ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

CENTRAL OTAGO DISTRICT COUNCIL RAMM DATABASE AND CONTACT ENERGY NZBN: 9429038549977

Prepared by: Claire Stanley

Date audit commenced: 8 May 2023

Date audit report completed: 24 May 2023

Audit report due date: 01-Jun-23

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EXECUTIVE SUMMARY

This audit of the **Central Otago District Council (CODC)** Unmetered Streetlights DUML RAMM 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.

This audit includes all streetlights for CODC load as recorded in RAMM.

The database is remotely hosted by thinkproject New Zealand Ltd. Contact reconciles this DUML load using the DST profile. This is managed by Contact Energy's subsidiary Simply Energy and is submitted against the CTCS participant identifier.

CODC's contractor for streetlight installation and maintenance is Delta. CODC update the maintenance changes and they have engaged BECA to update all new connections in RAMM.

The field audit was undertaken of a statistical sample of 192 items of load in CODC the area on the 14th and 15th May 2023.

The field audit indicated that the database was not within the allowable +/-5% variance threshold and is therefore deemed to be inaccurate. This is discussed in **section 3.1**.

- In absolute terms the installed capacity is estimated to be 2 kW lower than the database indicates.
- There is a 95% level of confidence that the installed capacity is between 10kW lower to 5 kW higher than the database.
- In absolute terms, total annual consumption is estimated to be 7,200 kWh lower than the DUML database indicates.
- There is a 95% level of confidence that the annual consumption is between -42,800 kWh p.a. lower to 19,300 kWh p.a. higher than the database indicates.

The total volume submitted to the Reconciliation Manager is based on a monthly database report derived from RAMM, and the "burn time" which is sourced from data loggers. The methodology is compliant.

I checked the submission calculation provided by Contact for April 2023 and it matches the database.

As noted in the previous audit report, CODC have no central management system in place and no plans to install one, but the fittings have fixed dimming for all Betacom lights (1,752 items of load or 80% of all lights) installed on their network. This was part of the night sky initiative in the area. The lights reduce their power consumption to 60% between the hours of midnight to 5am year-round. Currently this is not reflected in the submission volumes. This will be resulting in an estimated annual over submission of 25,000 kWh. New ICPs have been created and it is intended that submission will occur against the new ICPs, using the dimming profile that was approved by the Authority and noted in the previous audit. These will be applied once golden meters can be installed, then the volumes will reflect the dimming. This project has not progressed since the previous audit.

The audit found five non-compliances and repeats one recommendation. The future risk rating of 18 indicates that the next audit be completed in six months. I have considered this in conjunction with Contact's comments and recommend that the next audit be completed in eight months. This should allow sufficient time for the "golden" meters to be installed to account for dimming of the lights.

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	Over submission of an estimated 25,000 kWh per annum due to the hard-wired dimming LED lamps for 83% of the total lamps installed. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Three lamps with incorrect ballast applied resulting in very minor over submission. In absolute terms, total annual consumption is estimated to be 7,200 kWh lower than the DUML database indicates.	Weak	Medium	6	Investigating
ICP identifier and items of load	2.2	Clause 11(2)(a) and (aa) of Schedule 15.3	The ICP is not recorded in the database for 16 items of load.	Moderate	Low	2	Investigating
All load recorded in database	2.5	11(2A) of Schedule 15.3	Four additional lights were found in the field.	Moderate	Low	2	Investigating
Database accuracy	3.1	15.2 and 15.37B(b)	In absolute terms, total annual consumption is estimated to be 7,200 kWh lower than the DUML database indicates. Three lamps with incorrect ballast applied resulting in very minor over submission. New lights are not added to RAMM at the date of electrical connection.	Moderate	Low	2	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)	Over submission of an estimated 25,000 kWh per annum due to the hard-wired dimming LED lamps for 83% of the total lamps installed. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Three lamps with incorrect ballast applied resulting in very minor over submission. In absolute terms, total annual consumption is estimated to be 7,200 kWh lower than the DUML database indicates.	Weak	Medium	6	Investigating
					Future Risk Rating	**18**	

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

RECOMMENDATIONS

Subject	Section	Recommendation
Location of each item of load	2.3	Liaise with CODC to obtain better address information to ensure the lights are locatable where GPS co-ordinates are not recorded.

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

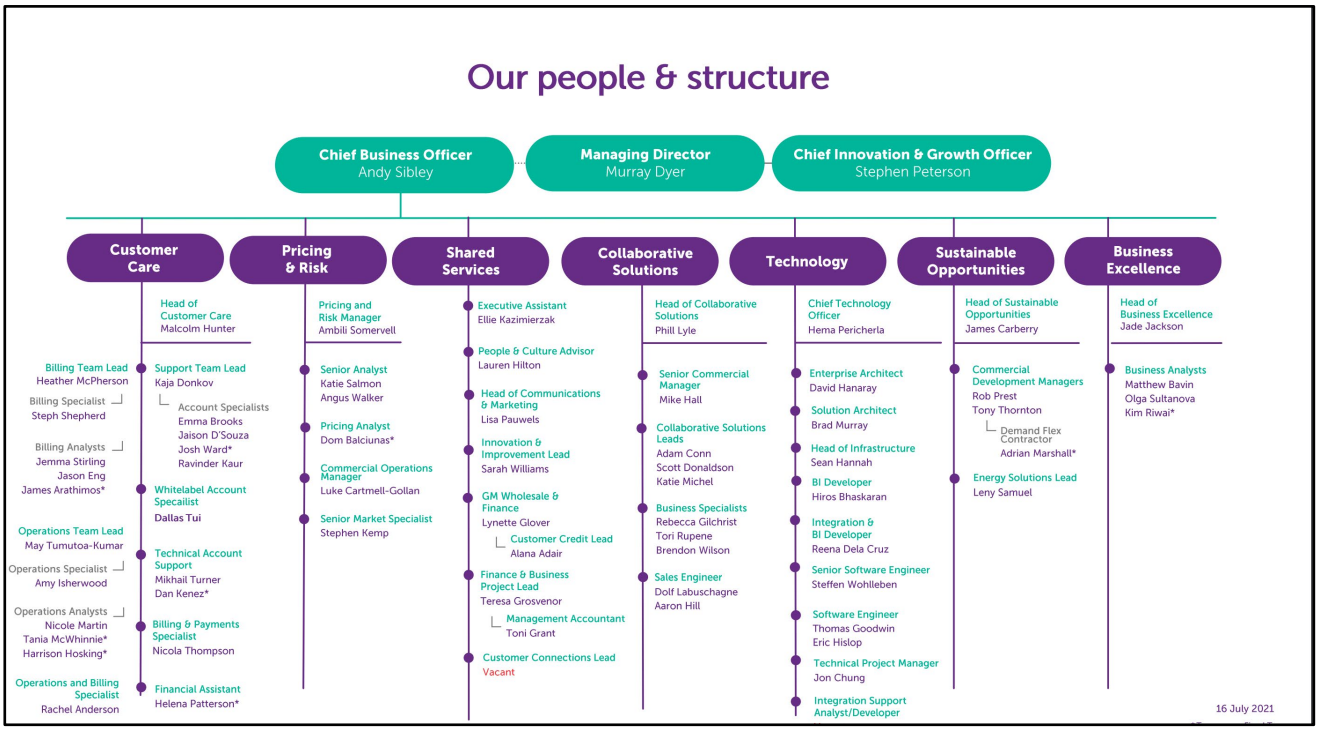
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Contact provided a copy of their organisational structure.



1.3. Persons involved in this audit

Name	Company	Role
Claire Stanley	Veritek Limited	Lead Auditor
Rebecca Elliot	Veritek Limited	Supporting Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Luke Cartmell-Gollan	Commercial Operations Manager	Simply Energy
Dallas Tui	Whitelabel Account Specialist	Simply Energy
Mark Hardman	Roading Asset Engineer	Central Otago DC

1.4. Hardware and Software

The SQL database used for the management of DUML is remotely hosted by thinkproject New Zealand Limited. The database is commonly known as "RAMM" which stands for "Road Assessment and Maintenance Management". The specific data used for DUML is held in the Streetlight tables. thinkproject New Zealand Limited backs up the database and assists with disaster recovery as part of their hosting service.

Access to the database is secure by way of password protection.

Systems used by the trader and their agent to calculate submissions are assessed as part of their reconciliation participant audits.

1.5. Breaches or Breach Allegations

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

1.6. ICP Data

ICP	Description	Profile	Number of items of load	Database wattage (watts)
0000481144CEF63	CROMWELL GXP	DST	291	17,895
0000002553CE07F	CLYDE GXP	DST	98	4,846
0001982630TG886	NASEBY GXP	DST	42	3,405
0000510662CEEB3*	CLYDE GXP	RPS	818	14,932
0001982631TG4C3	NASEBY GXP	RPS	187	3,413
0000510663CE2F6*	CROMWELL GXP	RPS	714	15,037
Blank ICP			16	348
		TOTAL	**2,166**	**59,876**

As recorded in the last audit, two ICPs are recorded in the database but are not being used for submission, they are identified as 'reconciled elsewhere'. ICP 0001982631TG4C3 is recorded as "active", however all volumes are reported against ICP 0000481144CEF63.

All three ICPs with the "RPS" profile are expected to be used once the new approved streetlight profile can be used. This is discussed further in **section 2.1**.

1.7. Authorisation Received

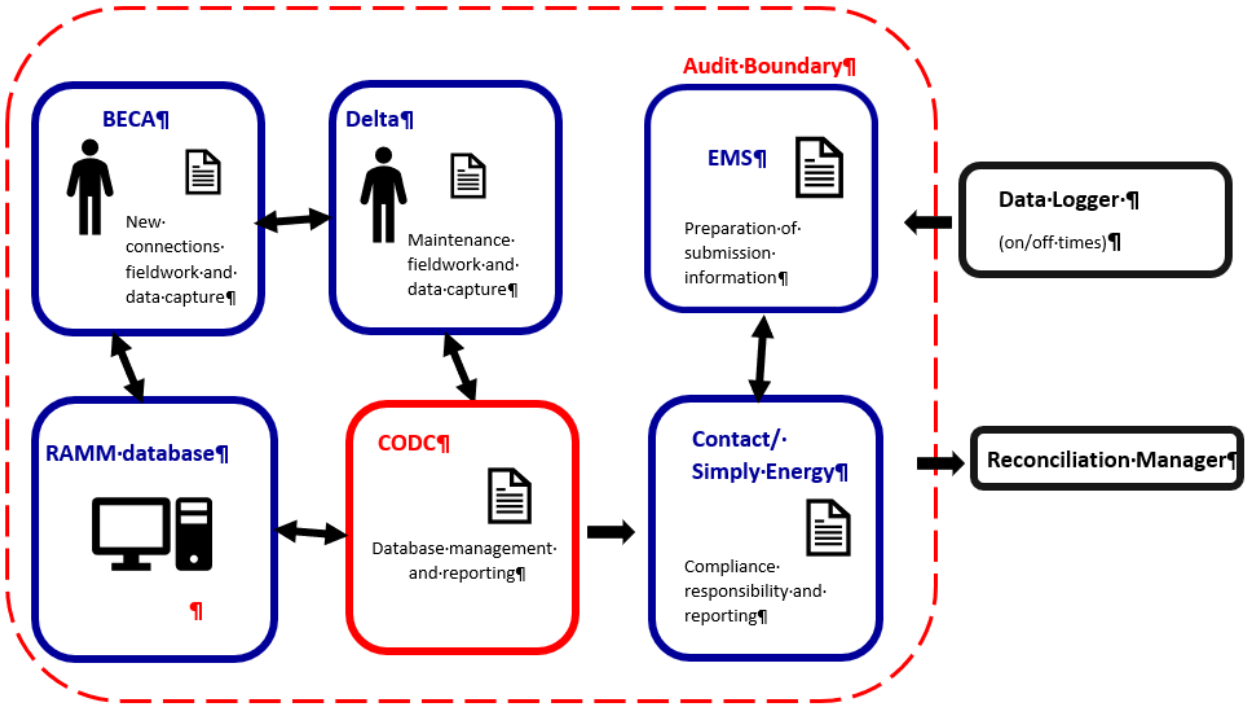
All information was provided directly by Contact or CODC.

1.8. Scope of Audit

This audit of the CODC DUML RAMM 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.

This audit includes all streetlights for CODC load as recorded in RAMM.

The RAMM database is managed by CODC and is remotely hosted by thinkproject New Zealand Limited. The field work is carried out by Delta. The asset data capture and database population are conducted by BECA for new connections and CODC for maintenance. The scope of the audit encompasses the collection, security and accuracy of the data, including the preparation of submission information. The diagram below shows the audit boundary for clarity.



The field audit was undertaken of 192 items of load on 14th and `15th May 2023.

1.9. Summary of previous audit

The previous audit was completed in February 2022 by Steve Woods of Veritek Limited. The current status of that audit's findings is detailed below:

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	Over submission of an estimated 25,000 kWh per annum due to the hard-wired dimming LED lamps for 83% of the total lamps installed. Three lamps with incorrect ballast applied resulting in very minor over submission.	Still existing Still existing
ICP identifier and items of load	2.2	Clause 11(2)(a) and (aa) of Schedule 15.3	The ICP is not recorded in the database for 16 items of load.	Still existing
All load recorded in database	2.5	11(2A) of Schedule 15.3	Four additional lights found in the field.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	Three lamps with incorrect ballast applied resulting in very minor over submission.	Still existing

Subject	Section	Clause	Non-compliance	Status
Volume information accuracy	3.2	15.2 and 15.37B(c)	Over submission of an estimated 25,000 kWh per annum due to the hard-wired dimming LED lamps for 83% of the total lamps installed. Three lamps with incorrect ballast applied resulting in very minor over submission	Still existing Still existing

RECOMMENDATIONS

Subject	Section	Recommendation	Status
Location of each item of load	2.3	Liaise with CODC to obtain better address information to ensure the lights are locatable where GPS co-ordinates are not recorded.	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

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.

Audit outcome

Compliant

2. DUML DATABASE REQUIREMENTS

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

Code reference

Clause 11(1) of Schedule 15.3

Code related audit information

The retailer must ensure the:

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

Audit observation

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

Audit commentary

Contact reconciles this DUML load using the DST profile. I checked the submission calculation provided by Contact for April 2023 and it matches the database.

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.

The total volume submitted to the Reconciliation Manager is based on a monthly database report derived from RAMM and the "burn time" which is sourced from data loggers. The methodology is compliant.

Examination of the database found the ballast wattages applied for three lights was incorrect resulting in an estimated very minor over submission of 38 kWh as detailed in **section 3.1**.

As noted in the previous audit report, CODC have no central management system in place and no plans to install one, but the fittings have fixed dimming for all Betacom lights (1,752 items of load or 80% of all lights) installed on their network. This was part of the night sky initiative in the area. The lights reduce their power consumption to 60% between the hours of midnight to 5am year-round. Currently this is not reflected in the submission volumes. This will be resulting in an estimated annual over submission of 25,000 kWh. New ICPs have been created and it is intended that submission will occur against the new ICPs, using the dimming profile that was approved by the Authority and noted in the previous audit. These will be applied once golden meters can be installed, then the volumes will reflect the dimming. This project has not progressed since the previous audit.

The field audit indicated that the database was not within the allowable +/-5% variance threshold and is therefore deemed to be in accurate. This is discussed in **section 3.1**.

- In absolute terms the installed capacity is estimated to be 2 kW lower than the database indicates.
- There is a 95% level of confidence that the installed capacity is between 10kW lower to 5 kW higher than the database.
- In absolute terms, total annual consumption is estimated to be 7,200 kWh lower than the DUML database indicates.
- There is a 95% level of confidence that the annual consumption is between -42,800 kWh p.a. lower to 19,300 kWh p.a. higher than the database indicates.

On 18 June 2019, the Electricity Authority issued a memo confirming that the code requirement to calculate the correct monthly load must:

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

The current data used is a snapshot and this practice is non-compliant.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 12-Jan-22 To: 08-May-23	Over submission of an estimated 25,000 kWh per annum due to the hard-wired dimming LED lamps for 83% of the total lamps installed. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Three lamps with incorrect ballast applied resulting in a very minor over submission. In absolute terms, total annual consumption is estimated to be 7,200 kWh lower than the DUML database indicates. Potential impact: Medium Actual impact: Medium Audit history: Multiple times previously Controls: Weak Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as weak because the new dimming profile is not being applied. The impact is assessed to be medium due to the impact of over submission.

Actions taken to resolve the issue	Completion date	Remedial action status
CODC are working with their Streetlight Maintenance team to have correct ballast information added	01/10/2023	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Regular checking of this information to ensure accuracy	01/10/2023	

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 an ICP was recorded against each item of load.

Audit commentary

All items of load have an ICP recorded against them, except for 16 items of load.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.2 Clause 11(2)(a) & (aa) of Schedule 15.3 From: 12-Jan-22 To: 08-May-23	The ICP is not recorded in the database for 16 items of load. Potential impact: Low Actual impact: Low Audit history: Once previously Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as moderate as the ICP is recorded for all but 16 items of load. The impact is assessed to be low due to the impact on submission.

Actions taken to resolve the issue	Completion date	Remedial action status
CODC have now added the ICPs for these 16 items	23/06/2023	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
CODC may look to make this field mandatory	01/07/2023	

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

Code reference

Clause 11(2)(b) of Schedule 15.3

Code related audit information

The DUML database must contain the location of each DUML item.

Audit observation

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

Audit commentary

The database contains the nearest street address, pole numbers and Global Positioning System (GPS) coordinates for most items of load. 20 items of load do not have GPS coordinates or street number recorded. I repeat the previous recommendation that more information is obtained and updated in the database to ensure the lights are easily locatable.

Recommendation	Description	Audited party comment	Remedial action
Location of each item of load	Liaise with CODC to obtain better address information to ensure the lights are easily locatable where GPS co-ordinates are not recorded.	Regular checking of this information to ensure accuracy	Identified

Audit outcome

Compliant

2.4. Description and capacity of load (Clause 11(2)(c) and (d) of Schedule 15.3)

Code reference

Clause 11(2)(c) and (d) of Schedule 15.3

Code related audit information

The DUML database must contain:

- *a description of load type for each item of load and any assumptions regarding the capacity*
- *the capacity of each item in watts.*

Audit observation

The database was checked to confirm 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 lamp make, model, wattage and the ballast wattage, all were populated.

The accuracy of the lamp description, capacity and ballasts recorded is discussed in **section 3.1**.

Audit outcome

Compliant

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

Code reference

Clause 11(2A) of Schedule 15.3

Code related audit information

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

Audit observation

The field audit was undertaken of 192 items of load on 14th and 15th May 2023.

Audit commentary

The field audit findings for the sample of lamps was accurate with the exception of the streets detailed in the table below:

Street/Area	Database Count	Field Count	Lamp no. difference	No of incorrect lamp wattage	Comments
Bradford St	2	2		1	1 x 27W LED recorded in the database but 20W LED located in the field.
Hazlett St	17	18	+1	1	1 x 17W LED recorded in the database but 1 x 23W LED located in the field 1 additional 17W LED not recorded in the database but located in the field.
Horace St	4	5	+ 2 -1		1 x 17W LED recorded in the database but not located in the field. 1 additional 125 MH not recorded in the database but located in the field. 1 additional 17W LED not recorded in the database but located in the field.
Killarney St	15	14	+1 -2		2 x 17W LED recorded in the database but not located in the field 1 additional 17W LED not recorded in the database but located in the field
Parkburn Lane	2	2		2	2 x 23W LED recorded in the database but 2 x 20W LED located in the field
Russell St	10	10		3	3 x 17W LED recorded in the database but 3 x 35W LED located in the field
Smithian Drive	7	6	-1	1	1 x 168W LED recorded in the database but 27W LED located in the field. 1x 168W LED recorded in the database but not located in the field.
Tarbert St	27	27		1	1 x 17W LED recorded in the database but 1 x 27W LED located in the field
Grand Total	**192**	**192**	**8 (+4,-4)**	**9**	

Four additional items of load were identified in the field of the 192 items of load sampled. This is recorded as a non-compliance below. The database accuracy is discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 12-Jan-22 To: 08-May-23	Four additional lights were found in the field. Potential impact: Low Actual impact: Low Audit history: Multiple times previously Controls: Moderate Breach risk rating: 2		
Audit risk rating	**Rationale for audit risk rating**		
Low	The controls are rated as moderate because they ensure most information is accurate. The impact is assessed to be low due to four additional lights found in the field in relation to the overall count of the items of load.		
Actions taken to resolve the issue		**Completion date**	**Remedial action status**
CODC are working with their Streetlight Maintenance team to identify these lights and correct		01/10/2023	Investigating
Preventative actions taken to ensure no further issues will occur		**Completion date**	
Regular checking of this information to ensure accuracy		01/10/2023	

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

Code reference

Clause 11(3) of Schedule 15.3

Code related audit information

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

Audit observation

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

Audit commentary

The RAMM database functionality achieves compliance with the code.

Audit outcome

Compliant

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

Code reference

Clause 11(4) of Schedule 15.3

Code related audit information

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

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

Audit observation

The database was checked for audit trails.

Audit commentary

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 database extract was provided, and I assessed the accuracy of this by using the DUML Statistical Sampling Guideline. The table below shows the survey plan.

Plan Item	Comments
Area of interest	Central Otago District Council area
Strata	The database contains items of load in the Central Otago district area. The area has two distinct sub regions of urban and rural. The processes for the management of all CODC items of load are the same, but I decided to place the items of load into three strata: 1. street name A – E, 2. street name F – O, and 3. street name P - Z
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 31 sub-units.
Total items of load	192 items of load were checked.

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

The process to manage changes made in the field being updated in the database was examined.

Audit commentary

Database accuracy based on the field audit

A field audit was conducted of a statistical sample of 192 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	97.2	Wattage from survey is lower than the database wattage by 2.8%
R_L	83.3	With a 95% level of confidence, it can be concluded that the error could be between -16.7% and 7.6%.
R_H	107.6	

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) applies.

The conclusion from Scenario B is that the database has poor accuracy demonstrated with statistical significance and means that the true wattage (installed in the field) could be between 16.7% lower and 7.6% 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 2 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is between 10kW lower to 5 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 7,200 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 42,800 kWh p.a. lower to 19,300 kWh p.a. higher than the database indicates.

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

Lamp description and capacity accuracy

I checked the wattages being applied in the database and found the following errors:

Lamp Make	Database gear wattage	Correct gear wattage	Quantity	Total difference
Metal Halide 125W*	13	11	2	4
Mercury Vapour	25	20	1	5
		Total	3	9

*Check if lamp should be Mercury Vapour, 125 W is not valid for Metal Halide.

The incorrect wattage will be resulting in an estimated very minor over submission of 38 kWh per annum (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool).

As previously reported, two lamps have an incorrect light model description applied, all other details for the lamp appeared to be correct.

Light Model	Make and model	Wattage
BRP711 LED23/NW 4000K Optic-DWP	Mercury Vapour	125
Mini-Stork 3000K 2550Lumen	HPS	70

Change management process findings

There has not been any change to the field processes, the field contractor is Delta for all fault and maintenance work. Delta are issued a Service Request for reactive work. The RAMM database is updated by the CODC staff with any changes.

Outage patrols are no longer undertaken, lamp outages are notified to CODC by residents, and Delta will be issued a Service Request to resolve.

The new subdivision process requires developers to install LED lights. These must be selected from the approved LED light types specified by NZTA. CODC accept responsibility of these assets upon the 224C being issued. "As-built" plans are expected to be submitted to CODC as part of this process. Currently it can take up to three months post the 224C being issued before the "as built" plans are provided. When the lights are vested to the Council, they are added to RAMM by BECA.

There are no festive lights connected to the unmetered streetlight circuits. Private lights are not held in the database.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 19-Jul-21 To: 11-Jan-22	In absolute terms, total annual consumption is estimated to be 7,200 kWh lower than the DUML database indicates. Three lamps with incorrect ballast applied resulting in very minor over submission. New lights are not added to RAMM at the date of electrical connection. Potential impact: Low Actual impact: Low Audit history: Three times previously Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as moderate, because field audit indicated the controls are robust but there is room for errors to occur. The impact is assessed to be low due to the kWh impact.

Actions taken to resolve the issue	Completion date	Remedial action status
CODC are working with their Streetlight Maintenance team to have correct ballast information added	01/10/2023	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Regular checking of this information to ensure accuracy	01/10/2023	

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

Contact reconciles this DUML load using the DST profile. I checked the submission calculation provided by Contact for April 2023 and it matches the database.

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.

The total volume submitted to the Reconciliation Manager is based on a monthly database report derived from RAMM and the "burn time" which is sourced from data loggers. The methodology is compliant.

Examination of the database found the ballast wattages applied for three lights resulting in an estimated very minor over submission of 38 kWh as detailed in **section 3.1**.

As noted in the previous audit report, CODC have no central management system in place and no plans to install one, but the fittings have fixed dimming for all Betacom lights (1,752 items of load or 80% of all lights) installed on their network. This was part of the night sky initiative in the area. The lights reduce their power consumption to 60% between the hours of midnight to 5am year-round. Currently this is not reflected in the submission volumes. This will be resulting in an estimated annual over submission of 25,000 kWh. New ICPs have been created and it is intended that submission will occur against the new ICPs, using the dimming profile that was approved by the Authority and noted in the previous audit. These will be applied once golden meters can be installed, then the volumes will reflect the dimming. This project has not progressed since the previous audit.

The field audit indicated that the database was not within the allowable +/-5% variance threshold and is therefore deemed to be in accurate. This is discussed in **section 3.1**.

- In absolute terms the installed capacity is estimated to be 2 kW lower than the database indicates.
- There is a 95% level of confidence that the installed capacity is between 10kW lower to 5 kW higher than the database.
- In absolute terms, total annual consumption is estimated to be 7,200 kWh lower than the DUML database indicates.
- There is a 95% level of confidence that the annual consumption is between -42,800 kWh p.a. lower to 19,300 kWh p.a. higher than the database indicates.

On 18 June 2019, the Electricity Authority issued a memo confirming that the code requirement to calculate the correct monthly load must:

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

The current data used is a snapshot and this practice is non-compliant.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 Clause 15.2 and 15.37B(c) From: 12-Jan-22 To: 08-May-23	Over submission of an estimated 25,000 kWh per annum due to the hard-wired dimming LED lamps for 83% of the total lamps installed. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Three lamps with incorrect ballast applied resulting in very minor over submission. In absolute terms, total annual consumption is estimated to be 7,200 kWh lower than the DUML database indicates. Potential impact: Medium Actual impact: Medium Audit history: Multiple times previously Controls: Weak Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as weak because the new dimming profile is not being applied. The impact is assessed to be medium due to the impact of over submission.

Actions taken to resolve the issue	Completion date	Remedial action status
CODC are working with their Streetlight Maintenance team to have correct ballast information added	01/10/2023	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Regular checking of this information to ensure accuracy	01/10/2023	

CONCLUSION

The database is remotely hosted by thinkproject New Zealand Ltd. Contact reconciles this DUML load using the DST profile. This is managed by Contact Energy's subsidiary Simply Energy and is submitted against the CTCS participant identifier.

CODC's contractor for streetlight installation and maintenance is Delta. CODC update the maintenance changes and they have engaged BECA to update all new connections in RAMM.

The field audit was undertaken of a statistical sample of 192 items of load in CODC the area on the 14th and 15th May 2023.

The field audit indicated that the database was not within the allowable +/-5% variance threshold and is therefore deemed to be in accurate. This is discussed in **section 3.1**.

- In absolute terms the installed capacity is estimated to be 2 kW lower than the database indicates.
- There is a 95% level of confidence that the installed capacity is between 10kW lower to 5 kW higher than the database.
- In absolute terms, total annual consumption is estimated to be 7,200 kWh lower than the DUML database indicates.
- There is a 95% level of confidence that the annual consumption is between -42,800 kWh p.a. lower to 19,300 kWh p.a. higher than the database indicates.

The total volume submitted to the Reconciliation Manager is based on a monthly database report derived from RAMM, and the "burn time" which is sourced from data loggers. The methodology is compliant.

I checked the submission calculation provided by Contact for April2 2023 and it matches the database.

As noted in the previous audit report, CODC have no central management system in place and no plans to install one, but the fittings have fixed dimming for all Betacom lights (1,752 items of load or 80% of all lights) installed on their network. This was part of the night sky initiative in the area. The lights reduce their power consumption to 60% between the hours of midnight to 5am year-round. Currently this is not reflected in the submission volumes. This will be resulting in an estimated annual over submission of 25,000 kWh. New ICPs have been created and it is intended that submission will occur against the new ICPs, using the dimming profile that was approved by the Authority and noted in the previous audit. These will be applied once golden meters can be installed, then the volumes will reflect the dimming. This project has not progressed since the previous audit.

The audit found five non-compliances and repeats one recommendation. The future risk rating of 18 indicates that the next audit be completed in six months. I have considered this in conjunction with Contact's comments and recommend that the next audit be completed in eight months. This should allow sufficient time for the "golden" meters to be installed to account for dimming of the lights.

PARTICIPANT RESPONSE

Central Otago DC were quick to add missing ICPs identified and have a plan to update missing ballast information as well as adding the additional lights into their database. They are going to work closely with their streetlight maintenance team to try and avoid this being a problem in future audits. Central Otago DC are aware of the importance of keeping their database up to date and correct and will continue to work to achieve the best accuracy as possible.