ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

CHRISTCHURCH CITY COUNCIL AND CONTACT ENERGY LIMITED

Prepared by: Tara Gannon

Date audit commenced: 10 April 2019

Date audit report completed: 17 May 2019

Audit report due date: 1 June 2019

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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.

Electricity is supplied in the CCC region by Orion and Mainpower. Orion and Mainpower both manage databases of unmetered load information on behalf of CCC, who is Contact's customer. 44,228 (99.73%) unmetered items of load are connected to Orion's network, and 121 (0.23%) unmetered items of load are connected to Mainpower's network in Kainga.

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. A monthly report from the database is provided to Contact, and used to calculate submissions. Contact submits the DUML load as HHR using the HHR profile. On hours are derived using data logger information.

Mainpower's fault, maintenance, new connection and upgrade work is completed by Mainpower or Mainpower's approved contractors. Paperwork is provided to the Mainpower records team confirming that work is complete, and Mainpower uses this information to update the database. A monthly report from the database is provided to Contact, and used to calculate submissions. Contact submits the DUML load as HHR using the HHR profile. On hours are derived using SCADA information.

This audit has found lower Orion database accuracy than the 2018 audit, which has significantly affected the audit outcome. Most were timing differences caused by a delay between LED upgrades being carried out and paperwork received to update the database.

Volumes for Orion's smart lights are being reconciled. The smart light ICPs are recorded with inactive reconciled elsewhere status, and the volumes are submitted against the corresponding DUML ICP for the NSP. The smart lights are switched on and off using sensor information, and are unlikely to have the same on hours as the DUML ICPs.

Five non-compliances were identified, and one recommendation was raised. The future risk rating of 31 indicates that the next audit be completed in three months.

Orion and Mainpower were provided lists of all discrepancies identified during the audit, which they investigated and resolved where possible. Based on this, and the comments received, I recommend the next audit be completed in nine months to allow time to improve processes to record LED upgrades and resolve the other non-compliances.

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	**Orion** The February 2019 kW applied for submission are higher than the database extract values for February 2019 by 40.593 kW or 11,599.57 kWh based on the on hours for the month. The database contains some inaccurate data. **Mainpower** The database contains some inaccurate data.	Weak	High	9	Identified
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	**Mainpower** One lamp in the Mainpower database does not have a lamp model, lamp wattage or ballast wattage recorded.	Strong	Low	1	Investigating
All load recorded in database	2.5	11(2A) of Schedule 15.3	**Orion** 13 items of load missing from the database. **Mainpower** Five items of load missing from the database.	Weak	Low	3	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	**Orion** The database contains some inaccurate data. **Mainpower** The database contains some inaccurate data.	Weak	High	9	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	**Orion** The February 2019 kW applied for submission are higher than the database extract values for February 2019 by 40.593 kW or	Weak	High	9	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			11,599.57 kWh based on the on hours for the month. ICPs 0007102594RN519 and 0007102595RN95C had RPS HHR profile recorded instead of HHR. The database contains some inaccurate data. **Mainpower** ICP 0000366751MPE2F had RPS HHR profile recorded instead of HHR. The database contains some inaccurate data.				
Future Risk Rating						**31**	

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	Description	Recommendation
Database accuracy	3.1	Street address information	Check and update street addresses to reflect the street that the lights are situated on.

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.

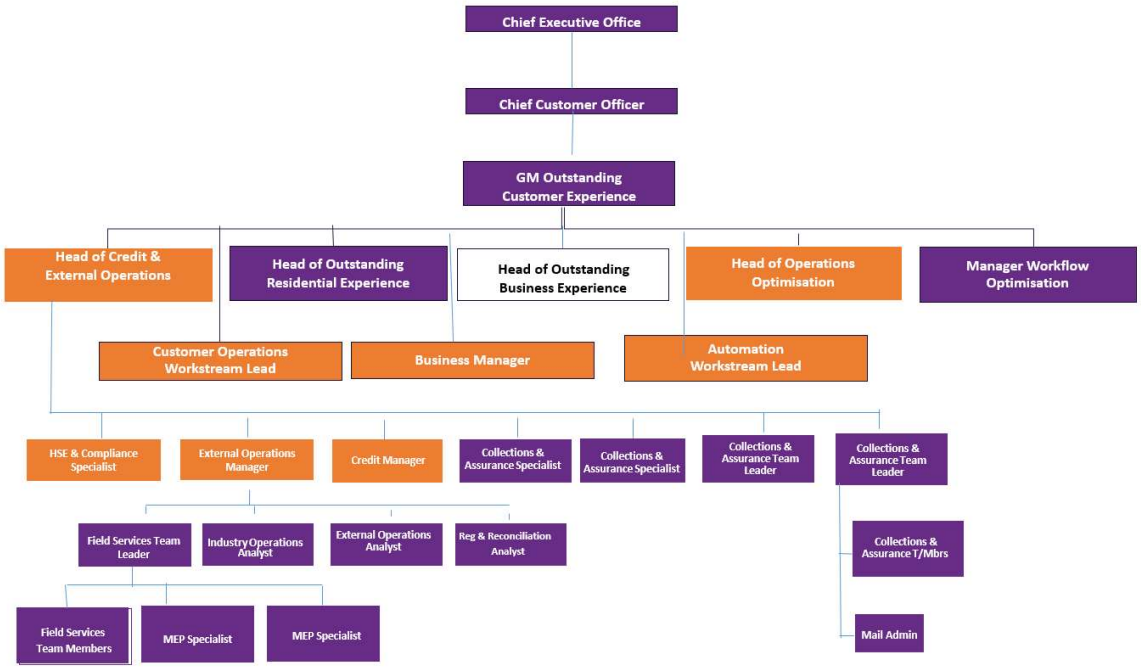
Audit commentary

There is one exemption in place relevant to the scope of this audit:

Exemption No. 177: Exemption to clause 8(g) of schedule 15.3 of the Electricity Industry Participation Code 2010 ("Code") in respect of providing half-hour ("HHR") submission information instead of non half-hour ("NHH") submission information for distributed unmetered load ("DUML"). This exemption expires at the close of 31 October 2023.

1.2. Structure of Organisation

Contact Energy provided a copy of their organisational structure.



1.3. Persons involved in this audit

Auditor:

Tara Gannon

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Penny Lawrence	Operations Services	Orion
Sarah Barnes	Regulatory Manager	Mainpower
Neil O'Loughlin	Maintenance Manager	Mainpower
Joel Hung	Commercial Analyst	Mainpower
Allie Jones	External Operations Analyst	Contact Energy
Pam Homer	Account Executive	Contact Energy
Sarah Crowe	Head of Credit and External Operations	Contact Energy

1.4. Hardware and Software

Orion

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 database is restricted using logins and passwords.

Mainpower

Mainpower use an Access based Mainpower Streetlight Database for the management of the DUML information. Backup and restoration procedures are in place, and access to the Mainpower network (including the database) is restricted using logins and passwords.

1.5. Breaches or Breach Allegations

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

1.6. ICP Data

Orion

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0007102593RN8D3	Orion_CCC GXP street light ICP	BRY0661	HHR	14,835	1,706,648
0007102594RN519	Orion_CCC GXP street light ICP	ISL0331	RPS HHR	3,639	361,039
0007102595RN95C	Orion_CCC GXP street light ICP	ISL0661	RPS HHR	25,754	3,070,421
			Total	**44,228**	**5,138,108**

Orion has some unmetered smart lights connected on its LV network. Smart lights are available 24 hours, and are turned on and off by a light sensor. The smart lights are connected to ICPs 0007182098RNC27 and 0007182100RN8D0, which have a status of inactive - reconciled elsewhere and are outside the scope of this audit. The load for these ICPs is reconciled under the DUML ICPs as discussed in **sections 2.1** and **3.2**.

Mainpower

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000366681MPA69	Mainpower - KAI0111 Riverlea Estate Dr	KAI0111	HHR	20	1,660
0000366751MPE2F	Mainpower - KAI0111 Street Lights	KAI0111	RPS HHR	101	12,596
			Total	**121**	**14,256**

1.7. Authorisation Received

All information was provided directly by Contact, Orion or Mainpower.

1.8. Scope of Audit

This audit of the CCC DUML databases 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.

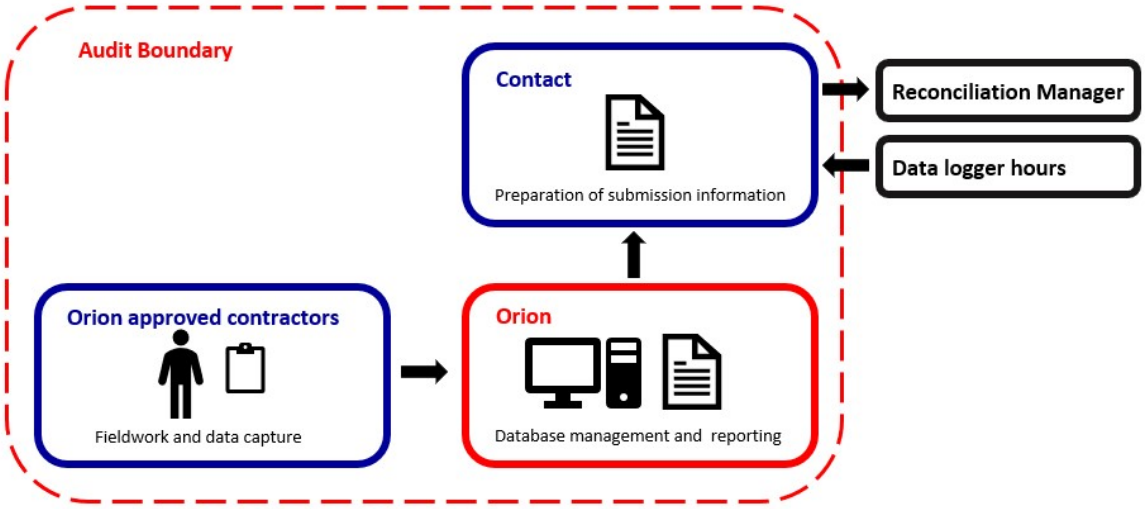
The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1.

Electricity is supplied in the CCC region by Orion and Mainpower. Orion and Mainpower both manage databases of unmetered load information on behalf of CCC, who is Contact's customer. 44,228 (99.73%) unmetered items of load are connected to Orion's network, and 121 (0.23%) unmetered items of load are connected to Mainpower's network in Kainga.

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.

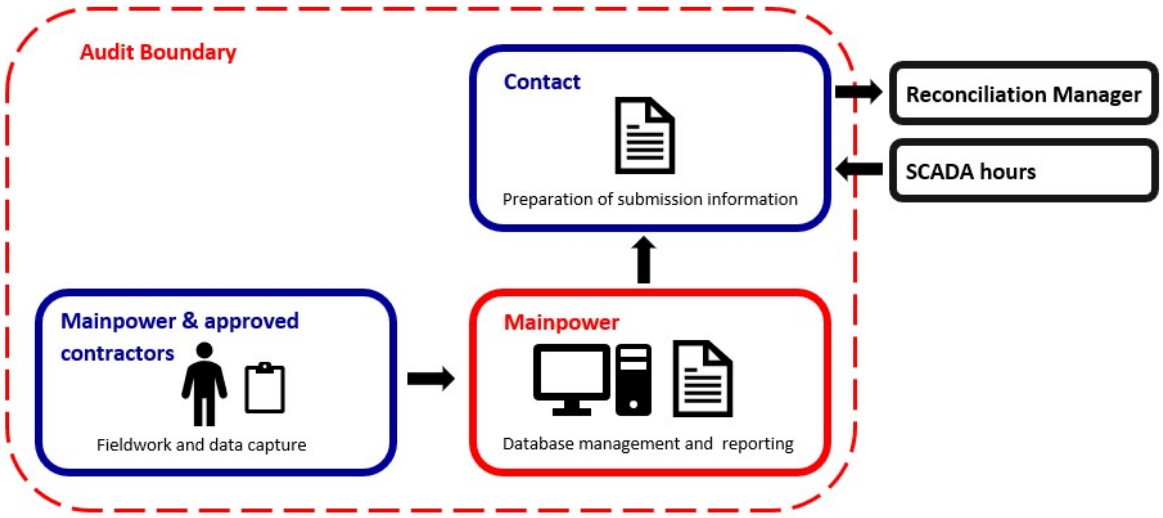
Orion

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. A monthly report from the database is provided to Contact, and used to calculate submissions. Contact submits the DUML load as HHR using the HHR profile. On hours are derived using data logger information.



Mainpower

Mainpower's fault, maintenance, new connection and upgrade work is completed by Mainpower or Mainpower's approved contractors. Paperwork is provided to the Mainpower records team confirming that work is complete, and Mainpower uses this information to update the database. A monthly report from the database is provided to Contact, and used to calculate submissions. Contact submits the DUML load as HHR using the HHR profile. On hours are derived using SCADA information.



The field audit was undertaken of a statistical sample of 526 items of load for Orion and 57 items of load for Mainpower on 10-12 April 2019.

1.9. Summary of previous audit

Contact provided a copy of the last audit report completed by Steve Woods of Veritek Limited in May 2018. Four non-compliances were identified, and two recommendations were made. The statuses of the non-compliances and recommendations are described below.

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	The Mainpower database accuracy is assessed to be 97.95% indicating an estimated over submission of 1,281 kWh per annum. The Orion database has nine lamp type and wattage differences, affecting 6,876 lamps with an overall wattage difference of 11.670 kW, which equates to 49,841 kWh per annum under submission.	Still existing
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	Nine lamp type and wattage differences in the Orion database, affecting 6,876 lamps with an overall wattage difference equating to 49,841 kW per annum under submission. One lamp in the Mainpower database has missing make and model information and no lamp wattage recorded.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	The Mainpower database accuracy is assessed to be 97.95% indicating an estimated over submission of 1,281 kWh per annum.	Still existing

Subject	Section	Clause	Non-compliance	Status
Volume information accuracy	3.2	15.2 and 15.37B(c)	The Mainpower database accuracy is assessed to be 97.95% indicating an estimated over submission of 1,281 kWh per annum. The Orion database has nine lamp type and wattage differences, affecting 6,876 lamps with an overall wattage difference of 11.670 kW, which equates to 49,841 kWh per annum under submission.	Still existing

Subject	Section	Description	Recommendation	Status
Festive lights	2.6	Clause 11(2)(a) and (aa) of Schedule 15.3	Put a process in place to ensure all Festive Lights are accounted for when status changes advised by Connetics.	Cleared
Database accuracy	3.2	Clause 15.2 and 15.37B(b)	Check all 125 watt MV lamps to confirm whether they have been replaced by lamps with other wattages.	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 the Orion and Mainpower databases within the required timeframe. Compliance is confirmed.

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

This clause requires that the distributed unmetered load database must satisfy the requirements of schedule 15.5 regarding the methodology for deriving submission information. Contact reconciles this DUML load as HHR using the HHR profile, in accordance with exemption number 177. This exemption is discussed further in **section 1.1**. On and off times are derived from data logger information for Orion, and SCADA information for Mainpower.

Orion

I checked the February 2019 submission data for ICPs 0007102593RN8D3, 0007102594RN519 and 0007102595RN95C. I found that the kW applied for submission differed from the database values due to the inclusion of wattages for smart lights, but the calculation process itself was functioning correctly. Orion has some unmetered smart lights connected on its LV network. Smart lights are available 24 hours, and are turned on and off by a light sensor. The smart lights are connected to ICPs 0007182098RNC27 and 0007182100RN8D0, which have a status of inactive - reconciled elsewhere and are outside the scope of this audit. I confirmed that Contact adds the wattages for each of CCC's smartlight ICPs to the DUML ICP which is connected to the same NSP as follows:

ICP	Submission kW	Database kW	Difference kW	Smartlight kW
0007102593RN8D3 (BRY0661)	1703.518	1701.479	2.039	2.039 ICP 0007182097RN3F9 (BRY0661)
0007102594RN519 (ISL0331)	361.059	361.039	0.020	0.020 ICP 0007182098RNC27 (ISL0331)
0007102595RN95C (ISL0661)	3033.044	2994.636	38.408	38.408 ICP 0007182100RN8D0 (ISL0661)
Total	**5097.621**	**5057.028**	**40.593**	**40.593**

Connection dates for festive lights are provided to Contact so that they can be included in submissions when connected, and excluded when disconnected. As discussed in **section 2.6**, festive lights were not connected in February 2019, and were correctly excluded from the calculation.

Volume inaccuracy is present as follows:

Issue	Estimated volume information impact (annual kWh)
Potential over submission due to database inaccuracy identified during the field audit	Estimated over submission of 2,617,500 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).
463 lights had a recorded wattage which differed from the expected wattage. Orion corrected the values to match the expected wattages during the audit.	Estimated over submission of 984.5W or 4,204 kWh per annum (based on annual burn hours of 4,271).
13 items of load missing from the database.	Estimated under submission is 582W or 2486 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

Mainpower

I checked the February 2019 submission data for ICPs 0000366681MPA69 and 0000366751MPE2F, and compliance is confirmed.

Volume inaccuracy is present as follows:

Issue	Estimated volume information impact (annual kWh)
Potential over submission due to database inaccuracy identified during the field audit	Estimated over submission of 3,200 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).
One lamp in the Mainpower database does not have a lamp model, lamp wattage or ballast wattage recorded.	Unknown
Five items of load missing from the database.	Estimated under submission of 446W or 1905 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: unknown To: 12-Apr-19	**Orion** The February 2019 kW applied for submission are higher than the database extract values for February 2019 by 40.593 kW or 11,599.57 kWh based on the on hours for the month due to the inclusion of smart lights The database contains some inaccurate data: The database accuracy is assessed to be 88.1% indicating potential over submission of 2,617,500 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). 463 lights had a recorded wattage which differed from the expected wattage, resulting in estimated over submission of 984.5W or 4,204 kWh per annum (based on annual burn hours of 4,271). Orion corrected the values to match the expected wattages during the audit. Some addresses and GPS coordinates do not reflect the physical location of the item of load. **Mainpower** The database contains some inaccurate data: The database accuracy is assessed to be 94.8% indicating potential over submission of 3,200 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). One lamp in the Mainpower database does not have a lamp model, lamp wattage or ballast wattage recorded. Potential impact: High Actual impact: High Audit history: Twice Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	Controls are rated as weak overall, as they are not sufficient to ensure that database records are accurate, particularly for Orion customer owned lights and upgraded lights. The impact is assessed to be high, based on the kWh differences described above. Many of the discrepancies are timing differences, and some have already been resolved. For LED upgrades, there is sometimes a delay between the light being installed and paperwork being received to update the database. A list of discrepancies has been provided to Orion and Mainpower who are working to investigate and resolve them.

Actions taken to resolve the issue	Completion date	Remedial action status
The over submission is due to the database not being updated as LED lights are replacing legacy lights in the field – Contact is working with Orion, see the participant comments at the end of this report – to ensure compliance.	27/05/2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Resubmission will be completed in an appropriate manner when each group is made compliant, ensuring that this is within a 14 month period. We will continue to work with Orion and CCC to ensure compliance	27/05/2019	

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 databases were checked to confirm the correct ICP was recorded against each item of load.

Audit commentary

Orion

All Orion items of load have an ICP recorded against them.

Mainpower

All Mainpower 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

Orion

All items of load have a street address recorded.

The database contains GPS coordinates for 44,218 (99.9%) of the 44,228 items of load. The 10 items without GPS coordinates have a street number and street recorded, which allows them to be readily located.

Where lighting is installed beyond the customer's property boundary, such as in parks, reserves community housing and carparks, the GPS location reflects the point of connection from Orion's network to the customer's cabling rather than the location of the individual item of load. The accuracy of locations for the individual items of load is discussed and recorded as non-compliance in **section 3.1**.

Mainpower

All items of load have street and area recorded.

The database contains GPS coordinates for 108 (89%) of the 121 items of load. The 13 items without GPS coordinates have a pole or nearest house location recorded.

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 lamp type and wattage capacity and included any ballast or gear wattage.

Audit commentary

Orion

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

Mainpower

Mainpower's database contains light type, lamp wattage and gear wattage information.

One item of load did not have the lamp type, lamp wattage or gear wattage populated. Mainpower intends to check and update the records for this light.

txtSITE	txtLOCATION	StreetPick	AreaPick
10407	459	KAINGA ROAD	KAINGA

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

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clauses 11(2)(c) and (d) of Schedule 15.3 From: unknown To: 12-Apr-19	**Mainpower** One lamp in the Mainpower database does not have a lamp model, lamp wattage or ballast wattage recorded. Potential impact: Low Actual impact: Low Audit history: Once Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as strong, because only one item of load with missing details was identified. The impact is unknown, but assessed to be low because only one light was affected.

Actions taken to resolve the issue	Completion date	Remedial action status
Mainpower will investigate this light	27/05/2019	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
CTCT don't believe it necessary to change any processes for 1 light	27/05/2019	

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

Code reference

Clause 11(2A) of Schedule 15.3

Code related audit information

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

Audit observation

The field audit was undertaken of a statistical sample of 526 items of load for Orion and 57 items of load for Mainpower on 10-12 April 2019.

Audit commentary

Orion

The following differences were identified during the field audit.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
0007102593RN8D3					
Caerphilly Pl	5	5	-	5	One L29 and four L24 LEDs were recorded as 70W HPS in the database. The lights have recently been upgraded and Orion is awaiting documentation to update the database.
Gertrude Pl	4	4	-	1	One 50W HPS pedestrian access way light had its bulb removed and appears unused. Orion has updated this lamp to show it is out of service.
Hendon St	7	7	-	3	Three L19 LEDs were recorded as 70W HPS in the database. The lights have recently been upgraded and Orion is awaiting documentation to update the database.
Liggins St	6	5	-1	-	One 2*30W FF recorded in the database was not present near 43 Liggins St. Orion intends to complete a site visit and will update the database following this.
McCormacks Bay Rd	29	26	-3	1	23 2*30W FF, one 70W HPS and two Cree LEDway LEDs (assumed to be 67W) were located on McCormacks Bay Road. The database recorded 26 2*30W FF, one 104W LED and two 67W LEDs. Orion intends to complete a site visit to confirm the lights installed.
0007102595RN95C Other					
Beckenham Park	9	6	-3	-	One 70W HPS and two M11FF uplights were unable to be located in the park. Three GPS locations were recorded, representing the point of connection rather than light locations because the lights are connected to customer owned cables. Orion has now removed the two FF lights from the database.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
Botanic Gardens	9	19	10	5	One GPS location was recorded, representing the point of connection rather than light locations because the lights are connected to customer owned cables. Details of the lights located were provided to Orion, and they intend to complete a site visit to confirm the lights installed.
Dunbarton St	1	1	-	1	One 58W LED was recorded as 87W LED in the database. Orion confirmed that the database has now been amended.
Halswell Rd Library & Community	26	28	2	26	Two GPS locations are recorded corresponding to the point of connection location rather than the light location. I found seven L33 lights and 21 L17 lights installed in the two carparks. The database recorded eight 19W LEDs, 16 38W LEDs and two 53W LEDs. Orion confirmed that the database has now been amended.
Jeffreys Park	6	4	-2	-	Two Phillips Tango lights are attached to the side of the library building to illuminate the carpark and are recorded in the database as 70W HPS, but are not unmetered. Orion has now updated the database to reflect this.
0007102595RN95C Street					
Attlee Cr	6	6	-	6	Six L20 LEDs were recorded as five 2*30W FF and one 70W HPS. The lights have recently been upgraded and Orion is awaiting documentation to update the database.
Cheyenne St	8	8	-	1	One L25 LED outside number 88 was recorded as 29W LED in the database. Orion confirmed that the database has now been amended.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
Dunbarton St	15	15	-	1	One 58W LED was recorded as 87W LED in the database. Orion confirmed that the database has now been amended.
Gregan Cr	8	8	-	8	Eight L20 LEDS were recorded as 2*30W FF in the database. The lights have recently been upgraded and Orion is awaiting documentation to update the database.
James K Baxter Pl	3	4	1	2	Two L20 and one L34 LEDs were missing from the database. One 2*30W FF and one 100W HPS were included in the database but were not located on the street. The lights have recently been upgraded and Orion is awaiting documentation to update the database.
Kildare St	7	7	-	1	One L20 LED is recorded as 70W HPS in the database. The lights have recently been upgraded and Orion is awaiting documentation to update the database.
Leander St	5	5	-	4	Four 22 LED were recorded in the database as 2*30W FF. The lights have recently been upgraded and Orion is awaiting documentation to update the database.
Normandy St	5	5	-	5	Five L24 LEDs were recorded as 2*30W FF in the database. The lights have recently been upgraded and Orion is awaiting documentation to update the database.
Piko Cr	9	9	-	9	Nine L20 LEDs were recorded in the database as five 50W HPS and four 70W HPS. The lights have recently been upgraded and Orion is awaiting documentation to update the database.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
Roberta Dr	15	15	-	15	15 L25 LEDs were recorded as 70W HPS in the database. The lights have recently been upgraded and Orion is awaiting documentation to update the database.
Shand Cr	7	7	-	7	Seven L20 LEDs were recorded as 70W HPS in the database. The lights have recently been upgraded and Orion is awaiting documentation to update the database.
Waterford Av	5	5	-	5	Five L20 LEDs were recorded as 70W HPS in the database. The lights have recently been upgraded and Orion is awaiting documentation to update the database.
Winters Rd	21	21	-	17	Major roadworks are underway in this area and layout has changed for the installation of the Winters Road Subway. One 100W HPS, three 2*30W FF, and 17 L22 LEDs were found on the street. Two 100W HPS, 12 2*30W FF, one 55W LPS and six 70W HPS were recorded in the database.
Total	**526**	**530**	**4**	**123**	

The field audit found:

- 13 lamps were present in the field but missing from the database, which are recorded as non-compliance below;
- nine lamps recorded in the database but missing from the field, which are recorded as non-compliance in **section 3.1**; and
- 123 wattage differences, which are recorded as non-compliance in **section 3.1**.

Mainpower

The following differences were identified during the field audit.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
CAWOOD ST	2	2	-	1	One lamp labelled S100 was recorded in the database as 110W HPS.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
MAIN NORTH ROAD	6	6	-	9	Eight lamps labelled 158LED were recorded in the database as 250W HPS. One lamp labelled 250W HPS was recorded in the database as 150W HPS.
PINE AVE	3	8	5	-	Five lamps situated on Pine Ave were missing from the database. Three were unlabelled and are assumed to be 70W SON, the other two were labelled 100W SON and 70W SON respectively.
Total	**57**	**62**	**5**	**10**	

The field audit found:

- five lamps were present in the field but missing from the database, which are recorded as non-compliance below; and
- ten wattage differences, which are recorded as non-compliance in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: unknown To: 12-Apr-19	**Orion** 13 items of load missing from the database. **Mainpower** Five items of load missing from the database. Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3

Audit risk rating	Rationale for audit risk rating
Low	Controls are rated as weak overall, as they are not sufficient to ensure that all load is consistently recorded in the database, particularly for Orion customer owned lights. The impact is assessed to be low based on the number of items missing, and that many of the discrepancies are timing differences. For LED upgrades, there is sometimes a delay between the light being installed and paperwork being received to update the database. For Orion, the estimated under submission is 582W or 2,486 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). For Mainpower the estimated under submission is 446W or 1,905 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

Actions taken to resolve the issue	Completion date	Remedial action status
CTCT will continue to work with CCC and Orion to ensure that the data in the Orion database is accurate. Please see the participant comments in the last section of this report for reasoning on the current state. CTCT believes that aside from the current LED project the controls for DUML are normally accurate to within the +/- 5% requirement	27/05/20-19	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
CTCT will continue to work with all parties concerned and will perform resubmission when possible within the 14 month washup period	27/05/2019	

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

On 20th September 2012 the Authority sent a memo to Retailers and auditors advising that tracking of load changes at a daily level was not required as long as the database contained an audit trail. I have interpreted this to mean that the production of a "snapshot" report from each database is sufficient to achieve compliance.

Processes to track changes to the databases were reviewed.

Orion

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 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 operations 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. In **section 2.5** I found that there were some delays in receiving information where lights had recently been upgraded.

All jobs are tracked using job numbers by the operations 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 operations 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.

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.

One private light was recorded in the database. During the audit it was confirmed to be disconnected and has been decommissioned.

Festive lights are recorded in the database with a class of "miscellaneous" and street address which includes "Christmas lights". These lights are listed as not in service in the database when disconnected, and made active when they are connected so that they can be included in submission data. No Christmas lights were connected during Christmas 2018. The 2018 audit found that notification of connection dates was missed for two Christmas lights, and the database information was corrected and provided to Contact.

Orion has some unmetered smart lights connected on its LV network. Smart lights are available 24 hours, and are turned on and off by a light sensor. The smart lights are connected to ICPs 0007182098RNC27 and 0007182100RN8D0, which have a status of inactive - reconciled elsewhere and are outside the scope of this audit. The load for these ICPs is reconciled under the DUML ICPs as discussed in **sections 2.1** and **3.2**.

An LED upgrade project is underway with the data being upgraded in batches of 1,000 - 1,300 at a time, and RAMM is updated by Orion once the installation is complete. In the long term, CCC is considering using a centralised management system to dim streetlights. Both Contact and Orion are aware of the compliance issues dimming can cause, and will work together to ensure compliance.

Mainpower

Mainpower's fault, maintenance, new connection and upgrade work is completed by Mainpower or Mainpower's approved contractors. Paperwork is provided to the Mainpower records team confirming that work is complete, and Mainpower uses this information to update the database. Mainpower relies on the paperwork to confirm the details to be loaded into the database, field checks are not normally completed.

For new subdivisions, the technician provides a form per light and these are signed at the time of data entry to confirm database population. There is also a check against the design. Information is entered into the database immediately on receipt, without having to wait for other departments to process their information. No new subdivisions were created during the audit period.

Outage patrols are completed every three months in the townships. Outages are also reported by residents within the CCC region and work orders are raised with contractors as required.

Some LED upgrades have been completed, but there are no immediate plans for a large scale LED rollout. New LED installations allow for use of a centralised management system and dimming, but there are no plans to use this technology at this stage.

There are no festive lights or private lights within the CCC area of Mainpower's network.

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

Orion

Orion demonstrated a complete audit trail of all additions and changes to the database information.

Mainpower

Mainpower demonstrated 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

Orion

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 databases contain 44,228 items of load. The processes for the management of all CCC items of load is the same. The database was divided into four strata: • 0007102593RN8D3 • 0007102594RN519 • 0007102595RN95C Other • 0007102595RN95C Street.
Area units	I created a pivot table of the roads in each database and used a random number generator to select a total of 51 sub-units across the four strata.
Total items of load	526 items of load were checked.

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

Mainpower

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 Mainpower network in Kaiapoi
Strata	The databases contain 121 items of load in Christchurch City Council area.

Plan Item	Comments
	The process for the management of all items of load is the same. Given the small size of the database, one stratum was created for the entire database.
Area units	I created a pivot table of the roads in each database and used a random number generator to select a total of 19 sub-units.
Total items of load	57 items of load were checked, making up approximately 55% of the entire database wattage.

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

Audit commentary

Orion

Database accuracy based on the field audit

The database was found to contain some inaccuracies and missing data as described in **section 2.5**. Most of the differences relate to LED upgrades, where there is sometimes a delay between the light being installed and paperwork being received to update the database. Orion was provided a list of all discrepancies identified during the audit, which they investigated and resolved where possible. Most were timing differences caused by a delay between LED upgrades being carried out and paperwork received to update the database.

The field data was 88.1% of the database data for the sample checked. This is not within the required database accuracy of ±5%. The statistical sampling tool reported with 95% confidence the precision of the sample was 15.5%, and the true load in the field will be between 79.8% and 95.3% of the load recorded in the database. The sample is not sufficiently precise to be able to determine the database accuracy but indicates that the database is likely to be over reporting the kW value.

The tool indicated that there is potentially 2,617,500 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool) of over submission. The statistical sampling tool reported with 95% confidence that there is a potential estimated over submission variance range of between 1,040,800 kWh and 4,430,300 kWh per annum.

Wattage accuracy

Orion's database contains a lamp type, which corresponds to a lamp total wattage including ballast wattage. The database was checked against the published standardised wattage table, and manufacturer's specifications where available. The following discrepancies were identified:

Lamp Type	Count	Recorded wattage	Expected wattage	Total difference (W)	Comment
175W MH	2	210	191	-38	Orion will update to the expected value
LED24	1	90	24	-66	Orion will update to the expected value
360W HPS	12	400	396	-48	Orion will update to the expected value
40W LED	34	47	40	-238	Orion will update to the expected value

Lamp Type	Count	Recorded wattage	Expected wattage	Total difference (W)	Comment
EM42	33	56	46	-330	Orion will update to the expected value
45W NGMH	43	51	50	-43	Orion will update to the expected value
60W NGMH	181	67	66	-181	Orion will update to the expected value
EM48	4	56	65	36	All 58W fluoro, a 7W ballast is expected
M05FF	153	5	4.5	-76.5	All High St Mall Four Power Parathrom 4.5W LED inground lamps.
Total	**463**			**-984.5**	

Specifications could not be located for the following lamp types to verify the wattages applied. Orion checked the lamps and updated the database where necessary.

Lamp Type	Count	Wattage	Orion Comment
28W MH	16	28	These are all Hereford St Bridge floodlighting, and will be replaced with LED lights fed from the CCC owned network.
450W MV	1	450	The lamp is not on site, and has been removed from the database.
750W MV	3	750	These lamps are out of service and have been removed from the database.

Incorrect lamp wattages identified in the previous audit were followed up, and found to be corrected.

Address accuracy

As recorded in **section 2.3**, where lighting is installed beyond the customer's property boundary, such as in parks, reserves, community housing and carparks, the GPS location reflects the point of connection from Orion's network to the customer's cabling rather than the location of the individual item of load.

This means that while the database contains a location for each item of load, in some cases it may not reflect the physical location of that item. In some cases the location information was insufficient to enable a specific item of load to be readily located, for example:

- at the Halswell Road Library and Community Centre 26 items of load shared two GPS coordinates and street addresses;
- at James K Baxter Place's housing complex five lights shared the same GPS position, and no street number information was available;
- at Beckenham Park nine lights shared two GPS positions, and no additional location information was available; and
- at the Botanic gardens nine lights shared one GPS position, and no additional location information was available.

Mainpower

Database accuracy based on the field audit

The database was found to contain some inaccuracies and missing data as described in **section 2.5**.

The field data was 94.8% of the database data for the sample checked. This is not within the required database accuracy of ±5%. The statistical sampling tool reported with 95% confidence the precision of the sample was 39.6%, and the true load in the field will be between 73.5% and 113.1% of the load recorded in the database. The sample is not sufficiently precise to be able to determine the database accuracy but indicates that the database is likely to be over reporting the kW value.

The tool indicated that there is potentially 3,200 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool) of over submission. The statistical sampling tool reported with 95% confidence that there is a potential estimated variance range of between 8,000 kWh under submission and 16,100 kWh over submission per annum.

The 2018 audit found 21 lamps specified as 125MV could be 70SON, incorrectly recorded as 125watt MV. Mainpower advised that the affected lights were checked and correct.

Wattage accuracy

The database was checked against the published standardised wattage table, and manufacturer's specifications where available.

As discussed in **section 2.4**, one item of load did not have any lamp make, model or wattage information recorded in the database. For all other items of load, lamp and ballast wattages were recorded as expected.

Address accuracy

The field audit found that GPS locations appeared correct, but in some cases the street name did not reflect the street that the item of load was located on. For example:

- items of load with locations Riverlea Estate Drive were recorded on Pine Ave, McDougal Square, and Yacht Club Road; and
- items of load with locations on Kainga Road were recorded on Pine Ave.

I recommend that the street address information is checked and updated.

Recommendation	Description	Audited party comment	Remedial action
Street address information	Check and update street addresses to reflect the street that the lights are situated on.	CTCT will pass this suggestion on to the required parties	Investigating

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: unknown To: 12-Apr-19	**Orion** The database contains some inaccurate data: The database accuracy is assessed to be 88.1% indicating potential over submission of 2,617,500 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). 463 lights had a recorded wattage which differed from the expected wattage, resulting in estimated over submission of 984.5W or 4,204 kWh per annum (based on annual burn hours of 4,271). Orion corrected the values to match the expected wattages during the audit. Some addresses and GPS coordinates do not reflect the physical location of the item of load. **Mainpower** The database contains some inaccurate data: The database accuracy is assessed to be 94.8% indicating potential over submission of 3,200 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). One lamp in the Mainpower database does not have a lamp model, lamp wattage or ballast wattage recorded. Potential impact: High Actual impact: Medium Audit history: Twice Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	Controls are rated as weak overall, as they are not sufficient to ensure that all load is consistently recorded in the database, particularly for Orion customer owned lights and upgraded lights. The impact is assessed to be high, based on the kWh differences described above. Many of the discrepancies are timing differences, and some have already been resolved. For LED upgrades, there is sometimes a delay between the light being installed and paperwork being received to update the database. A list of discrepancies has been provided to Orion and Mainpower who are working to investigate and resolve them.

Actions taken to resolve the issue	Completion date	Remedial action status
The over submission is due to the database not being updated as LED lights are replacing legacy lights in the field – Contact is working with Orion, see the participant comments at the end of this report – to ensure compliance.	27/05/2019	Identified

Preventative actions taken to ensure no further issues will occur	Completion date	
Resubmission will be completed in an appropriate manner when each group is made compliant, ensuring that this is within a 14 month period. We will continue to work with Orion and CCC to ensure compliance	27/05/2019	

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

Orion

I checked submission types and profiles for each ICP on the registry on 14/05/19. All three ICPs had the correct submission type, but ICPs 0007102594RN519 and 0007102595RN95C had RPS HHR profile recorded instead of HHR. This is recorded as non-compliance below.

I checked the February 2019 submission data for ICPs 0007102593RN8D3, 0007102594RN519 and 0007102595RN95C. I found that the kW applied for submission differed from the database values due to the inclusion of wattages for smart lights, but the calculation process itself was functioning correctly. Orion has some unmetered smart lights connected on its LV network. Smart lights are available 24 hours, and are turned on and off by a light sensor. The smart lights are connected to ICPs 0007182098RNC27 and 0007182100RN8D0, which have a status of inactive - reconciled elsewhere and are outside the scope of this audit. I confirmed that Contact adds the wattages for each of CCC's smartlight ICPs to the DUML ICP which is connected to the same NSP as follows:

ICP	Submission kW	Database kW	Difference kW	Smartlight kW
0007102593RN8D3 (BRY0661)	1703.518	1701.479	2.039	2.039 ICP 0007182097RN3F9 (BRY0661)
0007102594RN519 (ISL0331)	361.059	361.039	0.020	0.020 ICP 0007182098RNC27 (ISL0331)
0007102595RN95C (ISL0661)	3033.044	2994.636	38.408	38.408 ICP 0007182100RN8D0 (ISL0661)

Total	**5097.621**	**5057.028**	**40.593**	**40.593**

Connection dates for festive lights are provided to Contact so that they can be included in submissions when connected, and excluded when disconnected. As discussed in **section 2.6**, festive lights were not connected in February 2019, and were correctly excluded from the calculation.

Volume inaccuracy is present as follows:

Issue	Estimated volume information impact (annual kWh)
Potential over submission due to database inaccuracy identified during the field audit	Estimated over submission of 2,617,500 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).
463 lights had a recorded wattage which differed from the expected wattage. Orion corrected the values to match the expected wattages during the audit.	Estimated over submission of 984.5W or 4,204 kWh per annum (based on annual burn hours of 4,271).
13 items of load missing from the database.	Estimated under submission is 582W or 2486 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

Mainpower

I checked submission types and profiles for each ICP on the registry on 14/05/19. Both ICPs had the correct submission type, but ICP 0000366751MPE2F had RPS HHR profile recorded instead of HHR. This is recorded as non-compliance below.

I checked the February 2019 submission data for ICPs 0000366681MPA69 and 0000366751MPE2F, and compliance is confirmed.

Volume inaccuracy is present as follows:

Issue	Estimated volume information impact (annual kWh)
Potential over submission due to database inaccuracy identified during the field audit	Estimated over submission of 3,200 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).
One lamp in the Mainpower database does not have a lamp model, lamp wattage or ballast wattage recorded.	Unknown
Five items of load missing from the database.	Estimated under submission of 446W or 1905 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 Clause 15.2 and 15.37B(c) From: unknown To: 14-May-19	**Orion** The February 2019 kW applied for submission are higher than the database extract values for February 2019 by 40.593 kW or 11,599.57 kWh based on the on hours for the month due to the inclusion of smart lights. ICPs 0007102594RN519 and 0007102595RN95C had RPS HHR profile recorded instead of HHR. The database contains some inaccurate data: The database accuracy is assessed to be 88.1% indicating potential over submission of 2,617,500 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). 463 lights had a recorded wattage which differed from the expected wattage, resulting in estimated over submission of 984.5W or 4,204 kWh per annum (based on annual burn hours of 4,271). Orion corrected the values to match the expected wattages during the audit. Some addresses and GPS coordinates do not reflect the physical location of the item of load. **Mainpower** ICP 0000366751MPE2F had RPS HHR profile recorded instead of HHR. The database contains some inaccurate data: The database accuracy is assessed to be 94.8% indicating potential over submission of 3,200 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). One lamp in the Mainpower database does not have a lamp model, lamp wattage or ballast wattage recorded. Potential impact: High Actual impact: Medium Audit history: Twice Controls: Weak Breach risk rating: 9

Audit risk rating	Rationale for audit risk rating
High	Controls are rated as weak overall, as they are not sufficient to ensure that all load is consistently recorded in the database, particularly for Orion customer owned lights and upgraded lights. The impact is assessed to be high, based on the kWh differences described above. Many of the discrepancies are timing differences, and some have already been resolved. For LED upgrades, there is sometimes a delay between the light being installed and paperwork being received to update the database. A list of discrepancies has been provided to Orion and Mainpower who are working to investigate and resolve them.

Actions taken to resolve the issue	Completion date	Remedial action status
The over submission is due to the database not being updated as LED lights are replacing legacy lights in the field – Contact is working with Orion, see the participant comments at the end of this report – to ensure compliance.	27/05/2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Resubmission will be completed in an appropriate manner when each group is made compliant, ensuring that this is within a 14 month period. We will continue to work with Orion and CCC to ensure compliance	27/05/2019	

CONCLUSION

Electricity is supplied in the CCC region by Orion and Mainpower. Orion and Mainpower both manage databases of unmetered load information on behalf of CCC, who is Contact's customer. 44,228 (99.73%) unmetered items of load are connected to Orion's network, and 121 (0.23%) unmetered items of load are connected to Mainpower's network in Kainga.

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. A monthly report from the database is provided to Contact, and used to calculate submissions. Contact submits the DUML load as HHR using the HHR profile. On hours are derived using data logger information.

Mainpower's fault, maintenance, new connection and upgrade work is completed by Mainpower or Mainpower's approved contractors. Paperwork is provided to the Mainpower records team confirming that work is complete, and Mainpower uses this information to update the database. A monthly report from the database is provided to Contact, and used to calculate submissions. Contact submits the DUML load as HHR using the HHR profile. On hours are derived using SCADA information.

This audit has found lower Orion database accuracy than the 2018 audit, which has significantly affected the audit outcome. Most were timing differences caused by a delay between LED upgrades being carried out and paperwork received to update the database.

Volumes for Orion's smart lights are being reconciled. The smart light ICPs are recorded with inactive reconciled elsewhere status, and the volumes are submitted against the corresponding DUML ICP for the NSP. The smart lights are switched on and off using sensor information, and are unlikely to have the same on hours as the DUML ICPs.

Five non-compliances were identified, and one recommendation was raised. The future risk rating of 31 indicates that the next audit be completed in three months.

Orion and Mainpower were provided lists of all discrepancies identified during the audit, which they investigated and resolved where possible. Based on this, and the comments received, I recommend the next audit be completed in nine months to allow time to improve processes to record LED upgrades and resolve the other non-compliances.

PARTICIPANT RESPONSE

Following further investigation surrounding the non compliances in this report, Contact have received the below response from Orion and we hope that the authority will take this into account when they make their decision. For avoidance of doubt, we believe that Orion are working towards a compliant goal, we would like the authority to consider a longer audit period with the knowledge that Contact Energy will complete resubmission when it is appropriate:

CCC has a contract with Connetics to upgrade large volumes of lamps to LED over the next few years.

The design and head replacement has been approved by Orion. The process has geographically grouped into areas.

Finalised documentation for each of these 'groups' does not reach Orion until all works in each area have been completed and documentation sited and signed.

Works orders have been set up per 'group' and once everything has been completed for that particular area, it is then returned for Orion to upgrade their database. These batches to-date have ranged from approx. 500 - 1600 at the one time.

Orion have spoken to Connetics who have confirmed the roads highlighted in the findings have been upgraded and paperwork is being collated and finalised.

Currently there are a number of 'groups' that Orion are still waiting completion, many of whom contain roads mentioned in the highlighted non compliant lists provided by the auditor.

This is a case of practical timing. Orion is at the reliance of the completion documentation coming in from the CCC contractor 'Connetics' within the contracted time frames.

Side note: Since the Audit findings an additional 2800 lamps have been upgraded on the database.