ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

NELSON CITY COUNCIL AND TRUSTPOWER LIMITED

Prepared by: Tara Gannon

Date audit commenced: 2 May 2018

Date audit report completed: 14 May 2018

Audit report due date: 1 June 2018

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EXECUTIVE SUMMARY

This audit of the Nelson City Council (NCC) DUML database and processes was conducted at the request of Trustpower Limited (Trustpower) 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 RAMM database used for submission is managed by NCC. New connection, fault, and maintenance work is completed by Powertech Nelson New Zealand Limited (Powertech). Powertech record changes to the database on paper, which are then entered into a spreadsheet and updated in RAMM by Powertech's Electrical Contracts Manager.

Powertech provide Trustpower a monthly report of changes to the RAMM database, and a full report from the RAMM database every three months from February 2018 onwards. Prior to February 2018, full reports from the database were provided approximately annually.

Because the NCC database does not contain ballast wattages, Trustpower maintains its own records of lamp and ballast wattages for each ICP which are used for submission. The monthly and quarterly information provided by Powertech is used to keep this up to date.

An LED upgrade is underway, and due to be completed by December 2018. The lights will be centralised management system (CMS) ready, but NCC have no immediate plans to implement a CMS or use dimming.

The future risk rating of 14 indicates that the next audit be completed in 12 months. The potential impact is much higher than the risk rating indicates, but is reduced because Trustpower adds ballast wattages to the database information prior to submission.

Five non-compliances were identified, and one recommendation was raised. 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	The database used to prepare submissions contains some inaccurate information.	Weak	Low	3	Identified
ICP identifier and items of load	2.2	11(2)(a) and (aa) of Schedule 15.3	Three items of load do not have an ICP number recorded.	Moderate	Low	2	Identified
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	Nine items of load have unknown or blank lamp model, and zero wattage. No items of load have gear wattages recorded.	Weak	Low	3	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	The database used to prepare submissions contains some inaccurate information.	Weak	Low	3	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database used to prepare submissions contains some inaccurate information.	Weak	Low	3	Identified
Future Risk Rating						14	

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
Database accuracy	3.1	Wattage accuracy	Check the wattages for Italo 1 and Italo 2 lights and update the database if necessary.

ISSUES

Subject	Section	Description	Issue
		Nil	

1. ADMINISTRATIVE

1.1. Exemptions from Obligations to Comply with Code

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit observation

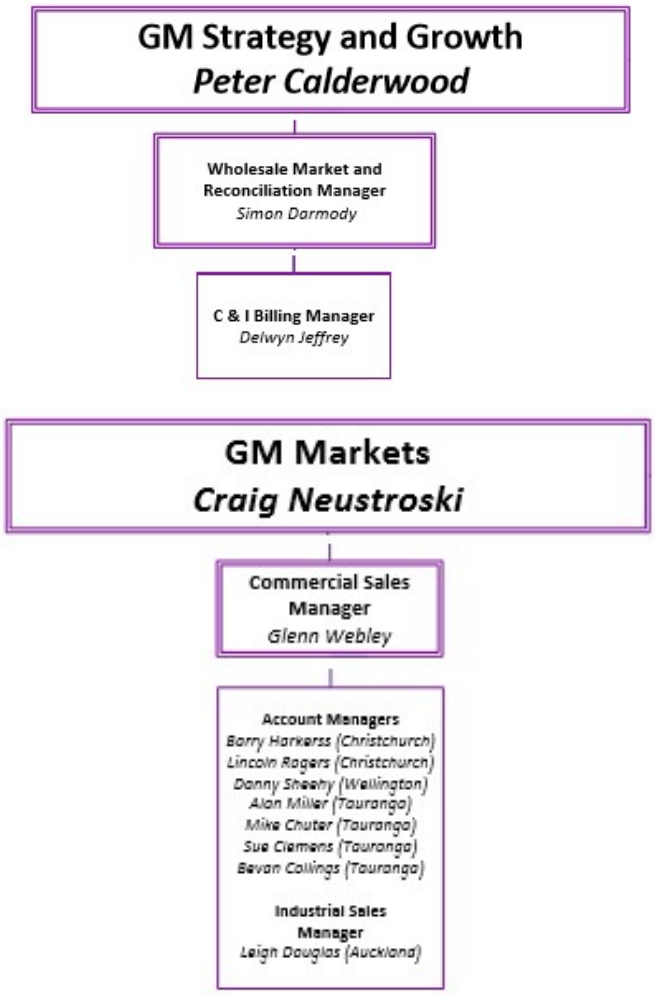
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Trustpower 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
Delwyn Jeffrey	Commercial and Industrial Billing Manager	Trustpower
Barry Harkerss	Commercial Account Manager	Trustpower
Roy Price	Electrical Contracts Manager	Powertech Nelson New Zealand Limited
Troy Chapman	Contract Supervisor - Roading	Nelson City Council

1.4. Hardware and Software

The SQL database used for the management of DUML is remotely hosted by RAMM Software Ltd. The database is commonly known as "RAMM" which stands for "Roading Asset and Maintenance Management".

Database back-up is in accordance with standard industry procedures. Access to the database is secure 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

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000090001NTBEF	NCC STREETLIGHTING STOKE	STK0331	STL	2,796	272,572
0000200190CTC63	NELSON STREETLIGHTS	STK0331	STL	2,372	233,775
			Total	**5,168**	**506,347**

1.7. Authorisation Received

All information was provided directly by Trustpower, NCC, and Powertech.

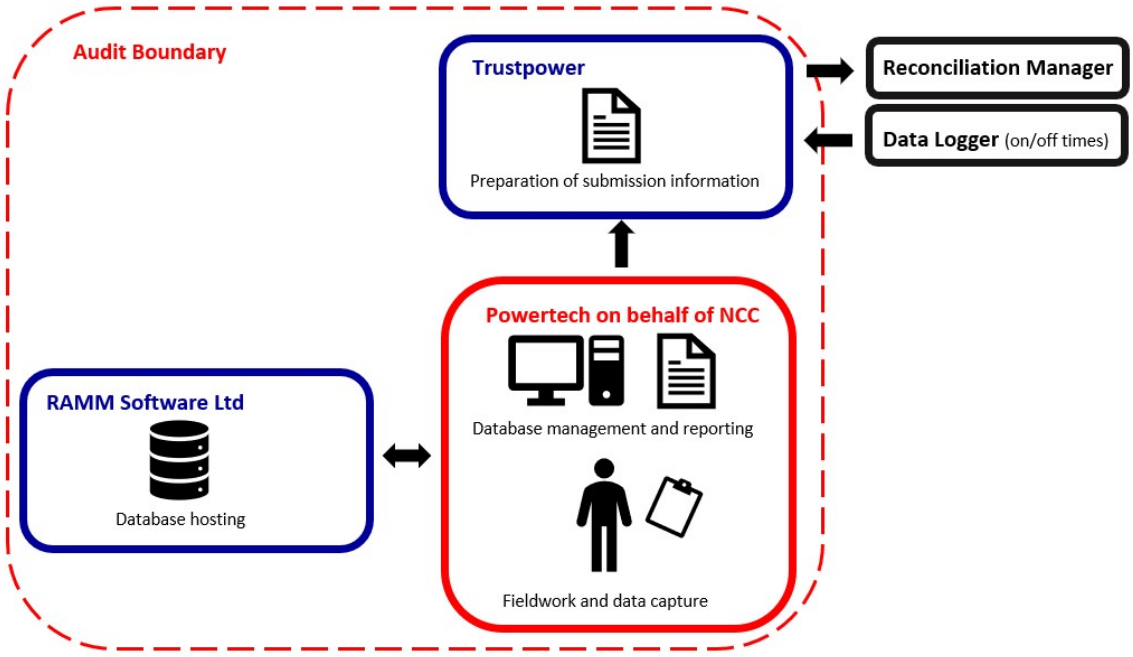
1.8. Scope of Audit

The RAMM database used for submission is managed by NCC. New connection, fault, and maintenance work is completed by Powertech Nelson New Zealand Limited (Powertech). Powertech record changes to the database on paper, which are then entered into a spreadsheet and updated in RAMM by Powertech's Electrical Contracts Manager.

Powertech provide Trustpower a monthly report of changes to the database, and a full report from the database every three months from February 2018 onwards. Prior to February 2018, full reports from the database were provided approximately annually.

Because the NCC database does not contain ballast wattages, Trustpower maintains its own records of lamp and ballast wattages for each ICP which are used for submission. The monthly and quarterly information provided by Powertech is used to keep this up to date.

The scope of the audit encompasses the collection, security and accuracy of the data, including the preparation of submission information based on the database reporting. The diagram below shows the audit boundary for clarity.



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

The field audit was undertaken of 302 items of load on 2 May 2018. The total population was divided into two strata:

- Nelson Electricity ICP 0000200190CTC63; and
- Network Tasman ICP 0000090001NTBEF.

1.9. Summary of previous audit

The previous audit was completed in May 2017 by Rebecca Elliot of Veritek Limited. Three 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
Description of load type/ capacity	2.2	11(2)(d)	140 fittings wattage different to make/model stated in DB. DB has no fitting ballast ratings.	Still existing. Refer to **section 2.4**.
Lamp installation date	2.3	11(3)	1,987 fittings with no install date.	Installation dates have been populated where available, and for all new lamps. 326 fittings now show blank installation dates, where the installation date is unknown.
DB Audit	2.5	11(5)	Volumes don't match billing volumes.	Still existing. Refer to **section 2.1**.

Subject	Section	Clause	Non-compliance	Status
DB maintenance	2	11 schedule 15.3	The DB must be tidied up and corrected to match the fitting model and wattage of those fittings (140).	Still existing. Refer to **section 3.1**.
DB maintenance (Ballast rating)	2	11(2)(d)schedule15.3	Populate the ballast column.	Still existing. Refer to **section 3.1**.

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

Trustpower 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.

Audit commentary

Trustpower reconciles this DUML load using the STL profile. The on and off times are derived from data logger information.

Because the database excludes ballast wattages, Trustpower adds these on as part of the submission calculation process. Trustpower maintains a summary showing the count of each fitting type for each ICP and adds the ballast wattages. Changes to the database are updated each month.

I recalculated the submissions for February and March 2018 for ICPs 0000090001NTBEF and 0000200190CTC63 using the data logger and database information. I confirmed that the calculation method was correct.

There is some inaccurate data within the database used to calculate submissions. This is recorded as non-compliance and discussed in **sections 2.4** and **3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: unknown To: 02-May-18	The database used to prepare submissions contains some inaccurate information. • The database accuracy is assessed to be 99.9% indicating an estimated over submission of 115 kWh per annum. • Ballast wattages are not recorded in the database, resulting in under recorded wattage of approximately 60,165 watts. Ballast wattages are correctly included in Trustpower's submissions. • Nine unmetered items of load have an unknown or blank lamp model, and zero wattage. Potential impact: High Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3

Audit risk rating	Rationale for audit risk rating
Low	The controls are rated as weak, because they are not sufficient to ensure that database wattage is accurate. The impact is assessed to be low, because Trustpower adds on the missing ballast wattages prior to submission. If Trustpower did not correct these wattages, the impact could be high.

Actions taken to resolve the issue	Completion date	Remedial action status
TRUS adds ballast to lamp wattages as standard procedure when calculating submission data. NCC are changing the majority of their lamps to LED. They will look at adding ballast into their database for non LED lamps when they have completed this project.	Project end date is expected to be 31/12/18	Identified
Powertech will investigate and update the historic database anomalies	30/06/18	
Preventative actions taken to ensure no further issues will occur	**Completion date**	
The LED conversion project is causing an overhaul of the database as lamps are replaced. New Connections and maintenance are all handled by Powertech who have procedures in place to update and validate site changes to the database for new occurrences.	Project end date is expected to be 31/12/18	

2.2. ICP identifier and items of load (Clause 11(2)(a) and (aa) of Schedule 15.3)

Code reference

Clause 11(2)(a) and (aa) of Schedule 15.3

Code related audit information

The DUML database must contain:

- *each ICP identifier for which the retailer is responsible for the DUML*
- *the items of load associated with the ICP identifier.*

Audit observation

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

Audit commentary

Three unmetered items of load have no ICP number recorded in the database. This is recorded as non-compliance below.

Pole ID	House Address	Make	Model	Lamp Wattage
6739	CENTENNIAL ROAD	Osram	SON-I-70	70
6947	PARK_WAKEFIELD_WAKEFIELD	Philips	12W E27 compact fluro	12
6973	SHARED MAITAI RIVER 01 (under south end of bridge)	special lights	RBG 20led lantern	70

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.2 With: Clause 11(2)(a) and (aa) of Schedule 15.3 From: unknown To: 02-May-18	Three items of load do not have an ICP number recorded. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as moderate as they are sufficient to ensure that most items of load have an ICP number recorded. The impact is low because only three items of load are affected and the wattage is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Powertech will investigate and update the historic database anomalies	30/06/18	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
New Connections and maintenance are all handled by Powertech who have procedures in place to update and validate site changes to the database for new occurrences.	30/06/18	

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

Code reference

Clause 11(2)(b) of Schedule 15.3

Code related audit information

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

Audit observation

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

Audit commentary

The nearest house address is recorded for all items of load. Most items of load (99.1%) also have GPS coordinates 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

Make, model and lamp wattages are recorded in the database for most items of load.

Nine unmetered items of load which are not privately owned have an unknown or blank lamp model, and zero wattage.

Pole ID	Light Owner	House Address	Make	Model	Lamp Wattage
5143	NCC SUB road network	1 - 9 BRIDGE STREET (Side of Golf shop.)	Philips		0
7692	NCC SUB road network	COSTER STREET (O/S Lot 32)	AEC Illuminazione LED		0
7693	NCC SUB road network	COSTER STREET (O/S Lot 30/31)	AEC Illuminazione LED		0
7694	NCC SUB road network	COSTER STREET (O/S Lot 26/27)	AEC Illuminazione LED		0
7695	NCC SUB road network	COSTER STREET (O/S Lot 22)	AEC Illuminazione LED		0

Pole ID	Light Owner	House Address	Make	Model	Lamp Wattage
7696	NCC SUB road network	COSTER STREET (Opp Lot 61)	AEC Illuminazione LED		0
5584	NCC SUB road network	CROSS QUAY (2nd Left off Akerston.Lot5)	Philips		0
7651	NCC SUB road network	MONTEBELLO AVE (Last in road so far)			0
190	NCC UNSUB walkways	JENNER ROAD (W/WAY TO VANGUARD ST.DISC 21/12/09)	Philips	Unknown	0

Gear wattage is not recorded in the database. Trustpower adjusts the data provided to reflect losses associated with ballasts. These are based on those published by ELEXON (The Balancing and Settlement Code Company (BSCCo) for Great Britain) and Betacom.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) and (d) of Schedule 15.3 From: unknown To: 02-May-18	Nine items of load have unknown or blank lamp model, and zero wattage. No items of load have gear wattages recorded. Potential impact: High Actual impact: Low Audit history: Once previously Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak as they are not sufficient to ensure that most items of load have make, model, lamp and gear wattage recorded. The impact is low, because Trustpower adjusts the wattages to include the gear wattage prior to calculating their submissions. The impact of the nine items of load with unknown or blank lamp models is expected to be low.

Actions taken to resolve the issue	Completion date	Remedial action status
TRUS adds ballast to lamp wattages as standard procedure when calculating submission data. NCC are changing the majority of their lamps to LED. They will look at adding ballast into their database for non LED lamps when they have completed this project.	Project end date is expected to be 31/12/18	Identified
Powertech will investigate and update the historic database anomalies	30/06/18	
Preventative actions taken to ensure no further issues will occur	**Completion date**	
The LED conversion project is causing an overhaul of the database as lamps are replaced. New Connections and maintenance are all handled by Powertech who have procedures in place to update and validate site changes to the database for new occurrences.	Project end date is expected to be 31/12/18	

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

Code reference

Clause 11(2A) of Schedule 15.3

Code related audit information

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

Audit observation

A field audit of a statistical sample of 302 items of load recorded in the database was undertaken on 2 May 2018. The total population was divided into two strata:

- Nelson Electricity ICP 0000200190CTC63; and
- Network Tasman ICP 0000090001NTBEF.

Audit commentary

The field audit findings are detailed in the table below.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
Nelson Electricity ICP 0000200190CTC63					
AVON TERRACE	4	4	-	-	
CITY HEIGHTS	6	6	-	-	
ERIN STREET	2	2	-	-	

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
GORRIE STREET	4	4	-	-	
KERR STREET	4	4	-	-	
MOORHOUSE AVENUE	2	2	-	-	
PARK_AKERSTEN_AKERSTEN	5	5	-	-	
ROSA CRISTINA WAY	10	10	-	-	
RUSSELL STREET	28	28	-	-	
SEYMOUR AVENUE	13	13	-	-	
SH 6 ROCKS ROAD	47	47	-	-	
SH 6 WAKEFIELD QUAY	29	29	-	-	
SHELBOURNE STREET	9	8	-1	-	There are two records for 36 Shelbourne St, the 70W SON record is correct.
WHITBY ROAD	6	6	-	-	
Network Tasman ICP 0000090001NTBEF					
ALLPORT PLACE	10	10	-	-	
CENTENNIAL ROAD	6	6	-	-	
COVENT DRIVE	17	17	-	-	
DICKENS STREET	3	3	-	-	
HAMPSHIRE PLACE	2	2	-	-	
IWA ROAD	7	7	-	-	
KIDSON PLACE	6	6	-	-	
LIGHTHOUSE VIEW	4	4	-	-	
MATUKU PLACE	2	2	-	-	
PASCOE STREET	19	19	-	-	
SALISBURY ROAD	9	9	-	-	

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
SANCTUARY DRIVE	23	23	-	-	
THETFORD CHASE	2	2	-	-	
TUCKETT PLACE	2	2	-	-	
VENICE PLACE	10	10	-	-	
WASTNEY TERRACE	11	11	-	-	
Total	**302**	**301**	**-1**	**-**	

I found one less lamp in the field than was recorded in the database. This difference is recorded as non-compliance in **section 3.1**.

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

Any changes that are made during any given month take effect from the beginning of that month. The information is available which would allow for the total load in kW to be retrospectively derived for any day. On 20 September 2012, the Authority sent a memo to retailers and auditors advising that tracking of load changes at a daily level was not required if the database contained an audit trail. I have interpreted this to mean that the provision of a copy of the report to Trustpower when changes occur is sufficient to achieve compliance.

New connection, fault and maintenance work is completed by Powertech. Powertech record changes to the database on paper, which are then entered into a spreadsheet and updated in RAMM by Powertech's Electrical Contracts Manager. The database is usually updated within two business days of work being completed.

For new connections, Powertech receives a request from NCC, arranges connection and loads the streetlight into RAMM including light type and wattage information, location, GPS coordinates and the date livened.

For new subdivisions:

- If Powertech is the contractor, the new connection process above is followed.

- If another contractor is used, the developer arranges connection with the network and provides "as built" plans to NCC. NCC passes the details to Powertech, who check the new lights and update the database.

There can be a delay in NCC being advised of new connections where Powertech is not the contractor. It is estimated that Powertech is the contractor for over half of recent new subdivisions. I did not see any evidence of late updates for new connections during the audit.

There are 19 private lights recorded in the database; the networks have been advised of these so that ICPs can be created.

Christmas and festive lights are used by NCC. These lights are metered, and excluded from the scope of this audit.

Outage patrols of the whole NCC area are completed monthly. Faults and outages are also reported to NCCC, who inform Powertech. When any field work required is completed, the database is updated if necessary.

Audit outcome

Compliant

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

Code reference

Clause 11(4) of Schedule 15.3

Code related audit information

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

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

Audit observation

The database was checked for audit trails.

Audit commentary

The RAMM database contains a complete audit trail. Reporting provided to Trustpower is from the RAMM database.

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	NCC region
Strata	The database contains items of load in Nelson area. The processes for the management of all NCC items of load are the same. The total population was divided into two strata: • Nelson Electricity ICP 0000200190CTC63; and • Network Tasman ICP 0000090001NTBEF.
Area units	I created a pivot table of the roads and I used a random number generator in a spreadsheet to select a total of 30 sub-units.
Total items of load	302 items of load were checked.

Wattages for all items of load were checked against the published standardised wattage tables produced by the Electricity Authority, and the manufacturer's specifications.

Audit commentary

The database was found to contain some inaccuracies and missing data.

The field audit found one less lamp in the field than was recorded in the database, and no lamp wattage differences.

The field data was 99.9% of the database data for the sample checked. The total wattage recorded in the database for the sample was 28,632 watts. The total wattage found in the field for the sample checked was 28,605 watts, a difference of 27 watts. This will result in estimated over submission of 115 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

Recorded wattages are based on the lamp wattage recorded on the luminaire. Ballast wattages are not recorded in the database. NCC intends to replace almost all the lights with LEDs by December 2018, which is expected to resolve most of the issues because ballast for LED lights will be recorded as 0. Based on March 2018 data, the estimated ballast wattages are:

ICP	Estimated ballast wattage	Estimated kWh per annum (based on 4,271 burn hours)
Nelson Electricity ICP 0000200190CTC63	26,592 watts	113,574 kWh
Network Tasman ICP 0000090001NTBEF	33,573 watts	143,390 kWh
Total	**60,165 watts**	**256,965 kWh**

Nine unmetered items of load have an unknown or blank lamp model, and zero wattage.

Wattages for all items of load were checked against the published standardised wattage tables produced by the Electricity Authority, and the manufacturer's specifications. For Italo 1 and 2 lamps, some wattages differed slightly to the current manufacturer's specifications as shown below.

Lamp model	Database wattage	Expected wattage	Count of lamps
Italo 1 2 Module 525mA	28.5	30	1
Italo 1 2 Module 525mA STU	32	30	17
Italo 1 2 Module 700mA	38	40	38
Italo 1 2 Module LED	33	30-40	5
Italo 1 3 Module 700	61	59	28
Italo 1 3 module 700mA	80	79	2
Italo 1 4 Module 525mA	75	77	1
Italo 1 4 Module LED 700mA	103	102	55
Italo 2 5 Module LED 700mA	128	131	7
Italo 2 6 Module LED 525mA	116	118	52
Italo 2 6 Module LED 700mA	150	158	19
Italo 2 6Module 700mA STW	148	158	14
Italo 2 8 Module 525mA	152	158	3
Italo 2 8 Module 700mA	154	158	3

Powertech believes that the standard wattages for these lamps may have changed over time. I recommend that the wattages for these lamps should be checked, to confirm whether they are correct.

Description	Recommendation	Audited party comment	Remedial action
Database accuracy	Check the wattages for Italo 1 and Italo 2 lights and update the database if necessary.	Powertech to confirm the wattage of these lamp types	Identified

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: unknown To: 02-May-18	The database used to prepare submissions contains some inaccurate information. • The database accuracy is assessed to be 99.9% indicating an estimated over submission of 115 kWh per annum. • Ballast wattages are not recorded in the database, resulting in under recorded wattage of approximately 60,165 watts. • Nine unmetered items of load have an unknown or blank lamp model, and zero wattage. Potential impact: High Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak, because they are not sufficient to ensure that database wattage is accurate. The impact is assessed to be low, because Trustpower adds on the missing ballast wattages prior to submission. If Trustpower did not correct these wattages, the impact could be high.

Actions taken to resolve the issue	Completion date	Remedial action status
TRUS adds ballast to lamp wattages as standard procedure when calculating submission data. NCC are changing the majority of their lamps to LED. They will look at adding ballast into their database for non LED lamps when they have completed this project. Powertech will investigate and update the historic database anomalies	Project end date is expected to be 31/12/18 30/06/18	Identified

Preventative actions taken to ensure no further issues will occur	Completion date	
NCC are changing the majority of their lamps to LED. They will look at adding ballast into their database for non LED lamps when they have completed this project.	Project end date is expected to be 31/12/18	

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 all ICPs have the correct profile and submission flag
- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

Audit commentary

Trustpower reconciles this DUML load using the STL profile. The on and off times are derived from data logger information.

Because the database excludes ballast wattages, Trustpower adds these on as part of the submission calculation process. Trustpower maintains a summary showing the count of each fitting type for each ICP and adds the ballast wattages. Changes to the database are updated each month.

I recalculated the submissions for February and March 2018 for ICPs 0000090001NTBEF and 0000200190CTC63 using the data logger and database information. I confirmed that the calculation method was correct.

There is some inaccurate data within the database used to calculate submissions. This is recorded as non-compliance and discussed in **sections 2.4** and **3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: unknown To: 02-May-18	The database used to prepare submissions contains some inaccurate information. • The database accuracy is assessed to be 99.9% indicating an estimated over submission of 115 kWh per annum. • Ballast wattages are not recorded in the database, resulting in under recorded wattage of approximately 60,165 watts. Ballast wattages are correctly included in Trustpower's submissions. • Nine unmetered items of load have an unknown or blank lamp model, and zero wattage. Potential impact: High Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak, because they are not sufficient to ensure that database wattage is accurate. The impact is assessed to be low, because Trustpower adds on the missing ballast wattages prior to submission. If Trustpower did not correct these wattages, the impact could be high.

Actions taken to resolve the issue	Completion date	Remedial action status
TRUS adds ballast to lamp wattages as standard procedure when calculating submission data. NCC are changing the majority of their lamps to LED. They will look at adding ballast into their database for non LED lamps when they have completed this project. Powertech will investigate and update the historic database anomalies	Project end date is expected to be 31/12/18 30/06/18	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
The LED conversion project is causing an overhaul of the database as lamps are replaced. New Connections and maintenance are all handled by Powertech who have procedures in place to update and validate site changes to the database for new occurrences	Project end date is expected to be 31/12/18	

CONCLUSION

The RAMM database used for submission is managed by NCC. New connection, fault, and maintenance work is completed by Powertech Nelson New Zealand Limited (Powertech). Powertech record changes to the database on paper, which are then entered into a spreadsheet and updated in RAMM by Powertech's Electrical Contracts Manager.

Powertech provide Trustpower a monthly report of changes to the RAMM database, and a full report from the RAMM database every three months from February 2018 onwards. Prior to February 2018, full reports from the database were provided approximately annually.

Because the NCC database does not contain ballast wattages, Trustpower maintains its own records of lamp and ballast wattages for each ICP which are used for submission. The monthly and quarterly information provided by Powertech is used to keep this up to date.

An LED upgrade is underway, and due to be completed by December 2018. The lights will be centralised management system (CMS) ready, but NCC have no immediate plans to implement a CMS or use dimming.

The future risk rating of 14 indicates that the next audit be completed in 12 months. The potential impact is much higher than the risk rating indicates, but is reduced because Trustpower adds ballast wattages to the database information prior to submission.

Five non-compliances were identified, and one recommendation was raised.

PARTICIPANT RESPONSE

A number of historic issues with data in the Nelson City Council DUML database are expected to be resolved once the LED roll-out is completed.

Trustpower maintains a list of lamp types which includes the ballast inclusive load kW for each type. This field is used to calculate market submissions so that that the ballast is always included. The Trustpower ballasts have been updated as of April 2018 to reference the EA Standardised Table of Streetlight Wattages.

NCC are undertaking a project to change the majority of their lamps to LED which do not have ballast. Once this project is completed (currently expected to be 31/12/18), they will update their non LED lamps to show ballast.