ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

WESTLAND DISTRICT COUNCIL AND TRUSTPOWER LIMITED

Prepared by: Tara Gannon

Date audit commenced: 3 May 2018

Date audit report completed: 14 May 2018

Audit report due date: 1 June 2018

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EXECUTIVE SUMMARY

This audit of the Westland District Council (WDC) 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 has undertaken work to cleanse the database, including adding NZTA lights. Further work is planned to:

- update missing description and wattage information
- check duplicate streetlight numbers
- cleanse street addresses; and
- split the total wattage to separate lamp and ballast wattage fields.

There are no immediate plans for large scale LED upgrades.

The future risk rating of 17 indicates that the next audit be completed in 12 months. Five non-compliances were identified, and no recommendations were raised. The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non- Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Deriving submission information	2.1	11(1) of Schedule 15.3	The database used to prepare submissions contains some inaccurate information.	Moderate	Medium	4	Identified
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	17 items of load have missing capacity and/or wattage information.	Moderate	Low	2	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	Festive lights are not recorded in the database.	Weak	Low	3	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	The database used to prepare submissions contains some inaccurate information.	Moderate	Medium	4	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database used to prepare submissions contains some inaccurate information.	Moderate	Medium	4	Identified
Future Risk Rating						17	

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

RECOMMENDATIONS

Subject	Section	Description	Recommendation
		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:

Tara Gannon

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Delwyn Jeffrey	Commercial and Industrial Billing Manager	Trustpower
Barry Harkerss	Commercial Account Manager	Trustpower
Cary Lancaster	GIS Administrator	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)
0000950050WPE41	Westland District Council – Hokitika town area	HKK0661	STL	412	39,555
0000950070WP314	Westland District Council – Rural area	HKK0661	STL	163	14,345
0000950071WPF51	Westland District Council	KUM0661	STL	28	2,057
0000950072WP391	Westland District Council	OTI0111	STL	1	160
0000950100WPF4D	NZTA Westcoast	DOB0331	STL	147	36,175
0000950111WP9A5	NZTA Westcoast	GYM0661	STL	231	63,802
0000950112WP565	NZTA Westcoast	HKK0661	STL	197	30,432
0000950113WP920	NZTA Westcoast	KUM0661	STL	44	6,083

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000950114WP4EA	NZTA Westcoast	OTI0111	STL	3	355
0000950115WP8AF	NZTA Westcoast	RFN1101	STL	94	9,690
0000950116WP46F	NZTA Westcoast	RFN1102	STL	52	10,931
			Total	**1,372**	**213,585**

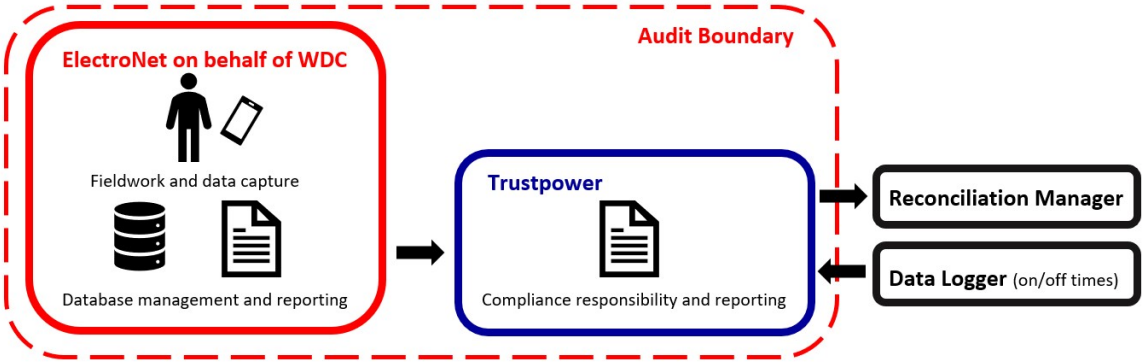
1.7. Authorisation Received

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 150 items of load was undertaken on 3-5 May 2018. The sample was selected from two strata:

- NZTA; and
- Westland DC.

1.9. Summary of previous audit

This is Veritek's first audit for the WDC distributed unmetered load database.

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.

I recalculated the submissions for February 2018 and March 2018 for all eleven ICPs using the data logger and database information. I confirmed that the calculation method was correct.

Because updated March 2018 database information was received after initial submissions were due for nine of the 11 ICPs, the March initial allocation submission was based on February 2018 database information. Once March 2018 data was received the system was updated, and the correct data was provided for revision submissions.

There is some inaccurate data within the ElectroNet database used to calculate submissions. This is recorded as non-compliance and discussed in **sections 2.4, 2.5** and **3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: unknown To: 04-May-18	The database used to prepare submissions contains some inaccurate information. • The database accuracy is assessed to be 99.3% indicating an estimated over submission of 483 kWh per annum. • 454 lamps had incorrect total wattages recorded, resulting in over submission of 2,840.5 watts or 12,132 kWh per annum. • 17 items of load have missing capacity and/or wattage information. • Festive lights are not recorded in the database. The impact of this is unknown. Potential impact: Medium Actual impact: Medium Audit history: None 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 lamp information is correctly recorded most of the time. 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
Electronet will investigate and update the historic database anomalies.	31/07/18	Identified
Electronet will add Festive lights to the database when they are in use and ensure they are included in the monthly updates.	As needed	
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Electronet undertake the new connections and maintenance of streetlights in the West Coast area, the updates are made in the field as the work is completed, and reviewed in the office.	Complete	
Trustpower will follow up during the festive period to ensure the lights are included when they are in use	31/12/18	

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

Code reference

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

Code related audit information

The DUML database must contain:

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

Audit observation

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

Audit commentary

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

All items of load have a GPS location recorded, and most items of load also have a street address recorded.

Audit outcome

Compliant

2.4. Description and capacity of load (Clause 11(2)(c) and (d) of Schedule 15.3)

Code reference

Clause 11(2)(c) and (d) of Schedule 15.3

Code related audit information

The DUML database must contain:

- *a description of load type for each item of load and any assumptions regarding the capacity*
- *the capacity of each item in watts.*

Audit observation

The database was checked to confirm that it contained a field for lamp type and wattage capacity and included any ballast or gear wattage.

Audit commentary

The database records light type and total wattage, including ballast. ElectroNet plans to split the total wattage into lamp and ballast wattage fields.

17 lamps had missing or unknown light type information and/or zero or blank lamp wattage.

Number	Location	Light Type	Wattage	X	Y
	Main Road, Franz Josef	OTHER		1371591.966	5193650.387
03988	Gibson Quay	OTHER	8[1]	1433127.044	5268272.946
Missing Tag	Town Centre Signage Hokitika	OTHER		1433367.077	5268416.517
Missing Tag	Kumara Signage Western end	OTHER	150	1450685.29	5279332.91
Missing Tag	Weld Lane Hokitika	OTHER		1433041.062	5268614.163
Missing Tag	Clock Tower	UNKNOWN		1433268.256	5268470.172

[1] This light was found to have an incorrect wattage during the field audit and is discussed further in **sections 2.6**, and **3.1**.

Number	Location	Light Type	Wattage	X	Y
Missing Tag	Town Centre Signage Hokitika	OTHER		1433356.903	5268391.086
Missing Tag	Hokitika Sign	UNKNOWN		1433372.233	5268424.283
Missing Tag	Hokitika Sign	UNKNOWN		1433345.181	5268395.171
Missing Tag	Town Centre Signage Hokitika	OTHER		1433372.404	5268416.461
Missing Tag	Information Center Seaview	OTHER		1434197.345	5269671.311
Missing Tag	Kumara Township Signage Eastern End	OTHER	150	1451757.056	5277526.613
Missing Tag	Hokitika Sign	UNKNOWN		1433347.378	5268386.108
Missing Tag		UNKNOWN	0	1434030.598	5269445.894
Missing Tag	Town Centre Signage Hokitika	OTHER		1433356.712	5268393.304
Missing Tag	Hokitika Sign	UNKNOWN		1433362.758	5268422.91
Needs Tag		UNKNOWN	0	1434003.043	5269389.422

This is recorded as non-compliance below. ElectroNet intends to visit each of these sites to confirm the description and capacity of these items, and update the database.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) and (d) of Schedule 15.3 From: unknown To: 04-May-18	17 items of load have missing capacity and/or wattage information. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as moderate, because most items of load have capacity and wattage information recorded. The impact is assessed to be low because 17 items of load (1.2%) are affected.

Actions taken to resolve the issue	Completion date	Remedial action status
Electronet have undertaken to review these sites and update the database as needed.	31/07/18	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Electronet undertake the new connections and maintenance of streetlights in the West Coast area, the updates are made in the field as the work is completed, and reviewed in the office.	Completed	

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 150 items of load was undertaken on 3-5 May 2018. The sample was selected from two strata:

- NZTA; and
- Westland DC.

Audit commentary

The field audit findings are detailed in the table below.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
NZTA					
Arahura Bridge, Arahura	11	11	-	-	
Broadway, Reefton	30	30	-	-	
Buller Road, Reefton	25	25	-	-	
Davie St, Hokitika	12	12	-	-	

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
Gibson Quay, Hokitika	33	31	-2	1	One 15W jam jar light behind the custom house was recorded as 8W. Two 50W SON lights were missing from beside the ship at Sunset Point.
Kaniere Rd, Hokitika	26	26	-	-	
Westland DC					
Livingstone St	11	11	-	-	
West Drive	2	2	-	-	
Total	**150**	**148**	**-2**	**1**	

I found two less lamps in the field than were recorded in the database, and one lamp wattage difference. These differences are recorded as non-compliance in **section 3.1**.

Festive lights are used on Hokitika's main street, but no information is available and they are not recorded in the database. It is intended that these lights will be replaced before they are used next Christmas and the new lights will be recorded in the database. This is recorded as non-compliance below.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: unknown To: 04-May-18	Festive lights are not recorded in the database. Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as weak as they are not sufficient to ensure that all lights, including Christmas lights are recorded in the database. The impact is unknown but is rated as low, as there are a small number of Christmas lights and they are only used during the festive season.

Actions taken to resolve the issue	Completion date	Remedial action status
Electronet will add Festive lights to the database when they are in use and ensure they are included in the monthly updates.	As needed	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Trustpower will follow up during the festive period to ensure the lights are included when they are in use	31/12/18	

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

Code reference

Clause 11(3) of Schedule 15.3

Code related audit information

The DUML database must track additions and removals in a manner that allows the total load (in kW) to be retrospectively derived for any given day.

Audit observation

The process for tracking of changes in the database was examined.

Audit commentary

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

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 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**.

Most new connections relate to network extensions, new subdivisions are rare. When new subdivisions are created, Westpower ensure that the installation is compliant and provides approval for connection.

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 is not aware of any unmetered private lights.

Festive lights are used on Hokitika's main street, but no information is available and they are not recorded in the database. This is recorded as non-compliance in **section 2.5**. It is intended that these lights will be replaced with LEDs before they are used next Christmas, and the new lights will be recorded in the database.

Electronet completes periodic outage patrols. Faults and outages are also reported to WDC, who inform Electronet. When any field work required is completed, the database is updated if necessary.

Audit outcome

Compliant

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

Code reference

Clause 11(4) of Schedule 15.3

Code related audit information

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

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

Audit observation

The database was checked for audit trails.

Audit commentary

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
- 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	Westland region
Strata	The database contains items of load in WDC area. The processes for the management of all WDC items of load are the same. I created two strata: • NZTA; and • Westland DC.
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 eight subunits.
Total items of load	150 items of load were checked.

Wattages for all items of load were checked against the published standardised wattage tables produced by the Electricity Authority.

Audit commentary

The database was found to contain some inaccuracies.

The field audit found:

- two less lamps in the field than were recorded in the database
- one lamp type and wattage difference.

The field data was 99.3% of the database data for the sample checked. The total wattage recorded in the database for the sample was 16,011.5 watts. The total wattage found in the field for the sample checked was 15,898.5 watts, a difference of 113 watts. This will result in estimated over submission of 483 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

Festive lights are used on Hokitika's main street, but no information is available and they are not recorded in the database. This is recorded as non-compliance below.

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. 454 lamps had

incorrect total wattages recorded, resulting in over submission of 2840.5 watts or 12,132 kWh per annum. This is recorded as non-compliance below.

The values shaded red show the number of lamps with incorrect total wattages. This information was provided to ElectroNet, who intend to update the lamp wattages.

	Count of lamps with total wattage										
Lamp	40	50	62	70	77	100	110	165	250	280	Expected wattage
100W SON T						9	1			14	110
150W SON PAK								1			168
250 SON									1	399	278
40W INC	11	2									40
50 SON E			9								55
70 SON E				2	59						77
90 SOX						9					120
Osram										8	278

17 items of load recorded in the database have missing capacity and/or wattage information.

The GIS Administrator periodically checks for duplicate streetlight numbers, and is working through cleansing these. There are currently six duplicate numbers, which will be investigated and updated.

number	location	Light Type	Wattage	X	Y
02003(Duplicate)	3 Frames Road	70 SON	83	1358653.326	5183035.17
02003(Duplicate)	Grey Road, Pole 27997	70 SON	83	1505573.423	5336055.112
02677(Duplicate)	Cnr of Douglas Drive and Franz Josef Highway	150 SON	168	1358733	5183168.436
02677(Duplicate)	Cnr of Douglas Drive and Franz Josef Highway	150 SON	168	1358717.482	5183085.291
02148	Sinnamon Street	70 HPS SON/T	83	1505948.478	5336342.131
02148		70 SON	83	1505686.892	5337199.617

Some addressing information recorded in the database is inaccurate or inconsistent, for example:

- two lights on Gibson Quay attached to the same pole had different physical addresses recorded, one was listed as a Hokitika Heritage light, the other on Gibson Quay
- one light on Airport Road had a street address of Gibson Quay
- two lights on the corner of Stafford and Davie Streets are recorded with a Gibson Quay street address.

ElectroNet intends to review and update incorrect street addresses.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: unknown To: 18-Apr-18	The database used to prepare submissions contains some inaccurate information. • The database accuracy is assessed to be 99.3% indicating an estimated over submission of 483 kWh per annum. • 454 lamps had incorrect total wattages recorded, resulting in over submission of 2840.5 watts or 12,132 kWh per annum. • 17 items of load have missing capacity and/or wattage information. • Festive lights are not recorded in the database. The impact of this is unknown. • There are six lights which do not have a unique light number in the database. • Some street address descriptions were inconsistent with the GPS coordinate information. Potential impact: Medium Actual impact: Medium Audit history: None 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 lamp information is correctly recorded most of the time. 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
Electronet have undertaken to review and correct the historic database inaccuracies	31/07/18	Identified
Electronet will add Festive lights to the database when they are in use and ensure they are included in the monthly updates.	As needed	

Preventative actions taken to ensure no further issues will occur	Completion date	
Electronet undertake the new connections and maintenance of streetlights in the West Coast area, the updates are made in the field as the work is completed, and reviewed in the office.	Completed	
Trustpower will follow up during the festive period to ensure the lights are included when they are in use	31/12/18	

3.2. Volume information accuracy (Clause 15.2 and 15.37B(c))

Code reference

Clause 15.2 and 15.37B(c)

Code related audit information

The audit must verify that:

- *volume information for the DUML is being calculated accurately*
- *profiles for DUML have been correctly applied.*

Audit observation

The submission was checked for accuracy for the month the database extract was supplied. This included:

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

Audit commentary

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

I recalculated the submissions for February 2018 and March 2018 for all eleven ICPs using the data logger and database information. I confirmed that the calculation method was correct.

Because updated March 2018 database information was received after initial submissions were due for nine of the 11 ICPs, the March initial allocation submission was based on February 2018 database information. Once March 2018 data was received the system was updated, and the correct data was provided for revision submissions.

There is some inaccurate data within the ElectroNet database used to calculate submissions. This is recorded as non-compliance and discussed in **sections 2.4, 2.5** and **3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: unknown To: 04-May-18	The database used to prepare submissions contains some inaccurate information. • The database accuracy is assessed to be 99.3% indicating an estimated over submission of 483 kWh per annum. • 454 lamps had incorrect total wattages recorded, resulting in over submission of 2840.5 watts or 12,132 kWh per annum. • 17 items of load have missing capacity and/or wattage information. • Festive lights are not recorded in the database. The impact of this is unknown. Potential impact: Medium Actual impact: Medium Audit history: None 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 lamp information is correctly recorded most of the time. 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
Electronet have undertaken to review and correct the historic database inaccuracies	31/07/18	Identified
Electronet will add Festive lights to the database when they are in use and ensure they are included in the monthly updates.	As needed	
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Electronet undertake the new connections and maintenance of streetlights in the West Coast area, the updates are made in the field as the work is completed, and reviewed in the office.	Completed	
Trustpower will follow up during the festive period to ensure the lights are included when they are in use	31/12/18	

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 has undertaken work to cleanse the database, including adding NZTA lights. Further work is planned to:

- update missing description and wattage information
- check duplicate streetlight numbers
- cleanse street addresses; and
- split the total wattage to separate lamp and ballast wattage fields.

There are no immediate plans for large scale LED upgrades.

The future risk rating of 17 indicates that the next audit be completed in 12 months.

PARTICIPANT RESPONSE

ElectroNet have agreed to review the data and correct the historic inaccuracies in the database. Trustpower will follow up to ensure this work is undertaken.

Trustpower have also added an action point to ensure that the festive lights are included in the December and January data.