioned. This is part of a larger Waka Kotahi project to move the management of all Waka Kotahi unmetered assets into their RAMM database across New Zealand.

A number of other issues were identified in this audit:

- The monthly wattage report is being manipulated outside of RAMM to calculate the correct wattage values. The code requires that the database is up to date. These errors have been passed to Westlink to correct.
- 42 lights are recorded as “inactive” in the monthly wattage report but are likely to be active in the field. This will be resulting in a potential estimated under submission of 28,248 kWh per annum. Westlink are reviewing the monthly wattage report to correct this.
- The field audit found that the database is not within the allowable accuracy threshold of +/-5% resulting in an estimated over submission of 3,500 kWh p.a.

The audit found four non-compliances and makes one recommendation. The future risk rating of 20 indicates that the next audit be completed in three months. I have considered this and Manawa’s comments and recommend that the next audit be in nine months to allow sufficient time for the issues identified to be resolved.



## PARTICIPANT RESPONSE

This audit has uncovered some errors in terms of how new lights are being registered and managed in this area for Waka Kotahi. Unfortunately this process appears to have become more complicated with the introduction of a new ICP, and new database and a new retailer being proposed for new lights on new parts of the high way network. This will require careful clarification with our customer and our customer's contractor (Westlink) to ensure the historic data can be correctly identified and allocated, and that there is a clear process for how future changes are managed.

We will work with the interested parties to get this resolved – including any corrections to our reconciled volumes. We expect this work to take a few months to get to the bottom of and to restore effective business processes for managing it going forward.

We would like to thank Veritek for helping us work through this, including helping work through this audit with a number of new personnel involved.