ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

NZTA ELECTRONET AREA AND TRUSTPOWER LIMITED

Prepared by: Rebecca Elliot

Date audit commenced: 7 October 2019

Date audit report completed: 29 November 2019

Audit report due date: 1 December 2019

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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.

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 data for the NZTA lights was provided by NZTA from their RAMM database to ElectroNet and this was uploaded to Arc GIS. No validation was carried out on this data by ElectroNet. This audit found a similar level of inaccuracy in the field audit as in the previous audit. I recommended that a full field audit of the NZTA lights be undertaken and have repeated this again to maintain visibility. ElectroNet are keen to do this but no approval from NZTA has been provided as yet.

This audit found five non-compliances and makes two recommendations. The future risk rating of 28 indicates that the next audit be completed in three months. I have considered this in conjunction with Trustpower's comments and I recommend that the next audit be in six months to allow sufficient time to conduct a full field audit.

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	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.	Weak	Medium	6	Investigating
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.	Weak	Low	2	Investigating
All load recorded in database	2.5	11(2A) of Schedule 15.3	Three additional lights found in the field.	Weak	Medium	6	Investigating
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.	Weak	Medium	6	Investigating

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)	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.	Weak	Medium	6	Investigating
Future Risk Rating						28	

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	Recommend a full field audit is undertaken to correctly record the NZTA lights in the ElectroNet area.
		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:

Rebecca Elliot

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Robbie Diederen	Reconciliation Analyst	Trustpower
Cary Lancaster	GIS Administrator	ElectroNet
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.

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	148	35,715
0000950111WP9A5	NZTA Westcoast	GYM0661	STL	231	63,354
0000950112WP565	NZTA Westcoast	HKK0661	STL	197	28,352
0000950113WP920	NZTA Westcoast	KUM0661	STL	38	5,786
0000950114WP4EA	NZTA Westcoast	OTI0111	STL	3	355
0000950115WP8AF	NZTA Westcoast	RFN1101	STL	94	9,870
0000950116WP46F	NZTA Westcoast	RFN1102	STL	52	10,867
			Total	**763**	**154,299**

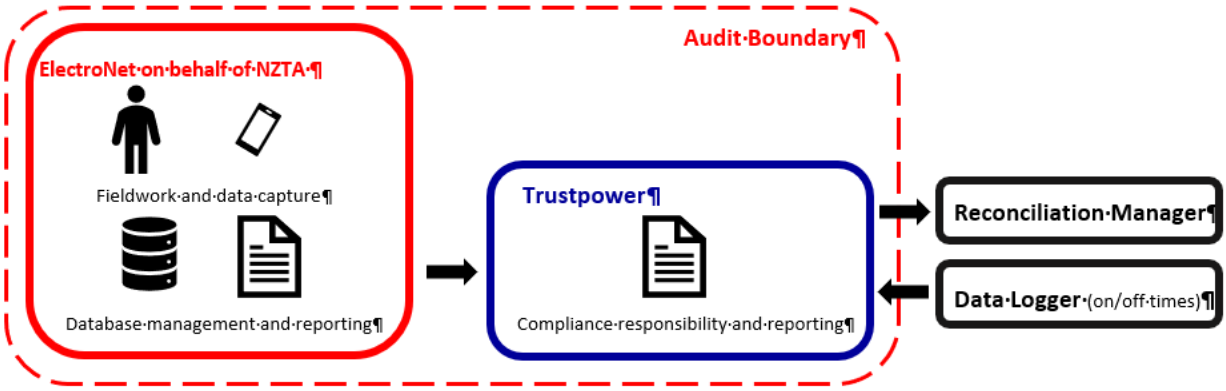
1.7. Authorisation Received

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 165 items of load was undertaken on 6 & 7 November 2019. The sample was selected from three strata:

- North
- South
- 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 current 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	The database used to prepare submissions contains some inaccurate information. The field data was 92.2% of the database data for the sample checked. This will result in potential over submission of 51,300 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). 26 items of load with the incorrect wattage recorded. Three items of load with zero or no wattage recorded.	Still existing
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	Three items of load have missing capacity and/or wattage information.	Still existing
All load recorded in database	2.5	11(2A) of Schedule 15.3	Six additional lights found in the field.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	The database used to prepare submissions contains some inaccurate information. The field data was 92.2% of the database data for the sample checked. This will result in potential over submission of 51,300 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). 26 items of load with the incorrect wattage recorded. Three items of load with zero or no wattage recorded.	Still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database used to prepare submissions contains some inaccurate information. The field data was 92.2% of the database data for the sample checked. This will result in potential over submission of 51,300 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). 26 items of load with the incorrect wattage recorded. Three items of load with zero or no wattage recorded.	Still existing

Table of Recommendations

Subject	Section	Recommendation	Status
Location of each item of load	2.3	Align items of load with a single street with uniform spelling of street names.	Cleared
Database accuracy	3.1	Recommend a full field audit is undertaken to correctly record the NZTA lights in the ElectroNet area.	Not yet implemented

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 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 as recorded 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 846 kWh as detailed 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: 07-May-18 To: 31-Oct-19	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. 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 as the data uploaded from the NZTA RAMM database was not verified and no approval has been received from NZTA for ElectroNet to do a field audit to correct Arc GIS. 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
It is Trustpowers view that a full field audit needs to be completed and has approached Electronet on NZTA's behalf to supply pricing to complete that audit. His information has been provided to NZTA however at this time they have not agreed to complete the field audit. Trustpower continues to work with NZTA to have this work completed however we aware that EA is in discussion with NZTA around their DUML processes and therefore suggest that this database serves as an example to be discussed with them.	To be advised	Investigating
Preventative actions taken to ensure no further issue will occur	**Completion date**	
To get agreement from NZTA to meet the cost of the field inventory	ASAP	

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 last audit indicated that ElectroNet were planning to split the total wattage into lamp and ballast wattage fields. This has not been progressed as NZTA have not approved this to be progressed.

One lamp has a missing or unknown light type information and/or zero or blank lamp wattage.

Location	Light Type	Wattage	X	Y
Franz Josef Highway	OTHER		170.180582	-43.375263

This is recorded as non-compliance below.

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

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) and (d) of Schedule 15.3 From: 07-May-18 To: 30-Sep-19	One item of load has no capacity, lamp or wattage information. Potential impact: Low Actual impact: Low Audit history: Twice previously Controls: Weak Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak as the data uploaded from RAMM was not verified and no approval has been received from NZTA for ElectroNet to do a field audit to correct this. The impact is assessed to be low as only one item of load (0.3%) is affected.

Actions taken to resolve the issue	Completion date	Remedial action status
It is Trustpowers view that a full field audit needs to be completed and has approached Electronet on NZTA's behalf to supply pricing to complete that audit. His information has been provided to NZTA however at this time they have not agreed to complete the field audit. Trustpower continues to work with NZTA to have this work completed however we aware that EA is in discussion with NZTA around their DUML processes and therefore suggest that this database serves as an example to be discussed with them	To be advised	Investigating
Preventative actions taken to ensure no further issue will occur	**Completion date**	
To get agreement from NZTA to meet the cost of the field inventory	To be advised	

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 165 items of load was undertaken on 7th & 8thNovember 2019. The sample was selected from three strata:

- North
- South
- Urban.

Audit commentary

The field audit discrepancies are detailed in the table below:

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
Cnr Broadway, Ross St	2	2		1	1x incorrect wattage recorded as 150W HPS in the database but 70W HPS found in the field
Cnr High St, Nelson St	3	3		3	1x incorrect wattage recorded as 110W HPS in the database but 250W HPS found in the field
Cnr Sinnamon St, Broadway	4	4		2	2x incorrect wattages recorded as 70W HPS but 150W HPS found in the field
Fitzherbert St	24	25	+1		1x additional 150W HPS found in the field

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
Inangahua Junction Intersection	4	4		1	1x incorrect wattage recorded as 250W HPS in the database but 110W HPS found in the field
Kumara Junction Highway	3	2	-1		1x 70W HPS not found in the field
State Highway 7	17	17		8	8x incorrect wattages found in the field
Whall St	4	6	+2		2x extra 250W HPS found in the field
GRAND TOTAL	165	167	4	15	

I found three 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: 07-May-18 To: 31-Oct-19	Three additional lights found in the field. 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 as the data uploaded from RAMM was not verified and no approval has been received from NZTA for ElectroNet to do a field audit to correct this. 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
It is Trustpowers view that a full field audit needs to be completed and has approached Electronet on NZTA's behalf to supply pricing to complete that audit. His information has been provided to NZTA however at this time they have not agreed to complete the field audit. Trustpower continues to work with NZTA to have this work completed however we aware that EA is in discussion with NZTA around their DUML processes and therefore suggest that this database serves as an example to be discussed with them	To be advised	Investigating
Preventative actions taken to ensure no further issue will occur	**Completion date**	

To get agreement from NZTA to meet the cost of the field inventory	To be advised	

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 Westland region
Strata	The database contains the NZTA items of load in Westland area. The processes for the management of all WDC items of load are the same. I created three geographical strata: • North • South • 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	165 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 statistical sample of 165 items of load found that the field data was 94.4% of the database data for the sample checked.

Result	Percentage	Comments
The point estimate of R	96.4%	Wattage from survey is lower than the database wattage by 3.6%
R_L	88.2%	With a 95% level of confidence it can be concluded that the error could be between -11.8% and+3.4%
R_H	103.4%	

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 11.8% lower to 3.4% 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 18 kW lower and 5 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 23,900 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 78,000 kWh p.a. lower and 22,700 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 %

I repeat the last audit's recommendation that a full field audit be undertaken to correct this data.

Description	Recommendation	Audited party comment	Remedial action
Database accuracy	Recommend a full field audit is undertaken to correctly record the NZTA lights in the ElectroNet area.	This recommendation has been made to NZTA along with a quote from ElectroNet to carry out the field work	Investigating

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	Column Labels																	
Row Labels	**22**	**27**	**50**	**55**	**61**	**77**	**83**	**110**	**120**	**121**	**136**	**157**	**168**	**250**	**278**	**280**		**Grand Total**
100W SON T								17										17
110 SON										20								20
125 MBFU											11							11
150 HPS SON/T													3					3
150 SON												2	76					78
150W SON PAK													1					1
1x40 F			1															1
1x40F			1															1
250 HPS COATED																26		26
250 SON															398			398
250W EYE LAMP														1				1
50 SON E				1														1
50 SON I					6													6
70 HPS SON/T							82											82
70 SON							79											79
70 SON E						18												18
90 SOX									9									9
LED	7	3																10
OTHER																	1	1
Grand Total	**7**	**3**	**2**	**1**	**6**	**18**	**161**	**17**	**9**	**20**	**11**	**2**	**80**	**1**	**398**	**26**	**1**	**763**

64 lights with the incorrect ballast applied resulting in a minor estimated annual under submission of 846kWh.

As detailed in **section 2.4**, there is one item of load recorded in the database with no capacity, lamp description or wattage information. This is recorded as non-compliance below.

There are ten LED lights in the field. These do not have light make and model details. I recommend that the lamp make and model is recorded in the database confirm that the correct wattage has been applied.

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.	Will bring this to ElectroNet attention and have them make the alterations to meet the standards	Identified

The last audit detailed items of load with duplicate streetlight numbers and address locations. Each of these has a unique GPS address and are separate items of load. Compliance is confirmed.

Change management process findings

There have been no new connections for NZTA in the ElectroNet area but the process to manage these is the same as 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 completes periodic outage patrols. When any field work required is completed, the database is updated as necessary.

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: 07-May-18 To: 31-Oct-19	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. 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 as the data uploaded from RAMM was not verified and no approval has been received from NZTA for ElectroNet to do a field audit to correct this. 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

It is Trustpowers view that a full field audit needs to be completed and has approached Electronet on NZTA's behalf to supply pricing to complete that audit. His information has been provided to NZTA however at this time they have not agreed to complete the field audit. Trustpower continues to work with NZTA to have this work completed however we aware that EA is in discussion with NZTA around their DUML processes and therefore suggest that this database serves as an example to be discussed with them	To be advised	Investigating
Preventative actions taken to ensure no further issue will occur	**Completion date**	
To get agreement from NZTA to meet the cost of the field inventory	To be advised	

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 as recorded 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 846 kWh as detailed 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: 07-May-18 To: 31-Oct-19	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. 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 as the data uploaded from RAMM was not verified and no approval has been received from NZTA for ElectroNet to do a field audit to correct this. 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
It is Trustpowers view that a full field audit needs to be completed and has approached Electronet on NZTA's behalf to supply pricing to complete that audit. His information has been provided to NZTA however at this time they have not agreed to complete the field audit. Trustpower continues to work with NZTA to have this work completed however we aware that EA is in discussion with NZTA around their DUML processes and therefore suggest that this database serves as an example to be discussed with them	To be advised	Investigating
Preventative actions taken to ensure no further issue will occur	**Completion date**	
To get agreement from NZTA to meet the cost of the field inventory	To be advised	

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.

The data for the NZTA lights was provided by NZTA to ElectroNet and this was uploaded to Arc GIS. No validation was carried out on this data by ElectroNet. This audit found a similar level of inaccuracy in the field audit as the previous audit. I recommended that a full field audit of the NZTA lights be undertaken and have repeated this again to maintain visibility. ElectroNet are keen to do this but no approval from NZTA has been provided as yet.

This audit found five non-compliances and makes two recommendations. The future risk rating of 28 indicates that the next audit be completed in three months. I have considered this in conjunction with Trustpower's comments and I recommend that the next audit be in six months to allow sufficient time to conduct a full field audit.

PARTICIPANT RESPONSE

It is Trustpowers view that a full field audit needs to be completed and has approached Electronet on NZTA's behalf to supply pricing to complete that audit. His information has been provided to NZTA however at this time they have not agreed to complete the field audit. Trustpower continues to work with NZTA to have this work completed however we aware that EA is in discussion with NZTA around their DUML processes and therefore suggest that this database serves as an example to be discussed with them

We have made good process with Electronet in improving processes in both updating the Ramm Database and in sending us timely data to enable accurate billing and reconciliation of the Streetlight usage. We believe that with the approach of Christmas and the ongoing discussions with NZTA that no meaningful outcome will be achieved by scheduling an Audit in 3 months. A more appropriate time frame would be 6 months, to allow for a response from NZTA and hopefully a full field Audit to be completed.