ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

NELSON CITY COUNCIL AND TRUSTPOWER LIMITED

Prepared by: Steve Woods

Date audit commenced: 26 August 2019

Date audit report completed: 2 October 2019

Audit report due date: 2 October 2019

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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.

The database is reasonably accurate for NCC lighting but is less accurate for NZTA lighting. Most of the issues found relate to NZTA lighting.

Trustpower is not submitting or billing for NZTA lighting, but NZTA lighting is in the database against the same ICPs as the NCC lighting, therefore I have considered them to be within the scope of the audit. Under submission is occurring by approximately 120,000 kWh p.a. due to the NZTA lights being left out. I checked whether the NZTA lights appeared in another database with another trader, but they don't. I also checked with Nelson Electricity and they confirmed they were not metered. NCC notified Trustpower on 27/02/18 that NZTA lighting should not be included in the invoice, however Trustpower remains responsible for reconciliation of this consumption until another ICP is created and submission occurs for this ICP.

Database accuracy is described as follows:

Result	Percentage	Comments
The point estimate of R	98.1	Wattage from survey is lower than the database wattage by 1.9%
R_L	93.1	With a 95% level of confidence it can be concluded that the error could be between -6.9% and 0.3%
R_H	100.3	

The variability of the sample results across the strata means that the true wattage (installed in the field) could be between 6.9% lower and 0.3% higher than the wattage recorded in the DUML database. Non-compliance is recorded because the potential error is greater than 5.0%.

In absolute terms the installed capacity is estimated to be 6.0 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is between 21 kW lower to 1.0 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 25,800 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 91,100kWh p.a. lower to 4,300 kWh p.a. higher than the database indicates.

The date of the next audit is determined by the Electricity Authority and is dependent on the level of compliance during this audit. The table below provides some guidance on this matter and recommends

an audit frequency of three months. I have considered this recommendation in conjunction with Trustpower's responses, and I recommend a next audit period of six months to allow sufficient time to resolve the submission issue for NZTA lighting.

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	Annual under submission of approx. 121,186, due to lack of submission for NZTA lighting. The field audit finding is that the total annual consumption is estimated to be 25,800 kWh lower than the DUML database indicates, as recorded in section 3.1. Zero wattage for three lights. Two records without an ICP. Submission is based on a snapshot and does not consider historic adjustments.	Weak	High	9	Disputed
ICP identifier and items of load	2.2	11(2)(a) and (aa) of Schedule 15.3	Two items of load did not have an ICP number recorded.	Moderate	Low	2	Cleared
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	Three items of load have unknown or blank lamp model, and zero wattage.	Strong	Low	1	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Database accuracy	3.1	15.2 and 15.37B(b)	In absolute terms, total annual consumption is estimated to be 25,800 kWh lower than the DUML database indicates. 3 items of load have zero wattage. 2 items of load did not have ICP identifiers.	Moderate	Medium	4	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	Annual under submission of approx. 121,186, due to lack of submission for NZTA lighting. The field audit finding is that the total annual consumption is estimated to be 25,800 kWh lower than the DUML database indicates, as recorded in section 3.1. Zero wattage for three lights. Two records without an ICP. Submission is based on a snapshot and does not consider historic adjustments.	Weak	High	9	Disputed
Future Risk Rating						25	

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
		Nil	

ISSUES

Subject	Section	Description	Issue
		Nil	

1. ADMINISTRATIVE

1.1. Exemptions from Obligations to Comply with Code

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

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

Audit observation

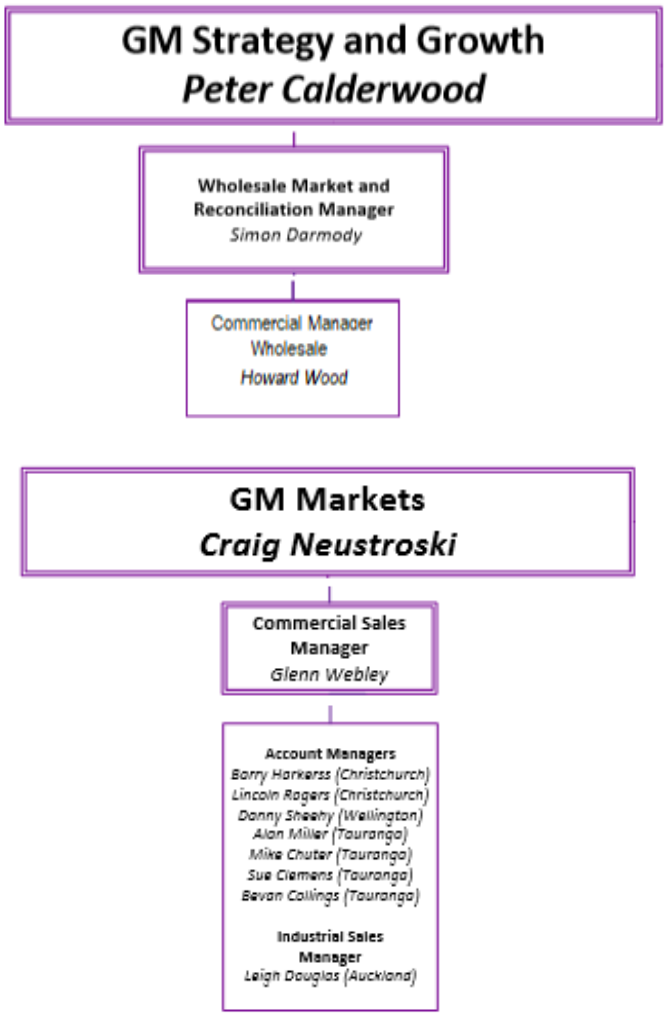
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Trustpower 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
Robbie Diederen	Reconciliation Analyst	Trustpower
Roy Price	Electrical Contracts Manager	Powertech Nelson New Zealand Limited
Gillian Dancey	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	2,924	148,606
0000200190CTC63	NELSON STREETLIGHTS	STK0331	STL	2,480	145,437
			Total	**5,404**	**294,043**

1.7. Authorisation Received

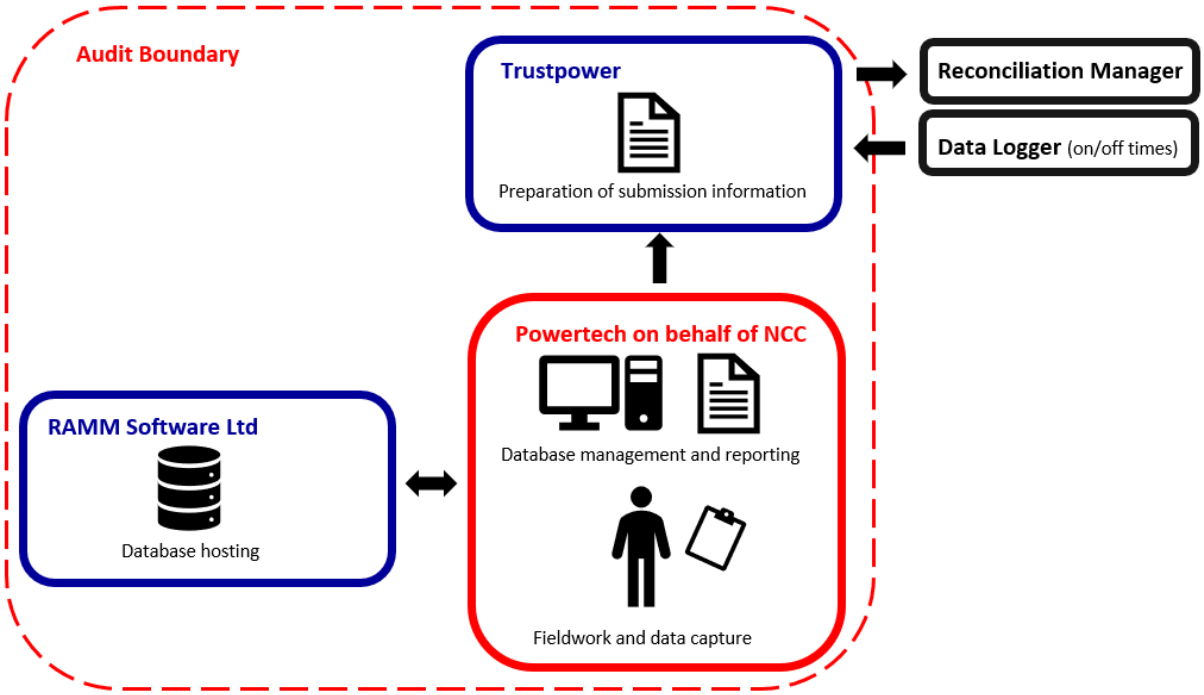
All information was provided directly by Trustpower, NCC, and Powertech.

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.

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 369 items of load. The total population was divided into four strata:

- Nelson roads;
- Tasman roads;
- NZTA; and
- Parks and Reserves

1.9. Summary of previous audit

The previous audit was completed in January 2018 by Tara Gannon of Veritek Limited. Five non-compliances were identified, and one recommendation was 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 database used to prepare submissions contains some inaccurate information.	Still existing
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.	Still existing
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.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	The database used to prepare submissions contains some inaccurate information.	Still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database used to prepare submissions contains some inaccurate information.	Still existing

Subject	Section	Clause	Recommendation	Status
Database accuracy	3.1		Check the wattages for Italo 1 and Italo 2 lights and update the database if necessary.	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

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.

Ballast wattages are now in the database and the correct values are used.

I recalculated the submissions for July 2019 for ICPs 0000090001NTBEF and 0000200190CTC63 using the data logger and database information. I found that the NZTA lighting, which has the same ICPs as the other lights, is not included in the submission totals. The table below shows the discrepancies.

ICP	Trustpower submission	Data base kWh including NZTA	Difference	Approximate annual difference
0000090001NTBEF	64,380	70,152	5,773	54,711
0000200190CTC63	62,156	69,170	7,014	66,475

NCC does not "on-charge" NZTA for the consumption of the NZTA lights, but they are in the database with the same ICP as the other lights, therefore I have considered them to be within the scope of this audit. NCC notified Trustpower on 27/02/18 that NZTA lighting should not be included in the invoice, however Trustpower remains responsible for reconciliation of this consumption until another ICP is created and submission occurs for this ICP.

On the Tasman network there are separate ICPs for NZTA, but these are only for items of load on the Tasman network and not the Nelson network.

I checked with the Distributor, Nelson Electricity, and they confirmed the NZTA lights do not a have separate metered or unmetered ICPs.

Some database inaccuracies have led to inaccurate volume information, as follows:

- zero wattage for three lights;
- two records without an ICP; and
- submission is based on a snapshot and does not consider historic adjustments.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: unknown To: 06-Sep-19	Annual under submission of approx. 121,186, due to lack of submission for NZTA lighting. The field audit finding is that the total annual consumption is estimated to be 25,800 kWh lower than the DUML database indicates, as recorded in section 3.1. Zero wattage for three lights. Two records without an ICP. Submission is based on a snapshot and does not consider historic adjustments. Potential impact: High Actual impact: High Audit history: Once Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated as weak, because they are not sufficient to ensure that database wattage is accurate. The impact is assessed to be high due to the level of submission inaccuracy.

Actions taken to resolve the issue	Completion date	Remedial action status
NZTA thought that they should be billed from NCC for these lights but they have never received any accounts thus far. Trustpower are in talks with NCC and NZTA to sort this matter, We do not accept the auditors finding that Trustpower has under submitted data for the NZTA load. as neither Trustpower or Nelson City Council have any responsibility for the NZTA load. The NZTA contractor has included them incorrectly against our ICP.	30/11/2019	Disputed
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will assist NZTA in resolving this issue	30/11/2019	

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

Audit commentary

Two unmetered items of load had no ICP number recorded in the database at the time of the audit. The correct ICP was populated immediately following the on-site visit. This is recorded as non-compliance below.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.2 With: Clause 11(2)(a) and (aa) of Schedule 15.3 From: 04-Jul-19 To: 02-Sep-19	Two items of load did not have an ICP number recorded. Potential impact: Low Actual impact: Low Audit history: Once 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 two items of load are affected, and the wattage is low.

Actions taken to resolve the issue	Completion date	Remedial action status
This a DB issue and will be sorted by Powertech	8/10/2019	Cleared
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Both Powertech and TP to check on a monthly basis	8/10/2019	

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 and all but five had GPS coordinates. The GPS coordinates were immediately populated following the audit however the street address was sufficient to locate them.

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 have the wattage recorded as zero. Six of these records were confirmed as being disconnected, meaning that zero is the correct wattage, but three records should not be zero. These three records also don't have make and model information recorded. The records are shown in the table below.

Location	House Address	Make	Model	Lamp Wattage
0	3 - 9 MAJESTIC WAY (Private)	Unknown		0
575	MOTUEKA STREET (OMAHU WAY - 1ST IN ROW)	Unknown	Unknown	0
551	MOTUEKA STREET (F3 OMAHU WAY)	Unknown	Unknown	0

Gear wattage is now recorded in the database and I confirmed the figures were correct.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) and (d) of Schedule 15.3 From: 01-May-18 To: 06-Sep-19	Three items of load have unknown or blank lamp model, and zero wattage. Potential impact: Low Actual impact: Low Audit history: Twice previously Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are strong because they mitigate risk to an acceptable level. The impact is low, because there only three items of load with incorrect data.

Actions taken to resolve the issue	Completion date	Remedial action status
For Powertech to check DB to ensure what is actually in field	31/10/2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Powertech has responsibility to maintain the S/L DB. This will be remedied and DB updated	31/10/2019	

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 369 items of load. The total population was divided into four strata:

- Nelson roads;
- Tasman roads;
- NZTA; and
- Parks and Reserves.

Audit commentary

The field audit discrepancies are detailed in the table below.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
SH 6 WAKEFIELD QUAY	29	28	-1	5	1 x 105W HPS not found

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
					2 x 201W LED recorded as 150W HPS 1 x 107W LED recorded as 150W HPS 1 x 201W LED recorded as 148W LED
COLLINS STREET	1	1	-	1	1 x 201W LED recorded as 148W LED
HAVEN ROAD (ARTERIAL, SOUTHBOUND)	15	15	-	1	1 x 150W LED recorded as 150W HPS
MAITAI TO ROCKS ROAD CYCLEWAY - COLLINS STREET	5	5	-	4	3 x 201W LED recorded as 148W LED 1 x 201W LED recorded as 150W LED
PARK_ELMA TURNER LIBRARY_TAHAKI	5	2	-3	-	3 X 70W HPS removed in field not in database
PARK_NGAWHATU_NGAWHATU	4	3	-1	-	1 X 70W HPS removed in field not in database
Total			**-5**	**11**	

I found five less lamps in the field than were recorded in the database. This difference is recorded as non-compliance in **section 3.1**. Compliance is confirmed for recording all load in the database because no additional lights were found.

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 RAMM database functionality achieves compliance with the code.

The change management process and the compliance of the database reporting provided to Trustpower is detailed in **sections 3.1** and **3.2**.

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 is 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 four strata: • Nelson Roads; • NZTA; • Parks and Reserves; and • Tasman Roads.
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 58 sub-units.
Total items of load	369 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

A field audit was conducted of a statistical sample of 369 items of load. The "database auditing tool" was used to analyse the results, which are shown in the table below.

Result	Percentage	Comments
The point estimate of R	98.1	Wattage from survey is lower than the database wattage by 1.9%
R_L	93.1	With a 95% level of confidence it can be concluded that the error could be between -6.9% and 0.3%
R_H	100.3	

These results were categorised in accordance with the "Distributed Unmetered Load Statistical Sampling Audit Guideline", effective from 01/02/19 and the table below shows that Scenario C (detailed below) applies.

The conclusion from Scenario C is that the variability of the sample results across the strata means that the true wattage (installed in the field) could be between 6.9% lower and 0.3% higher than the wattage

recorded in the DUML database. Non-compliance is recorded because the potential error is greater than 5.0%.

In absolute terms the installed capacity is estimated to be 6.0 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is between 21 kW lower to 1.0 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 25,800 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 91,100kWh p.a. lower to 4,300 kWh p.a. higher than the database indicates.

Scenario	**Description**
A - **Good accuracy, good precision**	This scenario applies if: (a) R_H is less than 1.05; and (b) R_L is greater than 0.95 The conclusion from this scenario is that: (a) the best available estimate indicates that the database is accurate within +/- 5 %; and (b) this is the best outcome.
B - **Poor accuracy, demonstrated with statistical significance**	This scenario applies if: (a) the point estimate of R is less than 0.95 or greater than 1.05 (b) as a result, either R_L is less than 0.95 or R_H is greater than 1.05. There is evidence to support this finding. In statistical terms, the inaccuracy is statistically significant at the 95% level.
C - **Poor precision**	This scenario applies if: (a) the point estimate of R is between 0.95 and 1.05 (b) R_L is less than 0.95 and/or R_H is greater than 1.05 The conclusion from this scenario is that the best available estimate is not precise enough to conclude that the database is accurate within +/- 5 %.

Lamp description and capacity accuracy

Nine unmetered items of load have the wattage recorded as zero. Six of these records were confirmed as being disconnected, meaning that zero is the correct wattage, but three records should not be zero. These three records also don't have make and model information recorded. The records are shown in the table below. If it is assumed that these lights are 70W HPS then under submission of 1,064 kWh p.a. is estimated.

Location	House Address	Make	Model	Lamp Wattage
0	3 - 9 MAJESTIC WAY (Private)	Unknown		0
575	MOTUEKA STREET (OMAHU WAY - 1ST IN ROW)	Unknown	Unknown	0
551	MOTUEKA STREET (F3 OMAHU WAY)	Unknown	Unknown	0

Gear wattage is now recorded in the database and I confirmed the figures were correct.

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 manufacturer's specifications, but there are different wattages in different specification sheets, which makes it difficult to determine the true wattage. I've accepted that if the wattage appears on one of the sheets then it is considered accurate. There were no wattages that could not be supported by at least one specification sheet.

Location accuracy

The field audit did not identify any location discrepancies.

ICP number and owner accuracy

Two unmetered items of load had no ICP number recorded in the database at the time of the audit. The correct ICP was populated immediately following the on-site visit. This is recorded as non-compliance below.

Change management process findings

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. The light install date is used as the date of physical change.

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; and
- if another contractor is used, the developer arranges connection with the network and provides "as built" plans to NCC, then 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. The light install date is used as the date of physical change, which provides an accurate start date, but the current reporting process is based on a snapshot and this practice is non-compliant.

There are 147 private lights recorded in the database. These are recorded against the two ICPs in the database, NCC pays for the consumption and on-charges this to the residents periodically.

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

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-May-18 To: 06-Sep-19	In absolute terms, total annual consumption is estimated to be 25,800 kWh lower than the DUML database indicates. 3 items of load have zero wattage. 2 items of load did not have ICP identifiers. Potential impact: High Actual impact: Medium Audit history: Once Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as moderate, because they are sufficient to ensure that database wattage is accurate most of the time. The impact is assessed to be medium, because over submission may be occurring of approx. 25,800 kWh per annum based on the database accuracy.

Actions taken to resolve the issue	Completion date	Remedial action status
On checking with both Nelson Electricity and NCC these private lights should be accounted for in the DB as NCC then on bills the people concerned. They are not separately metered	8/11/2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Once these have been added to the monthly total on the DB this shouldn't be an ongoing issue	8/11/2019	

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 all ICPs have 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

Ballast wattages are now in the database and the correct values are used.

I recalculated the submissions for July 2019 for ICPs 0000090001NTBEF and 0000200190CTC63 using the data logger and database information. I found that the NZTA lighting, which has the same ICPs as the other lights, is not included in the submission totals. The table below shows the discrepancies.

ICP	Trustpower submission	Data base kWh including NZTA	Difference for July 2019	Approximate annual difference
0000090001NTBEF	64,380	70,152	5,773	54,711
0000200190CTC63	62,156	69,170	7,014	66,475
Total	126,536	139,322	12,787	121,186

NCC does not "on-charge" NZTA for the consumption of the NZTA lights, but they are in the database with the same ICP as the other lights, therefore I have considered them to be within the scope of this audit. NCC notified Trustpower on 27/02/18 that NZTA lighting should not be included in the invoice, however Trustpower remains responsible for reconciliation of this consumption until another ICP is created and submission occurs for this ICP.

On the Tasman network there are separate ICPs for NZTA, but these are only for items of load on the Tasman network not the Nelson network.

I checked with the Distributor, Nelson Electricity, and they confirmed the NZTA lights do not a have separate metered or unmetered ICPs.

Some database inaccuracies have led to inaccurate volume information, as follows:

- zero wattage for three lights;
- two records without an ICP; and
- submission is based on a snapshot and does not consider historic adjustments.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: unknown To: 06-Sep-19	Annual under submission of approx. 121,186, due to lack of submission for NZTA lighting. The field audit finding is that the total annual consumption is estimated to be 25,800 kWh lower than the DUML database indicates, as recorded in section 3.1. Zero wattage for three lights. Two records without an ICP. Submission is based on a snapshot and does not consider historic adjustments. Potential impact: High Actual impact: High Audit history: Once Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated as weak, because they are not sufficient to ensure that database wattage is accurate. The impact is assessed to be high due to the level of submission inaccuracy.

Actions taken to resolve the issue	Completion date	Remedial action status
NZTA thought that they should be billed from NCC for these lights but they have never received any accounts thus far. Trustpower are in talks with NCC and NZTA to sort this matter, We do not accept the auditors finding that Trustpower has under submitted data for the NZTA load. as neither Trustpower or Nelson City Council have any responsibility for the NZTA load. The NZTA contractor has included them incorrectly against our ICP.	30/11/2019	Disputed
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will assist NZTA in resolving this issue	30/11/2019	

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.

The database is reasonably accurate for NCC lighting but is less accurate for NZTA lighting. Most of the issues found relate to NZTA lighting.

Trustpower is not submitting or billing for NZTA lighting, but NZTA lighting is in the database against the same ICPs as the NCC lighting, therefore I have considered them to be within the scope of the audit. Under submission is occurring by approximately 120,000 kWh p.a. due to the NZTA lights being left out. I checked whether the NZTA lights appeared in another database with another trader, but they don't. I also checked with Nelson Electricity and they confirmed they were not metered. NCC notified Trustpower on 27/02/18 that NZTA lighting should not be included in the invoice, however Trustpower remains responsible for reconciliation of this consumption until another ICP is created and submission occurs for this ICP.

Database accuracy is described as follows:

Result	Percentage	Comments
The point estimate of R	98.1	Wattage from survey is lower than the database wattage by 1.9%
R_L	93.1	With a 95% level of confidence it can be concluded that the error could be between -6.9% and 0.3%
R_H	100.3	

The variability of the sample results across the strata means that the true wattage (installed in the field) could be between 6.9% lower and 0.3% higher than the wattage recorded in the DUML database. Non-compliance is recorded because the potential error is greater than 5.0%.

In absolute terms the installed capacity is estimated to be 6.0 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is between 21 kW lower to 1.0 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 25,800 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 91,100kWh p.a. lower to 4,300 kWh p.a. higher than the database indicates.

PARTICIPANT RESPONSE

We note the issue raised by the Auditor with regard to the NZTA lights in the Nelson City Council region. We do not accept the comments made by the Auditor that Trustpower should have been submitting the load for NZTA. Our customer (Nelson City Council) does not have an agreement that they will pay for the NZTA load and on charge NZTA . The situation has arisen due to all three parties, in the wider region, NZTA , Tasman District Council and Nelson City Council using the same contractor for carrying out maintenance.

We are actively working with both NZTA and Nelson City Council to resolve the NZTA issue and ensure that NZTA fulfils its responsibility, of ensuring that its Unmetered load is submitted to the market via a Retailer, who ever that maybe.