ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

GREATER WELLINGTON REGIONAL COUNCIL AND MERIDIAN ENERGY

Prepared by: Steve Woods

Date audit commenced: 2 March 2020

Date audit report completed: 6 May 2021

Audit report due date: 01-Jun-19

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EXECUTIVE SUMMARY

This audit of the Greater Wellington Regional Council Unmetered Streetlights (**GWRC)** DUML database and processes was conducted at the request of Meridian Energy Limited (**Meridian**), 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 data for GWRC used to be held in the Porirua City Council database, but a separate ICP was created for GWRC with an effective date of 01/03/19. The data is held in GWRC's SAP system. This is the first audit of the database and it was conducted more as a "gap analysis" than a full audit because the information is not yet in a form where a full audit can be conducted.

The audit found nine non-compliance issues. The future risk rating of 56 indicates that the next audit be completed in three months. I agree with this recommendation because it is not a big job to conduct a 100% field audit of both carparks to update the database with accurate information.

The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Audit timeliness	1.10	16A.26 and 17.295F	Audit conducted late	Moderate	Medium	4	Identified
Deriving submission information	2.1	11(1) of Schedule 15.3	Under submission of approx. 13,700 kWh per annum.	None	Medium	8	Identified
ICP identifier	2.2	11(2)(a) and (aa) of Schedule 15.3	ICP identifier not in the database	None	Low	5	Identified
Location of items of load	2.3	11(2)(b) of Schedule 15.3	Location information not sufficient to locate each item of load.	None	Low	5	Identified
Description and capacity	2.4	11(2)(c) and (d) of Schedule 15.3	The database contains insufficient information to derive make and model for 25 items of load. Wattage details are not present	None	Medium	8	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
All load recorded in the database	2.5	11(2A) of Schedule 15.3	14 items of load are missing from the database	None	Low	5	Identified
Tracking of load changes	2.6	11(3) of Schedule 15.3	Date information is insufficient to derive the load for any given day.	None	Low	5	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	The database has many gaps and is inaccurate.	None	Medium	8	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	Under submission of approx. 13,700 kWh per annum.	None	Medium	8	Identified
Future Risk Rating						56	

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

RECOMMENDATIONS

Subject	Section	Description	Action

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

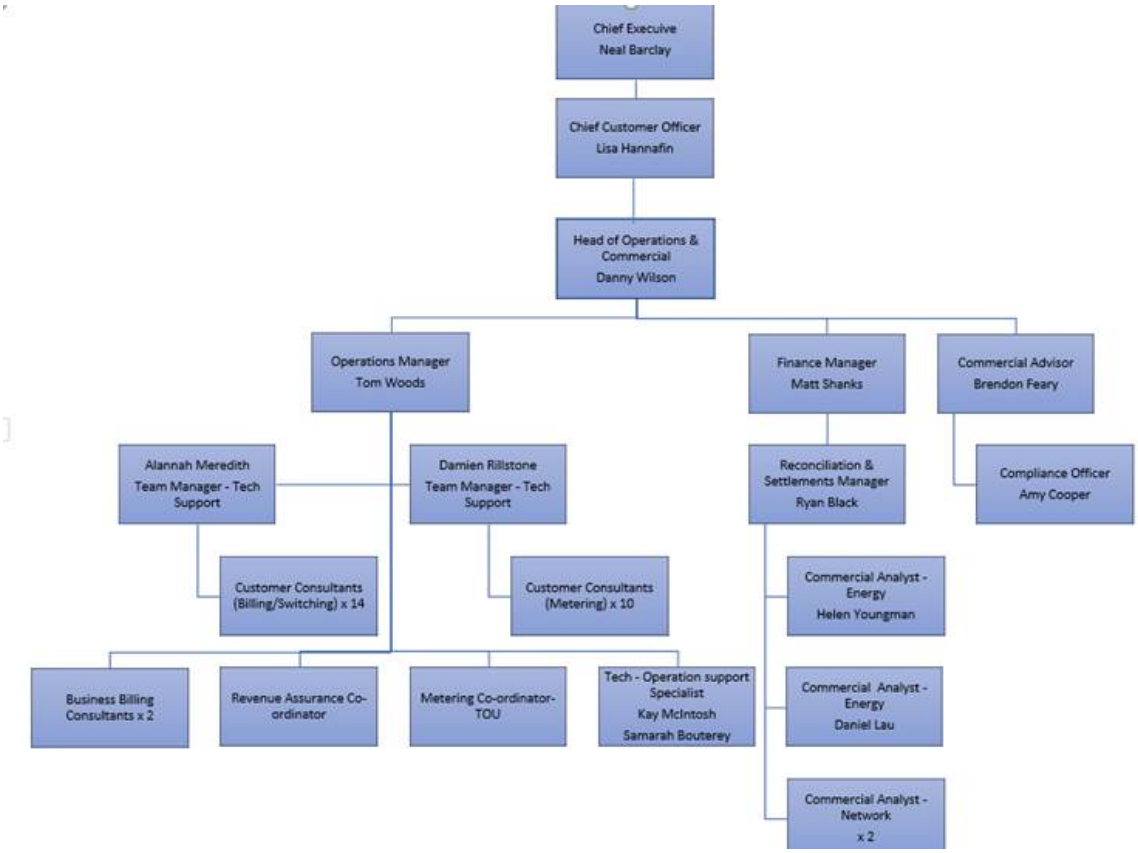
Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit commentary

Meridian confirms that there are no exemptions in place relevant to the scope of this audit.

1.2. Structure of Organisation

Meridian provided the relevant organisational structure:



1.3. Persons involved in this audit

Auditor:

Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Amy Cooper	Compliance Officer	Meridian
Danielle McEveney	Fixed Assets Adviser	GWRC

1.4. Hardware and Software

Data is held in GWRC's SAP system. Back-up arrangements will be checked during the first full audit.

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)
0000160523CK83F	MASTER ICP GWRC STREETLIGHTS PNI0331	PNI0331	UML	68	6,268 (estimated from PCC data)

1.7. Authorisation Received

All information was provided directly by Meridian or GWRC.

1.8. Scope of Audit

This audit of the **GWRC** DUML database and processes was conducted at the request of Meridian Energy Limited (**Meridian**), 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 data for GWRC used to be held in the Porirua City Council database, but a separate ICP was created for GWRC with an effective date of 01/03/19. The data is held in GWRC's SAP system. This is the first audit of the database and it was conducted more as a "gap analysis" than a full audit because the information is not yet in a form where a full audit can be conducted.

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 field audit was undertaken of all lights at the Paremata and Porirua railway stations.

1.9. Summary of previous audit

This is the first audit of the GWRC 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

Meridian have requested Veritek to undertake this streetlight audit.

Audit commentary

The ICP was created 01/03/19 which means an audit was required by 01/06/19, therefore the audit is later than the Code allows.

Non-compliance	Description
Audit Ref: 1.10 With: Clause 16A.26 and 17.295F From: 01-Jun-19 To: 08-Mar-20	Audit conducted late 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 recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact on settlement is moderate due to under submission of approx. 13,700 kWh per annum

Actions taken to resolve the issue	Completion date	Remedial action status
There was confusion and ongoing discussion between councils regarding responsibility of assets related to this ICP which delayed the audit. The audit was undertaken once this was clarified.	March 2020	Cleared
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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 and the application of profiles was checked. The database was checked for accuracy.

Audit commentary

Meridian reconciles this DUML load using the UNM profile. The total volume submitted to the Reconciliation Manager is based on the registry daily kWh figure, which is derived from a kW figure from information supplied by GWRC at the time the ICP was created, multiplied by 11.8 hours per day.

The kW figure in the registry is based on 11 lights at the Paremata railway station carpark, but it excludes all of the lighting at the Porirua railway station carpark.

I checked the Paremata lighting and found all of the data was inaccurate. My findings are as follows:

- 5 incorrect wattages
- 6 lights no found
- 14 additional lights

The registry records the kW as 3.058. The PCC database (the old source of data) has 6.268kW. The information provided by GWRC does not contain sufficient detail to determine the correct database wattage, but it is likely to be closer to 6.268 kW than 3.058kW, because the 3.058 is based on 11 lights, where the PCC database has 49 lights and the GWRC database has 68 lights. Therefore, under submission has occurred by approximately 13,700 kWh per annum based on an annual burn time of 4,271 hours.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-Mar-19 To: 08-Mar-20	Under submission of approx. 13,700 kWh per annum. Potential impact: Medium Actual impact: Medium Audit history: None Controls: None Breach risk rating: 8
Audit risk rating	**Rationale for audit risk rating**

Medium	Controls are not yet in place to ensure the accuracy of the database or submission information. 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
Further work has been carried out to establish and record the correct light information in the DUML database for this ICP.	16 June 2020	Identified
Registry information and historic submissions have been revised using updated database lamp information and adding applicable gear wattage.	August 2020	
Gear wattages have been added to the database.	November 2020	
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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 the correct ICP was recorded against each item of load.

Audit commentary

The database does not contain the ICP identifier.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.2 With: Clause 11(2)(a) and (aa) of Schedule 15.3 From: 01-Mar-19 To: 08-Mar-20	ICP identifier not in the database Potential impact: Low Actual impact: Low Audit history: None Controls: None Breach risk rating: 5

Audit risk rating	Rationale for audit risk rating		
Low	Controls are not yet in place to ensure database accuracy. The impact on settlement and participants is minor; therefore the audit risk rating is low.		
Actions taken to resolve the issue		**Completion date**	**Remedial action status**
We have requested that the ICP be added to the database.		Dec 2020	Identified
Preventative actions taken to ensure no further issues will occur		**Completion date**	

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 a street name but there is not sufficient information to locate each item of load. GPS coordinates are preferable.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.3 With: Clause 11(2)(b) of Schedule 15.3 From: 01-Mar-19 To: 08-Mar-20	Location information not sufficient to locate each item of load. Potential impact: Low Actual impact: Low Audit history: None Controls: None Breach risk rating: 5
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are not yet in place to ensure database accuracy. The impact on settlement and participants is minor; therefore the audit risk rating is low. The main impact is that the audit is difficult to conduct

Actions taken to resolve the issue	Completion date	Remedial action status
The inclusion of GPS co-ordinates in the database has been recommended to WRC.	Aug 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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 and that each item of load had a value recorded in these fields.

Audit commentary

The database contains a field for manufacturer, model number and manufacturer part number, but there are no fields for wattage and gear wattage. The model information is blank for 14 records and insufficient for a further 11.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) and (d) of Schedule 15.3 From: 01-Mar-19 To: 08-Mar-20	The database contains insufficient information to derive make and model for 25 items of load. Wattage details are not present. Potential impact: Medium Actual impact: Medium Audit history: None Controls: None Breach risk rating: 8
Audit risk rating	**Rationale for audit risk rating**

Medium	Controls are not yet in place to ensure database accuracy. The impact on settlement and participants is moderate; therefore the audit risk rating is medium. The main impact is that the audit is difficult to conduct

Actions taken to resolve the issue	**Completion date**	**Remedial action status**
Lamp manufacturer and model and wattage are now included in the database for all items of load. Gear wattage is populated in the database	August 2020 Nov 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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

I checked all lights at Porirua and Paremata carparks. The database information is incomplete, and it was difficult to identify whether there were lights missing from the database.

Audit commentary

I checked all lights at Porirua and Paremata carparks. The database information is incomplete, and it was difficult to identify whether there were lights missing from the database, but I did identify 14 additional lights at the Paremata carpark, which don't appear to be in the database.

Audit outcome

Non-compliant

Non-compliance	**Description**
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 01-Mar-19 To: 08-Mar-20	14 items of load are missing from the database. Potential impact: Medium Actual impact: Low Audit history: None Controls: None Breach risk rating: 5
Audit risk rating	**Rationale for audit risk rating**

Low	Controls are not yet in place to ensure database accuracy. Under submission could be 6,800 kWh per annum assuming 114 watts per fitting.		
Actions taken to resolve the issue		**Completion date**	**Remedial action status**
Further work has been carried out to establish and record the correct light information in the DUML database for this ICP. Registry information and historic submissions have been revised using updated database lamp information and adding applicable gear wattage.		July 2020 August 2020	Identified
Preventative actions taken to ensure no further issues will occur		**Completion date**	

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 discussed with GWRC.

Audit commentary

Fieldwork is conducted by Commercial Signals, who maintain a spreadsheet of changes. These are passed to GWRC and entered into SAP. The database contains a "start-up date" but this was not populated, therefore the total load cannot be derived for any given day.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.6 With: Clause 11(3) of Schedule 15.3 From: 01-Mar-19 To: 08-Mar-20	Date information is insufficient to derive the load for any given day. Potential impact: Low Actual impact: Low Audit history: None Controls: None Breach risk rating: 5
Audit risk rating	**Rationale for audit risk rating**

Low	Controls are not yet in place to ensure database accuracy. The lack of date information is likely to have a minor impact on settlement.

Actions taken to resolve the issue	Completion date	Remedial action status
Further work has been carried out to establish and record the correct light information in the DUML database for this ICP including lamp installation dates. Registry information and historic submissions have been revised using updated database lamp information and adding applicable gear wattage.	July 2020 August 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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

Code reference

Clause 11(4) of Schedule 15.3

Code related audit information

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

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

Audit observation

The database was checked for audit trails.

Audit commentary

The SAP database has a complete audit trail of all additions and changes to the database information.

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

I reviewed the content of the database, and I checked the two relevant railway carparks to determine accuracy.

Audit commentary

Database accuracy based on the field audit

I checked the Paremata lighting and found all of the data was inaccurate. My findings are as follows:

- 5 incorrect wattages
- 6 lights no found
- 14 additional lights

The Porirua lighting appears to be more accurate but the database does not contain sufficient detail to be certain.

Lamp description and capacity accuracy

The database contains a field for manufacturer, model number and manufacturer part number, but there are no fields for wattage and gear wattage. The model information is blank for 14 records and insufficient for a further 11.

NZTA lighting

NZTA lighting is included in a separate NZTA database with different ICPs.

ICP accuracy

The ICP is not recorded.

Location accuracy

The database contains a street name but there is not sufficient information to locate each item of load. GPS coordinates are preferable.

Change management process findings

Fieldwork is conducted by Commercial Signals, who maintain a spreadsheet of changes. These are passed to GWRC and entered into SAP. The database contains a “start-up date” but this was not populated, therefore the total load cannot be derived for any given day.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Mar-19 To: 08-Mar-20	The database has many gaps and is inaccurate. Potential impact: Medium Actual impact: Medium Audit history: None Controls: None Breach risk rating: 8
Audit risk rating	**Rationale for audit risk rating**
Medium	Controls are not yet in place to ensure database accuracy. The impact is assessed to be medium, based on the field audit findings.

Actions taken to resolve the issue	Completion date	Remedial action status
Further work has been carried out to establish and record the correct light information in the DUML database for this ICP. Registry information and historic submissions have been revised using updated database lamp information and adding applicable gear wattage. Gear wattages have been added to the database.	16 June 2020 August 2020 November 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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 the ICP has the correct profile and submission flag
- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

Audit commentary

Meridian reconciles this DUML load using the UNM profile. The total volume submitted to the Reconciliation Manager is based on the registry daily kWh figure, which is derived from a kW figure from information supplied by GWRC at the time the ICP was created, multiplied by 11.8 hours per day.

The kW figure in the registry is based on 11 lights at the Paremata railway station carpark, but it excludes all of the lighting at the Porirua railway station carpark.

I checked the Paremata lighting and found all of the data was inaccurate. My findings are as follows:

- 5 incorrect wattages
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The registry records the kW as 3.058. The PCC database (the old source of data) has 6.268kW. The information provided by GWRC does not contain sufficient detail to determine the correct database wattage, but it is likely to be closer to 6.268 kW than 3.058kW, because the 3.058 is based on 11 lights, where the PCC database has 49 lights and the GWRC database has 68 lights. Therefore, under submission has occurred by approximately 13,700 kWh per annum based on an annual burn time of 4,271 hours.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-Mar-19 To: 08-Mar-20	Under submission of approx. 13,700 kWh per annum. Potential impact: Medium Actual impact: Medium Audit history: None Controls: None Breach risk rating: 8
Audit risk rating	**Rationale for audit risk rating**
Medium	Controls are not yet in place to ensure the accuracy of the database or submission information. 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
Further work has been carried out to establish and record the correct light information in the DUML database for this ICP. Registry information and historic submissions have been revised using updated database lamp information and adding applicable gear wattage. Gear wattages have been added to the database.	16 June 2020 August 2020 November 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

CONCLUSION

The data for GWRC used to be held in the Porirua City Council database, but a separate ICP was created for GWRC with an effective date of 01/03/19. The data is held in GWRC's SAP system. This is the first audit of the database and it was conducted more as a "gap analysis" than a full audit because the information is not yet in a form where a full audit can be conducted.

The audit found nine non-compliance issues. The future risk rating of 56 indicates that the next audit be completed in three months. I agree with this recommendation because it is not a big job to conduct a 100% field audit of both carparks to update the database with accurate information.

PARTICIPANT RESPONSE

Since the audit was conducted significant work has been carried out to correctly record the lights associated with ICP 0000160523CK83F which pertain to Porirua and Paremata station car park lighting.

The database records 55 items of load 9.83 kW and includes lamp manufacturer and model, wattage and gear wattage information.

Historic submission information has been corrected back to May 2019 (difference of 27,192 kWh corrected).