ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

GREY DISTRICT COUNCIL AND PIONEER ENERGY LIMITED

Prepared by: Rebecca Elliot

Date audit commenced: 3 May 2020

Date audit report completed: 26 May 2020

Audit report due date: 1 June 2020

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EXECUTIVE SUMMARY

This audit of the **Grey District Council (GDC)** DUML database and processes was conducted at the request of **Pioneer Energy Limited (Pioneer)** 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 largely conducted in accordance with the audit guidelines for DUML audits version 1.1. A field audit was not undertaken due to the restrictions imposed by the Covid-19 lockdown; therefore, the results of the 2019 field audit were checked to ensure the database was updated.

At the time of the last audit the LED rollout was reported as being 85% complete. The remainder of the rollout has been completed during the audit period. The completion of the rollout has seen the correction of the discrepancies identified in the 2019 field audit. The only inaccuracy identified in this audit was one item of load with no wattage recorded.

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 Pioneer.

The future risk rating of eight indicates that the next audit be completed in 18 months. I have considered this in conjunction with Pioneer's comments and agree with this recommendation.

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	One item of load has no wattage information recorded in the database. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Moderate	Low	2	Investigating
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	2 items of load have missing capacity and/or lamp type information.	Moderate	Low	2	Investigating
Database accuracy	3.1	15.2 and 15.37B(b)	1 item of load with missing wattage information.	Moderate	Low	2	Investigating
Volume information accuracy	3.2	15.2 and 15.37B(c)	1 item of load with missing wattage information. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Moderate	Low	2	Investigating
Future Risk Rating						8	

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
Location of each item of load	2.3	Align items of load with a single street with a uniform format of street names.

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

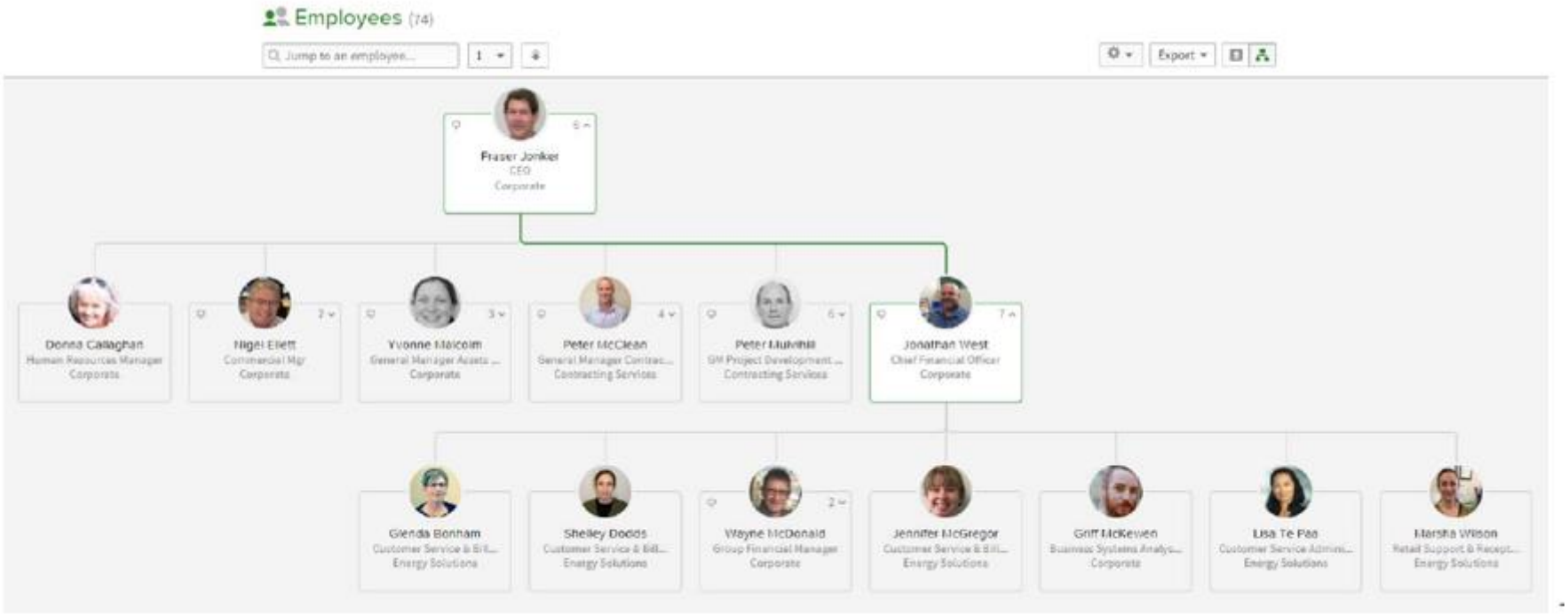
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Pioneer provided a copy of their organisational structure.



1.3. Persons involved in this audit

Auditors:

Rebecca Elliot

Veritek Limited

Electricity Authority Approved Auditor

Supporting Auditor:

Brett Piskulic

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Glenda Bonham	Retail Customer Service Team Leader	Pioneer
Jennifer McGregor	Customer Services & Billing Analyst	Pioneer
Violet Penty	Asset Support Officer	ElectroNet
Cary Lancaster	GIS Administrator	ElectroNet
Danielle Sollitt	Asset Systems Cadet	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)
0000950020WPB1C	GDC GYM0661 SL AC	GYM0661	DST	192	4,911
0000950040WP4EC	GDC GYM0661 SL AC	GYM0661	DST	960	32,016
0000950090WP9AE	GDC DOB0331 SL AC	DOB0331	DST	388	9,747
0000950091WP5EB	GDC KUM0661 SL AC	KUM0661	DST	27	749
0000950092WP92B	GDC RFN1102 SL AC	RFN1102	DST	4	103
			Total	**1,571**	**47,526**

1.7. Authorisation Received

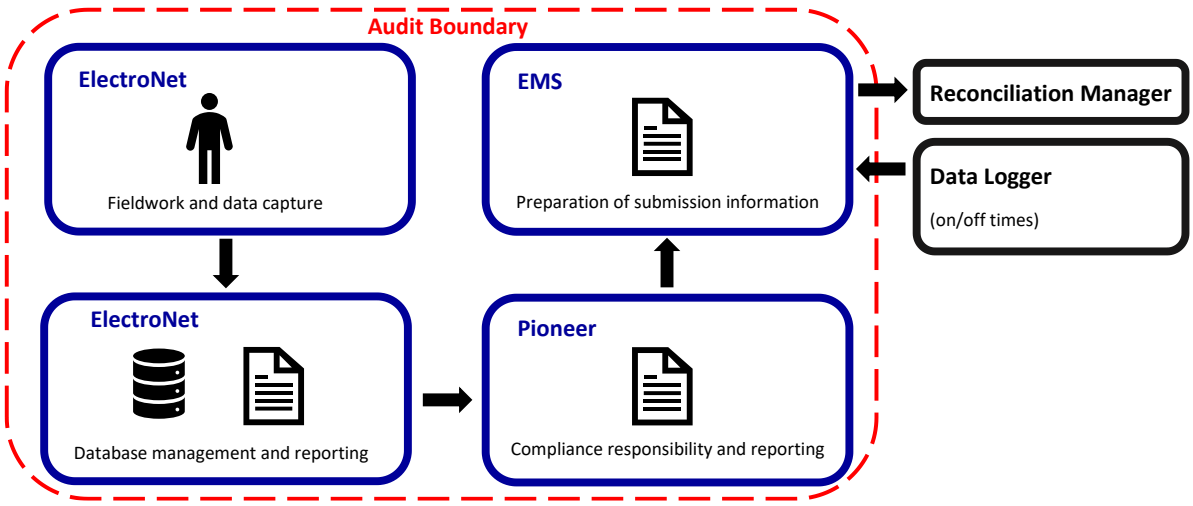
All information was provided directly by Pioneer and ElectroNet.

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 Pioneer.

The audit was largely conducted in accordance with the audit guidelines for DUML audits version 1.1. A field audit was not undertaken due to the restrictions imposed by the Covid-19 lockdown; therefore, the results of the 2019 field audit were checked to ensure the database was updated.

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.



1.9. Summary of previous audit

The previous audit was completed in May 2019 by Ewa Glowacka of TEG & Associates. Seven non-compliances were identified, and no recommendations were made. The current status of the non-compliances 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.	Still existing
ICP identifier and items of load	2.2	11(2)(aa) of Schedule 15.3	39 lights did not have ICP identifier assigned.	Cleared
Location of each item of the load	2.3	11(2)(b) of Schedule 15.3	Location description of each light is not reliable, discrepancies between a pole number in the field and in the database; only GPS coordinates give accurate location.	Cleared
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	5 items of load have unknown or blank lamp model, and/or blank lamp wattage.	Still existing for lesser number
All load recorded in database	2.5	11(2A) of Schedule 15.3	4 lamps were not recorded in the database. Festive lights are not recorded.	Cleared
Database accuracy	3.1	15.2 and 15.37B(b)	Some information in the ARC GIS is incorrect or missing.	Still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	Volumes submitted are not accurate because of some inaccurate information 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

Pioneer 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

Pioneer reconciles this DUML load using the DST profile. The submission information is calculated and submitted by EMS on behalf of Pioneer. The on and off times are derived from data logger information.

I recalculated the submissions for March 2020 for the five ICPs associated with the GDC database using the data logger and database information. I confirmed that the calculation method was correct.

As recorded in **sections 2.4** and **3.1** there is one lamp with no wattage recorded in the ElectroNet database used to calculate submissions.

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: 01-Jun-18 To: 05-May-20	One item of load has no wattage information recorded in the database. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: Low Actual impact: Low Audit history: Twice 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 only one item of load is affected.

Actions taken to resolve the issue	Completion date	Remedial action status
We will endeavour to work with ElectoNet to resolve this issue indicated in the audit	Ongoing	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Work closely with ElectroNet to ensure an ongoing accurate database is maintained	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

All items of load have a GPS location recorded, and most items of load also have a street address recorded. In the previous audit it was recorded that the information in the address field and pole

number were not reliable, though the GPS locations could be relied upon to locate lights. I recommend that the address fields be reviewed to associate an item of load with a single street rather than the current range of physical address descriptions and street name variances.

Description	Recommendation	Audited party comment	Remedial action	
Location of each item of load	Align items of load with a single street with a uniform format of street names.	Pioneer to follow up on ElectroNet regarding database review of item of load with a single street rather than the current range.	Identified	

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.

The database was checked and I found that there is one item of load with missing light type and lamp wattage, and one item of load with no light type recorded (a reduction from the five found in the last audit). These are detailed in the table below:

Number	Location	Light Type	Wattage	X	Y
01305	7 Rutherglenn Road		145	171.168522	-42.512518
00301	Back of ASB Bank Greymouth			171.209218	-42.448997

The accuracy of lamp descriptions, wattages and ballasts is recorded 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: 01-Jun-19 To: 05-May-20	2 items of load have missing capacity and/or lamp type information. Potential impact: Low Actual impact: Low Audit history: three times 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 only two items of load are affected.

Actions taken to resolve the issue	**Completion date**	**Remedial action status**
Pioneer to follow up on ElectroNet investigations regarding database accuracy	Ongoing	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Work closely with ElectroNet to ensure an ongoing accurate database is maintained	Ongoing	

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 323 items of load was undertaken during the previous audit on 15-16 May 2019. I checked if the findings had been updated in the database.

Audit commentary

The discrepancies found in the previous field audit are detailed in the table below.

Address	Database Count	Lights found	Difference	Wattage found (W)	Wattage record database (W)	Difference (W)
Tasman St	26	26	0	826	821	5
Cowper St	17	18	1	540	579	-39
Water walk	24	25	1	771	677	94

Address	Database Count	Lights found	Difference	Wattage found (W)	Wattage record database (W)	Difference (W)
Turumaha	12	12	0	829	603	226
Herbert St	12	12	0	696	806	-110
Shakespeare St	31	31	0	2,174	2,098	76
Marlborough Street	16	17	1	557	474	83
Ward St	23	23	0	516	547	-31
Boddytown	20	20	0	405	400	5
Dobson	24	24	0	581	589	-8
Kaiata	32	33	1	856	834	22
	Total difference (No)		**4**	**Total difference (W)**		**323**

I checked the database and found that the database has been updated for all of the discrepancies shown in the last audit. ElectroNet advised that the discrepancies were updated during the completion of the LED rollout.

In the previous audit it was identified that festive lights were used but not recorded in the database. I confirmed that there are now permanent festive lights recorded, and seasonal lights are added and removed from the database each year using the new connection process.

The database accuracy is discussed in **section 3.1**.

Audit outcome

Compliant

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

Code reference

Clause 11(3) of Schedule 15.3

Code related audit information

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

Audit observation

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

Audit commentary

The ElectroNet database functionality achieves compliance with the code. The change management process and the compliance of the database reporting provided to Pioneer 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. There is a history table in the database which records the details of all changes made including historical lamp 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

Wattages were checked for alignment with the published standardised wattage table produced by the Electricity Authority.

The findings of the field audit undertaken during the last audit were reviewed to determine if the database had been updated.

The change management process to track changes and timeliness of database updates was evaluated.

Audit commentary

Lamp description and capacity accuracy

The ElectroNet database was found to have no inaccuracies when compared to the published standardised wattage tables produced by the Electricity Authority.

LED wattages are recorded by the installer and are based on the wattages that are printed on the label attached to each fitting. ElectroNet provided example photos of the three common LED types and I confirmed that the label wattage matched the database recorded wattage.

As recorded in **section 2.4** there is one lamp with no wattage recorded in the database.

Previous field audit findings

I checked if the database had been updated to reflect the findings of the field audit undertaken during the last audit.

The discrepancies found in the previous field audit are detailed in the table below.

Address	Database Count	Lights found	Difference	Wattage found (W)	Wattage record database (W)	Difference (W)
Tasman St	26	26	0	826	821	5
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	Total difference (No)		**4**	**Total difference (W)**		**323**

I checked the database and found that the database has been updated for all of the discrepancies found in the last audit. ElectroNet advised that the discrepancies were updated during the completion of the LED rollout.

In the previous audit it was identified that festive lights were used but not recorded in the database. I confirmed that there are now permanent festive lights recorded, and seasonal lights are added and removed from the database each year using the new connection process.

Change management process findings

There have been no changes to the processes in place during the audit period. 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.

Most new connections relate to network extensions, and new subdivisions are rare. There were no new lights connected during the audit period. 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.

Periodic outage patrols are conducted by ElectroNet. Faults and outages are also reported to GDC, who inform ElectroNet. When any field work required is completed, the database is updated if necessary.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Jun-19 To: 05-May-20	One item of load has no wattage information recorded in the database. Potential impact: Low Actual impact: Low Audit history: Twice 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 only one item of load is affected.

Actions taken to resolve the issue	Completion date	Remedial action status
Pioneer to follow up with Electronet regarding the one item of load that has no wattage information recorded in the database	Ongoing	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Work closely with ElectroNet to ensure an ongoing accurate database is maintained	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

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

I recalculated the submissions for March 2020 for the five ICPs associated with the GDC database using the data logger and database information. I confirmed that the calculation method was correct.

As recorded in **sections 2.4** and **3.1** there is one lamp with no wattage recorded in the ElectroNet database used to calculate submissions.

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-Jun-19 To: 05-May-20	One item of load has no wattage information recorded in the database. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: Low Actual impact: Low Audit history: Twice 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 only one item of load is affected.

Actions taken to resolve the issue	Completion date	Remedial action status
Pioneer to follow up on ElectroNet investigations regarding database accuracy	Ongoing	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Work closely with ElectroNet to ensure an ongoing accurate database is maintained	Ongoing	

CONCLUSION

The audit was largely conducted in accordance with the audit guidelines for DUML audits version 1.1. A field audit was not undertaken due to the restrictions imposed by the Covid-19 lockdown; therefore, the results of the 2019 field audit were checked to ensure the database was updated.

At the time of the last audit the LED rollout was reported as being 85% complete. The remainder of the rollout has been completed during the audit period. The completion of the rollout has seen the correction of the discrepancies identified in the 2019 field audit. The only inaccuracy identified in this audit was one item of load with no wattage recorded.

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 Pioneer.

The future risk rating of eight indicates that the next audit be completed in 18 months. I have considered this in conjunction with Pioneer's comments and agree with this recommendation.

PARTICIPANT RESPONSE

Nothing further to add.