ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

CHRISTCHURCH CITY COUNCIL
MAINPOWER LIGHTS
AND
CONTACT ENERGY LIMITED
NZBN: 9429038549977

Prepared by: Steve Woods

Date audit commenced: 25 August 2022

Date audit report completed: 21 September 2022

Audit report due date: 1 October 2022

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EXECUTIVE SUMMARY

This audit of the **Christchurch City Council (CCC) DUML database** and processes on the Mainpower network 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.

In the previous audit, the Mainpower database was audited (since this was the last extract that was provided to the trader in February 2021) however CCC have taken over the management of the database for the DUML load, with a start date of 10 February 2022. The database is remotely hosted by thinkproject New Zealand Ltd.

Electricity is supplied in the CCC region by Mainpower. Contact use CCC's RAMM database for submission. CCC provide a monthly report to Contact of this 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.

Connetics is engaged as the streetlighting maintenance contractor and update RAMM with any changes.

I checked the July 2022 submission data for ICPs 0000366681MPA69 and 0000366751MPE2F and confirmed that the calculation methodology was correct.

This audit found four non-compliances and makes one recommendation. This is an improvement from the last audit, with the database now being maintained by CCC. The future risk rating of five indicates that the next audit be completed in 18 months. I have considered this in conjunction with Contact's responses and recommend that the next audit be in 24 months.

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	One lamp with the incorrect total wattage recorded in the database, resulting in approximately 13 kWh of under submission.	Strong	Low	1	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	Four additional lights found in the field from the 131 items of load sampled.	Moderate	Low	2	Identified
Database accuracy	3.1	15.2 and 15.37B (b)	One lamp with the incorrect total wattage recorded in the database, resulting in approximately 13 kWh of under submission.	Strong	Low	1	Identified
Volume information accuracy	3.2	15.2 and 15.37B (c)	One lamp with the incorrect total wattage recorded in the database, resulting in approximately 13 kWh of under submission.	Strong	Low	1	Identified
Future Risk Rating						5	

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
Database accuracy	3.1	Investigate and determine the correct ICP for the lights in Pine Ave. Simply Energy and Contact Energy to update records.

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

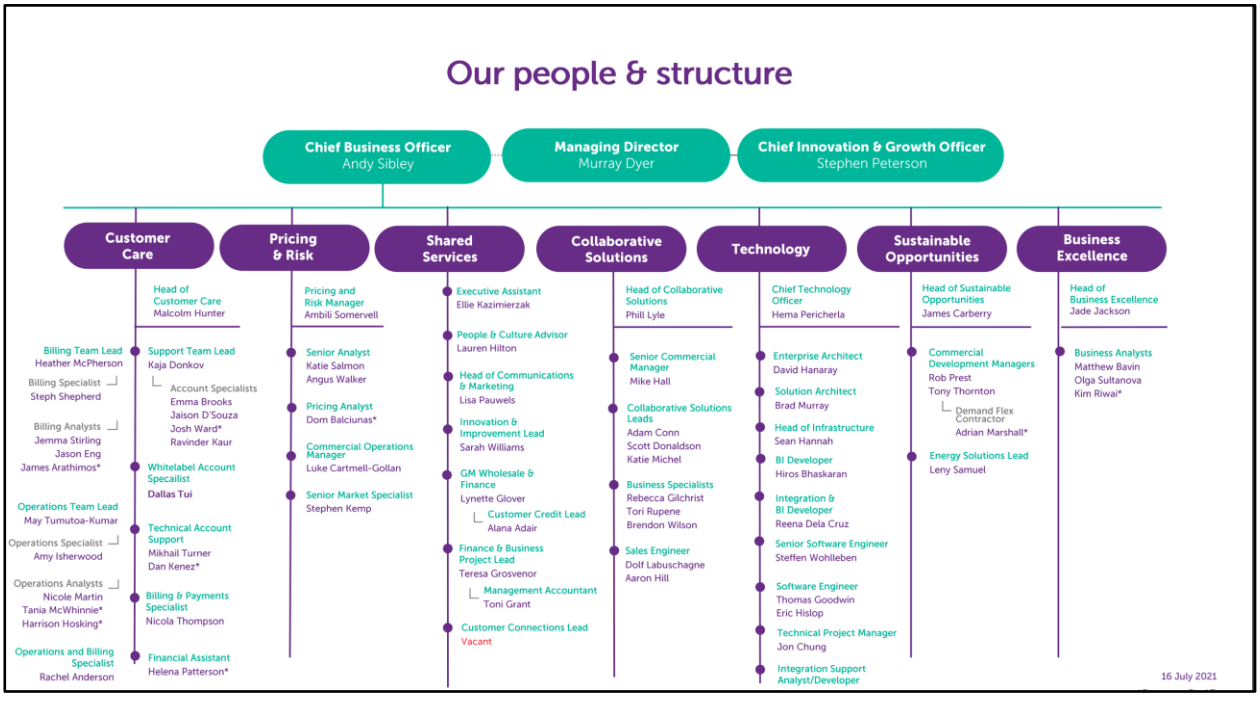
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

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
Claire Stanley	Veritek Limited	Supporting Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Luke Cartmell-Gollan	Commercial Operations Manager	Contact Energy
Geoff English	Senior Transport Asset Engineer	CCC

1.4. Hardware and Software

In the previous audit, the Mainpower database was audited (since this was the last extract that was provided to the trader in February 2021) however CCC have taken over the management of the database for the DUML load, with a start date of 10 February 2022.

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

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)
0000366681MPA69	Mainpower - KAI0111 Riverlea Estate Dr	KAI0111	DST	10	1,344
0000366751MPE2F	Mainpower - KAI0111 Street Lights	KAI0111	DST	121	1,753
Total				131	3,097

1.7. Authorisation Received

All information was provided directly by Contact and CCC.

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.

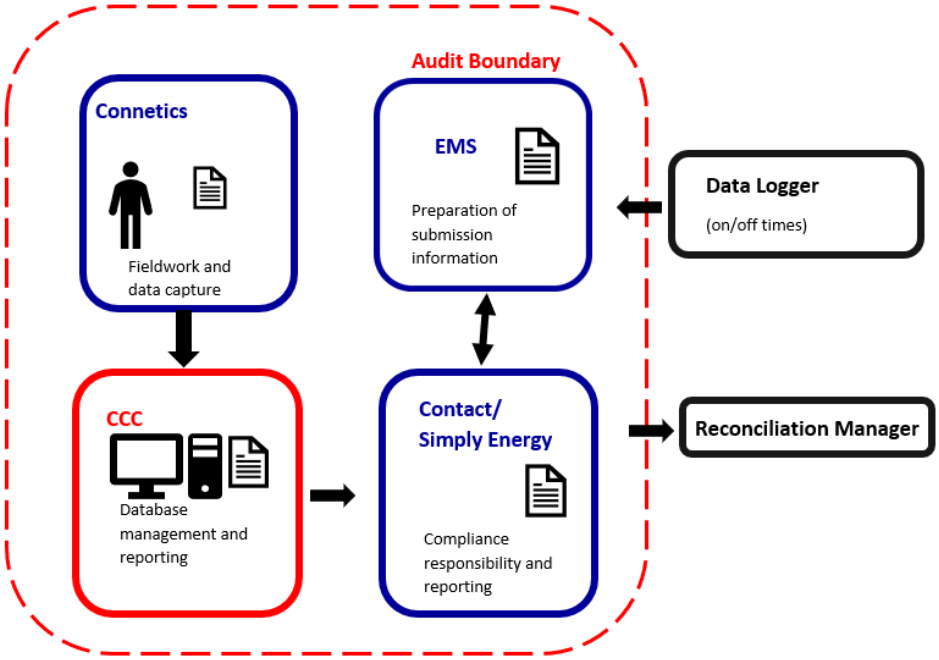
Electricity is supplied in the CCC region by Mainpower. Contact use CCC's RAMM database for submission. CCC provide a monthly report to Contact of this database. Contact reconciles the CCC DUML load using the DST profile. Wattages are derived from a RAMM database extract. On and off times are derived from a data logger.

Connetics is engaged as the streetlighting maintenance contractor and update RAMM with any changes.

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.

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

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 boundaries for clarity.



A field audit was undertaken for all 131 items of load for Mainpower on 9th September 2022.

1.9. Summary of previous audit

The previous audit of this database was undertaken by Rebecca Elliot of Veritek Limited in April 2022. The current status of the issues raised in that audit are detailed below.

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	Variance in light volumes reported to Simply Energy vs what is recorded in the database is likely to be resulting in an estimated 2,359 kWh per annum of under submission.	Cleared
			The database accuracy is assessed to be 22% less than is recorded in the database. Resulting in an estimated over submission of 5,950 kWh per annum (based on 4,271 annual burn hours).	Cleared
			The monthly database used for submission is no longer being maintained so the monthly volumes being calculated do not take into account any changes.	Cleared
All load recorded in database	2.5	11(2A) of Schedule 15.3	Eight additional lights found in the field from the 128 items of load sampled.	Still existing for one lamp.
Database accuracy	3.1	15.2 and 15.37B (b)	The database accuracy is assessed to be 22% less than is recorded in the database. Resulting in an estimated over submission of 5,950 kWh per annum (based on 4,271 annual burn hours).	Cleared
			No change management in place as the Mainpower database is no longer being maintained.	Cleared
Volume information accuracy	3.2	15.2 and 15.37B (c)	Variance in light volumes reported to Simply Energy vs what is recorded in the database is likely to be resulting in an estimated 2,359 kWh per annum of under submission.	Cleared
			The database accuracy is assessed to be 22% less than is recorded in the database. Resulting in an estimated over submission of 5,950 kWh per annum (based on 4,271 annual burn hours).	Cleared
			The monthly database used for submission is no longer being maintained so the monthly volumes being calculated do not take into account any changes.	Cleared

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.

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 July 2022 submission data for ICPs 0000366681MPA69 and 0000366751MPE2F and confirmed that the calculation methodology was correct.

The field audit found six discrepancies which are detailed in **section 2.5**. The full field audit found that the database had 98% accuracy rate.

One item of load has the incorrect wattage applied in the DUML database resulting in an estimated minor under submission of 13 kWh per annum. This is detailed in **section 3.1**.

The monthly report is being provided by CCC and notifies any changes made through the month.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 10-Feb-22 To: 25-Aug-22	One lamp with the incorrect total wattage recorded in the database, resulting in approximately 13 kWh of under submission. Potential impact: Low Actual impact: Low Audit history: Multiple times previously 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 is assessed to be low, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
Record will be updated.	31/10/2022	Identified
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

The database was checked to confirm an ICP was recorded against each item of load.

Audit commentary

The initial database that was provided by CCC did not include the ICPs. An updated database has now been provided by CCC and includes the ICPs.

All items of load have an ICP recorded against them.

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

All items of load have the road name recorded. The database contains GPS coordinates for all items of load except for one item of load.

Address accuracy is discussed further 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

A description of each light is recorded in the light make and lamp model fields, wattages are recorded in the Watts LED UDT field. All items of load have a lamp model and lamp wattage populated.

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

The accuracy of the recorded wattages 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

A field audit included all 131 items of load for Mainpower on 9th September 2022.

Audit commentary

The field audit discrepancies are detailed in the table below.

Road	Database count	Field count	Light count difference	Wattage recorded incorrectly	Comments
KAINGA RD	50	49	-1		1 x 29W LED recorded in the database but not located in the field.
LINK RD	4	4		1	1 x 16W LED recorded in the database but 1 x 20W LED located in the field.
George Oliver Pl	0	4	+4		4 x new lamps not recorded in the database but located in the field. The lamps were not labelled with the wattage.
Grand Total	**131**	**134**	**5 (+4, -1)**		

I found four additional lamps in the field than were recorded in the database, and one lamp with incorrect wattages for all of the 131 items of load checked. The 29W LED lamp in Kainga Rd has now been removed from the database. The items missing from the database are recorded as non-compliance.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 10-Feb-22 To: 25-Aug-22	Four additional lights found in the field from the 131 items of load sampled. 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 rated as moderate as the processes that have been put in place will ensure that the data is recorded correctly most of the time. The impact is assessed to be low due to the number of additional lights found in the field.

Actions taken to resolve the issue	Completion date	Remedial action status
A field audit will be undertaken to ensure records on Link and Kainga Road are accurate. George Oliver Place has not yet been vested to Council so is the responsibility of the developer, not Council. Will be added to Council's CMS/RAMM and submission values after vesting occurs	30/11/2022 N/a	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 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

The field audit was undertaken of all 131 items of unmetered load items recorded in the database on 9th September 2022.

Wattages were checked for alignment with the published standardised wattage table produced by the Electricity Authority or LED light specifications where available against the DUML database.

The change management process to track changes and timeliness of database updates was evaluated.

Audit commentary

Database accuracy

The field audit found six discrepancies which are detailed in **section 2.5**. The full field audit found that the database had 98% accuracy rate.

The field audit confirmed that the database accuracy is within the allowable +/-5% threshold and is therefore considered compliant.

The last field audit found a large number of errors as the database was not being maintained, these have now been updated in the CCC database.

ICP Number

Five lights in Pine Ave are recorded in the CCC DUML database on ICP 0000366681MPA69 and billed by Simply Energy (CTCS). These lights are also recorded against ICP 0000366361MP5D6 and billed by Contact Energy (CTCT) as standard unmetered load. I recommend that these lights are investigated to determine the correct ICP and update the database to reflect the findings.

ICP	Road	Light Model	Lamp Make	WATTS LED UDT
0000366681MPA69	PINE AVE	Philips Road Grace DWP	LED	20
0000366681MPA69	PINE AVE	Philips Road Grace DWP	LED	20
0000366681MPA69	PINE AVE	Philips Road Grace DWP	LED	20
0000366681MPA69	PINE AVE	Philips Road Grace DWP	LED	20
0000366681MPA69	PINE AVE	Philips Road Grace DWP	LED	20

Recommendation	Description	Audited party comment	Remedial action
Clause 15.2 and 15.37B(b)	Investigate and determine the correct ICP for the lights in Pine Ave. Simply Energy and Contact Energy to update records.	The lights have been being double reconciled. Will be removed from Council submissions and left to be managed via 0000366681MPA69.	Identified

Lamp description and capacity accuracy

As discussed in **section 2.4**, wattages for all items of load were checked against the published standardised wattage table produced by the Electricity Authority or LED light specifications.

One item of load had the incorrect total wattage recorded:

Lamp Model recorded	Total Wattage recorded	Total Wattage expected	Quantity	Difference
70W HPS SUPER T	80	83	1	3

This will result in an estimated under submission of approximately 13 kWh per annum (based on 4271 hours per annum). This is recorded as non-compliance below.

Change management process findings

The processes were reviewed for new lamp connections and the tracking of load changes due to maintenance.

The field contractor is Connetics, and they are responsible for the network maintenance.

Outage patrols are not conducted, CCC are able to identify any issues with lights through the CMS system and will initiate a job with Connetics to resolve the issue.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 10-Feb-22 To: 25-Aug-22	One lamp with the incorrect total wattage recorded in the database, resulting in approximately 13 kWh of under submission. Potential impact: Low Actual impact: Low Audit history: Multiple times previously 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 is assessed to be low, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
Record will be updated.	31/10/2022	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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

Code reference

Clause 15.2 and 15.37B(c)

Code related audit information

The audit must verify that:

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

Audit observation

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

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

Audit commentary

Contact reconciles this DUML load using the DST profile. Simply Energy on behalf of Contact send the monthly kW values to EMS. EMS prepare the submission file using the data logger hours to determine the burn hours and the file is then sent to Contact who submit the data under the CTCS code.

I checked the July 2022 submission data for ICPs 0000366681MPA69 and 0000366751MPE2F and confirmed that the calculation methodology was correct.

The field audit found six discrepancies which are detailed in **section 2.5**. The full field audit found that the database had 98% accuracy rate.

The monthly report is being provided by CCC and notifies any changes made through the month.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 10-Feb-22 To: 25-Aug-22	One lamp with the incorrect total wattage recorded in the database, resulting in approximately 13 kWh of under submission. Potential impact: Low Actual impact: Low Audit history: Multiple times previously 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 is assessed to be low, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
Record will be updated.	31/10/2022	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

CONCLUSION

In the previous audit, the Mainpower database was audited (since this was the last extract that was provided to the trader in February 2021) however CCC have taken over the management of the database, with a start date of 10 February 2022. The database is remotely hosted by thinkproject New Zealand Ltd.

Electricity is supplied in the CCC region by Mainpower. Contact use CCC's RAMM database for submission. CCC provide a monthly report to Contact of this 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.

Connetics is engaged as the streetlighting maintenance contractor and update RAMM with any changes.

I checked the July 2022 submission data for ICPs 0000366681MPA69 and 0000366751MPE2F and confirmed that the calculation methodology was correct.

This audit found four non-compliances and makes one recommendation. This is an improvement from the last audit, with the database is now being maintained by CCC. The future risk rating of five indicates that the next audit be completed in 18 months. I have considered this in conjunction with Contact's responses and recommend that the next audit be in 24 months.

PARTICIPANT RESPONSE

Contact has reviewed this report and their comments are contained within the report.