ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

GORE DISTRICT COUNCIL AND MERIDIAN ENERGY

Prepared by: Rebecca Elliot

Date audit commenced: 1 December 2019

Date audit report completed: 6 March 2020

Audit report due date: 08-Mar-20

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EXECUTIVE SUMMARY

This audit of the Gore District Council (GDC) 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.

Previously Meridian was the trader for all the GDC ICPs. ICP 0008801007TPEE2 switched to Pioneer Energy from 1/05/19, leaving the remaining two ICPs with Meridian. The ICP that has switched to Pioneer continues to be billed to the Power Company Ltd as per the historical arrangement. Meridian has retained all the lights billed directly to the GDC. ICP 0008801019TP7D4 has been created for the NZTA lights in the GDC area and this is included in this audit.

The field audit was undertaken of a statistical sample of 103 items of load on 17th February 2020. I found a similar level of accuracy to the last audit, indicating that the database is overstated and the DUML statistical tool indicates a potential over submission of 28,300 kWh per annum.

The database is relatively static, but the errors found in previous audits were still present in this audit. Overall the processes in place to manage the database are robust, but historic errors need to be corrected to improve the accuracy. The personnel managing this in GDC are in the process of being replaced due to staff attrition. It will take time for new staff to come up to speed with the management of streetlights.

The audit found five non-compliances and makes one recommendation. The future risk rating of 15 indicates that the next audit be completed in 12 months.

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 accuracy is assessed to be 90.2% of the database for the sample checked indicating a potential over submission of approximately 28,300 kWh per annum. Estimated potential minor over submission of 214 kWh per annum due to incorrect ballasts being used. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.	Moderate	Medium	4	Identified
Description and capacity of load	2.4	11(2)(c) of Schedule 15.3	Seven items of load with an "unknown" light description recorded.	Strong	Low	1	Identified
All load recorded in the database	2.5	11(2A) of Schedule 15.3	One additional light found in the field.	Moderate	Low	2	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	The database accuracy is assessed to be 90.2% of the database for the sample checked indicating a potential over submission of approximately 28,300 kWh per annum. Estimated potential minor over submission of 214 kWh per annum due to incorrect ballasts being used.	Moderate	Medium	4	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database accuracy is assessed to be 90.2% of the database for the sample checked indicating a potential over submission of approximately 28,300 kWh per annum. Estimated potential minor over submission of 214 kWh per annum due to incorrect ballasts being used. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.	Moderate	Medium	4	Identified
Future Risk Rating						15	

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	Confirm the correct wattage has been applied to the LED lights outside of the NES dairy factory

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

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

1.2. Persons involved in this audit

Auditor:

Rebecca Elliot

Veritek Limited

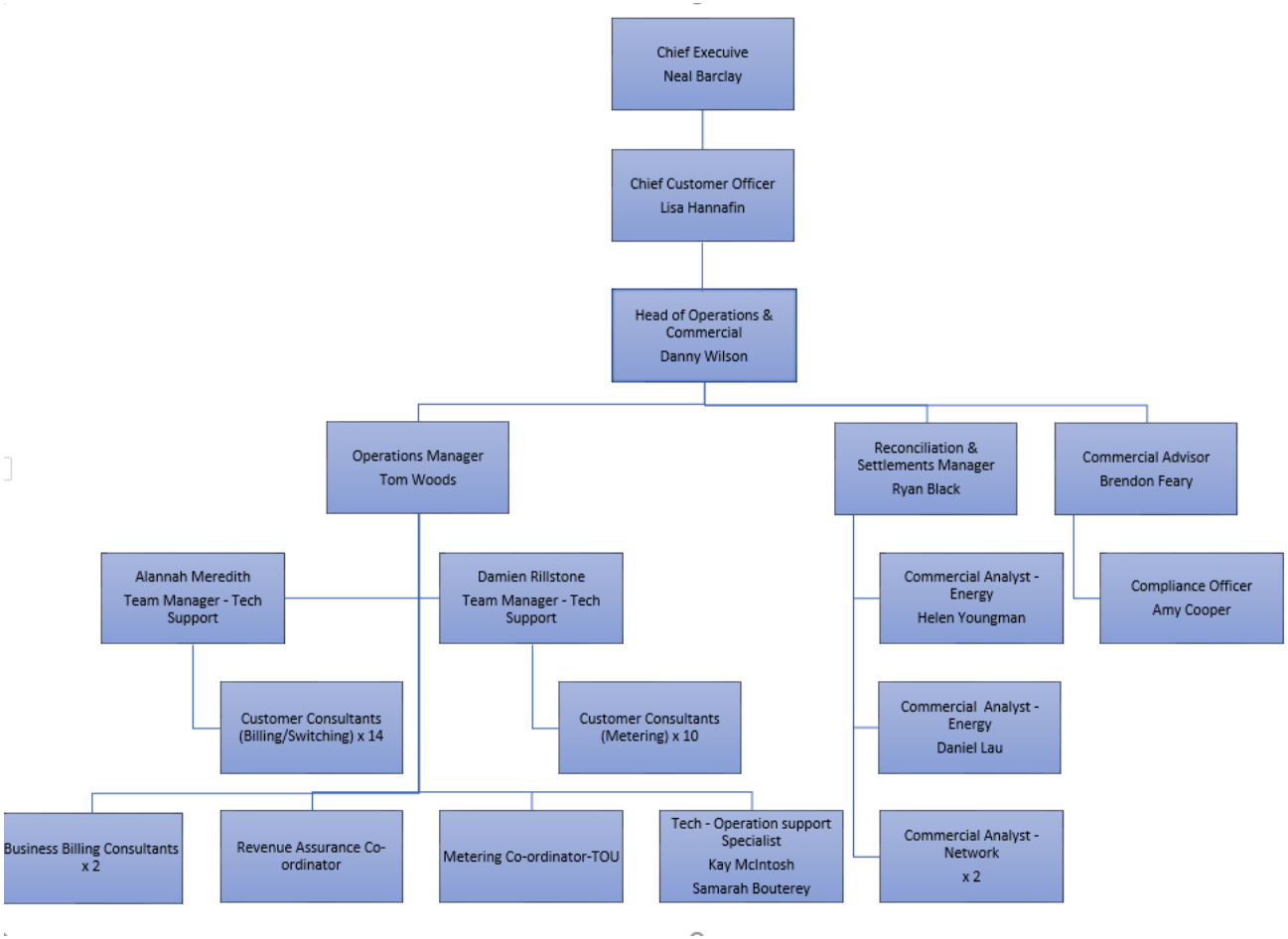
Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Peter Standring	Transportation Manager	Gore District Council
Amy Cooper	Compliance Officer	Meridian Energy
Helen Youngman	Energy Data Analyst	Meridian Energy

1.3. Structure of Organisation

Meridian provided a copy of their organisational structure:



1.4. Hardware and Software

The SQL database used for the management of DUML is remotely hosted by RAMM Software Ltd. The database is commonly known as "RAMM" which stands for "Roading Asset and Maintenance Management".

GDC confirmed that the database back-up is in accordance with standard industry procedures. Access to the database is secure by way of password protection.

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	Number of items of load	Database wattage (watts)
0008801002TP3AD	GDC LIGHTS - URBAN	GOR0331	187	7,192
0008801019TP7D4	GDC LIGHTS - NZTA	GOR0331	300	58,090
0008801020TPE7D	GDC LIGHTS - URBAN	GOR0331	50	2,001
Total			537	67,283

1.7. Authorisation Received

All information was provided directly by Meridian and GDC.

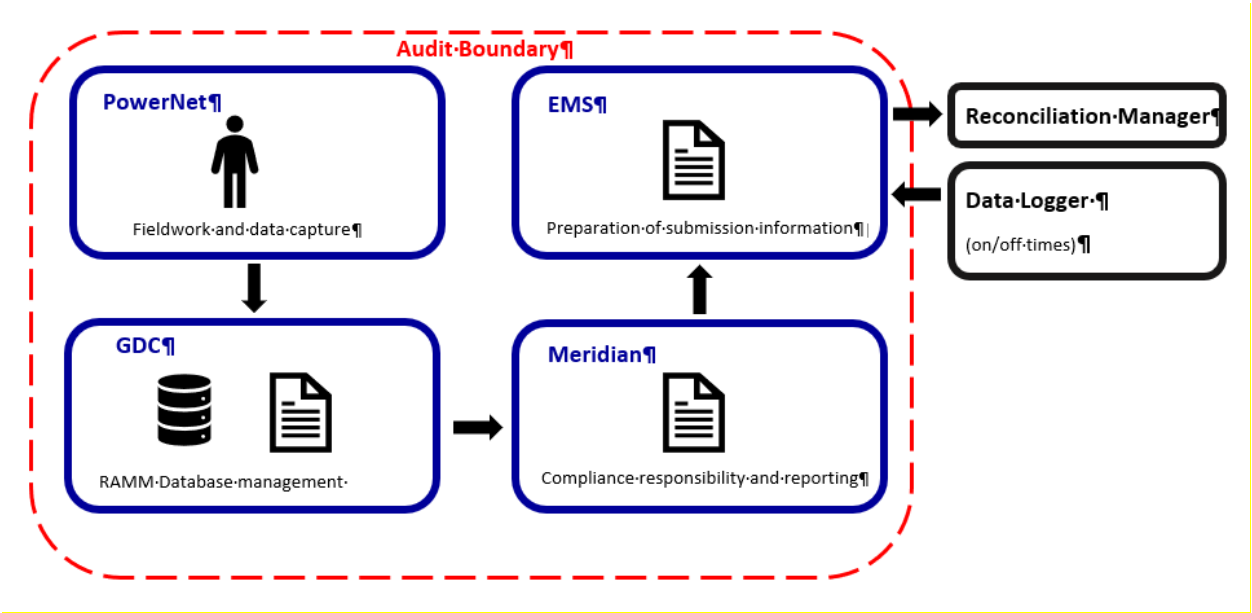
1.8. Scope of Audit

GDC is considered Meridian's customer for all the GDC lights except for ICP 0008801007TPEE2 which switched to Pioneer from 1/05/2019.

The database used for submission is the GDC RAMM database. This database includes NZTA lighting. PowerNet have created an ICP for these lights during the audit period.

Field work is conducted by PowerNet as a contractor.

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.



The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1.

The field audit was undertaken of a statistical sample of 103 items of load on 17th February 2020.

1.9. Summary of previous audit

The previous audit was completed in April 2019 by Rebecca Elliot of Veritek Limited. Four non-compliances were identified, and two recommendations were made. The current status of the non-compliances recorded are 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 accuracy is assessed to be 90.2% of the database for the sample checked indicating a potential over submission of approximately 46,600 kWh per annum. Festive lighting and decorative lighting in the park beside Medway Road not recorded in RAMM and therefore not reconciled. Estimated potential under submission of 41,786 kWh per annum due to incorrect lamp wattage and ballasts being used.	Still existing No longer part of this audit- these lights have switched to Pioneer Reduced to 214kWh as the under verandah lights are no longer with Meridian
All load recorded in the database	2.5	11(2A) of Schedule 15.3	Four additional lights found in the field. Festive lighting and decorative lighting in the park beside Medway Road not recorded in RAMM.	Still existing No longer part of this audit- these lights have switched to Pioneer

Subject	Section	Clause	Non-Compliance	Status
Database accuracy	3.1	15.2 and 15.37B(b)	The database accuracy is assessed to be 90.2% of the database for the sample checked indicating a potential over submission of approximately 46,600 kWh per annum. Festive lighting and decorative lighting in the park beside Medway Road not recorded in RAMM. Estimated potential under submission of 41,786 kWh per annum due to incorrect lamp wattage and ballasts being used.	Still existing No longer part of this audit- these lights have switched to Pioneer Reduced to 214kWh as the under verandah lights are no longer with Meridian
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database accuracy is assessed to be 90.2% of the database for the sample checked indicating a potential over submission of approximately 46,600 kWh per annum. Festive lighting and decorative lighting in the park beside Medway Road not recorded in RAMM and therefore not reconciled. Estimated potential under submission of 41,786 kWh per annum due to incorrect lamp wattage and ballasts being used.	Still existing No longer part of this audit- these lights have switched to Pioneer Reduced to 214kWh as the under verandah lights are no longer with Meridian

Table of Recommendations

Subject	Section	Non-Compliance	Status
Tracking of load change	2.6	Meridian to liaise with GDC and PowerNet to review the electrical connection of streetlights.	Still existing
Database accuracy	3.1	Audit all under verandah lighting to confirm the correct fluorescent lamp values are recorded in RAMM.	No longer part of this audit- these lights have switched to Pioneer

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

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

Audit commentary

Meridian reconciles this DUML load using the DST profile. Meridian is using the GDC RAMM database for reconciliation. The on and off times are derived from a data logger read by EMS and are used to create a shape file. Meridian supplies EMS with the capacity information and EMS calculates the kWh figure for each ICP and includes this in the relevant AV080 file. This process was audited during Meridian's reconciliation participant audit and EMS' agent audit. Compliance was confirmed for both parties.

I compared the RAMM database provided to the capacity information Meridian supplied to EMS for the month of December 2019 and found it matched.

There is some inaccurate data within the RAMM database which is used to provide capacity information to Meridian.

Issue	Potential volume information impact (annual kWh)
Potential over submission due to database inaccuracy	28,300 kWh over submission
5x 150W HPS with 250W HPS ballast of 28W applied	214 kWh over submission

This is recorded as non-compliance and discussed in **sections 2.5, 3.1** and **3.2**.

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed 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 monthly report is provided as a snapshot and is non-compliant. When a wattage is changed in the database due to a physical change or a correction, only the record present at the time the report is run is recorded, not the historical information showing dates of changes. Meridian completes revision submissions where corrections are required and has not yet updated their processes to be compliant with the Authority's memo.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-Sep-18 To: 31-Dec-19	The database accuracy is assessed to be 90.2% of the database for the sample checked indicating a potential over submission of approximately 28,300 kWh per annum. Estimated potential minor over submission of 214 kWh per annum due to incorrect ballasts being used. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. Potential impact: Medium Actual impact: Medium Audit history: Multiple times Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as moderate. The processes in place are robust for the calculation of submission. Powernet send through changes to GDC to load into the database, but errors can sometimes still occur. The impact is assessed to be medium, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
We will pass on database discrepancies identified during the audit to GDC to resolve.	31 March 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Despite the recent completion of the LED roll out it appears all changes may not have not been correctly processed in the database. We will recommend GDC undertake a full field audit to identify and correct any remaining inaccuracies.	TBC	

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 contains an ICP reference and all items of load had an ICP recorded. The last audit noted that Powernet were creating an ICP for the NZTA streetlights. This has been completed during the audit period and all state highway lights are recorded against this ICP.

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 address and GPS co-ordinates, and all were populated.

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

Audit commentary

A lamp type, lamp rating, and input wattage (including gear or ballast) is included for all but seven items of load. These have an "unknown" lamp type recorded. All have 150W assigned to them suggesting they are 150W high pressure sodium. This is recorded as non-compliance

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) of Schedule 15.3 From: 02-Apr-19 To: 31-Dec-19	Seven items of load with an "unknown" light description recorded. Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as strong as the process in place ensures that light types are captured. These seven items are exceptions. The impact is assessed to be low as this has no direct impact on reconciliation.

Actions taken to resolve the issue	Completion date	Remedial action status
These items of load will be provided to Gore DC to review and update with the correct information.	31 March 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Controls are reported as strong		

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

The field audit was undertaken of a statistical sample of 103 items of load on 17th February 2020.

Audit commentary

The field audit findings are detailed in the table below:

Street/Area	Database Count	Field Count	Lamp no. difference	No of incorrect lamp wattage	Comments
CHARLTON LN	6	6		1	1x incorrect LED wattage recorded as 24W LED but older model found in the field
CRAWFORD RD	5	5		1	1x incorrect LED wattage recorded as 24W LED but 130W LED found in the field
DOCTORS ROAD	6	5	-1		1x 250W HPS not found in the field
MCCONNELL ST	3	3		1	1x incorrect LED wattage recorded as 24W LED but 130W LED found in the field
MCQUEEN AVE	5	4	-1		1x 10W LED not found in the field
MCILLWRAITH RD	1	1		1	1x 100W HPS recorded in the database as 250W HPS
NUFFIELD ST	3	2	-1		1x 250W HPS not found in the field
SELBOURNE ST	1	0	-1		1x 150W HPS not found in the field
WAIKAKA VALLEY HIGHWAY (SH90)	1	2	+1		1x extra 250W HPS found in the field
GRAND TOTAL	103	100	5	4	

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

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

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 01-Apr-19 To: 31-Dec-19	One additional light found in the field. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as moderate as there are good controls in place to ensure that the database is kept up to date and accurate, but errors can still occur. The impact is assessed to be low as the volume of additional lights found in the field as a percentage of the overall sample checked is small and the database is relatively static.

Actions taken to resolve the issue	Completion date	Remedial action status
We will pass on the discrepancies found during the field audit to GDC to resolve.	31 March 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Despite the recent completion of the LED roll out it appears all changes may not have not been correctly processed in the database. We will recommend GDC undertake a full field audit to identify and correct any remaining inaccuracies.	TBC	

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 RAMM database functionality achieves compliance with the code. The change management process and the compliance of the database reporting provided to Meridian 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 RAMM database was checked for audit trails.

Audit commentary

The RAMM database contain a complete audit trail of all additions and changes including the identifier of person who makes any changes.

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	Gore District Council region
Strata	The database contains items of load in Gore district area. The processes for the management of GDC items of load are the same, but I decided to place the items of load into three strata of a similar size, as follows: 1. A-L 2. M-W 3. State Highway
Area units	I created a pivot table of the roads in each area and I used a random number generator in a spreadsheet to select a total of 27 sub-units.
Total items of load	103 items of load were checked.

Wattages were checked for alignment with the published standardised wattage table produced by the Electricity Authority or LED light specifications where available.

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

Audit commentary

Field Audit Findings

A statistical sample of 103 items of load found that the field data was 90.2% of the database data for the sample checked.

Result	Percentage	Comments
The point estimate of R	90.2%	Wattage from survey is lower than the database wattage by 9.8%
R_L	79.2%	With a 95% level of confidence it can be concluded that the error could be between -20.8% and -0.5%
R_H	99.5%	

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 20.8% and 0.5% lower than the wattage recorded in the DUML database. Non-compliance is recorded because the potential error is greater than 5.0%.

In absolute terms the installed capacity is estimated to be 7kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is between 14 kW lower and equal to the database.

In absolute terms, total annual consumption is estimated to be 28,300 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 1,500 and 59,800 kWh p.a. lower than the database indicates.

This is a similar level of accuracy to that found in the last audit.

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 %

Lamp description and capacity accuracy

Wattages for all items of load were checked against the published standardised wattage table produced by the Electricity Authority. The previous audit found an estimated potential under submission of 41,786 kWh per annum due to incorrect lamp wattage and ballasts being used. This has reduced to a very minor over submission of 214 kWh (as detailed below), due to the incorrect lights having switched away to Pioneer from 1/05/19. These are discussed in that audit report.

Incorrect lamp wattages and ballasts	Potential volume information impact (annual kWh)
5x 150W HPS with 250W HPS ballast of 28W applied	214 kWh over submission

This is recorded as non-compliance below.

As reported in the last audit, the NES McNab dairy factory resulted in some new streetlights being connected during the audit period. GDC were not advised by PowerNet of these and GDC sought the details from the contractor carrying out the work to ensure these lights were added to the database. These are recorded in the database as 20W LED, whilst they have 20 LED bulbs these are unlikely to be 1W bulbs as they are on the state highway. I recommend that GDC get the light specification to confirm that the correct wattage is recorded.

Recommendation	Description	Audited party comment	Remedial action
Tracking of load change	Confirm the correct wattage has been applied to the LED lights outside of the NES dairy factory	We will follow up with GDC to confirm the wattage for these 20 lights	Identified

Change management process findings

The processes were reviewed for new lamp connections and the tracking of load changes due to faults and maintenance.

GDC have no new subdivisions in progress so new streetlight connections are few and far between. There were no new connections found during the audit period.

Fault and maintenance work continues to be undertaken by PowerNet contracting division via a long-standing memorandum of understanding. PowerNet provide GDC with details of all changes made in the field and these are updated in RAMM.

GDC have completed their LED roll out and due to the low failure rate of LED lights, outage patrols are no longer considered necessary.

No private lights have been identified in the GDC database.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Sep-18 To: 31-Dec-19	The database accuracy is assessed to be 90.2% of the database for the sample checked indicating a potential over submission of approximately 28,300 kWh per annum. Estimated potential minor over submission of 214 kWh per annum due to incorrect ballasts being used. Potential impact: Medium Actual impact: Medium Audit history: Three times Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as moderate Powernet send through changes to GDC to load into the database, but errors can sometimes still occur. 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
Small number of ballast discrepancies will be passed to GDC to resolve in the database.	31 March 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Despite the recent completion of the LED roll out it appears all changes may not have not been correctly processed in the database. We will recommend GDC undertake a full field audit to identify and correct any remaining inaccuracies.	TBC	

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; and
- 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 DST profile. Meridian moved to using the GDC RAMM database for reconciliation in April 2019. The on and off times are derived from a data logger read by EMS and are used to create a shape file. Meridian supplies EMS with the capacity information and EMS calculates the kWh figure for each ICP and includes this in the relevant AV080 file. This process was audited during Meridian's reconciliation participant audit and EMS' agent audit. Compliance was confirmed for both parties.

I compared the RAMM database provided to the capacity information Meridian supplied to EMS for the month of December 2019 and found it matched.

There is some inaccurate data within the RAMM database which is used to provide capacity information to EMS. This is recorded as non-compliance and discussed in **sections 2.1**, **2.5** and **3.1**.

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed 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 monthly report is provided as a snapshot and is non-compliant. When a wattage is changed in the database due to a physical change or a correction, only the record present at the time the report is run is recorded, not the historical information showing dates of changes. Meridian completes revision submissions where corrections are required and has not yet updated their processes to be compliant with the Authority's memo.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-Sep-18 To: 31-Dec-19	The database accuracy is assessed to be 90.2% of the database for the sample checked indicating a potential over submission of approximately 28,300 kWh per annum. Estimated potential minor over submission of 214 kWh per annum due to incorrect ballasts being used. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. Potential impact: Medium Actual impact: Medium Audit history: Twice Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as moderate. The processes in place are robust for the calculation of submission. Powernet send through changes to GDC to load into the database, but errors can sometimes still occur. 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
Small number of ballast discrepancies will be passed to GDC to resolve in the database.	31 March 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Despite the recent completion of the LED roll out it appears all changes may not have not been correctly processed in the database. We will recommend GDC undertake a full field audit to identify and correct any remaining inaccuracies.	TBC	

CONCLUSION

Previously Meridian was the trader for all the GDC ICPs. ICP 0008801007TPEE2 switched to Pioneer Energy from 1/05/19, leaving the remaining two ICPs with Meridian. The ICP that has switched to Pioneer continues to be billed to the Power Company Ltd as per the historical arrangement. Meridian has retained all the lights billed directly to the GDC. ICP 0008801019TP7D4 has been created for the NZTA lights in the GDC area and this is included in this audit.

The field audit was undertaken of a statistical sample of 103 items of load on 17th February 2020. I found a similar level of accuracy to the last audit, indicating that the database is overstated and the DUML statistical tool indicates a potential over submission of 28,300 kWh per annum.

The database is relatively static, but the errors found in previous audits were still present in this audit. Overall the processes in place to manage the database are robust, but historic errors need to be corrected to improve the accuracy. The personnel managing this in GDC are in the process of being replaced due to staff attrition. It will take time for new staff to come up to speed with the management of streetlights.

The audit found five non-compliances and makes one recommendation. The future risk rating of 15 indicates that the next audit be completed in 12 months.

PARTICIPANT RESPONSE

Meridian have reviewed this audit and their comments are recorded in the body of the report. No further comments were provided.