ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

NZTA ELECTRONET AREA AND TRUSTPOWER LIMITED

Prepared by: Steve Woods

Date audit commenced: 21 September 2020

Date audit report completed: 17 November 2020

Audit report due date: 10 November 2020

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EXECUTIVE SUMMARY

This audit of the NZTA ElectroNet area (**NZTA**) 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 Arc GIS database used for submission is managed by ElectroNet, on behalf of Westpower. New connection, fault, and maintenance work is completed by ElectroNet, who update the GIS in the field using Arc GIS collector. ElectroNet provide a monthly report from the database to Trustpower.

ElectroNet confirmed that a full field audit has been completed by them on behalf of NZTA. The field audit undertaken for this audit found a similar level of inaccuracy as was found in the previous audit. It is evident from this audit that the results from the full field audit have not been updated in the database. Electronet are investigating this.

The main findings are as follows:

1. In absolute terms, total annual consumption is estimated to be 33,400 kWh lower than the DUML database indicates.

2. 36 items of load with the incorrect wattage recorded resulting in a minor estimated under submission of 329 kWh per annum.

This audit found four non-compliances and makes one recommendation. The future risk rating of 20 indicates that the next audit be completed in three months. I have considered this in conjunction with Trustpower's comments and recommend that the next audit be in six months, with the main focus being to check that the database has been updated from ElectroNet's full field audit.

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	In absolute terms, total annual consumption is estimated to be 33,400 kWh lower than the DUML database indicates. 36 items of load with the incorrect wattage recorded resulting in a minor estimated under submission of 329 kWh per annum. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Weak	Medium	6	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	Two additional lights found in the field.	Weak	Low	2	Investigating
Database accuracy	3.1	15.2 and 15.37B(b)	In absolute terms, total annual consumption is estimated to be 33,400 kWh lower than the DUML database indicates. 36 items of load with the incorrect ballast recorded resulting in a minor estimated under submission of 329 kWh per annum.	Weak	Medium	6	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Volume information accuracy	3.2	15.2 and 15.37B(c)	In absolute terms, total annual consumption is estimated to be 33,400 kWh lower than the DUML database indicates. 36 items of load with the incorrect wattage recorded resulting in a minor estimated under submission of 329 kWh per annum. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Weak	Medium	6	Identified
Future Risk Rating						20	

Future risk rating	0	1-4	5-8	9-15	16-18	19+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Recommendation
Database accuracy	3.1	Record LED light make and model in the database to confirm that the correct wattage is recorded in the database.

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

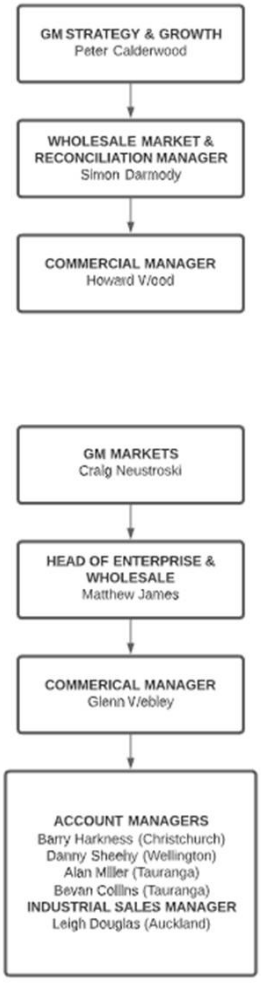
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

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 Lead Auditor

Veritek Limited

Electricity Authority Approved Auditor

Claire Stanley Supporting Auditor Veritek

Other personnel assisting in this audit were:

Name	Title	Company
Robbie Diederen	Reconciliation Analyst	Trustpower
Violet Penty	Asset Support Officer	ElectroNet

1.4. Hardware and Software

The Arc GIS SQL database used for the management of DUML is managed by ElectroNet.

The database back up is in accordance with standard industry procedures. Access to the database is restricted using a login and password.

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

1.5. Breaches or Breach Allegations

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

1.6. ICP Data

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000950100WPF4D	NZTA Westcoast	DOB0331	STL	159	23,621
0000950111WP9A5	NZTA Westcoast	GYM0661	STL	242	59,941
0000950112WP565	NZTA Westcoast	HKK0661	STL	195	25,744
0000950113WP920	NZTA Westcoast	KUM0661	STL	40	6619
0000950114WP4EA	NZTA Westcoast	OTI0111	STL	2	206
0000950115WP8AF	NZTA Westcoast	RFN1101	STL	94	9,950
0000950116WP46F	NZTA Westcoast	RFN1102	STL	52	10,342
			Total	**784**	**136,428**

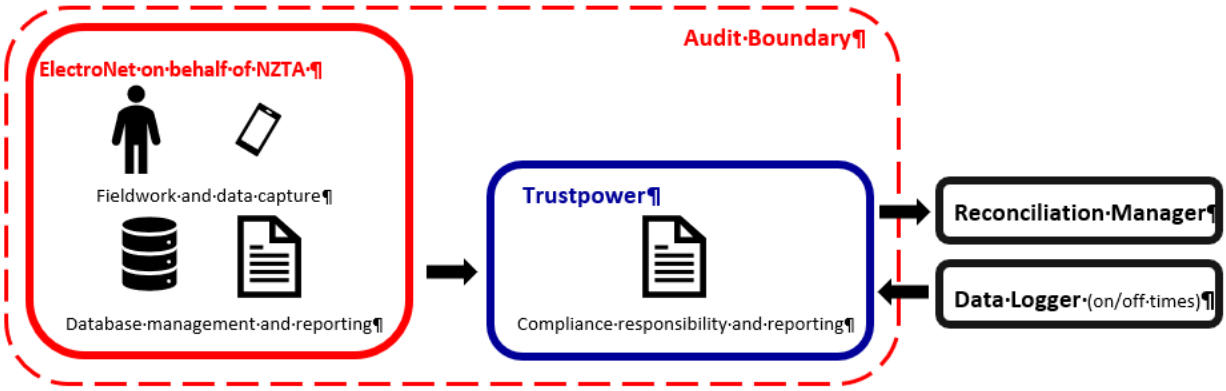
1.7. Authorisation Received

All information was provided directly by Trustpower and ElectroNet.

1.8. Scope of Audit

The Arc GIS database used for submission is managed by ElectroNet, on behalf of Westpower. New connection, fault, and maintenance work is completed by ElectroNet, who update the GIS in the field using Arc GIS collector. ElectroNet provide a monthly report from the database to Trustpower.

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.



A field audit of a statistical sample of 141 items of load was undertaken on 23 & 24 September 2020. The sample was selected from three strata:

- north,
- south, and
- urban.

1.9. Summary of previous audit

The previous audit was completed in May 2019 by Rebecca Elliot of Veritek Limited. Five non-compliances were identified, and two recommendations were made. The status of these is detailed below.

Table of Non-Compliance

Subject	Section	Clause	Non-Compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	Database is not confirmed as accurate with a 95% level of confidence. 64 items of load with the incorrect wattage recorded resulting in a minor estimated under submission of 846kWh per annum. One item of load with no wattage recorded.	Still existing
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	One item of load has no capacity, lamp or wattage information.	Resolved
All load recorded in database	2.5	11(2A) of Schedule 15.3	Three additional lights found in the field.	Still existing for different lights
Database accuracy	3.1	15.2 and 15.37B(b)	Database is not confirmed as accurate with a 95% level of confidence. 64 items of load with the incorrect wattage recorded resulting in a minor estimated under submission of 846kWh per annum. One item of load with no wattage recorded.	Still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	Database is not confirmed as accurate with a 95% level of confidence. 64 items of load with the incorrect wattage recorded resulting in a minor estimated under submission of 846kWh per annum. One item of load with no wattage recorded.	Still existing

Table of Recommendations

Subject	Section	Recommendation	Status
Database accuracy	3.1	Recommend a full field audit is undertaken to correctly record the NZTA lights in the ElectroNet area.	Completed but not updated into the database
		Record LED light make and model in the database to confirm that the correct wattage is recorded in the database.	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 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.

Audit outcome

Compliant

2. DUML DATABASE REQUIREMENTS

2.1. Deriving submission information (Clause 11(1) of Schedule 15.3)

Code reference

Clause 11(1) of Schedule 15.3

Code related audit information

The retailer must ensure the:

- *DUML database is up to date*
- *methodology for deriving submission information complies with Schedule 15.5.*

Audit observation

The process for calculation of consumption was examined.

Audit commentary

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

I recalculated the submissions for July 2020 for the seven ICPs associated with the NZTA database using the data logger and database information. I confirmed that the calculation method was correct.

The field audit against the database quantities found that the database is not confirmed as accurate with a 95% level of confidence resulting in an estimated over submission of 33,400 kWh per annum. This is detailed in **section 3.1**.

A check of the wattages applied identified a small number of lights with the incorrect wattage applied and one item of load with no wattage recorded this will be resulting in an estimated minor under submission of 329 kWh as detailed in **sections 2.4** and **3.1**.

On 18 June 2019, the Electricity Authority issued a memo confirming that the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed, and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current data used is a snapshot and this practice is non-compliant.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 31-Oct-19 To: 25-Sep-20	In absolute terms, total annual consumption is estimated to be 33,400 kWh lower than the DUML database indicates. 36 items of load with the incorrect wattage recorded resulting in a minor estimated under submission of 329 kWh per annum. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: High Actual impact: Medium Audit history: Three times previously Controls: Weak Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as weak, the ElectroNet field audit while being completed has not corrected the data as expected. This is being investigated by ElectroNet. The impact is assessed to be medium, based on the submission inaccuracies indicated by the DUML audit tool.

Actions taken to resolve the issue	Completion date	Remedial action status
We have worked with Electronet and they have now updated the Database with the findings of the Field Audit	29/10/2020	Identified
Preventative actions taken to ensure no further issue will occur	**Completion date**	
We have instructed Electonet to ensure that all field work is updated in the DUML database in a timely manner and we will monitor for effectiveness ongoingly	28/10/2020 & Ongoing	

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

All items of load have an ICP number recorded.

Audit outcome

Compliant

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

Code reference

Clause 11(2)(b) of Schedule 15.3

Code related audit information

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

Audit observation

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

Audit commentary

The database contains fields for the street name, area and GPS coordinates which are populated for all items of load.

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

The database records light type and total wattage, including ballast.

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

Audit outcome

Compliant

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

Code reference

Clause 11(2A) of Schedule 15.3

Code related audit information

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

Audit observation

A field audit of a statistical sample of 141 items of load was undertaken on 22nd & 23rd September 2020. The sample was selected from three strata:

- north,
- south, and
- urban.

Audit commentary

The field audit discrepancies are detailed in the table below:

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
Cnr Kumara Junction Highway Keogans Rd	1	1		1	1 x 70W HPS recorded in the database but 1 x 103W LED found
Cnr State Highway 7, Golf Links Rd	1	1		1	1 x 250 W HPS recorded in the database but 1 x 100W HPS found.
Inangahua Junction Intersection	4	4		1	1 x 250W HPS recorded in the database but 1 x 110W HPS found
Cnr Kumara Junction Highway, Old Christchurch Rd	1	0	-1		1 x 70W LED not found in the field
Coast Rd	3	3		1	1 x 70W HPS recorded in the database but 1 x 22W LED found
Ramsay St	1	1		1	1 x 70W HPS recorded in the database but 1 x 22W LED found.
Omoto Rd, opposite Auto Diesel	2	2		1	1 x 250W HPS recorded in the database but 1 x 149W LED found.
Opposite 49 main south road	1	0	-1		1 x 250W HPS not found in the field.
Cnr Main South Rd, Jamieson Rd	1	1		1	1 x 250W HPS recorded in the database but 1 x 149W LED found.
Main South Rd (near Power Rd)	0	1	+1		1 additional 250W HPS found.
Grey Road, Pole 27997	1	1		1	1 x 70W HPS recorded in the database but 1 x 103W LED found
Omoto Rd	4	4		1	1 x 136W MBFU recorded in the database but 1 x 73W LED found.
Cnr Main South Rd, Rutherglen Rd	1	1		1	1 x 250W HPS recorded in the database but 1 x 103W LED found.
Cnr State Highway 6, Owen St	1	1		1	1 x 70W HPS recorded in the database but 1 x 22W LED found.
Cnr Buller Road, Crampton Rd	1	1		1	1 x 70W HPS recorded in the database but 1 x 103W LED found
Moorhouse St	10	12		2	2 x additional 70W HPS found in the field.
Cnr Seven Mile Rd, Duncan St	2	2		2	2 x 250W HPS recorded in the database but 2 x 149W LED found.
Seven Mile Rd (near Millar St)	0	1	+1		1 x additonal 103W LED found in the field.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
Cnr Seven Mile Rd, Carroll St	1	1		1	1 x 70W HPS recorded in the database but 1 x 103W LED found
GRAND TOTAL	**141**	**141**	**4 (-2+2)**	**17**	

The field audit found two additional lights in the field. This is recorded as non-compliance below.

The accuracy of the database is detailed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 31-Oct-19 To: 25-Sep-20	Two additional lights found in the field. Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak due to the high number of errors found in the field. The impact is assessed to be low due to the small number of additional lights found

Actions taken to resolve the issue	Completion date	Remedial action status
We are investigating the discrepancy in what the Auditor has found and what was in our comprehensive Field Audit of all fixtures	01/12/2020	Investigating
Preventative actions taken to ensure no further issue will occur	**Completion date**	
We will work with the Auditor to ensure that GPS coordinates are obtained for any lights that they located, so that we can more accurately compare with the DUML database any potential discrepancies.	01/12/2020	

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 Arc GIS 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

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

ElectroNet staff take a copy of the GIS database into the field on a device, and modify, add and delete data as required when tasks are completed. When the device is synchronised, the new records are inserted into the main database.

Staff in the office post and reconcile the data. This process involves:

- an automatic comparison between the original data in the device and the current data in the GIS, to determine whether changes to the main database have occurred since the device was last synchronised; if changes have occurred an exception is created for manual investigation; and
- a manual check of the changed data to confirm it is correct and reasonable.

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	NZTA ElectroNet Westland region
Strata	The database contains the NZTA items of load in Westland area. The processes for the management of all NZTA items of load are the same. I created three geographical strata: • north, • south, and • urban
Area units	I created a pivot table of the roads based on the strata and I used a random number generator in a spreadsheet to select a total of 57 sub-units or 15% of the database wattage.
Total items of load	141 items of load were checked.

Wattages for all items of load were checked against the published standardised wattage tables produced by the Electricity Authority or LED light specifications where available against the DUML database.

Audit commentary

A field audit was conducted of a statistical sample of 141 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	94.3%	Wattage from survey is lower than the database wattage by 5.7%
R_L	88.1%	With a 95% level of confidence it can be concluded that the error could be between -11.9% and -0.7%
R_H	99.3%	

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 0.7% and 11.9% lower 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 8.0 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is between 16 kW lower and 1 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 33,400 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 4,200 kWh p.a. and 69,400 kWh p.a. lower 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 %

A full field audit was performed by ElectroNet, they have advised there may have been some technical difficulties with the iPads, impacting the data updates and therefore not all updates have been made in the database. This is currently being investigated by ElectroNet.

Lamp description and capacity accuracy

The database records the total wattage for each item load. Wattages for all items of load were checked against the published standardised wattage tables produced by the Electricity Authority. This found:

Count of Wattage	Co																						
Row Labels	**22**	**27**	**40**	**50**	**53**	**55**	**58**	**61**	**70**	**75**	**77**	**83**	**88**	**103**	**120**	**121**	**136**	**149**	**160**	**168**	**278**	**280**	**(blank)**	**Grand Total**
110 SON																9								9
125 MBFU																	5							5
150 SON																				124				124
1x40F				1																				1
250 HPS COATED																						16		16
250 SON																					291			291
40W FLURO				2		1																		3
50 SON E						1																		1
50 SON I								6																6
70 HPS SON/T												52												52
70 SON												193												193
70 SON E											18													18
90 SOX															9									9
LED	5	8	1		2		4		2	1			2	16				11	4					56
(blank)																								
Grand Total	**5**	**8**	**1**	**3**	**2**	**2**	**4**	**6**	**2**	**1**	**18**	**245**	**2**	**16**	**9**	**9**	**5**	**11**	**4**	**124**	**291**	**16**		**784**

There were 36 lights with the incorrect ballast applied resulting in a minor estimated annual under submission of 329kWh.

There are 56 LED lights in the field, and I repeat the recommendation from the last audit to populate the lamp make and model.

Recommendation	Description	Audited party comment	Remedial action
Database Accuracy	Record LED light make and model in the database to confirm that the correct wattage is recorded in the database.	This has now been completed	Cleared

Change management process findings

New connections for NZTA in the ElectroNet area are managed and follow the same process that is in place for Westland District Council. New connection, fault, and maintenance work is completed by ElectroNet, who update the GIS in the field using Arc GIS collector. ElectroNet office staff validate the data and post it to the database after the field devices are synchronised to the main database. This process is described further in **section 2.7**.

A process workflow in the Maximo system is used to manage all new connections and includes a step to update GIS information. Maximo tasks are normally allocated to a work group rather than individual, and key tasks are escalated within Maximo if not completed within specified timeframes. Tasks can be reassigned as necessary. Once the installation job is complete, a work task is created for the GIS team to check the Arc GIS database is up to date.

ElectroNet are not aware of any plans to roll out LED lights for NZTA on the ElectroNet network.

There are no private or festive lights associated with the NZTA lights.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 31-Oct-19 To: 25-Sep-20	In absolute terms, total annual consumption is estimated to be 33,400 kWh lower than the DUML database indicates. 36 items of load with the incorrect ballast recorded resulting in a minor estimated under submission of 329 kWh per annum. Potential impact: High Actual impact: Medium Audit history: Twice previously Controls: Weak Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
Medium	A full field audit was performed by ElectroNet, they have advised there may have been some technical difficulties with the iPads, impacting the data updates. This is currently being investigated by ElectroNet. The impact is assessed to be medium, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
We have worked with Electronet and they have now updated the Database with the findings of the Field Audit	29/10/2020	Identified
Preventative actions taken to ensure no further issue will occur	**Completion date**	
We have instructed Electonet to ensure that all field work is updated in the DUML database in a timely manner and will monitor to ensure effectiveness	28/10/2020 & Ongoing	

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

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

I recalculated the submissions for September 2019 for the seven ICPs associated with the NZTA database using the data logger and database information. I confirmed that the calculation method was correct.

The field audit against the database quantities found that the database is not confirmed as accurate with a 95% level of confidence resulting in an estimated over submission of 33,400 kWh per annum. This is detailed in **section 3.1**.

A check of the wattages applied identified a small number of lights with the incorrect wattage applied will be resulting in an estimated minor under submission of 329 kWh as detailed in **sections 2.4** and **3.1**.

On 18 June 2019, the Electricity Authority issued a memo confirming that the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed, and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current data used is a snapshot and this practice is non-compliant.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-Nov-19 To: 25-Sep-20	In absolute terms, total annual consumption is estimated to be 33,400 kWh lower than the DUML database indicates. 36 items of load with the incorrect wattage recorded resulting in a minor estimated under submission of 329 kWh per annum. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: High Actual impact: Medium Audit history: Twice previously Controls: Weak Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as weak, the ElectroNet field audit while being completed has not corrected the data as expected. This is being investigated by ElectroNet The impact is assessed to be medium, based on the submission inaccuracies indicated by the DUML audit tool.

Actions taken to resolve the issue	Completion date	Remedial action status
We have worked with Electronet and they have now updated the Database with the findings of the Field Audit	29/10/2020	Identified

We have instructed Electonet to ensure that all field work is updated in the DUML database in a timely manner and will monitor to ensure effectiveness	28/10/2020 & ongoing	

CONCLUSION

The Arc GIS database used for submission is managed by ElectroNet, on behalf of Westpower. New connection, fault, and maintenance work is completed by ElectroNet, who update the GIS in the field using Arc GIS collector. ElectroNet provide a monthly report from the database to Trustpower.

ElectroNet confirmed that a full field audit has been completed by them on behalf of NZTA. The field audit undertaken for this audit found a similar level of inaccuracy as was found in the previous audit. It is evident from this audit that the results from the full field audit have not been updated in the database. Electronet are investigating this.

The main findings are as follows:

1. In absolute terms, total annual consumption is estimated to be 33,400 kWh lower than the DUML database indicates.

2. 36 items of load with the incorrect wattage recorded resulting in a minor estimated under submission of 329 kWh per annum.

This audit found four non-compliances and makes one recommendation. The future risk rating of 20 indicates that the next audit be completed in three months. I have considered this in conjunction with Trustpower's comments and recommend that the next audit be in six months, with the main focus being to check that the database has been updated from ElectroNet's full field audit.

PARTICIPANT RESPONSE

We have spoken with the contractors and they have advised us that the field audit was wrapping up around the same time that we had Claire Stanley from Veritek on site. As a result, some of the information was still being processed from the iPads to the database at the time of the audit. The field Audit was a full and comprehensive capturing all the lights for NZTA. We had a couple of discrepancies between the Veritek field sample and the Field Audit we carried out. We will be working with Veritek to obtain GPS coordinates for the couple of discrepancies that we have identified.

The Audit score is largely based on the Database not being updated with the field Audit findings at the time of this Audit. Now that this work has been done, we are confident that our submission data for this DUML is now an accurate reflection of what is in the Field.

We will continue to monitor the situation to ensure effectiveness.