ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

CHRISTCHURCH CITY COUNCIL AND CONTACT ENERGY LIMITED

NZBN: 9429038549977

Prepared by: Steve Woods

Date audit commenced: 6 September 2023

Date audit report completed: 7 December 2023

Audit report due date: 16 December 2023

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EXECUTIVE SUMMARY

This audit of the **Christchurch City Council (CCC) 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.

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.

As noted in the previous audit CCC undertakes dimming of lamps on the network, which leads to over submission by the trader, as they are submitting more than is consumed. If it is assumed that 31,000 lights are dimmed by 20% for a quarter of the night and the average wattage per light is 67 watts (the current average from the database), then the total over submission is estimated to be:

31,000 * 0.067 * 4271 * 0.2 * 0.25 = 443,543 kWh per annum.

It is intended that submission will use the dimming profile that has been approved by the Authority for these lamps. The project to implement this is still in progress but the completion date is unknown. It is already more than 14 months since dimming commenced, therefore as every month passes, approx. 37,000 kWh of over submission is occurring which will not be revised.

The field audit was undertaken of a statistical sample of sample of 505 items of load. This found the database is not confirmed to be accurate within the allowable ±5% accuracy threshold and over submission of 637,200 kWh per annum is occurring.

I checked the data submission for August 2023 and confirmed the process was correct, however the database extract has different figures to the summary report provided to Contact. The table below shows the differences.

ICP Number	Description	Summary report used for submission (kW)	Database wattage (kW)
0007102593RN8D3	Orion_CCC GXP street light ICP	928.55	919,91
0007102594RN519	Orion_CCC GXP street light ICP	264.38	265,08
0007102595RN95C	Orion_CCC GXP street light ICP	1738.74	1,711,78
	Total	**2,931.68**	**2,896.77**

Orion explained this discrepancy as possibly being due to non-streetlight load being in the report to Contact, which is removed from the database extract for the audit. This discrepancy results in over submission by approx. 149,000 kWh per annum.

In total, over submission in excess of 1,200,000 kWh is occurring each year.

This audit found five non-compliances. The future risk rating of 30 indicates that the next audit be completed in three months I have considered this in conjunction with Contact's responses and recommend that the next audit be in six months. This takes into account the Xmas break, but also reflects the urgency of resolving the dimming issue, which results in approx. 37,000 kWh of over submission every month, which will not be revised.

The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Deriving submission information	2.1	11(1) of Schedule 15.3	In absolute terms, total annual consumption is estimated to be 637,200 kWh lower than the DUML database indicates. Estimated over submission of 443,543 kWh per annum based on dimming of 31,000 lamps. Over submission of approx. 149,000 kWh per annum due to incorrect monthly reporting.	Weak	High	9	Investigating
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	26,087 items of load have insufficient descriptions.	Moderate	Low	2	Investigating
All load recorded in database	2.5	11(2A) of Schedule 15.3	One additional item of load identified in the field audit	Strong	Low	1	Identified
Database accuracy	3.1	15.2 and 15.37B (b)	In absolute terms, total annual consumption is estimated to be 696,100 kWh lower than the DUML database indicates. At least 32 items of load with incorrect coordinates. 13,000 kWh over submission outside the 14-month revision window due to a delay in updating the database following LED upgrades on Rose St.	Weak	High	9	Investigating
Volume information accuracy	3.2	15.2 and 15.37B (c)	In absolute terms, total annual consumption is estimated to be 637,200 kWh lower than the DUML database indicates. Estimated over submission of 443,543 kWh per annum based on dimming of 31,000 lamps. Over submission of approx. 149,000 kWh per annum due to incorrect monthly reporting.	Weak	High	9	Investigating
Future Risk Rating						30	

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
		Nil

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

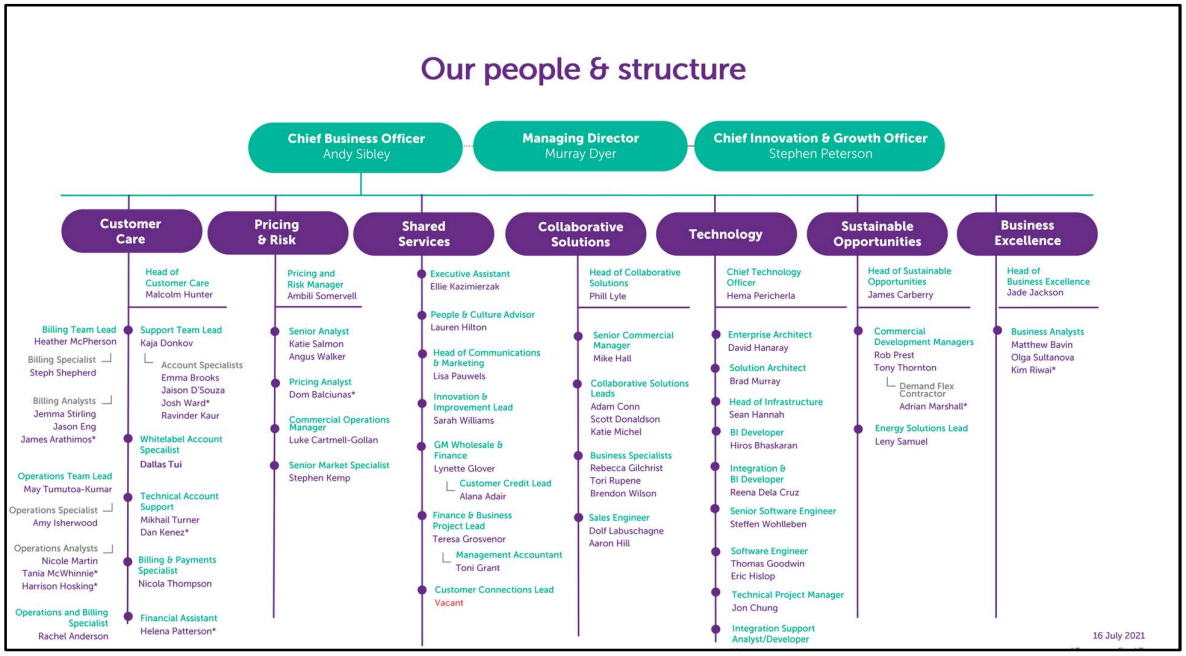
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Contact Energy provided a copy of their organisational structure.



1.3. Persons involved in this audit

Auditor:

Name	Company	Role
Steve Woods	Veritek Limited	Lead Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Penny Lawrence	Operations Services	Orion
Dallas Tui	White Label Account Specialist	Simply Energy

1.4. Hardware and Software

Orion use a purpose-built Oracle Streetlighting/DUML database for the management of the DUML information. Backup and restoration procedures are in place, and access to the Orion network (including the database) is restricted using logins and passwords.

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

1.5. Breaches or Breach Allegations

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

1.6. ICP Data

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0007102593RN8D3	Orion_CCC GXP street light ICP	BRY0661	DST	14,433	919,911
0007102594RN519	Orion_CCC GXP street light ICP	ISL0331	DST	3,931	265,083
0007102595RN95C	Orion_CCC GXP street light ICP	ISL0661	DST	26,358	1,711,779
Total				44,722	2,896,772

The smart lights are also recorded in the database for ICPs 0007182097RN3F9, 0007182098RNC27 and 0007182100RN8D0. These are recorded with “inactive - reconciled elsewhere” status, and the volumes are submitted against the corresponding DUML ICP for the NSP as discussed in **sections 2.1** and **3.2**.

1.7. Authorisation Received

All information was provided directly by Contact, Simply Energy and Orion.

1.8. Scope of Audit

This audit of the CCC 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.

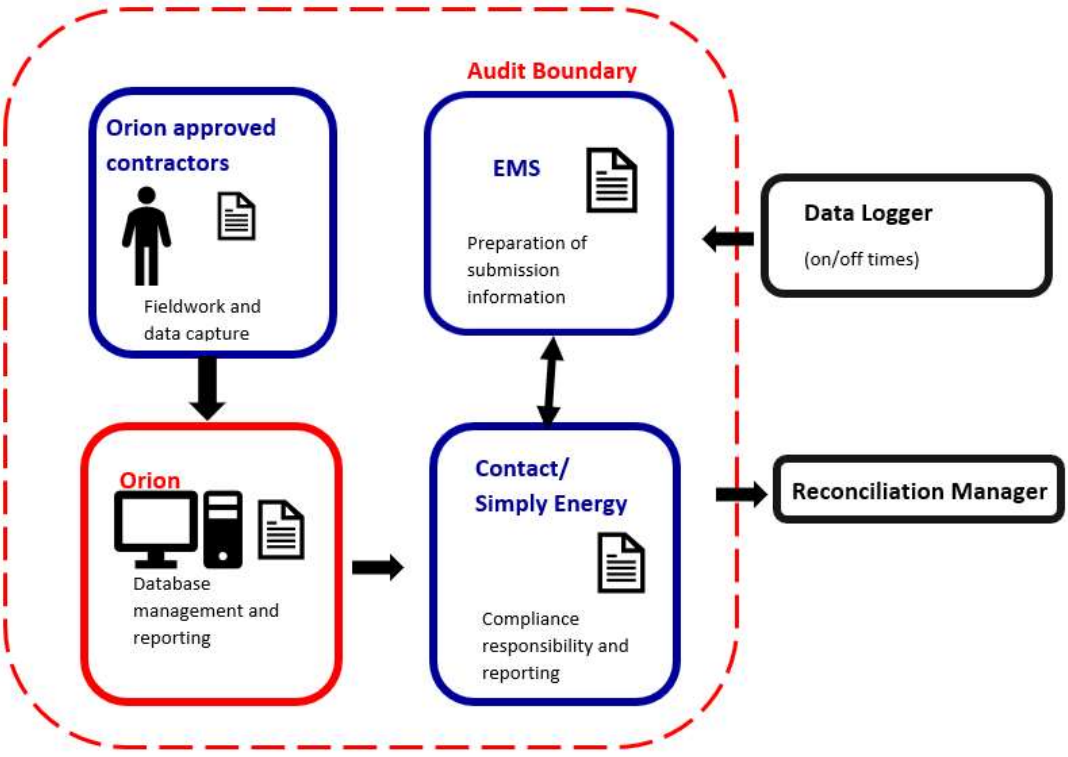
The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1.

The unmetered load is managed by Orion and the data is held in their DUML database, on behalf of CCC, who is Contact's customer.

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 diagrams below show the audit boundaries for clarity.

Orion's fault, maintenance, new connection and upgrade work is completed by Orion's approved contractors. The contractors provide paperwork to Orion confirming that work is complete, and Orion uses this information to update the database.

The smart light ICPs 0007182097RN3F9, 0007182098RNC27 and 0007182100RN8D0 are recorded with "inactive - reconciled elsewhere" status, and the volumes are submitted against the corresponding DUML ICP for the NSP. This is discussed in **sections 2.1** and **3.2**.



A field audit was undertaken of a statistical sample of 505 items of load on 26th and 27th October 2023.

1.9. Summary of previous audit

The previous audit of this database was undertaken by Steve Woods of Veritek Limited in December 2022. 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-compliances

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	In absolute terms, total annual consumption is estimated to be 696,100 kWh lower than the DUML database indicates. 45 lamps have incorrect total wattages, resulting in an estimated under submission of 1,192 kWh p.a. based on 4,271 burn hours. Estimated over submission of 443,543 kWh per annum based on dimming of 31,000 lamps.	Still existing
Database accuracy	3.1	15.2 and 15.37B (b)	In absolute terms, total annual consumption is estimated to be 696,100 kWh lower than the DUML database indicates. 45 lamps have incorrect total wattages, resulting in an estimated under submission of 1,192 kWh p.a. based on 4,271 burn hours.	Still existing
Volume information accuracy	3.2	15.2 and 15.37B (c)	In absolute terms, total annual consumption is estimated to be 696,100 kWh lower than the DUML database indicates. 45 lamps have incorrect total wattages, resulting in an estimated under submission of 1,192 kWh p.a. based on 4,271 burn hours. Estimated over submission of 443,543 kWh per annum based on dimming of 31,000 lamps.	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

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 checked the data submission for August 2023 and confirmed the process was correct, however the database extract has different figures to the summary report provided to Contact. The table below shows the differences.

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	Total	**2,931.68**	**2,896.77**

Orion explained this discrepancy as possibly being due to non-streetlight load being in the report to Contact, which is removed from the database extract for the audit. This discrepancy results in over submission by approx. 149,000 kWh per annum.

CCC undertakes dimming of lamps on the network, which leads to over submission by the trader, as they are submitting more than is consumed. If it is assumed that 31,000 lights are dimmed by 20% for a quarter of the night and the average wattage per light is 67 watts (the current average from the database), then the total over submission is estimated to be:

31,000 * 0.067 * 4271 * 0.2 * 0.25 = 443,543 kWh per annum.

It is intended that submission will use the dimming profile that has been approved by the Authority for these lamps. The project to implement this is in progress but the completion date is unknown.

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 637,200 kWh.

The monthly report is provided with a daily kW value. The daily value is used for submission. Revisions are carried out if the data changes. This meets the requirements of the code.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-Nov-22 To: 23-Nov-23	In absolute terms, total annual consumption is estimated to be 637,200 kWh lower than the DUML database indicates. Estimated over submission of 443,543 kWh per annum based on dimming of 31,000 lamps. Over submission of approx. 149,000 kWh per annum due to incorrect monthly reporting. Potential impact: High Actual impact: High Audit history: Multiple times previously Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated as weak because they do not mitigate risk to an acceptable level. The impact is assessed to be high, based on the kWh differences described above, which result in over submission of approx. 1.2GWh per annum.

Actions taken to resolve the issue	Completion date	Remedial action status
Dimming project still ongoing, CCC will continue to work on this and keep us updated	01/02/2024	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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

An ICP is recorded for each item of load. CCC's database contains a GXP code that is linked to the relevant ICP in the customer table in Access.

Audit commentary

All items of load have a GXP recorded against them and this maps to the ICP.

Audit outcome

Compliant

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

Code reference

Clause 11(2)(b) of Schedule 15.3

Code related audit information

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

Audit observation

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

Audit commentary

The database contains fields for the street name, number, and GPS coordinates. GPS coordinates are recorded for all items of load. The accuracy of this information is discussed in **section 3.1**.

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 a lamp type, which corresponds to a lamp total wattage including ballast wattage. All items of load have a lamp type and total wattage recorded; however most LED lights do not have a detailed description. For example, "29W LED" does not provide sufficient information to check back to specifications to confirm if the wattage is correct. 26,087 of 44,722 records do not have sufficient details.

The accuracy of the recorded wattages is discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) and (d) of Schedule 15.3 From: 01-Jan-23 To: 21-Nov-23	26,087 items of load have insufficient descriptions. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact on settlement and participants is minor; therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
CCC looking to add standardized descriptions to remove this non-compliance	01/02/2024	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

A field audit was undertaken of a statistical sample of 505 items of load on 26th and 27th October 2023. The sample was selected from four strata, as follows:

- street names A – D,
- street names E – K,
- street names L – Q, and
- street names R – Z.

Audit commentary

The field audit discrepancies are summarised in the table below. Detailed results were provided to Orion and Contact.

Discrepancy	Quantity
In the field but not in the database	1
In database but not in the field	2
Incorrect wattage	30
Incorrect coordinates	32

One additional item of load was identified in the field audit.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 01-Nov-22 To: 23-Nov-23	One additional item of load identified in the field audit. Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as strong because they mitigate risk to an acceptable level. The impact on settlement and participants is minor; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
CCC will update their database accordingly	01/02/2023	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.

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 databases were checked for audit trails.

Audit commentary

The database has a complete audit trail of all additions and changes to the database information.

Audit outcome

Compliant

3. ACCURACY OF DUML DATABASE

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

Code reference

Clause 15.2 and 15.37B(b)

Code related audit information

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

Audit observation

The DUML Statistical Sampling Guideline was used to determine the database accuracy. The table below shows the survey plan.

Plan Item	Comments
Area of interest	CCC streetlights connected to the Orion network within the CCC geographical boundary.
Strata	The database contains 44,722 items of load. The processes for the management of all CCC items of load is the same. The database was divided into four strata: • street names A to D, • street names E to K, • street names L to Q, and • street names R to Z.
Area units	I created a pivot table of the roads in each database and used a random number generator to select a total of 94 sub-units across the four strata.
Total items of load	505 items of load were checked.

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

A field audit was conducted of a statistical sample of 505 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	94.8	Wattage from survey is lower than the database wattage by 5.2%.
R_L	87.9	With a 95% level of confidence, it can be concluded that the error could be between-12.1% and – 0.8%
R_H	99.2	

These results were categorised in accordance with the "Distributed Unmetered Load Statistical Sampling Audit Guideline", effective from 1 February 2019. The table below shows that Scenario B (detailed below) applies.

The conclusion from Scenario B is that there is evidence to support that the inaccuracy is statistically significant at the 95% level. The variability of the sample results across the strata means that the true wattage (installed in the field) could be between 0.8% and 12.1% lower than the wattage recorded in the DUML database. Non-compliance is recorded because the error is greater than 5.0%.

In absolute terms the installed capacity is estimated to be 149 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is between 23 kW lower and 349 kW lower than the database.

In absolute terms, total annual consumption is estimated to be 637,200 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 1,491,400 kWh p.a. lower to 99,200 kWh p.a. lower 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 %

Light description and capacity accuracy

As discussed in **section 2.4**, all lights have a lamp and gear wattage recorded.

Lamp and gear wattages for all other lamps were compared to the expected values, and no exceptions were identified. All previous exceptions have been resolved.

Address location accuracy

As discussed in **section 2.3**, all lights have an address recorded.

The field audit identified that many of the parks and reserves lights have the same GPS coordinates, even if there are multiple lights in different locations. This is because Orion does not have coordinates for locations within properties. The field audit identified 32 examples.

Change management process findings

There has not been any change to the fault, maintenance, new connection, and upgrade work processes. It is completed by Orion's approved contractors. The contractors provide paperwork to Orion confirming that work is complete, and Orion uses this information to update the Streetlighting/DUML database and GIS. For new subdivisions, this paperwork includes "as built" plans.

Upon receipt, paperwork is checked for completeness and accuracy and any issues are followed up with the contractor. The information is sent to the GIS team so that the GIS can be updated, and then returned to the connections team to update the Streetlighting/DUML database from the date the change or new connection was effective. Once data entry is complete, the values loaded are checked against the paperwork provided, and some spot checks in the field are completed. Paperwork is normally promptly provided electronically and processed within two to three business days of receipt.

All jobs are tracked using job numbers by the connections team as part of the works management process. Late paperwork from contractors, and late updates by the GIS team are followed up. A checklist is followed to ensure that all steps in the process are completed.

Orion's approved contractors have access to a web-based version of the Streetlighting/DUML database in the field and advise Orion's connections team if they notice any discrepancies in the data recorded. Orion's operation team acts on these notifications and checks and updates the data where necessary.

The LED upgrade project is in the final stages, changes are still being made in the field and batches of upgraded lights are uploaded to RAMM. The upgrade data including pole, light, and installation date information is provided in spreadsheet form and the IT team run scripts to load the information in the database. The IT and connections teams complete testing on the updates to ensure that the records are correct.

Quarterly outage patrols are completed by Orion's contractors as part of the maintenance programme. Outages are also reported by residents within the CCC region and work orders are raised with contractors as required.

Orion's database records a "start date" and "created date". The "start date" is entered by the user and reflects the date that the light was installed or changed, and system controls prevent future "start dates" from being entered. The "created date" reflects when the database record was created. Full history of the records that applied from each start date can be viewed in the database.

Whilst the processes described above appear robust, there was one road in the field audit (Rose St) where 19 lights were changed to LED on 21 February 2020 but were only loaded to the database during this audit, a delay of 44 months. Only 14 months of revisions are able to be conducted, therefore approx. 13,000 kWh will not be submitted.

Festive lights

There has been no change to the festive lights; these are recorded in the database with a class of "miscellaneous" and street address which includes "Christmas lights". These lights are listed as 'Out of Service' in the database when disconnected and made active when they are connected so that they can be included in submission data. The festive lights have not been connected for about five years. They have been correctly excluded from submission information.

Private lights

As previously reported new private lights are not accepted, and where private lights are identified Orion arranges for standard or shared unmetered load to be created. In the meantime, private unmetered lights are recorded in the database against the appropriate ICP number and reported in the monthly extracts.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Nov-22 To: 23-Nov-23	In absolute terms, total annual consumption is estimated to be 696,100 kWh lower than the DUML database indicates. At least 32 items of load with incorrect coordinates. 13,000 kWh over submission outside the 14-month revision window due to a delay in updating the database following LED upgrades on Rose St. Potential impact: High Actual impact: High Audit history: Multiple times previously Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated as weak because they do not mitigate risk to an acceptable level. The impact is assessed to be high, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
Dimming project still ongoing, CCC will continue to work on this and keep us updated	01/02/2024	Investigating
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 checked the data submission for August 2023 and confirmed the process was correct, however the database extract has different figures to the summary report provided to Contact. The table below shows the differences.

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0007102595RN95C	Orion_CCC GXP street light ICP	1738.74	1,711,78
	Total	**2,931.68**	**2,896.77**

Orion explained this discrepancy as possibly being due to non-streetlight load being in the report to Contact, which is removed from the database extract for the audit. This discrepancy results in over submission by approx. 149,000 kWh per annum.

CCC undertakes dimming of lamps on the network, which leads to over submission by the trader, as they are submitting more than is consumed. If it is assumed that 31,000 lights are dimmed by 20% for a quarter of the night and the average wattage per light is 67 watts (the current average from the database), then the total over submission is estimated to be:

31,000 * 0.067 * 4271 * 0.2 * 0.25 = 443,543 kWh per annum.

It is intended that submission will use the dimming profile that has been approved by the Authority for these lamps. The project to implement this is in progress but the completion date is unknown.

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 637,200 kWh.

The monthly report is provided with a daily kW value. The daily value is used for submission. Revisions are carried out if the data changes. This meets the requirements of the code.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-Nov-22 To: 23-Nov-23	In absolute terms, total annual consumption is estimated to be 637,200 kWh lower than the DUML database indicates. Estimated over submission of 443,543 kWh per annum based on dimming of 31,000 lamps. Over submission of approx. 149,000 kWh per annum due to incorrect monthly reporting. Potential impact: High Actual impact: High Audit history: Multiple times previously Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated as weak because they do not mitigate risk to an acceptable level. The impact is assessed to be high, based on the kWh differences described above, which result in over submission of approx. 1.2GWh per annum.

Actions taken to resolve the issue	Completion date	Remedial action status
CCC working on changing their reporting so unmetered load such as tsunami warning sirens and bus stop lights not included	01/03/2023	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	

CONCLUSION

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.

As noted in the previous audit CCC undertakes dimming of lamps on the network, which leads to over submission by the trader, as they are submitting more than is consumed. If it is assumed that 31,000 lights are dimmed by 20% for a quarter of the night and the average wattage per light is 67 watts (the current average from the database), then the total over submission is estimated to be:

31,000 * 0.067 * 4271 * 0.2 * 0.25 = 443,543 kWh per annum.

It is intended that submission will use the dimming profile that has been approved by the Authority for these lamps. The project to implement this is still in progress but the completion date is unknown. It is already more than 14 months since dimming commenced, therefore as every month passes, approx. 37,000 kWh of over submission is occurring which will not be revised.

The field audit was undertaken of a statistical sample of sample of 505 items of load. This found the database is not confirmed to be accurate within the allowable ±5% accuracy threshold and over submission of 637,200 kWh per annum is occurring.

I checked the data submission for August 2023 and confirmed the process was correct, however the database extract has different figures to the summary report provided to Contact. The table below shows the differences.

ICP Number	Description	Summary report used for submission (kW)	Database wattage (kW)
0007102593RN8D3	Orion_CCC GXP street light ICP	928.55	919,91
0007102594RN519	Orion_CCC GXP street light ICP	264.38	265,08
0007102595RN95C	Orion_CCC GXP street light ICP	1738.74	1,711,78
	Total	**2,931.68**	**2,896.77**

Orion explained this discrepancy as possibly being due to non-streetlight load being in the report to Contact, which is removed from the database extract for the audit. This discrepancy results in over submission by approx. 149,000 kWh per annum.

In total, over submission in excess of 1,200,000 kWh is occurring each year.

This audit found five non-compliances. The future risk rating of 30 indicates that the next audit be completed in three months I have considered this in conjunction with Contact's responses and recommend that the next audit be in six months. This takes into account the Xmas break, but also reflects the urgency of resolving the dimming issue, which results in approx. 37,000 kWh of over submission every month, which will not be revised.

PARTICIPANT RESPONSE

The dimming project has taken longer than originally anticipated which has affected the outcome of this audit. However, CCC are committed to the success of this project which will correct the over submission and hopefully reflected in the next audit.