ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

WAITAKI DISTRICT COUNCIL AND CONTACT ENERGY LIMITED

Prepared by: Steve Woods (assisted by Deborah Anderson)

Date audit commenced: 14 May 2018

Date audit report completed: 26 May 2018

Audit report due date: 01-Jun-18

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EXECUTIVE SUMMARY

This audit of the Waitaki Disctrict Council (**WDC**) 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, which became effective on 1 June 2017.

The WDC boundary is part of both Network Waitaki and OtagoNet (Child Company of PowerNet). WDC manages a RAMM database for the entire area, but this is not used for submission purposes. WDC sends a monthly report to Network Waitaki and any changes in this data are updated into a summary spreadsheet which is then sent to Contact. OtagoNet data is held in a spreadsheet at summary level and this is also sent to Contact on a monthly basis.

The only information available at individual light level is that in WDC's RAMM database. Whilst this data is not used for submission purposes, it was used to gauge the accuracy of the RAMM database, which was then compared to the OtagoNet and Network Waitaki totals to estimate submission accuracy.

The audit found five non-compliance issues in relation to this DUML database and processes and makes one recommendation.

The future risk rating of 34 indicates that the next audit be completed in 3 months. Remedial action is planned to be complete by December 2018; therefore I recommend an audit frequency of nine months to allow the necessary actions to be completed.

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	Waitaki District Council's database is not being used directly for submission calculations. Net over submission estimated to be 65,566 kWh per annum.	Weak	High	9	Identified
ICP identifier and items of load	2.2	11(2)(a) and (aa) of Schedule 15.3	There are five items of load that do not have an ICP identifier recorded against them in the database.	Strong	Low	1	Identified
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	Inadequate load type recorded in the database for 27 items of load • 16 items with no model or wattage information • 11 items with wattage but no	Weak	Medium	6	Identified

			model information Incorrect wattage values in the database, resulting in an estimated 47,382 kWh over submission per annum. 13 lamp types, total of 759 items of load affected.				
Database accuracy	3.1	15.2 and 15.37B(b)	The database has a large number of inaccuracies The field data was 78% of the database data for the sample checked. Indicating over submission of 212,200 kWh per annum	Weak	High	9	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database volume information is not correct. Comparison of WDC's (uncorrected) data with the Networks' data results in estimated under submission of 99,341 kWh per annum. Incorrect lamp and wattage values in the database result in an estimated 47,293 kWh over submission per annum. The field data was 78% of the database data for the sample checked, result in estimated over submission of 212,200 kWh per annum. Net over submission estimated to be 65,566 kWh per annum	Weak	High	9	Identified
					Future Risk Rating	**34**	

Future risk rating	1-3	4-6	7-8	9-17	18-26	27+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Description	Recommendation
Description and capacity of load	2.4	Database review	Ballast values, by lamp type, need to be reviewed and standardized in the database

ISSUES

Subject	Section	Description	Issue

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.

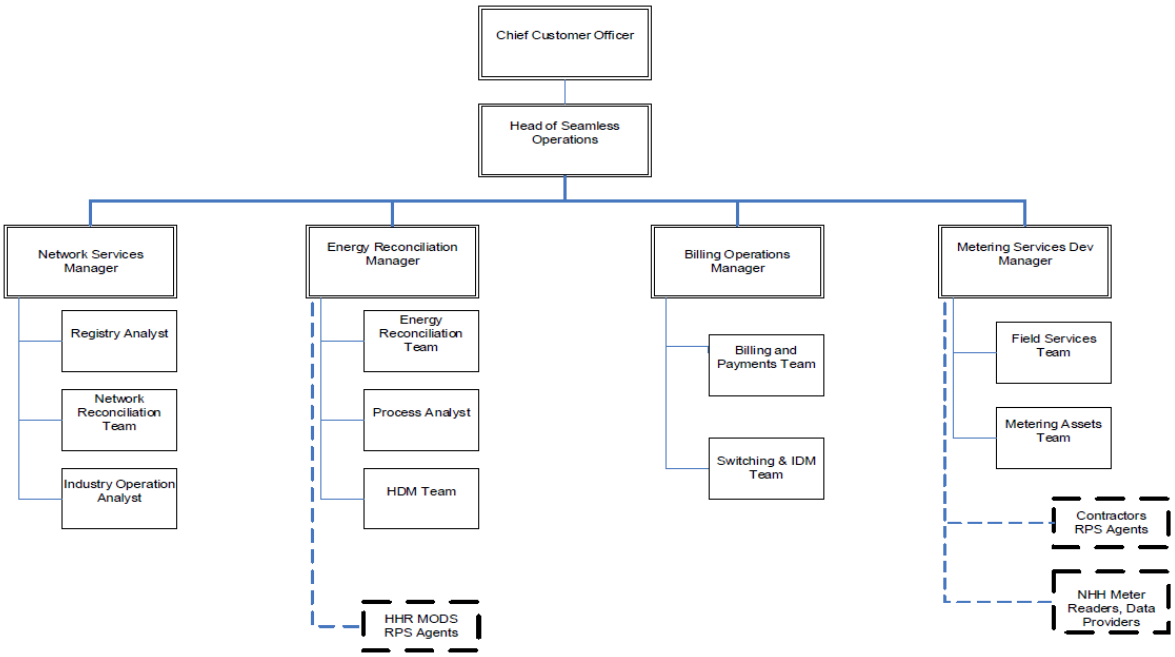
Audit commentary

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:

Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Rodger McGaw	Road Network Engineer	Waitaki District Council
Daryl White	CN Network Engineer	Waitaki District Council
Michael Voss	Roading Manager	Waitaki District Council
Bernie Cross	Energy Reconciliation Manager	Contact Energy

1.4. Hardware and Software

WDC uses a RAMM database for the management of DUML information. This data resides on RAMM's server in Auckland, and back-up is in accordance with standard industry procedures. Access to the spreadsheet is secure by way of password protection.

Network Waitaki and OtagoNet both have systems which are backed up to a Server in accordance with standard industry procedures. Access is by way of password protection.

1.5. Breaches or Breach Allegations

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

1.6. ICP Data

The following ICPs are relevant to the scope of this audit:

ICP Number	Description	GXP	Profile	WDC database	Number of items of load	Database wattage (watts)
0001982402TG5FC OtagoNet	WDC STREETLIGHTS	HWB1101	HHR	152 13,755.2	157	16,529
0000050700WTE7B Network Waitaki	Street Lighting (WDC)	OAM0331	HHR	1957 194,359	1957	170,026
0000050710WT4D6 Network Waitaki	Street Lighting Transit	TWZ0331	HHR	133 6,532	133	6,001

0000050720WT32E Waitaki Power	Street Lighting Waitaki GXP	WTK0111	HHR	195 9,983.2	195	9,554
			Totals	**2,437** **225,369.4**	**2,442**	**202,110**

Note: Shaded 'WDC database' values are taken from WDC's database while the far right two columns are compiled from the Network Waitaki and Otago Power extracts provided to Contact.

1.7. Authorisation Received

All information was provided directly by Contact and WDC.

1.8. Scope of Audit

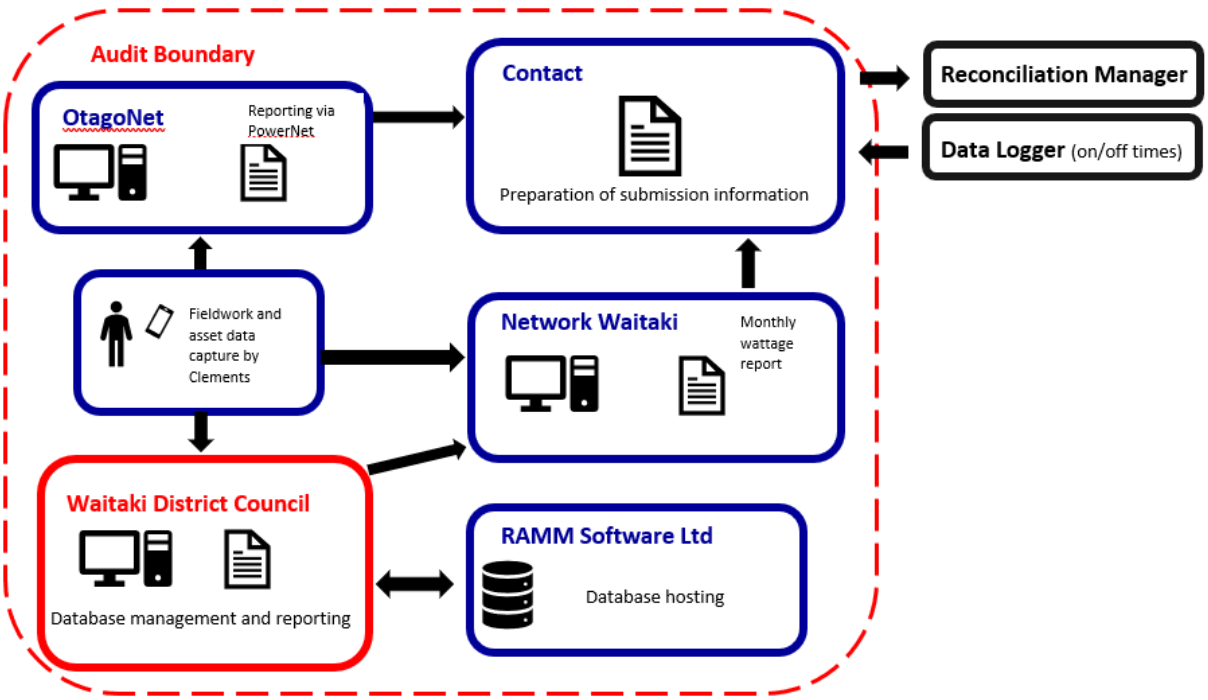
This audit of the Waitaki District Council (**WDC**) DUML database and processes was conducted at the request of Contact Energy Limited (**Contact**), in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1, which became effective on 1 June 2017.

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.

Contact use monthly reports received from both OtagoNet and Network Waitaki as a basis for their submission calculation.

The diagram below shows the audit boundary for clarity.



The field audit was undertaken of a statistical sample of 213 items of load on 15th & 16th May 2018.

1.9. Summary of previous audit

The previous audit was completed in March 2017 by Allie Jones of Contact Energy Limited. Three non-compliances were identified. The status of the non-compliances is described below.

Subject	Section	Clause	Non-compliance	Status
Audit Trails	1.9	Clause 21 of Schedule 15.2	Audit trail does not exist for OtagoNet spreadsheet system	Still existing
Location of Each Item of Load	2.2.2	Clause 11 (2) (b) of Schedule 15.3	Location of load type is not supplied by OtagoNet	Still existing
Description of each item of load	2.2.3	Clause 11 (2) (c) of Schedule 15.3	Description of Load type is not supplied by OtagoNet	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 3 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. 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 and the application of profiles was checked. The database was checked for accuracy.

Audit commentary

Contact reconciles this DUML load using the HHR profile, in accordance with exemption number 177. This exemption is discussed further in **section 1.1**. The registry shows HHR profile for all of these WDC ICPs.

Submissions are based on the network reports received from Network Waitaki and OtagoNet, with on and off times derived from data logger information.

I recalculated the submissions for March 2018 for each of the ICPs using the volumes provided by Network Waitaki and OtagoNet and the data logger hours provided. I confirmed that the calculation method was correct.

Festive lights were correctly excluded from the calculation because they were not connected. When they are connected they appear as a separate item on the Networks' monthly summaries.

WDC database changes are sent to Network Waitaki each month. WDC's database is not used directly for calculating submissions. This is recorded as non-compliance.

The Networks' data has not been included in this audit. I am not in a position to comment directly on their content because the information is at summary level. Upon comparison of WDC's (uncorrected) data with the Networks' data used for submission as detailed in **section 1.6** above, the wattage difference is 23,259 W. This will result in estimated under submission of 99,341 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). However this needs to be balanced with the fact that the WDC database is inaccurate and estimated to be too high. If the WDC database was used it would lead to over submission of 212,200 kWh per annum. Whilst an estimate of submission accuracy is difficult, it appears over submission may have occurred by approx. 112,859 kWh per annum just based on the field audit. The next consideration is the finding in Section 2.4, which is that wattage information is incorrect, leading to the WDC data being too high, equating to 47,293 kWh per annum. Factoring this in results in estimated over submission of 65,566 kWh per annum.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 16-Mar-17 To: 30-Apr-18	Waitaki District Council's database is not being used directly for submission calculations. Net over submission estimated to be 65,566 kWh per annum. Potential impact: High Actual impact: High Audit history: None Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated as weak because WDC's database is not directly being used for submission calculations. The impact is high, due to the estimated kWh wattage difference with a corrected database.

Actions taken to resolve the issue	Completion date	Remedial action status
Contact will engage with Waitaki DC to transition The DUML database from Network Waitaki to Waitaki DC RAMM database. This will allow Contact and Waitaki DC to then investigate and address the database accuracy issues in a more effective and timely manner. It will take some time to transition across to the Waitaki DC RAMM and begin develop processes between Waitaki DC and Contact in identifying and resolving exceptions.	Dec 2018	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 the correct ICP was recorded against each item of load.

Audit commentary

There are five items of load that do not have an ICP number recorded against them in the database. The database has 2,442 items of load.

Pole ID	Road Name	Light ID	Model	Light Owner	Northing	Easting
2795	SH 1 - 2 THAMES HIGHWAY	9381		NZTA	5006547	1441491
2786	SH 1 - 3 SEVERN ST	9385	HPS 250	NZTA	5003939	1439999
2785	SH 1 - 3 SEVERN ST	9380	HPS 150	NZTA	5003965	1439964
2787	SH 1 - 3 SEVERN ST	9352	HPS 150	NZTA	5003936	1439969
2797	SH 8 - OMARAMA (OMARAMA AVE)	9394	HPS 70	NZTA	5069536	1358757

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.2 With: Clause 11(2)(a) and (aa) of Schedule 15.3 From: 16-Mar-17 To: 21-May-18	There are five items of load that do not have an ICP identifier recorded against them in the database. 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 rated as strong because only five of the 2442 lamps in the database do not have an ICP number recorded. The impact is low, the wattage for these lamps is 740 W.

Actions taken to resolve the issue	Completion date	Remedial action status
Contact will engage with Waitaki DC to transition The DUML database from Network Waitaki to Waitaki DC RAMM database. This will allow Contact and Waitaki DC to then investigate and address the database accuracy issues in a more effective and timely manner. It will take some time to transition across to the Waitaki DC RAMM and begin develop processes between Waitaki DC and Contact in identifying and resolving exceptions.	Aug 2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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

There is a large proportion of the database that does not have GPS co-ordinates (1533 lamps), but all items do have street address locations and Pole ID's to assist with Location.

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 and that each item of load had a value recorded in these fields.

Audit commentary

Lamp make, model, lamp wattage and ballast wattage not always included in the database.

There are 16 lamps with no model or wattage information in the database.

Road ID	Road Name	Pole No.	Model	Wattage
1465	OHAU DR	810	-	-
1465	OHAU DR	808	-	-
1465	OHAU DR	811	-	-
1465	OHAU DR	807	-	-
1465	OHAU DR	801	-	-
1465	OHAU DR	803	-	-
1465	OHAU DR	805	-	-
1465	OHAU DR	802	-	-
1465	OHAU DR	469	-	-
1465	OHAU DR	815	-	-
1465	OHAU DR	463	-	-
1061	BOND ST	M4	-	-

1314	GORDON ST - KUROW	16679	-	-
194	KAURU HILL RD	19935	-	-
268	SALEYARDS RD	14012	-	-
222	WOOLSHED RD	1184	-	-

And a further 11 lamps with a wattage recorded but no model information.

Road ID	Road Name	Pole No.	Model	Wattage
1027	MONMOUTH ST	2365	-	18
1144	ITCHEN ST	1313	-	18
1144	ITCHEN ST	1311	-	18
2015	SH 1 - 2 THAMES HIGHWAY	2653	-	18
2015	SH 1 - 2 THAMES HIGHWAY	1952	-	28
2015	SH 1 - 2 THAMES HIGHWAY	1950	-	28
2015	SH 1 - 2 THAMES HIGHWAY	2652	-	18
2015	SH 1 - 2 THAMES HIGHWAY	1936	-	18
2017	SH 1 - 4 WANSBECK ST	1252	-	25
2017	SH 1 - 4 WANSBECK ST	1254	-	28
2015	SH 1 - 2 THAMES HIGHWAY	2795	-	18

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

There is an extremely high amount of inconsistency in the database with 20 out of the 34 lamp types having more than one wattage recorded against them. In all 759 of the 2415 items of load (with model information) have an incorrect wattage recorded against them. The issue appears to be with inconsistent and incorrect ballast values being used in the database.

In meeting with WDC, apparently a lot of work has been done in this area, so future extracts should be more consistent and reflective of what is on the network. I recommend, if not already done, a complete review and standardisation of lamp type wattages is performed.

Description	Recommendation	Audited party comment	Remedial action
Description and capacity of load	Ballast values, by lamp type, need to be reviewed, standardized and corrected in the database		Identified

The differences found were 20 lamp type and wattage differences, affecting 759 lamps with an overall wattage difference of 11,073 W, this will result in estimated over submission of 47,293 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

WDC database Model description	Wattage	Lamp Type Category	Correct wattage	Lamps affected	wattage difference	total difference
150 INCANDESENT	168	Incandesent	150	5	-18	-90
HPS 110	110	High Pressure Sodium	121	1	11	11
HPS 150	161	High Pressure Sodium	168	2	7	14
HPS 150	175	High Pressure Sodium	168	1	-7	-7
HPS 150	178	High Pressure Sodium	168	4	-10	-40
HPS 210 (3 x 70 HPS)	234	High Pressure Sodium	*249*	4	15	60
HPS 220 (2 x 110 HPS)	245	High Pressure Sodium	*242*	13	-3	-39
HPS 70	81	High Pressure Sodium	83	21	2	42
HPS 70	88	High Pressure Sodium	83	1	-5	-5
L114-NV4	125	LED	114	1	-11	-11
L114-NV4	128	LED	114	1	-14	-14
L114-NV4	132	LED	114	5	-18	-90
L114-NV4	138	LED	114	6	-24	-144
L114-NV4	139	LED	114	59	-25	-1475
L114-NV4	142	LED	114	93	-28	-2604
L114-NX4	125	LED	114	1	-11	-11
L114-NX4	132	LED	114	2	-18	-36
L114-NX4	142	LED	114	1	-28	-28
L120-NV4	138	LED	120	1	-18	-18
L129-NV4	147	LED	129	1	-18	-18
L155-NX4	168	LED	155	1	-13	-13
L155-NX4	183	LED	155	1	-28	-28
L50-NV4	61	LED	50	4	-11	-44
L50-NV4	63	LED	50	9	-13	-117
L50-NV4	68	LED	50	11	-18	-198
L50-NV4	75	LED	50	1	-25	-25
L50-NV4	78	LED	50	1	-28	-28
L66-NX3	77	LED	66	2	-11	-22
L66-NX3	79	LED	66	1	-13	-13
L66-NX3	80	LED	66	1	-14	-14
L82-NV4	93	LED	82	2	-11	-22
L82-NV4	100	LED	82	6	-18	-108
L82-NV4	110	LED	82	6	-28	-168
L82-NX4	93	LED	82	3	-11	-33
L82-NX4	106	LED	82	2	-24	-48
L98-NV4	109	LED	98	4	-11	-44

L98-NV4	111	LED	98	1	-13	-13
L98-NV4	116	LED	98	20	-18	-360
L98-NV4	123	LED	98	2	-25	-50
L98-NV4	126	LED	98	50	-28	-1400
L98-NX3	116	LED	98	1	-18	-18
LED 27W	38	LED	27	2	-11	-22
MINI Martin 3000 (LED - L28)	39	LED	28	96	-11	-1056
MINI Martin 3000 (LED - L28)	41	LED	28	92	-13	-1196
MINI Martin 3000 (LED - L28)	42	LED	28	5	-14	-70
MINI Martin 3000 (LED - L28)	46	LED	28	5	-18	-90
MINI Martin 3000 (LED - L28)	52	LED	28	1	-24	-24
Terraled Mini AP1 (LED - L21)	20.4	LED	21	77	0.6	46.2
Terraled Mini AP1 (LED - L21)	31.4	LED	21	106	-10.4	-1102.4
Terraled Mini AP1 (LED - L21)	33.4	LED	21	22	-12.4	-272.8
Terraled Mini AP1 (LED - L21)	38.4	LED	21	1	-17.4	-17.4
				759		-11073.4

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) and (d) of Schedule 15.3 From: 16-Mar-17 To: 21-May-18	Inadequate load type recorded in the database for 27 items of load • 16 items with no model or wattage information • 11 items with wattage but no model information Incorrect wattage values in the database, resulting in an estimated 47,293 kWh over submission per annum. 20 lamp types, total of 759 items of load affected. Potential impact: Medium Actual impact: Medium Audit history: None Controls: Weak Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as weak because of inconsistent and incorrect ballast assigned to lamp types. The impact is medium, the expected over submission is approaching 50,000 kWh per annum.

Actions taken to resolve the issue	Completion date	Remedial action status
Contact will engage with Waitaki DC to transition The DUML database from Network Waitaki to Waitaki DC RAMM database. This will allow Contact and Waitaki DC to then investigate and address the database accuracy issues in a more effective and timely manner. It will take some time to transition across to the Waitaki DC RAMM and begin develop processes between Waitaki DC and Contact in identifying and resolving exceptions.	Dec 2018	Identified
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

The field audit was undertaken of a statistical sample of 213 items of load on the 15th and 16th May.

Audit commentary

The field audit findings are detailed in the table below:

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
Strata					
Waitaki 1					
FLEET ST	7	7		-537	
BEDFORD ST	8	8		4.8	
RESERVOIR RD	21	21		-1029	
Waitaki 2					
ARUN ST	20	20		-215	
WATERFRONT RD	12	12		-273	
WANSBECK ST	27	27		-147	
Waitaki 3					
SH 1 - 3 SEVERN ST	58	58		-1990	
AWAMOA RD	16	16		-103	
KINGSLEA ST	4	4		-43.6	

ARTHUR ST	9	9		-94.8	
Waitaki 4					
WHITEROCKS RD	10	10		-84	
AIREDALE RD	7	7		-63	
Waitaki 5					
DALMENY ST	2	2		-164	
ARROW CRES	6	6		-42	
DOON ST	3	3		-22	
VIRGIL ST	3	3		-265	
Total Lamps	213	213		-5,067.6 W	

I found no additional lamps in the field than were recorded in the database. There were however a number of lamp wattage differences as shown in the table above, these are made up of a combination of incorrect lamp types shown in the database than were actually in the field and incorrect wattages recorded in the database. These differences are recorded as non-compliance in **section 2.4**.

The field data was 78% of the database data for the sample checked. This will result in estimated over submission of 212,200 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

These differences are recorded as non-compliance in **section 3.1**. I did not identify any load missing from the database.

Audit outcome

Compliant

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

Code reference

Clause 11(3) of Schedule 15.3

Code related audit information

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

All changes and new connections are notified through to WDC by the street lighting contractor, Clements for this region. Clements update RAMM database via tablet within the same month.

Festive lights are not defined separately in RAMM. The contractor advises WDC and the Network when they are installed and removed. The network records festive lights as a separate item in their monthly report to Contact.

WDC perform an annual night time audit. At other times maintenance is performed by a street lighting contractor upon receiving a request from WDC.

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

RAMM records audit trail information of changes made.

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	Waitaki region
Strata	The database contains 2442 items of load in Waitaki area. There were no new developments identified. The processes for the management of 2442 items of load are the same, but I decided to place the items of load into five strata, by vicinity to each other as follows: 1. Fleet, Bedford & Reservoir 2. Arun, Waterfront & Wansbeck

	3. Severn, Awamoa, Kingslea & Arthur 4. Whiterocks & Airedale 5. Dalmeny, Arrow, Doon & Virgil
Area units	I created a pivot table of the roads and used a random number generator in a spreadsheet to select a total of 16 subunits before grouping as above.
Total items of load	213 items of load were checked. Strata 1 36 Strata 2 59 Strata 3 87 Strata 4 17 Strata 5 14

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

Audit commentary

The database was found to contain inaccuracies.

When the database was checked for alignment with the published standardised wattage table. The differences found were 20 lamp type and wattage differences, affecting 759 lamps with an overall wattage difference of 11,073 W, this will result in estimated over submission of 47,293 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). These are detailed and recorded as a non-compliance in **section 2.4**.

The field audit found a number of lamp type and wattage differences. These are illustrated in **section 2.5** and recorded as a non-compliance in **section 2.4**.

The field data was 78% of the database data for the sample checked. The total wattage recorded in the database for the sample was 22,983 watts. The total wattage found in the field for the sample checked was 17,916 watts, a difference of 5,067 watts. This will result in estimated over submission of 212,200 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). This is recorded as a non-compliance.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 16-Mar-17 To: 21-May-18	The database has a large number of inaccuracies The field data was 78% of the database data for the sample checked. Indicating over submission of 212,200 kWh per annum Potential impact: High Actual impact: High Audit history: None 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 high, based on the estimated over submission mentioned above		
Actions taken to resolve the issue		**Completion date**	**Remedial action status**
Contact will engage with Waitaki DC to transition The DUML database from Network Waitaki to Waitaki DC RAMM database. This will allow Contact and Waitaki DC to then investigate and address the database accuracy issues in a more effective and timely manner. It will take some time to transition across to the Waitaki DC RAMM and begin develop processes between Waitaki DC and Contact in identifying and resolving exceptions.		Dec 2018	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
- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

Audit commentary

Volume information is not accurate.

Submissions are based on the network reports received from Network Waitaki and OtagoNet, with on and off times derived from data logger information. I confirmed that the calculation method was correct and submission totals matched data provided by the Networks.

WDC's database is not used directly for calculating submissions. This is recorded as non-compliance in **section 2.1**.

Upon comparison of WDC's (uncorrected) data with the Networks' data used for submission as detailed in **section 1.6** above, the wattage difference is 23,259 W. This will result in estimated under submission

of 99,341 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). This is recorded as non-compliance in **section 2.1**.

The Networks' data has not been included in this audit. I am not in a position to comment directly on their content because the information is at summary level. Upon comparison of WDC's (uncorrected) data with the Networks' data used for submission as detailed in **section 1.6** above, the wattage difference is 23,259 W. This will result in estimated under submission of 99,341 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). However this needs to be balanced with the fact that the WDC database is inaccurate and estimated to be too high. If the WDC database was used it would lead to over submission of 212,200 kWh per annum. Whilst an estimate of submission accuracy is difficult, it appears over submission may have occurred by approx. 112,859 kWh per annum just based on the field audit. The next consideration is the finding in Section 2.4, which is that wattage information is incorrect, leading to the WDC data being too high, equating to 47,293 kWh per annum. Factoring this in results in estimated over submission of 65,566 kWh per annum.

However if WDC's lamp and wattage differences (as recorded as non-compliance in **section 2.4**) and discrepancies found in the field audit (as recorded as non-compliance in **section 2.5**) are corrected this will go a long way to creating an accurate database.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 16-Mar-17 To: 21-May-18	The database volume information is not correct. Comparison of WDC's (uncorrected) data with the Networks' data results in estimated under submission of 99,341 kWh per annum. Incorrect lamp and wattage values in the database result in an estimated 47,293 kWh over submission per annum. The field data was 78% of the database data for the sample checked, result in estimated over submission of 212,200 kWh per annum. Net over submission estimated to be 65,566 kWh per annum. Potential impact: High Actual impact: High Audit history: None 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 high, because the net expected over submission if the database was to be used is approx. 65,566 kWh per annum.

Actions taken to resolve the issue	Completion date	Remedial action status

Contact will engage with Waitaki DC to transition The DUML database from Network Waitaki to Waitaki DC RAMM database. This will allow Contact and Waitaki DC to then investigate and address the database accuracy issues in a more effective and timely manner. It will take some time to transition across to the Waitaki DC RAMM and begin develop processes between Waitaki DC and Contact in identifying and resolving exceptions.	Dec 2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

CONCLUSION

The Waitaki District Council (WDC) boundary is part of both Network Waitaki and OtagoNet (Child Company of PowerNet).

The WDC boundary is part of both Network Waitaki and OtagoNet (Child Company of PowerNet). WDC manages a RAMM database for the entire area, but this is not used for submission purposes. WDC sends a monthly report to Network Waitaki and any changes in this data are updated into a summary spreadsheet which is then sent to Contact. OtagoNet data is held in a spreadsheet at summary level and this is also sent to Contact on a monthly basis.

The only information available at individual light level is that in WDC's RAMM database. Whilst this data is not used for submission purposes, it was used to gauge the accuracy of the RAMM database, which was then compared to the OtagoNet and Network Waitaki totals to estimate submission accuracy.

The audit found five non-compliance issues in relation to this DUML database and processes and makes one recommendation.

The future risk rating of 34 indicates that the next audit be completed in 3 months. Remedial action is planned to be complete by December 2018; therefore I recommend an audit frequency of nine months to allow the necessary actions to be completed.

Future risk rating	1-3	4-6	7-8	9-17	18-26	27+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

PARTICIPANT RESPONSE

Contact will work with Waitaki DC to transition DUML database from a distributor function and process to allow both parties to effectively begin to address the actual exceptions identified in this audit.

However this will take time and we hope that the audit frequency reflects a more appropriate re audit period than the 3 months based on the future risk rating.